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DESCRIPTION OF
UNITED STATES NAVAL GUNS
THEIR MARKS AND MODIFICATIONS

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DESCRIPTION OF UNITED STATES NAVAL GUNS, THEIR MARKS AND MODIFICATIONS.

AUTOMATIC MACHINE RIFLES.

MARK I.

The Colt automatic machine rifles made to use the .30-caliber rim cartridge (model of 1898) were called Mark I. None are now in service. No drawings.

MARK I, MODIFICATION 1.

Drawing 28140. When the Mark I Colt gun was modified to take .30-caliber cartridges with a cannellure (model of 1906), they were called Mark I, modification 1. At the same time the 6-mm. Colts were modified to take the same ammunition, and were also called Mark I, modification 1. So there are two types of Colts, having different mechanisms, with the same mark, because they both use the same ammunition. Weight of gun, 42 pounds; of cradle, 9.75 pounds; and of carriage, 22 pounds.

6-MM. COLT GUNS.

No drawings. There are still 26 (6-mm. Colt) guns that have not been converted and are in the hands of the Naval Militia.

MARK II.

No drawing. None in service.

MARK II, MODIFICATION 1.

Drawing 40471 shows the Benét-Mercié gun as used in service. A few of these guns have been drilled with special holes in the guard to permit of assembly in antiaircraft mounts on submarines and destroyers. Weight of gun, 25.5 pounds; of cradle, 7 pounds; and of carriage, 22 pounds. The same carriage is used for both the Colt and Benét-Mercié guns.

1-POUNDER 1.457-INCH GUNS 37 MM.

1-POUNDER SPONSELL GUN (40 CAL.)

No drawings. The gun interchanges with 1-pounder gun, Mark V. Two guns are on hand, No. 1 and No. 2, manufactured by Pratt & Whitney, 1892 and 1893, respectively. The breechblock is of the vertical sliding type and is operated by a crank shaft journaled in the lower part of the block. The crank handle projects to the rear below the axis of the gun when block is in its lowest position. The crank projects in front of the block and the crank pin works in a curved horizontal groove cut in a lug projecting from the gun.

The breech is slotted clear through and the sides are held together by the breechblock, which is dovetailed in the housing. Long cartridge case.

1-POUNDER GUN, MARK I (20 CAL.).

Drawing 13779. This is a Hotchkiss, light, short, Mark I gun, consisting of tube and trunnion hoop. The latter is screwed onto the tube. The diameter over the chamber is 3.35 inches, and at muzzle 2.28 inches. The center of trunnions is 9.13 inches from breech; they are 1.77 inches in diameter by 1.65 inches long. The distance between rimbases is 3.937 inches. Total length is 33.15 inches. Breech mechanism, Mark I. The small cartridge case is used in this gun. These guns have been withdrawn from service.

1-POUNDER GUN, MARK I, MODIFICATION 1 (35 CAL.).

No drawings. This is a Hotchkiss, light, long, Mark II gun. Breech mechanism, Mark I, modification 1. These guns have been withdrawn from service.

1-POUNDER GUN, MARK II (EXP.) (40 CAL.).

No drawings. Driggs-Schroeder gun, light, Mark I. Breech mechanism, Mark II, experimental. Withdrawn from service.

1-POUNDER GUN, MARK II (40 CAL.).

Drawing 7414. This gun is a Driggs-Schroeder, heavy, Mark I, and consists of tube, jacket, and locking hoop. The diameter over the powder chamber is 3.80 inches and diameter of muzzle is 2.10 inches. The thread for sleeve commences 17.20 inches from breech and is 6 inches long. Diameter at top of thread is 3.65 inches and 3.50 inches at the bottom. Total length of gun is 61.08 inches and length of tube is 58.28 inches. This gun was originally adapted for light ammunition, as shown on drawing, but was rebored to take the heavy ammunition. Breech mechanism, Mark II.

1-POUNDER GUN, MARK II, MODIFICATION 1 (40 CAL.).

No drawing. This gun is a Driggs-Schroeder, heavy, Mark II. Breech mechanism, Mark II, modification 1.

1-POUNDER GUN, MARK III (40 CAL.).

Drawing 9902. This gun is a Hotchkiss, heavy, long, Mark I, and consists of tube, jacket, and locking hoop. The diameter over the powder chamber is 3.50 inches and diameter of muzzle is 2.40 inches. The thread for the sleeve commences 15.65 inches from breech and is 6 inches long. Diameter at top of thread is 3.65 inches and 3.50 inches at the bottom; see drawing 13784. Total length of gun is 62 inches and length of tube is 57.98 inches. Breech mechanism Mark III. Long cartridge case.

1-POUNDER GUN, MARK IV (50 CAL.).

Drawing 13543. This gun is a Driggs-Schroeder, heavy, long, Mark II, and consists of tube, jacket, and locking hoop. The diameter over the powder chamber is 3.80 inches and the smallest diameter of the chase is 2.10 inches; diameter of muzzle bell is 2.50 inches. The thread for sleeve commences 18.086 inches from breech and is 5.4375 inches long. Diameter at top of thread is 3.548 inches and 3.50 inches at the bottom. Total length of gun is 75.986 inches and length of tube is 72.85 inches. Breech mechanism Mark IV. Long cartridge case.

1-POUNDER GUN, MARK V (40 CAL.).

Drawing 26878. This gun is a Hotchkiss, heavy, long, Mark II, and is identical with Mark III, but has a total length of 62.37 inches and breech mechanism Mark V. Long cartridge case.

1-POUNDER GUN, MARK VI (42.5 CAL.).

Drawing 13948. This is a Maxim-Nordenfelt, heavy, automatic, Mark I gun, and consists of a single forging. The center of the trunnions is 1 inch from breech, and they have a diameter of 2 inches, length 1 inch, and 4.5 inches between rimbases. The diameter over the chamber is 4.50 inches and at muzzle 2.35 inches. At 6 inches from muzzle the gun is threaded for a length of 1 inch, with a diameter of 2.50 inches, to fit barrel nut. Length of barrel is 62 inches. Breech mechanism Mark VI, automatic, with side feed. These guns have been withdrawn from service, and are now being remounted as antiaircraft guns. Heavy ammunition with a long day-tracer projectile is used.

1-POUNDER GUN, MARK VII (30 CAL.).

Drawing 18577. This is a Maxim-Nordenfelt, light, automatic, Mark II gun, similar in design to the Mark VI. The gun is a single forging, with center of trunnions 1 inch from breech, and they have a diameter of 1.75 inches, length 0.75 inch, and 4 inches between rimbases. The diameter over the chamber is 4 inches and at muzzle 2.35 inches. At 5.25 inches from muzzle the gun is threaded for a length of 1.04 inches, with a diameter of 2.50 inches, to fit barrel nut. Length of barrel is 43.50 inches. Breech mechanism Mark VII. These guns have been withdrawn from service. Small cartridge case.

1-POUNDER GUN, MARK VIII (40 CAL.).

Drawing 23669. This gun is a Hotchkiss, heavy, Mark III, semiautomatic. This gun is identical with Mark V, except that breech housing is different. Breech mechanism Mark VIII. Long cartridge case.

1-POUNDER GUN, MARK IX.

No drawings. This is a Maxim-Nordenfelt, light, automatic gun, Mark I. Breech mechanism Mark IX. The 13 guns of this mark have been withdrawn from service.

1-POUNDER GUN, MARK X (AEROPLANE GUN, 40 CAL.)#

Drawing 51016. This is a single-forging, nickel-steel gun. The diameter over powder chamber is 3 inches, over slide 2.70 inches, and at muzzle 2.25 inches. The length of the slide surface is 22.28 inches. The total length of the gun is 62.67 inches. On the underside of the gun and in front of the breech housing is a lug with a 1.75-inch hole for attaching the hydraulic-brake cylinder. Large case. Breech mechanism, Mark V, modification 1.

1-POUNDER GUN, MARK XI (LINE-THROWING GUN, 20 CAL.).

Drawing 53386. This gun is a 1.50-inch smooth-bore, single-forging, nickel-steel gun. The diameter over powder chamber is 3.5 inches. It is threaded to fit 1-pounder slide, Mark I, modification 1. The smallest diameter of chase is 3.25 inches. The muzzle bell is 3.40 inches in diameter. The total length of the gun is 33.5 inches. It uses the 1-pounder large case. Breech mechanism, Mark V, modification 1.

1-POUNDER GUN, MARK XII (40 CAL.).

Drawing 54608. This is a Driggs, single-forging, alloy-steel gun. The diameter over the powder chamber is 3.5 inches and the diameter of the muzzle is 2.40 inches. The thread for the sleeve commences 17.20 inches from breech and is 5.5 inches long. The diameter of the top of the thread is 3.65 inches and at the bottom 3.5 inches. The total length of the gun is 63.30 inches. The breech mechanism Mark IX has a sliding, rotating drop block. Long cartridge case.

1-POUNDER GUN, MARK XIII (40 CAL.).

Drawing 55222. This is a single-forging, alloy-steel gun. The gun is Mark V gun, built out of a single forging. Breech mechanism Mark V. Long cartridge case.

3-POUNDER 1.85-INCH GUNS, 47 MM.

3-POUNDER GUN, MARK I (40 CAL.).

Drawing 13795. This is a Hotchkiss rapid-fire gun, Mark I, consisting of tube, jacket, and locking hoop. The diameter over the chamber is 6.61 inches and at the muzzle 2.95 inches. The center of trunnions is 23.23 inches from breech. The trunnions are forged in one piece with the jacket and have a diameter of 2.756 inches, length is 2.09 inches, and distance between rimbases is 6.69 inches. Total length is 80.63 inches and length of tube is 74.055 inches. Breech mechanism Mark I.

3-POUNDER GUN, MARK I, MODIFICATION 1 (40 CAL.).

No drawings. Hotchkiss rapid-fire gun of French manufacture. Breech mechanism Mark I.

3-POUNDER GUN, MARK II (45 CAL.).

Drawing 7675. This is a Driggs-Schroeder rapid-fire gun, Mark I, and consists of tube, jacket, locking hoop, and trunnion band. The diameter over the chamber is 6.61 inches and at the muzzle 2.95 inches. The trunnion band is screwed on and center of trunnions is 26.80 inches from breech; the diameter is 2.756 inches, length 2.09 inches, and 7.91 inches between rimbases. Total length is 87.95 inches and length of tube is 83.25 inches. Breech mechanism Mark II.

3-POUNDER GUN, MARK III (45 CAL.).

No drawings. This is a Driggs-Schroeder rapid-fire gun, Mark II. The gun is trunnionless. Breech mechanism Mark III.

3-POUNDER GUN, MARK IV (50 CAL.).

Drawing 17600. This is a Hotchkiss semiautomatic gun, Mark IV, consisting of tube, jacket, and locking ring. The diameter over the chamber is 6.60 inches and the smallest diameter of the chase is 2.85 inches. Diameter of muzzle bell is 3.25 inches. Thread for sleeve commences 26.50 inches from breech with a diameter of 6.60 inches at top and 6.25 inches at the bottom of thread. Total length of gun is 99.05 inches and length of tube is 92.50 inches. Breech mechanism Mark IV.

3-POUNDER GUN, MARK IV, MODIFICATION 1 (50 CAL.).

Drawing 19895. This is gun Mark IV, modified to take sight Mark X.

3-POUNDER GUN, MARK V (50 CAL.).

No drawings. This is Maxim-Nordenfelt semiautomatic gun Mark I. Breech mechanism Mark V. Guns 114 to 116 (manufacturer's Nos. 4336, 4340, 4386). The guns are withdrawn from service.

3-POUNDER GUN, MARK VI (50 CAL.).

No drawings. This is Maxim-Nordenfelt semiautomatic gun Mark II. Breech mechanism Mark VI. Guns Nos. 117 to 121 (manufacturer's Nos. 4387 to 4391). The guns are withdrawn from service.

3-POUNDER GUN, MARK VII (45 CAL.).

Drawing 35459. This is a Vickers Sons & Maxim semiautomatic gun, Mark III. The gun is a single forging. In front of the slot for breech block is a lug projecting downward. The rear of the lug serves as a bearing for the operating shaft. The piston rod is screwed into the lug from the front. The diameter over the chamber is 6.55 inches and at the muzzle is 2.785 inches. The slide surface is 5.80 inches in diameter and about 19 inches long. It ends 50.45 inches from muzzle. Total length of gun is 92.35 inches and of bore 84 inches. Breech mechanism Mark VII.

3-POUNDER GUN, MARK VIII (40 CAL.).

Drawing 38650 is also strength-curve drawing. This is a Hotchkiss-Armstrong gun, consisting of tube, jacket, and locking hoop. It has trunnions. The diameter over the chamber is 6.614 inches and at muzzle is 2.953 inches. Total length is 80.63 inches and length of tube is 74.055 inches. Breech mechanism Mark VIII.

3-POUNDER GUN, MARK IX.

No drawings. This is Nordenfelt rapid-fire gun, Mark I. It is trunnionless. Breech mechanism Mark IX. Guns Nos. 1 and 2 (manufacturer's Nos. 4142 and 4172). These guns are withdrawn from service.

3-POUNDER GUN, MARK X, (50 CAL.).

Drawing 22288. This is a Hotchkiss semiautomatic gun, consisting of tube, jacket, and locking ring. The diameters over the chamber are 6.91 inches and 6.60 inches. The thread for yoke commences 13.425 inches from breech and is 4.25 inches long; diameter at top of thread is 6.91 inches and at the bottom is 6.60 inches. The slide surface commences 17.675 inches from breech with a diameter of 6.60 inches and is 13.25 inches long. The smallest diameter of the chase is 2.85 inches at 1.366 inches from muzzle; diameter of muzzle bell is 3.25 inches. Total length is 99.075 inches and length of tube is 92.50 inches. Breech mechanism Mark X.

3-POUNDER GUN, MARK X, MODIFICATION 1 (50 CAL.).

Drawing 24642. This gun is similar to Mark X, except that the slide surface is 17.25 inches long, and the conical part of the jacket correspondingly shorter.

3-POUNDER GUN, MARK X, MODIFICATION 2 (50 CAL.).

Drawing 24495. This gun is the same as gun Mark X, Modification 1, except that the yoke is forged in one piece with the jacket.

3-POUNDER GUN, MARK XI (50 CAL.).

Drawing 27357. This is a United States Rapid Fire Gun & Power Co. semiautomatic gun, consisting of tube, jacket, and locking ring. The locking ring is 37.70 inches long and is also a balancing hoop. In front of slot in breech housing 7.52 inches from breech are two lugs below the gun, in which the operating shaft is journaled. On bottom of gun, 15 inches from breech, is another lug, to which the piston rod is attached. The outside of gun, over the chamber, tapers from a diameter of 6.70 inches to 6.50 inches. The slide surface commences 19 inches from breech with a diameter of 6.15 inches and has two solid guide keys on the vertical center line of the gun. The smallest diameter of the chase is 2.8425 inches at 1.4476 inches from muzzle. The diameter of the muzzle bell is 3.22 inches. Total length of gun is 99.20 inches and length of tube 92.50 inches. Breech mechanism Mark XI.

3-POUNDER GUN, MARK XI, MODIFICATION 1 (50 CAL.).

Drawing 25424. This gun is practically the same as Mark XI, but the locking hoop is 2.25 inches long, the balancing sleeve being omitted. The smallest diameter of the chase is 3.235 inches at 1.563 inches from muzzle; diameter of muzzle bell is 3.50 inches.

3-POUNDER GUN, MARK XII.

No drawing. This gun is Nordenfelt semiautomatic Mark I gun. It has breech mechanism Mark XII. Guns Nos. 1 and 2 (manufacturer's Nos. 4046 and 4047). The guns have been withdrawn from service.

3-POUNDER GUN, MARK XIII (40 CAL.).

Drawing 17723. This is a Maxim rapid-fire gun, Mark M. On bottom of gun, 5.7813 inches from breech, a lug projects downward to which the piston rod is attached. The diameter over the chamber is 6.45 inches and at muzzle is 2.90 inches. Total length is 77.8125 inches. Breech mechanism, Mark XIII.

3-POUNDER GUN, MARK XIV (50 CAL.).

Drawing 20864. This is a Driggs-Seabury Ordnance Corporation semiautomatic gun-steel gun, consisting of tube, jacket, and locking ring. In front of the slot for the drop block is a lug projecting downward. The rear of the lug serves as bearing for the operating shaft and the piston rod is screwed into the lug from the front. The diameter over the chamber is 6.60 inches and the slide surface commences at 21.49 inches from breech with a diameter of 6.29 inches and is 12.61 inches long. The smallest diameter of the chase is 3.0569 inches at 3.25 inches from muzzle. The diameter of muzzle bell is 3.55 inches. Total length of gun is 99.10 inches and the length of tube is 92.50 inches. Breech mechanism Mark XIV.

6-POUNDER 2.244-INCH GUNS, 57 MM.

6-POUNDER GUN, MARK I (40 CAL.).

Drawing 47779. This is a Hotchkiss rapid-fire gun, short, Mark I, consisting of tube, jacket, and locking hoop. The diameter over the chamber is 8.27 inches and at the muzzle 3.35 inches. The center of trunnions is 24.80 inches from breech. The trunnions are forged in one piece with the jacket and have a diameter of 3.346 inches; length is 2.09 inches and distance between rimbases is 9.25 inches. The gun is hooped to 39 inches from breech. The chase, 58.63 inches long, tapers from a diameter of 4.92 inches to 3.35 inches at muzzle. Total length of gun is 97.63 inches; of tube 89.76 inches. Breech mechanism Mark I, drop block.

6-POUNDER GUN, MARK I, MODIFICATION 1 (40 CAL.).

No drawings. This gun is the same as Mark I, but of French manufacture, fitted with Mark II breech mechanism. For saluting only.

6-POUNDER GUN, MARK I, MODIFICATION 2 (40 CAL.).

No drawings. This gun is of French manufacture. Breech mechanism Mark I, modification 1.

6-POUNDER GUN, MARK I, MODIFICATION 3 (40 CAL.).

No drawings. This is a Hotchkiss-Armstrong rapid-fire gun. Breech mechanism Mark III.

6-POUNDER GUN, MARK I, MODIFICATION 4 (40 CAL.).

Drawing 47779. This is gun Mark I, retubed with an alloy-steel tube. Breech mechanism Mark I, drop block.

6-POUNDER GUN, MARK II (40 CAL.).

Drawing 47783. This is a Hotchkiss rapid-fire gun, Mark I, trunnionless. It consists of tube, jacket, and locking ring and is similar to gun Mark I. The thread for sleeve begins at 20.50 inches from breech with a diameter of 8.27 inches at top and 8.07 inches at bottom of thread. The taper on front end of jacket is slightly different in length from that on Mark I gun. Breech mechanism Mark I, drop block.

6-POUNDER GUN, MARK III (45 CAL.).

Drawing No. 11608. This is a Hotchkiss rapid-fire gun, Mark I, long. The gun is similar to Mark II. The thread for sleeve starts 22.75 inches from breech and is 8 inches long. The gun is hooped up to 38.5 inches from breech. From here the chase tapers in 70.36 inches from a diameter of 4.92 inches to 3.25 inches at the muzzle. Total length of gun is 108.86 inches and of tube 100.98 inches. Breech mechanism Mark I.

6-POUNDER GUN, MARK III, MODIFICATION 1 (45 CAL.).

Drawing 54947. This is gun Mark III retubed with an alloy-steel tube. Breech mechanism Mark I, drop block.

6-POUNDER GUN, MARK IV (30 CAL.).

Drawing 6567. This is a Driggs-Schroeder rapid-fire field gun consisting of a single forging, with a trunnion hoop screwed on. The center of trunnions is 22.50 inches from breech. The trunnions are 3 inches in diameter by 2 inches long. The distance between rimbases is 7.25

inches. At 6.85 inches from breech there is an elevating band put on the gun (see drawing 7513). The diameter over the chamber tapers from 7.75 inches over screw box, to 6.25 inches in rear of trunnion hoop. The diameter of the muzzle is 3.25 inches, total length is 72 inches, and length of bore is 67.50 inches. There is a strengthening band on breech at the beginning of the bore (see drawing 7415). Breech mechanism Mark IV, revolving drop block. Guns Nos. 2, 4, and 5. The guns are withdrawn from service.

6-POUNDER GUN, MARK IV, MODIFICATION 1 (30 CAL.).

Drawing 11637. This gun is the same as Mark IV, except that it is without strengthening band and has two lugs, solid on the gun, to which the elevating arrangement is attached. Breech mechanism Mark IV, modification 1, revolving drop block. Guns Nos. 6 to 11. The guns are withdrawn from service.

6-POUNDER GUN, MARK V (30 CAL.).

Drawing 9813. This is a Lynch field gun and is identical with Mark IV, modification 1, except that the square part for breech mechanism is made deeper. Breech mechanism Mark V, drop block, operated by rack. Guns Nos. 1 and 3. The guns are withdrawn from service.

6-POUNDER GUN, MARK VI (45 CAL.).

Drawing 9659. This is a Driggs-Schroeder rapid-fire gun, Mark I, consisting of tube, jacket, and hoop. The diameter over the chamber is 8.30 inches. The thread for sleeve starts at 25.95 inches from breech with a diameter of 8.27 inches at top and 8.07 inches at bottom of thread. The gun is hooped to 39.25 inches from breech. From there the gun tapers in a length of 68.08 inches from a diameter of 5.20 to 3.54 inches at muzzle. The total length of the gun is 107.33 inches and of the tube 100.98 inches. Breech mechanism Mark VI, revolving drop block.

6-POUNDER GUN, MARK VI, MODIFICATION 1 (45 CAL.)

Drawing 54794. This gun is gun Mark VI retubed with an alloy-steel tube and the B₂ hoop replaced with an alloy-steel hoop. Breech mechanism Mark VI, revolving drop block.

6-POUNDER GUN, MARK VII (45 CAL.).

Drawing 13820. This is a Hotchkiss rapid-fire gun, long, Mark II, consisting of tube, jacket, and locking ring. The diameter over the chamber is 8.27 inches, and the gun is cylindrical for a distance of 11.31 inches from muzzle with a diameter of 3.50 inches. The thread for sleeve is located at 22.75 inches from breech, with a diameter of 8.27 inches at top and 8.07 inches at bottom of thread. Total length of gun is 108.86 inches and length of tube is 100.98 inches. Breech mechanism Mark II, drop block.

6-POUNDER GUN, MARK VII, MODIFICATION 1 (45 CAL.).

Drawing 49894. This is gun Mark VII with the threads on jacket located 20.38 inches from breech to balance sight Mark XV.

6-POUNDER GUN, MARK VII, MODIFICATION 2 (45 CAL.).

Drawing 53916. This gun is identical with Mark VII gun except that the tube is made of alloy steel and that the jacket and locking hoop are made of gun steel with a higher prescribed elastic limit than the one prescribed for gun Mark VII. Breech mechanism Mark II, drop block.

6-POUNDER GUN, MARK VIII (50 CAL.).

Drawing 13705. This is a Driggs-Schroeder rapid-fire gun, Mark II, consisting of tube, jacket, and hoop. The diameter over the chamber is 8.30 inches and the smallest diameter of the chase is 3.30 inches at 1 inch from muzzle. Diameter of muzzle bell is 3.60 inches. The thread for sleeve commences 26.15 inches from breech with a diameter of 8.27 inches at top and 8.07 inches at bottom of thread. Total length of gun is 118.55 inches and length of tube is 112.20 inches. Breech mechanism Mark VI, modification 1, revolving drop block.

6-POUNDER GUN, MARK IX (42 CAL.).

Drawing 17145. This is a Maxim semiautomatic gun, Mark II, consisting of a single forging. In front of slot for breech block there is a downward projecting lug, the rear of which serves as a bearing for the operating shaft. The piston rod is screwed in from the front. The diameter over the chamber is 8 inches and at muzzle is 3.40 inches. Total length is 103.25 inches and length of the bore is 95 inches. Breech mechanisms Mark VII and Mark VII, modification 1.

6-POUNDER GUN, MARK IX, MODIFICATION 1 (42 CAL.).

Drawing 18084. This gun is identical with Mark IX, but is built of nickel steel, and the smallest diameter of the chase is 3.56 inches at 3.62 inches from muzzle. Diameter of muzzle bell is 4.10 inches. Breech mechanisms Mark VII and Mark VII, modification 1.

6-POUNDER GUN, MARK IX, MODIFICATION 2.

No drawings. This is a Maxim semiautomatic gun, Mark I, of foreign manufacture; only two guns, both withdrawn from service. Breech mechanism Mark VII, modification 2.

6-POUNDER GUN, MARK X (42 CAL.).

Drawing 17854. This is a Nordenfelt rapid-fire gun, Mark II. The diameter over the chamber is 7 inches and the center of trunnions is 29.525 inches from breech. The trunnions are 3.25 inches in diameter, 2.50 inches in length. The distance between rimbases is 7.25 inches. The diameter of the muzzle is 3.40 inches. The total length is 104.42 inches and length of bore is 95.01 inches. Breech mechanism Mark VIII.

6-POUNDER GUN, MARK XI (50 CAL.).

Drawing 25648. This is a Driggs-Seabury semiautomatic gun, Mark I. The gun is gun steel and consists of tube, jacket, and hoop. There is a lug in front of slot for block which serves as a bearing for operating lever. The outside of the gun over the chamber is tapered from 8.50 inches to 8.27 inches in rear of thread for sleeve. The thread for sleeve is located 27 inches from breech with a diameter of 8.27 inches at top and 8.07 inches at bottom of thread. The smallest diameter of the chase is 3.434 inches at 1.77 inches from muzzle, diameter of muzzle bell is 4 inches. Breech mechanism Mark IX, drop block.

6-POUNDER GUN, MARK XI, MODIFICATION 1 (50 CAL.).

Drawing 25648. This is identical with Mark XI except that it has been rebuilt, using the original jacket but a new tube and B₂ hoop. Breech mechanism Mark IX, drop block.

6-POUNDER GUN, MARK XII (ABOUT 32 CAL.).

No drawings. This is a Davis nonrecoil gun. The front barrel is approximately 6 feet and the rear barrel approximately 4 feet long. The working of the gun is similar to the 3-inch gun Mark XV.

3-INCH GUNS.

3-INCH GUN, MARK I (21 CAL.), FIELD GUN.

Drawing 12554. The gun is a single forging, with the hydraulic piston screwed directly onto the gun. Total length of gun, 69.60 inches. Length of bore, 64.30 inches. Breech mechanism, Mark I, Fletcher.

3-INCH GUN, MARK I, MODIFICATION 1 (21 CAL.), FIELD GUN.

Drawing 17379. The gun is a single forging designed on same lines as Mark I, but it has a solid lug for the piston rod. It slides in the cradle and has two keys on the horizontal line through its center. Breech mechanism, Mark I, modification 1, Fletcher.

3-INCH GUN, MARK II (50 CAL.).

Drawing 16885. This gun is built by American Ordnance Co. The gun is turned to 10.20 inches in diameter over the chamber for a length of 65.8 inches from breech. It has a ring for the yoke shrunk on over the chamber. The 10.20-inch diameter of the gun fits the sleeve and it is provided with two guide keys. The gun consists of tube, jacket, yoke ring, chase hoop, and locking hoop. It is hooped to 62 inches from muzzle. Total length, 153.80 inches. The tube is 150 inches long. All the guns of this mark have been modified.

3-INCH GUN, MARK II, MODIFICATION 1 (50 CAL.).

Drawing 23129. This gun is Mark II, provided with a balancing sleeve 34.50 inches long, weighing 150 pounds, screwed onto the locking hoop. Weight added to gun is 142 pounds. Breech mechanism Mark II, modification 2.

3-INCH GUN, MARK II, MODIFICATION 2 (50 CAL.).

Bureau's drawing 27692. This gun consists of tube, jacket, yoke ring, and locking ring, the latter being screwed on. Total length, 153.80 inches. The tube is 150 inches long. Diameter over chamber and in slide, 10.20 inches. Smallest diameter of chase is 5 inches and of muzzle bell 5.5 inches. Gun No. 101. Breech mechanism Mark II, modification 2.

3-INCH GUN, MARK III (50 CAL.).

Drawing 16488. The gun consists of tube, jacket, locking ring, and face plate. It is hooped to 66.3 inches from muzzle. Total length is 154.30 inches. The tube is 149.70 inches long. The gun is 11 inches in diameter over chamber and 9.5 inches in sleeve. The gun has two solid guide keys on the vertical center line. The locking ring has V-threads and its taper is less than that of the jacket. The smallest diameter of chase is 4.507 inches. Breech mechanism Mark III, Fletcher. All guns have been modified.

3-INCH GUN, MARK III, MODIFICATION 1 (50 CAL.).

Drawing 16488. This gun is Mark III, but the locking ring has U. S. threads and its outside is conical, conforming to the taper of the jacket. All guns have been modified.

3-INCH GUN, MARK III, MODIFICATION 2 (50 CAL.).

Drawing 16488. This gun is Mark III, modification 1 gun, but with the locking ring lengthened from 5 to 15 inches, increasing the weight of the gun 36 pounds. All guns have been modified.

3-INCH GUN, MARK III, MODIFICATION 3 (50 CAL.).

Drawing 21376. This gun is Mark III, modification 1, and Mark III, modification 2, with a new locking ring 35 inches long, to balance the gun in its mount. These guns have had their breech mechanisms changed to Mark VI and a screw-box liner inserted, except 269 to 273.

3-INCH GUN, MARK III, MODIFICATION 4 (50 CAL.).

Drawing 23223. This gun is made of nickel steel and consists of tube, jacket, locking hoop, and face plate. It is hooped to 66.3 inches from muzzle. It is similar to Mark III, modification 3, gun from breech to front end of slides. The front end of jacket and chase hoop taper from 9.5 inches to 7.75 inches in 32 inches. The inside of locking hoop is cylindrical and threaded its whole length. The smallest diameter of the chase is 4.7 inches at 6 inches from muzzle. Breech mechanism Mark III is being replaced by Mark VI and a screw-box liner inserted.

3-INCH GUN, MARK III, MODIFICATION 5 (50 CAL.).

Drawing 38169. This gun is Mark III, modification 3, lined with a cylindrical nickel-steel liner. Breech mechanism Mark VI.

3-INCH GUN, MARK III, MODIFICATION 6 (50 CAL.).

Drawing 38166. This gun is Mark III, modification 3, rebuilt, using nickel-steel tube. Breech mechanism Mark VI.

3-INCH GUN, MARK III, MODIFICATION 7 (50 CAL.).

Drawing 40116. This gun is Mark III, modification 3, lined with a conical nickel-steel liner. Breech mechanism Mark VI.

3-INCH GUN, MARK III, MODIFICATION 8 (50 CAL.).

Drawing 40066. This gun is Mark III, modification 4, lined with a conical nickel-steel liner. Breech mechanism Mark VI.

3-INCH GUN, MARK III, MODIFICATION 9 (50 CAL.).

Drawing 40116. This gun is Mark III, modification 6, lined with a conical nickel-steel liner. Breech mechanism Mark VI.

3-INCH GUN, MARK IV (23.5 CAL.), LANDING GUN.

Drawing 21187. This gun is built by Bethlehem Steel Co., and is a single forging with the two hydraulic cylinders in one piece with the gun. The gun has one straight cone beginning 5.05 inches from breech with a diameter of 7 inches and ending 2.5 inches from muzzle with a

diameter of 4.15 inches. Total length of gun is 74.35 inches and length of bore 70.55 inches. Inside diameter of hydraulic cylinders is 2.5 inches. Breech mechanism Mark IV.

3-INCH GUN, MARK V (50 CAL.).

Drawing 25610. This is Driggs Seabury Ordnance Corporation semiautomatic nickel-steel gun, consisting of tube, jacket, and locking ring. The outside is like gun Mark III, modification 4, from about 14 inches from breech to end of locking ring. The smallest diameter of the chase is 5 inches at 6 inches from muzzle. The gun has Mark V breech mechanism. In front of the slot for the drop block is a lug on the jacket projecting downward. The rear of this lug serves as bearing for the operating lever. The piston rods are screwed into the lug from the front. Total length of gun is 195.35 inches. Length of tube is 149.70 inches. Breech mechanism Mark V.

3-INCH GUN, MARK V, MODIFICATION 1 (50 CAL.).

Drawing 25610. This gun is identical with Mark V except that shoulder for slide stop has been increased from 9.90 inches to 10 inches in diameter. Breech mechanism Mark V, modification 2.

3-INCH GUN, MARK V, MODIFICATION 2 (50 CAL.).

This is a Mark V gun lined with a cylindrical nickel-steel liner. Breech mechanism Mark V.

3-INCH GUN, MARK V, MODIFICATION 3 (50 CAL.).

Drawing 41416. This gun is Mark V or Mark V, modification 1, lined with a conical nickel-steel liner. Breech mechanisms Mark V and Mark V, modification 2.

3-INCH GUN, MARK VI (50 CAL.).

Drawing 30868. This is a Mark V gun with the length of the slide increased from 29.43 inches to 37.43 inches and a corresponding decrease in length of the conical part of jacket. The shoulder for slide stop is 11 inches in diameter. The gun is hooped to 66.3 inches from muzzle. Breech mechanism Mark V, modification 1.

3-INCH GUN, MARK VI, MODIFICATION 1 (50 CAL.).

Drawing 45991. This gun is Mark VI with the shoulder for slide coned down to 10 inches in diameter. Breech mechanism Mark V.

3-INCH GUN, MARK VII (23 CAL.), LANDING GUN.

Drawing 35803. This gun is made of nickel steel and is a single forging. It is an Ehrhardt gun, manufactured by American-British Manufacturing Co. Three bands are shrunk onto the gun, the bands having projections on their lower sides fitting in the cradle. At the extreme end of the breech is a lug to which the hydraulic cylinder is attached. Total length is 77.9534 inches. Length of bore is 68.9458 inches. Maximum diameter over chamber is 7.6772 inches and the muzzle is 4.2126 inches in diameter. Breech mechanism Mark VII, Ehrhardt wedge block withdrawn to the side.

3-INCH GUN, MARK VII, MODIFICATION 1 (23 CAL.), LANDING GUN.

This is Mark VII gun, rebuilt. It is built up of tube, jacket, locking ring and two bands. It interchanges with Mark VII. Breech mechanism Mark VII.

3-INCH GUN, MARK VIII (50 CAL.).

Drawing 33184. This is a nickel-steel gun consisting of tube, jacket, and locking ring, and is hooped to 42.75 inches from muzzle. Diameter of gun over chamber is 11 inches; diameter of slide part, 9.5 inches, with one solid key on top of gun. The smallest diameter of chase, 6 inches from muzzle, is 5 inches. Total length of gun is 159 inches and length of tube 149.70 inches. Breech mechanism Mark VIII. Proctor semiautomatic, with wedge block withdrawn to the side. Gun No. 1054.

3-INCH GUN, MARK IX (23 CAL.), SUBMARINE GUN.

Drawing 47570. This is a semiautomatic gun consisting of a nickel-steel tube and jacket and a bronze sleeve and bronze locking ring. The slide cylinder begins 12.65 inches from the breech and is 20.85 inches long with a diameter of 7.10 inches. The key on top of the slide cylinder is solid with the gun. In front of the slide diameter the gun is reduced to 6.60 inches in diameter to fit the stuffing box in the hatch cover over the gun pit on the submarine. This part is covered by the bronze sleeve. The length of the bronze-covered surface is 29.4 inches including the locking ring which is 3 inches long. In front of the locking ring the gun is stepped down to 5.2 inches and then in 12.5 inches tapered down to the muzzle cylinder 4.4 inches in diameter and 1.50 inches long. Three lugs on the muzzle are for the attachment of a water-tight cap. Total length of gun is 77.05 inches, and of tube 69.15 inches. Landing gun fixed ammunition is used. Semiautomatic breech mechanism Mark IX, drop block.

3-INCH GUN, MARK X (50 CAL.), ANTI-AIRCRAFT GUN.

Drawing 45115. This is a semiautomatic nickel-steel gun, consisting of tube, jacket, and locking ring. The gun is hooped to 60.65 inches from muzzle. The diameter over the chamber is 11 inches. The slide surface commences 48 inches from breech, with a diameter of 9.50 inches, and has one solid key on top of gun. The smallest diameter of the chase is 4.994 inches at 5.45 inches from muzzle. The diameter of muzzle bell is 5.50 inches. In front of the slot for the drop block are two lugs, one projecting downward and one upward. The rear of the lug projecting downward serves as a bearing for the operating lever. The piston rod is fastened into the upward projecting lug. Total length of gun is 159.65 inches. Length of tube is 150 inches. Breech mechanism Mark V, modification 3, drop block.

3-INCH GUN, MARK X, MODIFICATION 1 (50 CAL.), ANTI-AIRCRAFT GUN.

Drawing 51124. This is Mark X gun, lined with a conical nickel-steel^{*} liner. Breech mechanism Mark V, modification 3, drop block.

3-INCH GUN, MARK X, MODIFICATION 2 (50 CAL.), ANTI-AIRCRAFT GUN.

Drawing 56413. This is Mark X gun with the breech housing in a separate piece, threaded and shrunk onto the jacket. Breech mechanism Mark V, modification 3, drop block.

3-INCH GUN, MARK XI (23 CAL.), LANDING GUN.

Drawing 56092. This is a Bethlehem Steel Co. gun. It is made of alloy steel and consists of three parts—tube, jacket, and breech housing. The jacket covers the tube to 1 inch from the muzzle. The breech housing is screwed onto the end of the jacket. The diameter over

the chamber is 7 inches for a length of 18 inches. From there the gun tapers to 4.7 inches at 5 inches from the muzzle. The muzzle bell is 5 inches in diameter. The tube is 70.5 inches long. Total length of gun is 77.5 inches. On the underside of the gun are guides to fit the cradle. The breech housing has two lugs, one on top and one on bottom, to attach the piston rods that control the recoil system. Breech mechanism Mark XI, drop block.

3-INCH GUN, MARK XII (15 CAL.), MOUNTAIN GUN.

Drawing 56694. This is a Bethlehem Steel Co. gun. It is made of nickel steel and consists of the gun barrel and the breech housing. The breech housing is screwed and shrunk onto the barrel. The diameter over the breech is 6.2 inches for a length of 5.75 inches. The breech housing stops here. The diameter of the barrel is 5.9 inches, tapering to 3.9 inches at the muzzle. The gun is attached to the carriage by a lug on the breech housing and by another lug on the barrel near the muzzle. Both lugs are on the lower side of the gun. The barrel is 45 inches long. Total length of gun is 48 inches. The chamber is identical with the chamber for Mark I gun. Breech mechanism Mark XIII.

3-INCH GUN, MARK XIII (23 CAL.), BOAT GUN.

Drawing 54831. This is a Driggs Ordnance Co. gun. It is a single forging alloy-steel gun. The breech housing is 8 inches square with lugs on top and on the right-hand side. The piston rod screws into the top lug. The side lug serves as bearing for the operating shaft. The gun is 6.65 inches in diameter in front of the housing. The slide surface commences 12.5 inches from face of breech. It is 6.25 inches in diameter and 39 inches long. A key 32.5 inches long is dovetailed in the top surface of the slide diameter. In front of the slide surface the gun tapers toward the muzzle bell. The smallest diameter of the chase is 4.15 inches. The diameter of the muzzle bell is 4.70 inches. The total length of the bore is 69 inches and of gun 75.60 inches. Landing-gun fixed ammunition is used. Semiautomatic breech mechanism Mark X, with horizontal sliding block.

3-INCH GUN, MARK XIV (23.5 CAL.), BOAT GUN.

This gun is manufactured by the Poole Engineering & Machine Co. The gun is a one-piece, alloy-steel gun. It has a piston-rod lug on top of the breech. The breech is rectangular with the corners cut off. The rectangular part is 10.25 inches long. In front of the breech, the gun is 7.5 inches in diameter for a length of 4.25 inches. At this point the gun is shouldered down to the slide diameter, 6.75 inches, which is 25 inches long. At the forward end of the slide the gun tapers to 5 inches in diameter in a length of 4 inches. It is then cylindrical for a length of 23.5 inches, at which point it is stepped down to a diameter of 4.30 inches. From there it tapers toward the muzzle. The smallest diameter of the chase is 4 inches. The diameter of the muzzle bell is 4.5 inches. The length of the bore is 71 inches and the total length of the gun is 79 inches. The gun uses landing-gun ammunition. Breech mechanism Mark XII, horizontal sliding block.

3-INCH GUN, MARK XV (24 CAL.), NONRECOIL GUN.

Drawings 56210, 56211, and 56212. This is a Davis nonrecoil gun. The gun has two barrels lined up one behind the other, when in firing position. The front barrel through which the projectile is propelled has a breech band shrunk on in which interrupted threads are cut. The breech recess is 1.53 inches deep. The front barrel is 75.7 inches long including the breech band and the bore is 74.17 inches. It is rifled for a length of 53.22 inches. The rear barrel through which a charge of bird shot is propelled is 45.8 inches long and is smooth bored. Both barrels have small muzzle bells. Below the gun barrel are two lugs in which a rod is journaled. This rod projects to the rear. The rear barrel is mounted in journals located in the upper parts of two links securely fastened to the rod. The rear barrel can revolve and slide back and forth in the journals. The front end of the rear barrel has interrupted screw threads to engage the threads in the screw box when the gun is closed ready to fire.

For opening the gun, the rear barrel is revolved till the interrupted screw threads clear each other. It is then retracted and swung to the side clear of the breech, the supporting rod revolving in its bearings below the front barrel. The rotation and retraction of the rear barrel is limited by a cam slot through which the operating-handle pin passes. The handle pin, on which the handle is mounted, is attached to the wall of the rear barrel. The cam plate is a part of the front link supporting the rear barrel. The operating handle can slide on the handle pin and is held down by an inside helical spring against the cam plate. At the ends of the cam slot, counterbores are located, in which the lower end of the handle can drop. The rear barrel is thus locked to the cam plate when the gun is ready to fire and when the rear barrel is retracted ready to be swung aside to clear the breech. The firing pin with its spring is located on top of the front barrel and its point passes through the wall of the gun. The trigger has a safety device, so that two distinct pressures by the hand are required to fire the gun. The gun uses special ammunition.

4-INCH GUNS.

4-INCH GUN, MARK I (40 CAL.).

Drawing 7064. This is a gun-steel gun, consisting of tube, jacket, and two hoops. It is hooped to 50 inches from muzzle. Diameter over chamber is 13 inches. Thread for sleeve commences 41.45 inches from breech and is 20 inches long, with diameters 12.32 inches and 12.02 inches. Diameter of muzzle is 6 inches. Length of gun is 164 inches and of the tube 160 inches. Loose ammunition. All guns have been converted to fixed ammunition. Breech mechanism, Mark I. No guns in service.

4-INCH GUN, MARK I, MODIFICATION I (40 CAL.).

Drawing 15315. This is gun Mark I converted to fixed ammunition by inserting a chamber liner, screw-box liner, and faceplate. Guns Nos. 1, 3, and 6 are 163.75 inches long, with tube 157.5 inches long. Gun No. 2 is 159.75 inches long, with tube 153.5 inches long. Faceplate, 2.25 inches thick, is included in length of gun. Breech mechanism, Mark IV, Fletcher. The guns of this mark have been condemned.

4-INCH GUN, MARK II (39 CAL.).

Gun No. 4, drawing 5882. This gun is practically the same as Mark I, but with thread for sleeve commencing at 44.75 inches from breech and cut away 3.50 inches each side of center of trunnions. Breech mechanism, Mark II, Driggs-Seabury.

Gun No. 5, drawing 7093. This gun is the same as gun No. 4, but has a continuous thread commencing at 41.45 inches from breech.

Guns Nos. 4 and 5 have been provided with a balancing sleeve about 13 inches long. Both guns are condemned.

4-INCH GUN, MARK III (40 CAL.).

Drawing 8995. This is a gun-steel gun, consisting of tube, jacket, and two hoops. It is hooped from breech to 50 inches from muzzle. The diameter over the chamber is 13 inches. Thread for sleeve begins 41.45 inches from the breech and is 20 inches long, with diameters 12.32 inches at top and 12.02 inches at bottom of thread. Total length is 164 inches and length of tube is 160 inches. Breech mechanism, Mark III, Dashiell.

4-INCH GUN, MARK III, MODIFICATION 1 (40 CAL.).

Drawing 7284. This gun is the same as Mark III, but with thread for sleeve starting 40.60 inches from breech and is hooped to 52.50 inches from muzzle. Breech mechanism, Mark III, modification 1, and Mark III, modification 2, Dashiell.

4-INCH GUN, MARK III, MODIFICATION 2 (40 CAL.).

Drawing 8542. This gun is the same as Mark III, modification 1, but thread for sleeve has an outside diameter of 12.72 inches and a diameter of 12.42 inches at bottom of thread. Breech mechanism, Mark III, modification 1, Dashiell.

4-INCH GUN, MARK III, MODIFICATION 3 (40 CAL.).

Drawing 8480. This gun is the same as gun Mark III, but the thread for sleeve has an outside diameter of 12.72 inches and a diameter of 12.42 inches at bottom of thread. Breech mechanisms Mark III and Mark III, modifications 1 and 2.

4-INCH GUN, MARK III, MODIFICATION 4 (40 CAL.).

Drawing 40074. This gun is Mark III or Mark III, modification 1, lined with a conical nickel-steel liner. Breech mechanism, Mark III, modification 2.

4-INCH GUN, MARK III, MODIFICATION 5 (40 CAL.).

Drawing 41016. This is gun Mark III, modification 2 or 3, lined with a conical nickel-steel liner. Breech mechanism, Mark III, modification 2.

4-INCH GUN, MARK IV (40 CAL.).

Drawing 12667. This gun consists of tube, jacket, and two hoops. It is hooped to 50 inches from muzzle. It has a shoulder for yoke 16.25 inches from breech. The slide surface is 12.50 inches in diameter, commencing 42 inches from breech, and has two solid guide keys, which are on the vertical center line of the gun. Length of gun, including faceplate, is 166.25

inches, and length of tube is 160 inches. It has breech mechanisms Mark IV and Mark IV, modifications 1 and 2, Fletcher.

4-INCH GUN, MARK IV, MODIFICATION 1 (40 CAL.).

Drawing 39659. This is gun Mark IV, lined with a conical nickel-steel liner. Breech mechanism, Mark IV, modification 2.

4-INCH GUN, MARK V (40 CAL.).

Drawing 12498. This gun is practically the same as Mark IV, but has no faceplate, and yoke stop is 14 inches from breech. Slide commences 39.75 from breech. Length of gun 164 inches, and length of tube 160 inches. Breech mechanisms, Mark III and Mark III, modifications 1 and 2, Dashiell.

4-INCH GUN, MARK V, MODIFICATION 1 (40 CAL.).

Drawing 36322. This is gun Mark V, lined with a conical nickel-steel liner, except gun No. 83, which has a conical gun-steel liner. Breech mechanism, Mark III, modification 2.

4-INCH GUN, MARK VI (40 CAL.).

Drawing 13041. This gun is the same as Mark V, but with breech mechanisms Mark V and V, modifications 1 and 2, Dashiell. Guns Nos. 282 to 291 have muzzle bells. The smallest diameter of the chase is 6.24 inches at 8 inches from muzzle.

4-INCH GUN, MARK VI, MODIFICATION 1 (40 CAL.).

Drawing 39302. This is gun Mark VI, lined with conical nickel-steel liner. Breech mechanism, Mark V, modification 2.

4-INCH GUN, MARK VII (50 CAL.).

Drawing 19777. This gun is made of gun steel and consists of tube, jacket, hoop, and locking ring. The gun has a screw-box liner and is hooped to 74 inches from muzzle. Total length is 204.50 inches. The tube is 200 inches long. The gun is 16 inches in diameter over the chamber and has a yoke stop 9.5 inches from breech. Slide commences 46.50 inches from breech and has a diameter of 14.5 inches. Guns Nos. 213 to 254, 257 to 281, and 321 to 326 have two solid guide keys on vertical center line of gun. Guns Nos. 315 to 320 and 327 to 338 have two keyways cut on vertical center line of gun. Smallest diameter of chase is 6.354 inches at 10.50 inches from muzzle. Breech mechanisms, Mark VI and Mark VI, modification 1, Fletcher.

4-INCH GUN, MARK VII, MODIFICATION 1 (50 CAL.).

Drawing 41121. This is gun Mark VII, lined with a conical nickel-steel liner. Breech mechanism, Mark VI, modification 1.

4-INCH GUN, MARK VIII (50 CAL.).

Drawing 45831. This is a gun-steel gun consisting of tube and jacket. The gun has a screw-box liner and is hooped to the muzzle and has a total length of 206.53 inches. The tube is 200 inches long, and the jacket is 206.28 inches long. The gun is 16 inches in diameter over

the chamber and has a yoke stop 7 inches from breech. Slide commences 47.50 inches from breech, with a diameter of 14.50 inches, and has two solid guide keys on the vertical center line of gun. Smallest diameter of chase is 6.50 inches at 9.25 inches from muzzle. Breech mechanism, Mark VII, modification 1, Bethlehem Steel Co.

4-INCH GUN, MARK IX (50 CAL.).

Drawing 38528. This is a nickel-steel gun, consisting of tube and jacket. The gun has a screw-box liner and is hooped to the muzzle. The diameter of the gun in rear of the yoke stop is 16 inches. The yoke stop is located 12.125 inches from breech. In front of the yoke stop the gun tapers from 16 inches to 14.50 inches at slide stop. The slide surface is 13 inches in diameter, commences 45.53 inches from breech, and is 64 inches long. The slide surface has one solid guide key on top of gun. The smallest diameter of the chase is 7 inches at 9.10 inches from muzzle. The total length of gun is 206.53 inches and the tube is 200 inches long. Breech mechanism, Mark VIII. The rifling is right-hand, with twist increasing from zero at the origin of the rifling to one turn in 31.17 calibers at the muzzle. There are 30 grooves 0.025 inches deep. Gun No. 475 has special rifling. Twist zero turn at origin of rifling and 1 turn in 25 calibers at muzzle, 30 grooves 0.025 inches deep. (See file 4427/1863, Bureau's letter 26755/15 (D1) of Apr. 19, 1915.)

4-INCH GUN, MARK IX, MODIFICATION 1 (50 CAL.).

Drawing 47818. This is gun Mark IX lined with a conical nickel-steel liner. The rifling is a semicubic parabola with a final twist of 1 turn in 25 calibers. There are 30 grooves 0.0375 inches deep. Breech mechanism Mark VIII.

4-INCH GUN, MARK IX, MODIFICATION 2 (50 CAL.).

Drawing 47784. This gun is identical with gun Mark IX from the breech to the end of the slide. The chase is 11.15 inches in diameter at front end of slide. The smallest diameter of the chase is 7.1 inches and this diameter is continued for 2.5 inches and goes to 9.1 inches from the muzzle. The outside diameters of the tube are from 0.2 inches to 0.7 inches larger than on the tube for gun Mark IX, except over the chamber, where the diameter 9 inches is retained. The tube was made larger to improve the design when lined. The rifling is the same as in gun Mark IX, modification 1. Breech mechanism Mark VIII.

4-INCH GUN, MARK IX, MODIFICATION 3 (50 CAL.).

Drawing 49823. This is gun Mark IX with a conical nickel-steel liner 80.44 inches long inserted without shrinkage. Breech mechanism Mark VIII.

4-INCH GUN, MARK IX, MODIFICATION 4 (50 CAL.).

Drawing 38528. This is gun Mark IX with the rifling grooves deepened from 0.025 inches to 0.0375 inches. Breech mechanism Mark VIII.

4-INCH GUN, MARK IX, MODIFICATION 5 (50 CAL.).

Drawing 54977. This is gun Mark IX, modification 2, with the rifling grooves deepened to 0.05 inches and the shell centering cylinder bored out to 4.144 inches. Breech mechanism Mark VIII.

4-INCH GUN, MARK IX, MODIFICATION 6 (50 CAL.).

Drawing 55296. This gun is Mark IX, and Mark IX, modifications 1, 3, 4, and 8, lined with a conical alloy-steel liner. The rifling is right-hand, with twist increasing from zero at the origin of the rifling to one turn in 25 calibers at the muzzle. There are 30 grooves 0.05 inches deep. The shell centering cylinder is 4.144 inches in diameter. Breech mechanism Mark VIII.

4-INCH GUN, MARK IX, MODIFICATION 7 (50 CAL.).

Drawing 55297. This is gun Mark IX, modifications 2 and 5, lined with a conical alloy-steel liner. The rifling is the same as in gun Mark IX, modification 6. The diameter of the shell centering cylinder is 4.144 inches. Breech mechanism Mark VIII.

4-INCH GUN, MARK IX, MODIFICATION 8 (50 CAL.).

Drawing 47649. This is gun Mark IX with the rifling grooves deepened to 0.05 inches and the shell centering cylinder bored out to 4.144 inches. Breech mechanism Mark VIII.

4-INCH GUN, MARK X (50 CAL.), ANTIAIRCRAFT GUN.

Drawing 47926. This gun is made of nickel steel and consists of tube, jacket, chase hoop, and locking ring. The gun has drop-block mechanism and is hooped to the muzzle. It is 211 inches long. The tube is 200.1 inches long on the sides and 200 inches long on top and bottom. The jacket is 48.5 inches long and the chase hoop 174.5 inches long. The gun is 16 inches in diameter over the chamber and has a lug with cap projecting upward for attaching the hydraulic cylinder. The slide surface is 14 inches in diameter, commences 50.5 inches from breech, and is 42.5 inches long. The slide surface has one inserted key on bottom of gun. The smallest diameter of chase is 7.10 inches for a length of 2.5 inches beginning at 11.5 inches and ending at 9 inches from muzzle. The muzzle bell is 7.75 inches in diameter. Breech mechanism Mark IX, drop block.

4.7-INCH GUNS.

4.7-INCH GUN, MARK I (47 CAL.).

No drawings. This gun is manufactured by Vickers & Sons. Breech mechanism Mark I. Guns Nos. 1 and 2. Small case. Washington Navy Yard sketch No. 8657 shows the case.

4.7-INCH GUN, MARK II (42 CAL.).

No drawings. This gun is a Vickers & Sons. Welin gun. Breech mechanism Mark II, gun No. 3. Small case.

4.7-INCH GUN, MARK III (50 CAL.).

Drawing 38096 is also strength curve. This is an Armstrong gun consisting of tube, jacket, and four hoops, and is hooped from breech to muzzle. The diameter over the chamber is 15.50 inches; the smallest diameter of the chase is 6.75 inches, and the diameter of muzzle bell is 7.70 inches. The total length of gun is 236.20 inches and the length of tube is 231.10 inches. Breech mechanism Mark III, guns Nos. 4 to 11. Large case.

4.7-INCH GUN, MARK IV.

No drawings. Guns Nos. 12 and 13.

5-INCH GUNS.

5-INCH GUNS, MARK I, MODIFICATION 1 (31 CAL.).

The original gun Mark I, drawing 1941, had trunnions and used loose ammunition. A liner was inserted in breech end, changing the gun to fixed ammunition. (See drawing 16047.) The trunnions were cut off and a sleeve threaded on gun (see drawing 16525) belonging to mount Mark X. The gun consists of liner, tube, jacket, and nine hoops. The hooping begins 3.5 inches from breech and stops 59.5 inches from muzzle. The diameter of breech over chamber is 18 inches and at muzzle 7.5 inches. There is no muzzle bell. Total length of gun is 159.97 inches and of tube 153.97 inches. Breech mechanism Mark II, modification 2, Dashiell. Guns Nos. 1 and 2. The guns are condemned. (See Washington Navy Yard file 18717/6 and the Bureau's first indorsement 23440/5(D) of July 23, 1910.)

5-INCH GUN, MARK II (40 CAL.).

Drawing 9869. This is a gun-steel gun, consisting of tube, jacket, and two hoops. The gun is hooped to 68.5 inches from muzzle. The thread for sleeve commences 55.5 inches from breech and continues for 24 inches with diameters 15.5 and 15.9 inches. The diameter of gun over chamber is 16.50 inches and of muzzle 7.10 inches. The chase begins 100.5 inches from muzzle. Total length of gun is 206 inches, of the tube 200 inches. Breech mechanism Mark II, modification 1, Dashiell. Case. Guns Nos. 3 and 4.

5-INCH GUN, MARK II, MODIFICATION 1 (40 CAL.).

Drawing 7219. The gun is practically the same as Mark II, but is hooped to 66 inches from muzzle. The thread for sleeve commences 58.50 inches from breech and the chase commences 98 inches from muzzle. Breech mechanism Mark II, modification 1. Case. Gun No. 5.

5-INCH GUN, MARK II, MODIFICATION 2 (40 CAL.).

Drawing 9384. This gun is the same as Mark I, modification 1, except that the jacket is cylindrical with a diameter of 15.50 inches for a length of 2.75 inches in rear of thread for sleeve and that the thread for the sleeve commences 55.75 inches from face of breech. Case. Guns Nos. 6 and 7. Breech mechanism Mark II, modification 2.

5-INCH GUN, MARK II, MODIFICATION 3 (40 CAL.).

Drawing 9112. The gun is identical with Mark II, modification 2, but without any cylinder in rear of thread for sleeve. Case. Breech mechanisms Mark II, and Mark II, modifications 1 and 2.

5-INCH GUN, MARK II, MODIFICATION 4 (40 CAL.).

Drawing 9837. This is gun Mark II, modification 3, with a muzzle bell 8.4 inches in diameter. Case. Breech mechanism Mark II, modifications 1 and 2.

5-INCH GUN, MARK II, MODIFICATION 5 (35 CAL.).

Drawing 21902. This is gun Mark II, modification 4, with 25 inches cut off from muzzle and a new locking hoop put on. The locking hoop extends over the whole length of the chase hoop to balance the gun. Case. Gun No. 39. Breech mechanism Mark II, modification 2.

5-INCH GUN, MARK II, MODIFICATION 6 (40 CAL.).

Drawing 26940. These guns are Mark II, modification 4, modified to fit mount Mark VIII and modification. The breech has been turned down to 16.25 inches for a distance of 13.435 inches and the front part of thread for sleeve cut away, reducing the length to 21.15 inches. Case. Breech mechanism Mark II, modification 1.

5-INCH GUN, MARK II, MODIFICATION 7 (40 CAL.).

Drawing 39628. This is gun Mark II, modifications 2, 3, and 4, lined with a conical nickel-steel liner. Breech mechanism Mark II, modification 2.

5-INCH GUN, MARK II, MODIFICATION 8 (40 CAL.).

Drawing 39631. This is gun Mark II, modification 6, lined with a conical nickel-steel liner. Breech mechanism Mark II, modification 2.

5-INCH GUN, MARK III (40 CAL.).

Drawing 12622. The gun consists of tube, jacket, and two hoops. The gun is hooped to 66 inches from muzzle. It has a shoulder for yoke 15.935 inches from face of breech. Diameter of gun over chamber is 16.50 inches. Slide surface commences 55.90 inches from breech, extending for a length of 23.5 inches, with a diameter of 15.98 inches. The gun has two solid guide keys, one on top and one on bottom of the slide surface. Front end of jacket is cylindrical, with a diameter of 15.5 inches. The smallest diameter of chase is 7.24 inches at 3.50 inches from muzzle. Diameter of muzzle bell is 8.40 inches. Total length of gun, including faceplate, is 208.38 inches and length of tube is 200 inches. Breech mechanisms Mark III, modifications 1, and 2. Fletcher. Faceplate is 2.75 inches thick. Case.

5-INCH GUN, MARK III, MODIFICATION 1 (40 CAL.).

Drawing 13918. This gun is Mark III with front end of jacket and locking hoop tapering from diameter 15.98 to 15.50 inches. Case. Outlines of the two guns are shown on shrinkage sheet, drawing 13679. Breech mechanism Mark III, modification 2.

5-INCH GUN, MARK III, MODIFICATION 2 (40 CAL.).

Drawing 39806. These are guns Mark III and Mark III, modification 1, lined with conical nickel-steel liners. Breech mechanism Mark III, modification 2.

5-INCH GUN, MARK IV (40 CAL.).

Drawing 11641. This was gun No. 71, which has been converted to Mark IV, modification 3 (see Washington Navy Yard file 21925/12 and Bureau's fifth indorsement 24191/5 (D) of September 18, 1911). No guns in service.

5-INCH GUN, MARK IV, MODIFICATION 1 (40 CAL.).

Drawing 12621. This gun is practically the same as Mark III, but a groove for yoke is cut 8.685 inches from breech 4.5 inches wide and 16.42 inches in diameter. The slide surface commences 53.15 inches from breech. Total length of gun is 206 inches and of tube 200 inches. Breech mechanism Mark II, modifications 1 and 2. Case.

5-INCH GUN, MARK IV, MODIFICATION 2 (40 CAL.).

Drawing 35891. This is gun Mark IV, modification 1 rebuilt using nickel-steel tube and hoops. All outside and inside dimensions of gun are identical with Mark IV, modification 1. Guns Nos. 73 and 79. Breech mechanism Mark II, modification 2.

5-INCH GUN, MARK IV, MODIFICATION 3 (40 CAL.).

Drawing 38342. This is gun Mark IV, modification 1 lined with a conical nickel-steel liner. Breech mechanism Mark II, modification 2. Case.

5-INCH GUN, MARK IV, MODIFICATION 4 (40 CAL.).

Drawing 47535. This is gun Mark IV, modification 3, designed to be turned down and threaded to interchange with guns Mark II, modification 4, but no guns were ever so modified.

5-INCH GUN, MARK V (50 CAL.).

Drawing 16257. This is a gun-steel gun consisting of tube, jacket, and one hoop. It is fitted with a screw-box liner. The gun is hooped to 66.75 inches from muzzle. The gun has a shoulder for yoke 28.40 inches from breech. Diameter of gun over chamber is 20.5 inches. The slide surface commences 52.90 inches from breech and is 40 inches long by 16 inches in diameter, with two guide keys, one on top and one on bottom of gun. The smallest diameter of chase is 7.747 inches at 11.5 inches from muzzle. Muzzle bell is 9 inches in diameter. Total length of gun is 255.65 inches and of tube 250 inches. Breech mechanism Mark IV, Vickers with Welin block. Loose ammunition.

5-INCH GUN, MARK V, MODIFICATION 1 (50 CAL.).

Drawing 40130. This is gun Mark V lined with a conical nickel-steel liner and with a nickel-steel locking ring and a gun-steel chase hoop added extending to the muzzle. Breech mechanism Mark IV, modification 1.

5-INCH GUN, MARK V, MODIFICATION 2 (50 CAL.).

Drawing 47562. This is the same as Mark V, modification 1, except that it has a slightly different liner. Gun No. 280. Breech mechanism Mark IV, modification 1.

5-INCH GUN, MARK V, MODIFICATION 3 (50 CAL.).

Drawing 49910. This is gun Mark V rebuilt. The old parts are the jacket and C₁ hoop, of gun steel, and the new parts nickel-steel tube and locking ring and gun steel B₂ hoop. The outside is the same as Mark V, modification 1, except for the position of the locking ring. Gun No. 245. Breech mechanism Mark IV, modification 1.

5-INCH GUN, MARK VI (50 CAL.).

Drawing 36936. The gun is built of nickel steel and consists of tube, jacket, and one hoop. The gun has a screw-box liner and is hooped to the muzzle. The shoulder for the yoke is located 30.2 inches from breech. Diameter over chamber is 20.5 inches. Slide surface commences 54.7 inches from breech and is 43.2 inches long by 16 inches in diameter, with two guide keys

let in on top and bottom. The smallest diameter of chase is 8.1 inches and of muzzle bell 9 inches. Total length of gun is 255.65 inches and of tube 250 inches. The gun is rifled with 30 grooves of uniform twist. The chamber is a modification of the chamber for gun Mark V. Loose ammunition. Breech mechanisms Mark IV and Mark IV, modification 1.

5-INCH GUN, MARK VI, MODIFICATION 1 (50 CAL.).

Drawing 37227. The gun is built of plain gun steel and is similar to Mark VI, except that shoulder for yoke is located 29.8 inches from breech and that slide surface commences 54.3 inches from breech and is 43.6 inches long. The chamber is the same as for Mark V gun. Rifling 20 grooves and semicubic parabolic twist, increasing from zero to 1 turn in 25 calibers. Loose ammunition. Breech mechanisms Mark IV and Mark IV, modification 1.

5-INCH GUN, MARK VI, MODIFICATION 2 (50 CAL.).

Drawing 37277. The gun is the same as Mark VI, modification 1, except that the chamber is the same as for gun Mark VI. Breech mechanism Mark IV, modification 1.

5-INCH TYPE GUN, MARK VII (51 CAL.).

Drawing 41843. This gun consists of tube, jacket, hoop, locking ring, chamber liner, and yoke-stop ring. The gun has a screw-box liner and is hooped to the muzzle. The gun was rebuilt to interchange with guns Mark VII. The breech mechanism Mark V type has been brought up to date, and is practically the same as breech mechanism Mark V. Gun No. 357 had this mark, but has been changed to Mark VII, modification 4.

5-INCH GUN, MARK VII (51 CAL.).

Bureau's drawing 31461. The gun is built of nickel steel and consists of tube, jacket, and two hoops. The gun has a screw-box liner, and is hooped to the muzzle. The shoulder for the yoke is 14 inches from breech. Diameter over chamber is 21 inches. Slide surface commences 57.9 inches from breech, and is 40 inches long by 16 inches in diameter with two guide keys let in on top and bottom. The smallest diameter of chase is 8.1 inches and of muzzle bell 9 inches. Total length of gun is 260.65 inches and of tube 253.95 inches. Case, but separate ammunition. Breech mechanism Mark V. All guns have been converted to bag guns.

5-INCH GUN, MARK VII, MODIFICATION 1 (51 CAL.).

Drawing 39105. The gun is Mark VII, lined with a conical nickel-steel liner. Breech mechanism Mark V. No guns.

5-INCH GUN, MARK VII, MODIFICATION 2 (51 CAL.).

Drawing 47631. This is gun Mark VII changed to a bag gun by inserting a gas-check seat bushing and using breech mechanism Mark VII, modification 1.

5-INCH GUN, MARK VII, MODIFICATION 3 (51 CAL.).

Drawing 47617. This is gun Mark VII modified by the insertion of a conical nickel-steel liner and converted to a bag gun by changing the chamber and using breech mechanism Mark VII, modification 1.

5-INCH GUN, MARK VII, MODIFICATION 4 (51 CAL.).

Drawing 48331. This is gun No. 357-L (Mark VII type) modified by the insertion of a conical nickel-steel liner, and changed to a bag gun. Breech mechanism Mark XII, modification 1.

5-INCH GUN, MARK VII, MODIFICATION 5 (51 CAL.).

Drawing 53248. This is gun Mark VII retubed and converted to a bag gun. Breech mechanism Mark VII, modification 1.

5-INCH GUN, MARK VIII (51 CAL.).

Drawing 35906. The gun consists of tube and jacket of nickel steel and C₁ hoop and locking ring of gun steel. It is hooped to the muzzle and has a screw-box liner. The gun is identical with gun Mark VII except for arrangement of screw-box liner and chamber. The shoulder for yoke is 14.6 inches from breech. Total length of gun is 261.25 inches and of tube 253.95 inches. Breech mechanisms Mark VII and Mark VII, modification 2. Loose ammunition.

5-INCH GUN, MARK VIII, MODIFICATION 1 (51 CAL.).

Drawing 45795. This is gun Mark VIII and Mark IX, lined with a conical nickel-steel liner. Breech mechanisms Mark VII, modification 2. Loose ammunition.

5-INCH GUN, MARK IX (51 CAL.).

Drawing 37395. This gun is identical with gun Mark VIII, except that the screw-box liner is different and that the gun has the same chamber as gun Mark VII. Breech mechanism Mark VI, experimental. Case. Originally gun No. 450 had this mark, but it has now been modified to Mark VIII, modification 1. No guns.

6-INCH GUNS.

6-INCH WIRE-WOUND GUN (30 CAL.).

Drawing 9735. The gun consists of tube, jacket, hoop, trunnion hoop, and four locking rings. The gun is wire-wound on the outside from 5.8 inches from breech to the 9-inch wide hoop and from hoop to 50.5 inches from muzzle. The wire has no covering. The trunnions are 7 inches in diameter by 6 inches long, 25.5 inches between rimbases, and located 64.8 inches from breech. The diameter over chamber is 20.7 inches and of muzzle 9.75 inches. Total length of gun is 190.53 inches and of tube 181.94 inches. Loose ammunition.

6-INCH GUN, MARK I (30 CAL.).

Drawing 8157. The gun consists of tube, jacket, 16 hoops, and one elevating band. It is hooped from 5.32 inches from breech to 76.38 inches from muzzle. The trunnions are 7 inches in diameter by 5.75 inches long, 25.5 inches between rimbases, and located 62.82 inches from breech. The elevating band is located 26 inches in rear of the trunnions. The diameter over chamber is 21.5 inches and smallest diameter of chase 9.45 inches. A muzzle bell is screwed onto the gun. Total length of gun is 189.7 inches and of tube 180 inches. Loose ammunition. Breech mechanism Mark I. Gun No. 1 for *Dolphin*. The gun is condemned.

6-INCH GUN, MARK II.

No guns.

6-INCH GUN, MARK II, MODIFICATION 1 (30 CAL.).

Drawing 13293. The gun consists of tube, jacket, 10 hoops and chamber liner. The gun is hooped from 4.37 inches from breech to 71.26 inches from muzzle. A sleeve is threaded on gun. The shoulder for yoke is located 14.5 inches from breech. Diameter over chamber is 21.5 inches and of muzzle 9.32 inches. The guns are lined at breech to varying depth. Total length of gun 193.53 inches and of tube 184.53 inches. Case. Breech mechanisms Mark IV and Mark IV, modification 1. Fletcher.

6-INCH GUN, MARK II, MODIFICATION 2 (30 CAL.).

Drawing 23228. This gun is the same as Mark II, modification 1, but with a cylindrical liner the whole length of the gun. The threads under sleeve have been cut away and the diameter made 20.5 inches, commencing 44.65 inches from breech and extending for a length of 32.72 inches. There are two guide keys. Gun No. 9. This gun has been condemned.

6-INCH GUN, MARK II, MODIFICATION 3 (30 CAL.).

Drawing 27478. This is gun Mark II, modification 1, provided with a balancing hoop 50.75 inches long, screwed onto the front chase hoop. Gun No. 6. Breech mechanism Mark IV, modification 1. The gun is condemned.

6-INCH GUN, MARK III (30 CAL.).

Drawing 5306. The gun consists of tube, jacket, and 10 hoops and is hooped from muzzle to 4 inches from breech. The gun has trunnions with diameter 7 inches, length 6 inches, and 24 inches between rimbases. The trunnions are located 69.66 inches from breech. Center of elevating band is 24 inches in rear of trunnions. The diameter over chamber is 20.5 inches and of muzzle 10.8 inches. Total length of gun is 196 inches and of tube 187.41 inches. Loose ammunition. Breech mechanism Mark III.

6-INCH GUN, MARK III, MODIFICATION 1 (35 CAL.).

Drawing 6542. The gun consists of tube, jacket, and 10 hoops. This gun is Mark III gun with jacket and C₄ hoop (new nomenclature) lengthened 6 inches, locating the trunnions 75.56 inches from breech and with tube projecting 24 inches in front of hooping. Diameter of muzzle is 9.25 inches. Total length of gun is 226 inches and of tube 217.41 inches. Loose ammunition. Breech mechanism Mark III. Gun Nos. 126, 129, and 132. The guns are condemned.

6-INCH GUN, MARK III, MODIFICATION 2 (40 CAL.).

Drawing 7224. The gun consists of tube, jacket, and eight hoops. The gun is hooped to 4 inches from breech and 59 inches from muzzle. The trunnions are 7 inches in diameter by 6 inches long, 24 inches between rimbases, and located 82.5 inches from breech. The diameter over chamber is 21 inches and of muzzle 9.1 inches. Total length of gun is 256 inches and of tube 247.41 inches. Loose ammunition. Breech mechanism Mark III. Guns Nos. 120 and 128. The guns are condemned.

6-INCH GUN, MARK III, MODIFICATION 3 (30 CAL.).

Drawing 13886. This is gun Mark III with a chamber liner 39.1 inches long, changing the gun to fixed ammunition, and using breech mechanisms Mark IV and Mark IV, modification 1, Fletcher. Length of gun is 196 inches and of tube 187 inches. Gun No. 125 has a liner 79 inches long (see drawing 13947). Dashiell breech mechanism experimental No. 2 (see drawing 14090).

6-INCH GUN, MARK III, MODIFICATION 4 (30 CAL.).

Drawing 17271. This gun is gun Mark III, modification 3, with the trunnions removed and threaded for sleeve. The thread commences 48.45 inches from breech and continues for 23.66 inches. Diameters of thread are 20 inches and 20.5 inches. Breech mechanisms Mark IV and Mark IV, modification 1.

6-INCH GUN, MARK III, MODIFICATION 5 (35 CAL.).

Drawing 18380. This is gun Mark III, modification 1, with a chamber liner changing the gun to fixed ammunition. Length of tube is 217 inches. Breech mechanisms Mark IV and Mark IV, modification 1. Fletcher. Guns Nos. 88, 130, and 131. The guns are condemned.

6-INCH GUN, MARK III, MODIFICATION 6 (40 CAL.).

Drawing 18381. This is gun Mark III, modification 2, with a chamber liner 39.1 inches long inserted, changing the gun to fixed ammunition. Length of tube 247 inches. Breech mechanism Mark IV. Fletcher. Gun No. 127.

6-INCH GUN, MARK III, MODIFICATION 7.

No drawings. No guns.

6-INCH GUN, MARK III, MODIFICATION 8 (40 CAL.).

Drawing 25388. This is gun Mark III, modification 2, lined its whole length with a gun-steel liner and changed to fixed ammunition. The trunnion hoop has been removed and gun is threaded for sleeve. The thread commences 56.579 inches from breech and continues for 27.421 inches. The diameters of threads are 20.5 inches and 21 inches. Shoulder for yoke is located 26.429 inches from breech and diameter of yoke seat is 20.625 inches. Length of gun is 256.25 inches and of tube 247.25 inches. Breech mechanism Mark IV, modification 1. Fletcher. Gun No. 121.

6-INCH GUN, MARK III, MODIFICATION 9 (30 CAL.).

Drawing 36727. This is a gun Mark III, modification 3, with the liner extending through the whole length of the bore. Gun No. 95. Breech mechanism Mark IV.

6-INCH GUN, MARK IV (40 CAL.).

Drawing 12779. This is a gun-steel gun consisting of tube, jacket, and seven hoops. The outside of gun is similar to gun Mark III, modification 2, but with breech hoop lengthened 0.1 inches, trunnion hoop removed, and threaded for sleeve. Diameters of thread are 20.5 inches and 21 inches. The thread commences 61 inches from face of breech and is 28.5 inches long, the last 3.9 inches being on a bronze sleeve attached to the locking hoop. The length of the

gun is 256.1 inches and of the tube 247.1 inches. Case. Breech mechanism Mark IV. Fletcher. Guns Nos. 133 and 134. The guns are condemned.

6-INCH GUN, MARK IV, MODIFICATION 1 (40 CAL.).

Drawing 12386. The gun consists of tube, jacket, and four hoops and is hooped from breech to 61.5 inches from muzzle. The gun is similar to gun Mark IV, but the chase hooping and projecting part of tube are heavier. Diameters of thread for sleeve are 20.5 inches and 21 inches. The thread commences 57.41 inches from face to breech. Diameter over powder chamber is 21 inches and of muzzle 9.1 inches. Length of gun is 256.41 inches and of tube 247.41 inches. Case. Breech mechanism, Fletcher, experimental, drawing 11189. Gun No. 135. The gun is condemned.

6-INCH GUN, MARK IV, MODIFICATION 2 (40 CAL.).

Drawing 12822. This gun is Mark IV, modification 1, with the breech cut off 1.8 inches. Length of gun is 254.61 inches and of tube 247.41 inches. Case. Breech mechanism, Dashiell, drawing 10185. Gun No. 136. The gun is condemned.

6-INCH GUN, MARK IV, MODIFICATION 3 (40 CAL.).

Drawing 12809. The gun is similar to Mark IV, modification 1, but the thread for sleeve commences 64.01 inches from breech and is 28.5 inches long, the last 5.1 inches being on a bronze sleeve attached to the locking hoop. Breech mechanism Mark IV. Fletcher. Guns Nos. 137, 138, 139, and 140. The guns are condemned.

6-INCH GUN, MARK IV, MODIFICATION 4 (40 CAL.).

Drawing 12967. This gun is identical with gun Mark IV, modification 1, except that a raised band 21.5 inches in diameter and 2.5 inches wide is turned 28.55 inches from breech, and that the thread for sleeve commences 58.7 inches from breech and is 31.25 inches long, the last 4.04 inches being turned on the locking ring, which latter has been slightly changed to suit. Diameter of muzzle 9 inches. Breech mechanism Mark IV, modification 1. Case.

6-INCH GUN, MARK IV, MODIFICATION 5 (40 CAL.).

Drawing 20816. This gun is identical with gun Mark IV, modification 4, except that the tube has been provided with a muzzle bell 10.5 inches in diameter. * Smallest diameter of chase is 9.38 inches, 11.7 inches from muzzle. Case. Breech mechanism Mark IV, modification 1.

6-INCH GUN, MARK IV, MODIFICATION 6.

No drawings and no guns.

6-INCH GUN, MARK IV, MODIFICATION 7 (40 CAL.).

Drawing 14337. This gun was built as a Mark IV, modification 4, gun, but the chamber has been bored out for loose ammunition and a face plate 1.83 inches thick added. A trunnion hoop was screwed on the gun and through the sides holes were drilled and tapped to receive pressure gauges (see drawing 16859). Breech mechanism is Fletcher experimental. Gun No. 154.

6-INCH GUN, MARK IV, MODIFICATION 8 (40 CAL.).

Drawing 19214. This gun is a Mark IV, modification 4, gun, with a muzzle liner 30 inches long and a bell screwed onto the muzzle. Gun No. 161. The gun is condemned. Case. Breech mechanism Mark IV, modification 1.

6-INCH GUN, MARK IV, MODIFICATION 9 (40 CAL.).

Drawing 12967. This gun is Mark IV, modification 4, rebuilt, using a nickel-steel tube and gun-steel locking hoop and chase hoop. Guns Nos. 166, 185, and 191. Breech mechanism Mark IV, modification 1. Case.

6-INCH GUN, MARK IV, MODIFICATION 10 (40 CAL.).

Drawing 27846. This is gun Mark IV, modification 4, lined with a two-step, nickel-steel cylindrical liner. Gun No. 149. Breech mechanism Mark IV, modification 1. Case.

6-INCH GUN, MARK IV, MODIFICATION 11 (40 CAL.).

Drawing 27243. This is gun Mark IV, modification 4, lined with a one-step, nickel-steel cylindrical liner. Guns Nos. 157, 173, and 174. Breech mechanism Mark IV, modification 1. Case.

6-INCH GUN, MARK IV, MODIFICATION 12 (40 CAL.).

Drawing 40719. This is gun Mark IV, modifications 4 and 9, lined with a cylindrical nickel-steel liner. Breech mechanism Mark IV, modification 1. Case.

6-INCH GUN, MARK IV, MODIFICATION 13 (40 CAL.).

Drawing 40718. This gun is Mark IV, modification 5, lined with a cylindrical nickel-steel liner. Case. Breech mechanism Mark IV, modification 1.

6-INCH GUN, MARK V (50 CAL.).

Drawing 38098 is also strength curve. This is an Armstrong gun hooped from breech to muzzle. The diameter over chamber is 23.3 inches and 22 inches. The smallest diameter of chase is 9 inches in rear of the muzzle bell. Lug for piston rod is in one with the gun. Total length of gun is 309.25 inches and of tube 300 inches. Case. Breech mechanisms Mark V and Mark V, modification 1.

6-INCH GUN, MARK VI (45 CAL.), EXPERIMENTAL.

Drawing 15435. The gun consists of tube, jacket, four hoops, and locking ring. It has a screw-box liner and is hooped from breech to 61.33 inches from muzzle. Shoulder for yoke is 19.5 inches from breech. Diameter over chamber is 24 inches. Diameter over screw box is 21.50 inches. The slide commences 56.5 inches from breech with a diameter of 21.75 inches and continues for a length of 53.428 inches, and has two solid guide keys on vertical center line of gun. Smallest diameter of chase is 9.2 inches and of muzzle bell 10.5 inches. Total length of gun is 276.258 inches and of tube 270 inches. Loose ammunition. Breech mechanism Mark VI, Welin block. Gun No. 197 (condemned).

6-INCH GUN, MARK VI (50 CAL.).

Drawing 17908. This is a gun-steel gun consisting of tube, jacket, three hoops, and a locking ring. It has a screw-box liner and is hooped from breech to 78.5 inches from muzzle. Shoulder for yoke is 24 inches from breech. Diameter over chamber, 24 inches. Slide commences 61 inches from breech and is 21.75 inches in diameter and 56 inches long, with two set-in guide keys on vertical center line of gun. Smallest diameter of chase is 9.243 inches at 12.50 inches from muzzle. Muzzle bell is 10.5 inches in diameter. Total length of gun is 300 inches and of tube 293.742 inches. Loose ammunition. Breech mechanism Mark VI, Welin block.

6-INCH GUN, MARK VI, MODIFICATION 1 (50 CAL.).

Drawing 36930. The gun consists of gun-steel jacket, C_1 and C_2 hoops, and nickel-steel tube B_2 , C_3 , and D_1 hoops. This gun is Mark VI rebuilt and hooped to the muzzle. The gun interchanges with Mark VIII and Mark VIII modified guns by counterboring the yoke and adding a stop ring in front on the gun shoulder as shown on sketch 4027. It interchanges with gun Mark VI as shown on sketch 4317. Breech mechanism Mark VI, modification 1. Loose ammunition.

6-INCH GUN, MARK VI, MODIFICATION 2 (50 CAL.).

Drawing 36980. This is gun Mark VI hooped to the muzzle with a gun-steel chase hoop and lined with a cylindrical nickel-steel liner. A nickel-steel locking ring is added at the rear of the new chase hoop. The outside of the gun is identical with Mark VI, modification 1. Total length of gun is 300.20 inches, of liner 293.942 inches, and of tube 293.742 inches. The gun interchanges with Mark VIII and Mark VIII modified guns under same conditions as for Mark VI, modification 1, see sketch 4027. It interchanges with gun Mark VI under same conditions as for Mark VI, modification 1, see sketch 4317. Breech mechanism Mark VI, modification 1. Loose ammunition.

6-INCH GUN, MARK VII (40 CAL.).

Drawing 19141. This is a gun-steel gun consisting of tube, jacket, and three hoops. The gun is built by the Bethlehem Steel Co., and its lines follow closely the Mark IV, modification 5. The yoke is screwed on the gun, the threads beginning 22.45 inches from breech and continuing for 5 inches. The thread for sleeve commences 57.6 inches from breech and is 31.25 inches long. Length of gun is 254.11 inches and of tube 247.41 inches. Case. Breech mechanism Mark VII, modification 1, Bethlehem eccentric thread on block.

6-INCH GUN, MARK VII, MODIFICATION 1 (40 CAL.).

Drawing 41252. This is Mark VII gun, lined with a cylindrical nickel-steel liner. Breech mechanism Mark VII, modification 1. Case.

6-INCH GUN, MARK VIII (50 CAL.).

Drawing 41913. This is a nickel-steel gun consisting of tube, jacket, three hoops, and locking ring. It has a screw-box liner and is hooped from breech to muzzle. Shoulder for yoke is located 27.75 inches from breech. The chamber has 8.08 inches inside and 24 inches outside

diameter; 64.75 inches from breech the gun is turned to a diameter of 21.75 inches for a length of 52.25 inches. This slide surface has two guide keys on the vertical center line. Smallest diameter of chase is 10 inches, located 12.20 inches from muzzle. The number of rifling grooves is 24. Total length of gun is 300.20 inches and of tube 293.942 inches. Loose ammunition. Breech mechanisms Mark VI and Mark VI, modification 1.

6-INCH GUN, MARK VIII, MODIFICATION 1 (50 CAL.).

Drawing 18387. This gun is identical with Mark VIII, except that the chamber is 8 inches in diameter and that the front end of the chamber differs from the one used in gun Mark VIII. Breech mechanisms Mark VI and Mark VI, modification 1. Twenty-four rifling grooves. Loose ammunition.

6-INCH GUN, MARK VIII, MODIFICATION 2 (50 CAL.).

Drawing 41913. The gun is identical with Mark VIII, except that it has 36 rifling grooves. Breech mechanisms Mark VI and Mark VI, modification 1. Drawing 29499 shows gun No. 561, which has the chase hoop in two parts and the tube stepped to suit, the original hoop having sand splits. Drawing 27622 shows gun No. 486, which has the jacket in two parts, the original jacket having sand splits. Loose ammunition.

6-INCH GUN, MARK VIII, MODIFICATION 3 (50 CAL.).

Drawing 35897. This gun is Mark VIII and Mark VIII, modifications 1 and 2, lined with a cylindrical nickel-steel liner with a new chamber. Thirty-six rifling grooves. Loose ammunition.

6-INCH GUN, MARK VIII, MODIFICATION 4 (50 CAL.).

Drawing 37406. This gun is Mark VIII and Mark VIII, modifications 1 and 2, lined with a conical nickel-steel liner with same chamber as in Mark VIII, modification 3. Thirty-six rifling grooves. Loose ammunition.

6-INCH GUN, MARK IX (44 CAL.).

Drawing 25050. This is a gun-steel gun consisting of tube, jacket, and three hoops, and is hooped from breech to muzzle. It is built by the Bethlehem Steel Co. The diameters over the chamber are 22.5 inches and 22 inches. The yoke is screwed on the gun from the front. The thread for yoke commences 25 inches from breech and is 5 inches long. The slide commences 59 inches from breech and is 19.5 inches in diameter, 56 inches long, and has two guide keys on the horizontal line. The smallest diameter of the chase is 9.75 inches at 6.80 inches from muzzle. Total length of gun is 270 inches and of tube 263.3 inches. Case. Breech mechanism Mark IX, modification 1. Bethlehem spiral block. Twenty-four rifling grooves.

6-INCH GUN, MARK IX, MODIFICATION 1 (44 CAL.).

Drawing 54985. This is gun Mark IX lined with a one-step, conical, alloy-steel liner. A liner locking ring is installed after proof. There are 36 rifling grooves. Case. Breech mechanism Mark IX, modification 1. Bethlehem spiral block.

6-INCH GUN, MARK X (45 CAL.).

No drawing. Vickers Sons & Maxim Co., gun No. 1015a, Navy No. 523.

6-INCH GUN, MARK XI (50 CAL.).

No drawing. Vickers Sons & Maxim Co., wire-wound gun No. 1070a, Navy No. 524.

6-INCH GUN, MARK XII (53 CAL.).

Drawing 53254. This gun is built part of nickel steel and part of gun steel. The liner, tube, jacket, and locking ring are of nickel steel and the C_1 and C_2 hoops of gun steel. The jacket reaches from breech to muzzle. The gun is provided with a screw-box liner. Shoulder for yoke is located 28 inches from breech. The diameter of the chamber is 7.5 inches and the outside diameter of the breech is 24.5 inches. At 72 inches from the breech the gun is turned down to a diameter of 22.2 inches for a length of 60 inches. This slide surface has a key inserted on top. From the slide diameter the gun tapers down to 17 inches in a length of 47 inches at the end of the C_1 hoop. In front of the C_1 hoop the gun steps down to 15.6 inches in diameter and in length of 126 inches tapers down to 10.25 inches. This latter diameter continues for 8 inches, after which the muzzle bell commences. The muzzle bell is 10.70 inches in diameter. The conical liner is inserted in the built-up gun. Total length of gun 325 inches and of tube and liner 318 inches. Rib rifling with 36 grooves of uniform width. The rifling curve is a semicubic parabola with final twist 1 turn in 25 calibers. Loose ammunition. Breech mechanism Mark X.

7-INCH GUNS.

7-INCH GUN, MARK I (44 CAL.).

Drawing 36691. This is a gun-steel gun consisting of liner, tube, jacket, three hoops, and locking ring. It has a screw-box liner and is hooped from breech to 47.5 inches from muzzle. The diameter over the chamber is 29 inches and the yoke stop is 19.5 inches from breech. The slide commences 66 inches from breech with a diameter of 25.50 inches and is 55 inches long with set-in keys on top and bottom of gun. The smallest diameter of chase is 11.80 inches at 13.25 inches from muzzle. The diameter of muzzle bell is 12.875 inches. Total length of gun is 315.25 inches, of liner 306.50 inches, and of tube 306.25 inches. Gun No. 1. Breech mechanism Mark 1, experimental. The gun has been lined with a cylindrical nickel-steel liner.

7-INCH GUN, MARK II (45 CAL.).

Drawing 36692. This is a nickel-steel gun consisting of tube, jacket, three hoops, locking ring, and screw-box liner. The gun is hooped from breech to muzzle. The diameter over the chamber is 29 inches and the yoke stop is 19.50 inches from breech. The slide surface commences 66 inches from breech and is 55 inches long with a diameter of 25.5 inches. It has one guide key set in on top of gun. The smallest diameter of chase is 11.25 inches at 12.25 inches from muzzle. The diameter of muzzle bell is 13 inches. Total length of gun is 323 inches and length of tube is 314.25 inches. Breech mechanisms Mark I and Mark I, modifications 1 and 2.

7-INCH GUNS, NOS. 2 AND 3 (45 CAL.).

Drawing 20342. These guns differ from other Mark II guns in the diameter of the second step from breech end of tube which is 13.25 inches instead of 12.75 inches. Gun No. 2 has been modified to Mark II, modification 2.

7-INCH GUN, MARK II, MODIFICATION 1 (45 CAL.).

Drawing 41253. This gun is gun Mark II lined with a conical nickel-steel liner. Breech mechanism Mark I, modifications 1 and 2.

7-INCH GUN, MARK II, MODIFICATION 2 (45 CAL.).

Drawing 41558. This gun is gun No. 2 lined with a cylindrical nickel-steel liner. Breech mechanism Mark I.

8-INCH GUNS.

8-INCH GUN, MARK I (30 CAL.).

Drawing 10724. The gun consists of tube, jacket, and 19 hoops, and is hooped from muzzle to 3.39 inches from breech. The gun has trunnions with diameter 10 inches, length 8 inches, 33.8 inches between rimbases, and located 87.80 inches from breech. The center of elevating band is located 37 inches in rear of center of gun trunnions. The diameter over chamber is 30 inches and at muzzle 14.5 inches. Total length of gun is 257.99 inches and length of tube 244.77 inches. Guns Nos. 2 and 4. Gun No. 4 has a chamber 1 inch longer than gun No. 2. Breech mechanism Mark I. The guns are condemned.

8-INCH GUN, MARK I, MODIFICATION 1 (30 CAL.).

Drawing 13735. The gun consists of tube, jacket, and 13 hoops, and it is hooped from breech end to 69.24 inches from muzzle. Diameter over chamber is 30 inches. At 68 inches from breech the gun is threaded for sleeve for a length of 12 inches. Diameters of thread, 29.80 inches and 29.30 inches. Shoulder for yoke is 13.11 inches from breech. Diameter of muzzle is 12.50 inches. Total length of gun is 254.61 inches and of tube 242.83 inches. Breech mechanism Mark IV. Guns Nos. 1 and 3. The guns are condemned.

8-INCH GUN, MARK II.

No drawings. No guns.

8-INCH GUN, MARK II, MODIFICATION 1 (30 CAL.).

Drawing 15730. This is a gun-steel gun consisting of tube, jacket, and 19 hoops, and is hooped from muzzle to 4.27 inches from breech. On the end of the breech one ring is fastened by screws (see drawing 15955), making the diameter of breech 29.50 inches up to shoulder for yoke, which is 13.11 inches from breech. At 77.19 inches from breech the gun is threaded for a length of 12 inches to receive a sleeve. Diameters of thread are 29.80 inches and 29.30 inches. Diameter over chamber is 30 inches and at muzzle 14.50 inches. Total length of gun is 255.60 inches and length of tube is 243.82 inches. Breech mechanism Mark IV. Guns Nos. 5, 6 and 8. Guns Nos. 5 and 6 are condemned. Gun No. 7 has been modified to 10-inch aerial torpedo gun.

8-INCH GUN, MARK III (30 CAL.), EXPERIMENTAL.

Drawing 6605. The gun consists of tube, jacket, and 11 hoops, and is hooped from muzzle to 4 inches from breech. The gun has trunnions with diameter 9.5 inches and length 8 inches, 33.8 inches between rimbases and located 90.6 inches from breech. The diameter over chamber is 28.75 inches and of muzzle 14.50 inches. Total length of gun is 261 inches and length of tube 251.50 inches. Breech mechanism Mark I, modification 1. Gun No. 15. The gun is condemned.

8-INCH GUN, MARK III (35 CAL.).

Drawing 6153. This is a gun-steel gun consisting of tube, jacket, and 11 hoops. The gun is hooped to 4 inches from breech and 43.5 inches from muzzle. The gun has trunnions with diameter 9.5 inches, length 8 inches, and 33.8 inches between rimbases. The trunnions are located 97 inches from breech, except guns Nos. 16, 19, 20, and 21, which have the trunnions located 96.63 inches from breech. The center of the elevating band is located 32 inches in rear of trunnions. The diameter over chamber is 28.75 inches and of muzzle 12.50 inches. Total length of gun is 304.5 inches and of tube 295 inches. Breech mechanism Mark I, modification 1.

8-INCH GUN, MARK III, MODIFICATION 1 (35 CAL.).

Drawing 8971. The gun consists of tube, jacket, and eight hoops, and is hooped to 29.5 inches from muzzle. Trunnions interchange with Mark III, but are located 101.60 inches from breech. Diameter over chamber and at muzzle, total length of gun, and of tube are the same as for Mark III. Breech mechanism Mark III. Guns Nos. 34, 36, and 37.

8-INCH GUN, MARK III, MODIFICATION 2 (35 CAL.).

Drawing 10821. The gun is identical with Mark III, modification 1, but has the tube stepped differently under the chase hoops. Breech mechanism Mark III. Gun No. 35.

8-INCH GUN, MARK III, MODIFICATION 3 (40 CAL.).

Drawing 8983. The gun consists of tube, jacket, and eight hoops, and is hooped from breech to 39.5 inches from muzzle. Trunnions interchange with Mark III and are located 117 inches from breech. The diameter over chamber is 28.75 inches and of muzzle 12 inches. Total length of gun is 344.50 inches and of tube 335 inches. Breech mechanism Mark III. Gun No. 51. The gun is condemned.

8-INCH GUN, MARK III, MODIFICATION 4 (35 CAL.).

Drawing 23216. This is a Mark III gun with a ring shrunk on the end of the breech and the breech made tapered as on guns Mark III, modifications 1, 2, and 3. A small balancing hoop is screwed onto the front chase hoop. Breech mechanism Mark III. Gun No. 9.

8-INCH GUN, MARK III, MODIFICATION 5 (35 CAL.).

Drawing 38641. This gun is Mark III lined with a cylindrical, nickel-steel, two-step liner. The trunnion hoop and elevating band have been removed and the threads that were under the trunnion hoop continued to the rear far enough to allow the gun to screw into a slide which is cast in one with the recoil cylinder. Breech mechanism Mark III, modification 1.

8-INCH GUN, MARK IV (35 CAL.).

Drawing 10781. This is gun Mark III, modification 1, with the trunnion hoop removed and gun threaded for sleeve. The thread commences 77.1 inches from breech and its diameters are 28.75 inches and 28.25 inches. The rear chase hoop is longer and the middle chase hoop is shorter than on gun Mark III, modification 1. Breech mechanism Mark III.

8-INCH GUN, MARK IV, MODIFICATION 1 (35 CAL.).

Drawing 11992. This gun is Mark IV shortened 0.66 inch in rear of threaded part of gun, making the total length of gun 303.84 inches and of tube 294.34 inches. Breech mechanism Mark III. Gun No. 27.

8-INCH GUN, MARK IV, MODIFICATION 2 (35 CAL.).

Drawing 10783. This gun is similar to Mark IV but has longer jacket and locking hoop, making the hooped part of chase stronger. The thread for sleeve commences 81 inches from breech. Breech mechanism Mark III. Guns Nos. 32 and 48.

8-INCH GUN, MARK IV, MODIFICATION 3 (35 CAL.).

Drawing 12378. This gun is identical with Mark IV but has only two hoops in rear of locking hoop, whereas gun Mark IV has three. Breech mechanisms, Mark III and Mark III, modification 1.

8-INCH GUN, MARK IV, MODIFICATION 4 (35 CAL.).

Drawing 13508. This gun is identical with Mark IV but has the breech end turned down to 28 inches in diameter to a point 16.25 inches from face of breech for making a shoulder for yoke. Breech mechanism Mark III.

8-INCH GUN, MARK IV, MODIFICATION 5 (35 CAL.).

Drawing 15869. This gun is identical with Mark IV, modification 4, but for the shape of the front of the powder chamber. Breech mechanism Mark III.

8-INCH GUN, MARK IV, MODIFICATION 6 (35 CAL.).

Drawing 23014. This is a nickel-steel gun consisting of tube, jacket, one hoop, and screw-box liner with flange. The gun is hooped from breech to 43.25 inches from muzzle. The chamber is similar to the one in gun Mark IV, modification 5, but about 1.4 inches shorter. The gun is threaded for sleeve. The thread commences 72.5 inches from breech and its diameters are 28.75 inches and 28.25 inches. The diameter over chamber is 28.75 inches and at muzzle 12.5 inches. Total length of gun is 296.625 inches and of tube 287.125 inches. Diameter of seat for yoke is 28 inches and its shoulder is located 12.875 inches from breech. The screw-box liner flange is 0.75 inch thick. Breech mechanism Mark III. Gun No. 83.

8-INCH GUN, MARK IV, MODIFICATION 7 (35 CAL.).

Drawing 38360. This is a nickel-steel gun. It is similar to Mark IV, modification 6. Shoulder for yoke is 16.25 inches from breech, and the seat is 27.99 inches in diameter. The gun is hooped from breech to 44.5 inches from muzzle. Diameter of muzzle 12.40 inches. Total length of gun 297.92 inches, and of tube 288.42 inches. Breech mechanism Mark III. Gun No. 52.

8-INCH GUN, MARK IV, MODIFICATION 8 (35 CAL.).

Gun No. 61. Drawing 28652, dated 1907, is also strength curve. The gun No. 61 consists of a heavy liner, part of tube, jacket, six hoops, and one locking ring. The parts are of gun steel. It is hooped from breech to muzzle. From the breech to 29.5 inches from the muzzle the outside of the gun is identical with gun Mark IV, modification 4, except at the breech end of the muzzle hoop the locking ring has been added. Smallest diameter of chase, 14.5 inches from muzzle, is 13.26 inches. Total length of gun is 304.75 inches and of liner 295.25 inches.

8-INCH GUN, MARK IV, MODIFICATION 9 (35 CAL.).

Drawing 40088. This is gun Mark IV lined with a cylindrical nickel-steel liner. Breech mechanism Mark III, modification 1.

8-INCH HOWITZER, MARK IV, MODIFICATION 10 (23 CAL.).

Drawing 55246. This is gun Mark IV, modification 8, No. 62, cut off to a length of 193.5 inches. The howitzer has been used for experimental work in connection with high explosive shells. Breech mechanism Mark III.

8-INCH GUN, MARK V (40 CAL.).

Drawing 17749. This is a gun-steel gun, consisting of tube, jacket, three hoops, and one locking ring. It is hooped from breech to 56 inches from muzzle. The shoulder for yoke is 19 inches from breech and the seat is 32.25 inches in diameter. The diameter over chamber is 33 inches. The gun is turned for slide 29.5 inches in diameter, commencing 75 inches from breech, and is provided with two keys. Diameter of smallest part of chase 14 inches from muzzle is 13.172 inches and of muzzle bell 14.5 inches. Total length of gun is 343 inches, and of tube 334 inches. Breech mechanism Mark V.

8-INCH GUN, MARK V, MODIFICATION 1 (45 CAL.).

Drawing 37275. A heavy nickel-steel liner has been inserted in Mark V gun lengthening the gun to 45 calibers. A gun-steel chase hoop has been added, hooping the gun to the muzzle, and a gun-steel locking ring covers its joint with the B₂ hoop. Total length 369 inches. The liner 360 inches long. The gun is interchangeable with gun Mark VI under conditions shown on sketch 4032. Breech mechanism Mark V.

8-INCH GUN, MARK V, MODIFICATION 2 (45 CAL.).

Drawing 37275. This gun is identical with Mark V, modification 1, but has breech mechanism Mark V, modification 1, and gas-check seat to suit. Guns Nos. 86 and 87.

8-INCH GUN, MARK VI (45 CAL.).

Drawing 19897. The gun is of nickel steel and consists of tube, jacket, three hoops, and locking ring. It is hooped from breech to muzzle. The shoulder for yoke is 19 inches from breech, and the seat is 32.75 inches in diameter. A locking ring is screwed on the gun in rear of the yoke. The diameter over powder chamber is 33.5 inches. The gun is turned for slide 29.5 inches in diameter, commencing 75 inches from breech, and has one key. Diameter of smallest part of chase, 14.5 inches from muzzle, is 12.8 inches and of muzzle bell 14.5 inches. Total length of gun is 369 inches and of tube 360 inches. Breech mechanism Mark V.

8-INCH GUN, MARK VI, MODIFICATION 1 (45 CAL.).

Drawing 33720. This gun is Mark VI, lined with a cylindrical nickel-steel liner. Gun No. 201. Breech mechanism Mark V.

8-INCH GUN, MARK VI, MODIFICATION 2 (45 CAL.).

Drawing 19897. This is Mark VI, with breech mechanism Mark VI.

8-INCH GUN, MARK VI, MODIFICATION 3 (45 CAL.).

Drawing 38160. This gun is Mark VI, lined with a conical nickel-steel liner. Breech mechanism Mark V. A liner locking ring is installed after proof.

8-INCH GUN, MARK VI, MODIFICATION 4 (45 CAL.).

Drawing 38160. This is gun Mark VI, modification 2, lined with a conical nickel-steel liner. Breech mechanism Mark VI. A liner locking ring is installed after proof.

8-INCH GUN, MARK VI, MODIFICATION 5 (45 CAL.).

Drawing 38160. This is gun Mark VI, modification 3 rebuilt with hoops B₂, C₂, and D₁, new. Guns No. 125 L. breech mechanism Mark V.

8-INCH HOWITZER, MARK VII (23 CAL.).

Drawing 55494. This is a single-forging, alloy-steel howitzer. It is 16 inches in diameter over the breech, 13 inches in diameter over the slide and 12.95 inches in diameter over the chase. The bore is 182 inches long and the total length is 190 inches. It is designed to interchange with the 4-inch guns Mark IX and modifications in the 4-inch mounts Mark XII, modifications 1 and 2. Breech mechanism Mark VII.

10-INCH GUNS.

10-INCH AERIAL TORPEDO GUN (18 CAL.), EXPERIMENTAL.

Drawing 55091. This gun was originally 8-inch gun Mark II, modification 1, No. 7. It was cut off, the chamber bushed to fit a 6-inch cartridge case and the bore enlarged to 10 inches in diameter for experimental firings with aerial torpedoes. Total length of gun is 189.33 inches. Eight-inch breech mechanism Mark IV.

10-INCH GUN, MARK I (31 CAL.).

Drawing 9144. This is a gun-steel gun consisting of tube, jacket, and 15 hoops, and is hooped from 5.91 inches from breech to muzzle. The diameter over the chamber is 40 inches. The gun is attached to the carriage by straps, shoulder for rear strap is 94.66 inches from breech and the diameters of recesses for straps are 38 inches, 37.50 inches, and 37 inches. Diameter of muzzle is 17.50 inches. Total length of gun is 329.10 inches and length of tube is 312.84 inches. Breech mechanism Mark I. Gun No. 1.

10-INCH GUN, MARK I, MODIFICATION 1 (31 CAL.).

Drawing 9147. This gun is identical with gun Mark I, except that the diameter of the jacket is 29.75 inches under A and B hoops and small variations in dimensions of hoops. Breech mechanism Mark I. Gun No. 2.

10-INCH GUN, MARK I, MODIFICATION 2 (35 CAL.).

Drawing 9150. The gun consists of tube, jacket, and 14 hoops and is hooped from 5.91 inches from breech to muzzle. The diameter over the chamber is 40 inches. The gun is attached to the carriage by straps, the location with respect to the breech and the dimensions for recesses being the same as for gun Mark I. Diameter of muzzle is 16.57 inches. Total length of gun is 365.50 inches, and length of tube is 349.34 inches. The chamber is the same as gun Mark I. Breech mechanism Mark I. Gun No. 3.

10-INCH GUN, MARK I, MODIFICATION 3 (35 CAL.).

Drawing 9153. This gun is the same as Mark I, modification 2, but with different hooping in front of straps. The tube has different diameter. Breech mechanism Mark I. Gun No. 4.

10-INCH GUN, MARK II (30 CAL.).

Drawing 7276. This is a gun-steel gun consisting of tube, jacket, and 11 hoops. The gun is hooped from 6 inches from breech to muzzle. The diameter over the chamber is 39 inches. The gun is attached to the carriage by straps, shoulder for rear strap is 94.66 inches from breech, and the diameter for recesses for straps is 37 inches. Diameter of muzzle is 17.25 inches. Total length of gun is 329.10 inches, and length of tube is 312.84 inches. Breech mechanisms Mark IV, Mark V, and Mark V, modification 1.

10-INCH GUN, MARK II, MODIFICATION 1 (30 CAL.).

Drawing 9493. This gun is identical with Mark II, but is hooped to breech. Breech mechanism Mark V.

10-INCH GUN, MARK II, MODIFICATION 2 (30 CAL.).

Drawing 12837. This is gun No. 26, converted from an 8-inch Hurst gun. It consists of tube, jacket, and eight hoops, and is hooped from breech to 68.59 inches from muzzle. From breech for a length of 164.5 inches the outside of the gun is identical with gun Mark II, modification 1. Breech mechanism Mark V.

10-INCH GUN, MARK III (40 CAL.).

Drawing 20192. This is a nickel-steel gun, consisting of tube, jacket, four hoops, and screw box liner. The gun is hooped from breech to muzzle. The diameter over the chamber is 42 inches. The yoke stop is located 29 inches from face of breech. The slide commences 94 inches from breech with a diameter of 38 inches, and has one key set in on top of gun. The smallest diameter of chase is 16.20 inches at 13.75 inches from muzzle. Diameter of muzzle bell is 17.25 inches. Total length of gun is 413 inches, and length of tube is 400 inches. Breech mechanism Mark VI.

10-INCH GUN, MARK III, MODIFICATION 1 (40 CAL.).

Drawing 20192. This gun is similar to gun Mark III, but the front part of the chamber is different. Breech mechanism Mark VI.

10-INCH GUN, MARK III, MODIFICATION 2 (40 CAL.).

Drawing 38504. This is gun Mark III, or Mark III, modification 1, lined with a conical nickel-steel liner. Breech mechanism Mark VI.

12-INCH GUNS.

12-INCH GUN, MARK I (35 CAL.).

Drawing 7221. The gun consists of tube, jacket, 10 hoops, and one locking ring, and is hooped from muzzle to 6 inches from breech face. The gun is attached to the carriage by means of straps. The first shoulder for the straps is located 131 inches from breech. The diameter over chamber is 45 inches, and diameter under straps 42.5 inches. The muzzle is without bell and is 20 inches in diameter. Total length of gun is 441 inches. The tube is 425 inches long. Breech mechanism Mark V, modification 1. Guns Nos. 1 and 2.

12-INCH GUN, MARK I, MODIFICATION 1 (35 CAL.).

Drawing 9490. The gun is similar to gun Mark I, but is hooped to the face of the breech. The diameter of breech end is 40 inches, increasing to 45 inches, 16 inches from breech. Breech mechanism Mark III, modification 1. Guns Nos. 3 and 4.

12-INCH GUN, MARK I, MODIFICATION 2 (35 CAL.).

Drawing 45165. This is gun Mark I, modification 1, with 1.46 inches cut from rear faces of strap bands on hoop C₃, in order to balance in mount Mark III, modification 1. Breech mechanism Mark IV. Guns Nos. 5 to 8, inclusive.

12-INCH GUN, MARK II (35 CAL.).

Drawing 10811. The gun consists of tube, jacket, seven hoops, and one locking ring, and is hooped from breech to 73.5 inches from muzzle. The outside of the gun is identical with Mark I, modification 1, from face of breech to 214 inches from breech. The muzzle is without bell and is 19 inches in diameter. The total length of gun is 441 inches. The tube is 424.32 inches long. Breech mechanism Mark V.

12-INCH GUN, MARK II, MODIFICATION 1 (35 CAL.).

Drawing 39515. This is gun Mark II lined with a cylindrical nickel-steel liner, with the band seat in the chamber changed and a nickel-steel C₈ locking ring at the joint between the B₂ and B₃ hoops added. Gun No. 9 L is shown on drawing 49927.

12-INCH GUN, MARK II, MODIFICATION 2 (35 CAL.).

Drawing 40126. This gun is Mark II rebuilt. The gun was cut off 155 inches from muzzle and a heavy cylindrical nickel-steel liner inserted. Three new gun-steel hoops were shrunk on, making the outside and inside dimensions of the gun identical with Mark II, modification 1. Two screwed nickel-steel locking rings were added to lock the outside joints on the chase. Breech mechanism Mark V. Gun No. 14.

12-INCH GUN, MARK III (40 CAL.).

Drawing 23771. The gun consists of tube, jacket, and eight hoops and is hooped from breech to 83 inches from muzzle. The gun is built up of four layers over the chamber, the fourth layer commencing 10 inches from breech. Diameter over chamber is 48.5 inches. In

recoiling, the gun slides in the mount; 100 inches from face of breech the gun is 42 inches in diameter. This slide surface is 98 inches long and has one guide key. There are two chase hoops. The smallest diameter of chase, 17.5 inches from muzzle, is 19.245 inches. Total length of gun is 493 inches. The tube is 480 inches long. Breech mechanism Mark VI. All guns have been modified.

12-INCH GUN, MARK III, MODIFICATION 1 (40 CAL.).

Drawing 23770. This gun is the same as Mark III, but has a smaller chamber. All guns have been modified to Mark III, modification 3.

12-INCH GUN, MARK III, MODIFICATION 2 (40 CAL.).

Drawing 17541. This gun is the same as Mark III, modification 1, but with only one long chase hoop. Gun No. 41 with the chase broken off; all other guns modified to Mark III, modification 3.

12-INCH GUN, MARK III, MODIFICATION 3 (40 CAL.).

Drawing 29931. This gun is Mark III and Mark III, modifications 1 and 2, hooped to the muzzle with a gun-steel chase hoop and lined with a cylindrical nickel-steel liner; a nickel-steel locking ring covers the joint at the rear end of the new chase hoop. Breech mechanisms Mark VI and Mark VI, modifications 1 and 2. The chambers of various guns differ somewhat and the shrinkage of Nos. 27 and 28 are different from the standard.

12-INCH GUN, MARK IV (40 CAL.).

Drawing 20343. This gun consists of tube, jacket, and seven hoops. It is hooped to the muzzle. From the breech for a length of 234 inches the outside of the gun is identical with gun Mark III. The smallest diameter of chase is 20.27 inches, 17.75 inches from muzzle. Total length of gun is 493.25 inches and length of tube is 480.25 inches. Breech mechanism Mark VI.

12-INCH GUN, MARK IV, MODIFICATION 1 (40 CAL.).

Drawing 45305. This is gun Mark IV lined with a cylindrical nickel-steel liner. Breech mechanism Mark VI, modification 2.

12-INCH GUN, MARK V (45 CAL.).

Drawing 20344. This gun is built of nickel steel and consists of tube, jacket, six hoops, and one locking ring. It is hooped to the muzzle. From the breech for a length of 234 inches the outside of the gun is identical with guns Mark III and Mark IV. The smallest diameter of the chase is 17.40 inches located 17.75 inches from muzzle. The chase hoop is in one piece. Total length of gun is 553 inches and length of tube 540 inches. Breech mechanism Mark VI, Mark VI, modification 1, and Mark VII. All guns have been modified.

12-INCH GUN, MARK V, MODIFICATION 1 (45 CAL.).

Drawing 37031. This gun is Mark V lined with a cylindrical nickel-steel liner. The powder chamber is different from the one used in gun Mark V. Breech mechanisms Mark VI, modifications 1 and 2. Guns Nos. 62, 65, and 66 have one layer of 0.125-inch wire (winding tension

50,000 pounds per square inch), under hoop D_1 , and No. 62 has a similar layer under hoop C_4 . Drawing 38443.

12-INCH GUN, MARK V, MODIFICATION 2 (45 CAL.).

Drawing 38331. This is gun Mark V lined with a conical nickel-steel liner and having the same chamber as Mark V, modification 1. Breech mechanism Mark VI, modification 2. Liner locking rings are to be inserted when guns are available.

12-INCH GUN, MARK V, MODIFICATION 3 (45 CAL.).

Drawing 40299. This is gun Mark V, modification 1, changed to suit breech mechanism Mark IX. Guns Nos. 90 and 91.

12-INCH GUN, MARK V, MODIFICATION 4 (45 CAL.).

Drawing 40300. This is gun Mark V, modification 1, changed to suit breech mechanism Mark X. Gun No. 93.

12-INCH GUN, MARK V, MODIFICATION 5 (45 CAL.).

Drawing 45299. This gun is gun Mark V lined with a conical nickel-steel liner and having a small chamber. Breech mechanism Mark VI, modification 2. Liner locking rings are to be inserted when guns are available.

12-INCH GUN, MARK V, MODIFICATION 6 (45 CAL.).

Drawing 54813. This is gun Mark V, modification 4, rebuilt with new tube, chase hoop B_2 , and locking hoops C_4 and D_2 . All new parts are made of alloy steel. The chamber is made of the same size as is used in gun Mark V, modification 5. Breech mechanism Mark X, Holmstrom. Gun No. 92.

12-INCH GUN, MARK V, MODIFICATION 7 (45 CAL.).

Drawing 54813. This is gun Mark V or Mark V, modifications 1, 2, or 5, rebuilt with new tube, chase hoop B_2 and locking hoops C_4 and D_2 . All new parts are made of alloy steel. The chamber is made of the same size as is used in gun Mark V, modification 5. Breech mechanism Mark VI, modification 2.

12-INCH GUN, MARK VI (45 CAL.).

Drawing 32264. Nickel-steel gun consisting of tube, jacket, screw-box liner, seven hoops, and one locking ring. It is hooped to the muzzle. From the breech for a length of 198 inches the outside of the gun is identical with guns Mark III, Mark IV, and Mark V. From here on the gun is made with two tapers until the smallest diameter of the chase, 18 inches, is reached, 17.75 inches from muzzle. Total length of gun is 553 inches and of tube 540 inches. Breech mechanism Mark VII. All guns have been modified.

12-INCH GUN, MARK VI, MODIFICATION 1 (45 CAL.).

Drawing 40705. This is gun Mark VI lined with a cylindrical nickel-steel liner. Breech mechanism Mark VI, modification 2. Gun No. 178.

12-INCH GUN, MARK VI, MODIFICATION 2 (45 CAL.).

Drawing 40767. This is gun Mark VI lined with a conical nickel-steel liner. Breech mechanism Mark VI, modification 2. Liner locking rings will be added when the guns are available.

12-INCH GUN, MARK VI, MODIFICATION 3 (45 CAL.).

Drawing 45303. This is gun Mark VI lined with a conical nickel-steel liner and having a small chamber. Breech mechanism Mark VI, modification 2. Liner locking rings will be added when the guns are available.

12-INCH GUN, MARK VII (50 CAL.).

Drawing No. 32900. Nickel-steel gun consisting of cylindrical liner, tube, jacket, eight hoops. The gun has a screw-box liner and is hooped from breech to muzzle. The gun is built up from the cylindrical liner, the latter being inserted in the tube without shrinkage before the jacket and hoops are shrunk on. The screw-box liner is screwed into C_1 and D_1 hoops. The seat for the yoke is 43 inches in diameter. The diameter over the chamber is 44 inches. The slide surface commences 110 inches from the face of the breech and is 40 inches in diameter and 93 inches long, with one guide key on top of gun. The chase is made in two tapers, the smallest diameter is 19 inches and is located 18.25 inches from muzzle, which is 21 inches in diameter. Total length of gun is 607.25 inches and of liner 594.25 inches. Breech mechanism Mark III.

12-INCH GUN, MARK VII, MODIFICATION 1 (50 CAL.).

Drawing 41961. This is a nickel-steel gun consisting of conical liner, tube, jacket, and eight hoops and one locking ring. It has a screw-box liner and is hooped to the muzzle. This is the Mark VII type gun. The original gun (drawing 32395) was the same as Mark VII without the liner and with short C_3 and E_3 hoops. The gun has been modified by removing the old D_3 hoop and part of C_2 and C_3 hoops, shrinking on a new long D_3 hoop, locking D_2 and D_3 hoops together with a screw locking ring E_1 , and inserting a conical liner. Breech mechanism Mark VIII. Gun No. 180L. Liner locking ring will be inserted in this gun.

12-INCH GUN, MARK VII, MODIFICATION 2 (50 CAL.).

Drawing 45271. This is gun Mark VII with a conical liner inserted, and with new locking hoop D_3 and new locking ring E_1 . Liner locking rings will be inserted when guns are available. Breech mechanism Mark VIII.

12-INCH GUN, MARK VII, MODIFICATION 3 (50 CAL.).

Drawing 45151. This is a nickel-steel gun consisting of tube, jacket, five hoops, one locking ring, and screw-box liner. The outside and inside of the gun are identical with Mark VII, modification 2, except the gas-check seat. Breech mechanism Mark IX, modification 1.

13-INCH GUNS.

13-INCH GUN, MARK I (35 CAL.).

Drawing 9081. The gun is built of gun-steel and consists of tube, jacket, nine hoops, and two screw locking rings. It is hooped from breech to 60 inches from muzzle and fastened to the carriage with straps. Diameter over chamber is 49 inches, under straps 46.5 inches, and of muzzle 21 inches. Total length of gun is 479.1 inches and of tube 460.6 inches. Breech mechanism Mark I.

13-INCH GUN, MARK I, MODIFICATION 1 (35 CAL.).

Drawing 29901. This is Mark I rebuilt. The only parts of the old gun that were kept are jacket and four breech hoops. The other parts are new and made of gun steel. The gun is the same as Mark I but with slightly different powder chamber. Gun No. 2. Breech mechanism Mark I.

13-INCH GUN, MARK I, MODIFICATION 2 (35 CAL.).

Drawing 38181. This is gun Mark I, Mark I, modification 1, and Mark II, modification 1, lined with a cylindrical nickel-steel liner. Total length of gun is 479.20 inches and of liner 460.70 inches.

13-INCH GUN, MARK II (35 CAL.).

Drawing 38378. The gun is built of gun steel and consists of tube, jacket, nine hoops, and two locking rings, and is hooped from breech to 60 inches from muzzle. The chamber is the same as for guns Mark I. The shoulder for the yoke seat is 18.5 inches from breech and the diameter of the seat is 48 inches. The gun slides in the cradle. The diameter over chamber and slide cylinder is 49 inches, and of muzzle 21 inches. Guns Nos. 13, 15 to 18, and 20 have a short B_2 hoop and long B_3 hoop; guns Nos. 14, 19, and 21 to 25 have a long B_2 hoop and short B_3 hoop. Total length of gun is 479.10 inches and of the tube 460.6 inches. Breech mechanisms Mark II and Mark II, modification 1. Gun No. 13 is lined from drawing 38379, and guns 18 and 19 from drawing 38480 with cylindrical liners.

13-INCH GUN, MARK II, MODIFICATION 1 (35 CAL.).

Drawing 38187. The outside is like Mark I and the inside like Mark II, modification 2. Gun No. 35. When lined this gun becomes Mark I, modification 2. Breech mechanism Mark II, modification 1.

13-INCH GUN, MARK II, MODIFICATION 2 (35 CAL.).

Drawing 38377. The gun is similar to Mark II, but the front end of the powder chamber has a different shape. Breech mechanism Mark II, modification 1.

13-INCH GUN, MARK II, MODIFICATION 3 (35 CAL.).

Drawing 38182. This is gun Mark II and Mark II, modification 2, lined with a cylindrical nickel-steel liner. The liner is identical with the one used for gun Mark I, modification 2. Breech mechanism Mark II, modification 1.

14-INCH GUNS.

14-INCH GUN, MARK I (45 CAL.).

Drawing 40746. This is a part nickel and part gun-steel gun consisting of tube, jacket, eight hoops and screw-box liner and is hooped from breech to muzzle. The screw-box liner is screwed into D_1 and C_1 hoops and has a flange 4 inches thick and 46 inches in diameter. The yoke stop is 30 inches from face of breech. The diameter over the chamber is 46 inches. The slide surface commences 105.50 inches from breech with a diameter of 42 inches and is 101.5 inches long with one key set in on top of gun. The chase is made up of two tapers and the smallest diameter is 21.5 inches at 24 inches from the muzzle. Diameter of muzzle bell is 24 inches. Total length of gun is 642.45 inches and length of tube is 628.45 inches. Breech mechanism Mark I.

14-INCH GUN, MARK I, MODIFICATION 1 (45 CAL.).

Drawing 40763. This is gun Mark I with breech mechanisms Mark II and Mark II, modification 1, side swing.

14-INCH GUN, MARK I, MODIFICATION 2 (45 CAL.).

Drawing 40764. This is gun Mark I with breech mechanism Mark III, drop block.

14-INCH GUN, MARK I, MODIFICATION 3 (45 CAL.).

Drawing 46760. This is gun Mark I, modification 2, modified by replacing the short D_3 hoop by a longer hoop and locking the latter to the D_3 hoop by screwing on the locking ring E_1 . The three joints on the gun under the D_3 hoop are closed by three locking rings in halves, before the long D_3 hoop is shrunk on. The slide cylinder, 42 inches in diameter, has been lengthened to 109.7 inches. Breech mechanisms Mark III and Mark III, modification 1, drop block.

14-INCH GUN, MARK I, MODIFICATION 4 (45 CAL.).

Drawing 46903. This is gun Mark I modified by making a new D_3 hoop and adding locking rings as for Mark I, modification 3, and in addition by inserting a conical nickel-steel liner. Breech mechanism Mark I, side swing.

14-INCH GUN, MARK I, MODIFICATION 5 (45 CAL.).

Drawing 46907. This is gun Mark I, modification 1, modified by making the same changes as in the case of Mark I, modification 4. Breech mechanisms Mark II and Mark II, modification 1, side swing.

14-INCH GUN, MARK I, MODIFICATION 6 (45 CAL.).

Drawing 45122. This is gun Mark I, modification 2, modified by making the same changes as in the case of Mark I, modification 4, or by modifying gun Mark I, modification 3, by inserting a conical nickel-steel liner. Breech mechanisms Mark III and Mark III, modification 1, drop block.

14-INCH GUN, MARK II (45 CAL.).

Drawing 41620. This is the 14-inch type gun. It is a nickel-steel gun similar to gun Mark I, but has the yoke stop 30.04 inches from breech and the slide surface is 98.03 inches long. The gun has short C_3 and D_3 hoops. Breech mechanism Mark II (experimental), gun No. 1. The gun has been modified to Mark II, modification 1.

14-INCH GUN, MARK II, MODIFICATION 1 (45 CAL.).

Drawing 46911. This is gun Mark II modified by replacing the short D_3 hoop by a longer hoop and locking the latter to the D_3 hoop by screwing on the locking ring E_1 . The three joints on the gun under the D_3 hoop are closed by three locking rings in halves, before the long D_3 hoop is shrunk on. The slide cylinder, 42 inches in diameter, has been lengthened to 109.73 inches. A conical nickel-steel liner of same dimensions as for guns Mark I, modifications 4, 5, and 6, has been inserted. Total length of gun 642.49 inches, of tube 628.45 inches, and of liner 628.49 inches. The liner projects 0.04 inches in the screw box so that the gas check and mushroom will interchange with breech mechanism Mark II. Breech mechanism Mark II (type), gun No. 1-L.

14-INCH GUN, MARK III (45 CAL.).

Drawing 45132. This is a part nickel and part gun-steel gun, consisting of tube, jacket, eight hoops, three locking rings, and screw-box liner and is hooped from breech to muzzle. The screw-box liner is screwed into C_1 hoop and has a flange 4 inches thick and 46 inches in diameter. The yoke stop is 30 inches from face of breech. The diameter over the chamber is 46 inches. The slide surface commences 105.50 inches from breech with a diameter of 42 inches and is 115 inches long, with one key set in on top of gun. The smallest diameter of the chase is 21.50 inches at 23 inches from muzzle and the diameter of the muzzle bell is 23.40 inches. Total length of gun is 642.45 inches and length of tube is 628.45 inches. Breech mechanisms, Mark III and Mark III, modification 1, drop block.

14-INCH GUN, MARK III, MODIFICATION 1 (45 CAL.).

Drawing 51108. This is gun Mark III lined with a conical nickel-steel liner. Breech mechanisms, Mark III and Mark III, modification 1.

14-INCH GUN, MARK IV (50 CAL.).

Drawing 48097. This is a nickel-steel gun. It consists of liner, tube, jacket, three hoops, and two locking rings. The liner is inserted last. The screw-box liner is screwed into the jacket and has a separate flange 4 inches thick screwed onto it. The yoke stop is 42.5 inches from breech. The diameter over chamber is 48 inches. The slide cylinder commences 120 inches from breech, has a diameter of 44 inches, and is 132 inches long, with one key set in on top of gun. The front end of C_2 hoop tapers in two successive slopes from a diameter of 44 inches and 31.80 inches in a length of 162 inches. In front of the C_2 hoop the chase is 28.80 inches in diameter, tapering in two successive slopes to 22.20 inches in a length of 255.75 inches. The 22.20-inch diameter is continued for 27 inches, after which the muzzle bell commences, its largest diameter being 23.4 inches. The total length of the gun is 714 inches, and of the tube and liner 700 inches. Breech mechanism, Mark IV, drop block.

14-INCH GUN, MARK IV, MODIFICATION 1 (50 CAL.).

Drawing 50238. This is gun Mark IV with the 4-inch flange on the screw-box liner omitted and the jacket and C_1 hoop lengthened corresponding amount. Breech mechanism, Mark IV, modification 1.

14-INCH GUN, MARK IV, MODIFICATION 2 (50 CAL.).

This is gun Mark IV, except that the liner is heavier. Gun No. 100.

14-INCH GUN, MARK V (45 CAL.).

No drawings. This gun is a part alloy and part gun-steel gun consisting of liner, tube, jacket, five hoops, and three locking rings. The screw box liner is screwed into the jacket. The outside of the gun is identical with 14-inch gun, Mark I and its modifications from breech end to front end of slide. The gun interchanges with Mark I. The liner, C_1 , C_2 , and C_3 hoops are of gun steel; the other parts are of alloy steel. The total length of the gun is 642.45 inches and of the tube and liner 628.45 inches. Breech mechanism, Mark II, modification 2, side swing.

16-INCH GUNS.

16-INCH TYPE GUN (45 CAL.).

Drawing 40467. This is a part nickel steel and part gun-steel gun consisting of tube, jacket, seven hoops, and two locking rings. The tube, jacket, and B hoops are of nickel steel, the other parts of gun steel. The gun is hooped to the muzzle. The screw-box liner screws into the C_1 hoop and has a flange 4.5 inches thick of same diameter as the gun. The yoke shoulder is located 35 inches from face of breech. The diameter of the gun over the chamber is 53 inches. The slide surface commences 121 inches from face of breech with a diameter of 48 inches and is 135 inches long, with one key set in on top of gun. The smallest diameter of the chase is 24 inches and the diameter of the muzzle bell is 26 inches. The total length of the gun is 735 inches and of the tube 720 inches. The breech mechanism is 16-inch type. Gun No. 1.

16-INCH GUN, MARK I (45 CAL.).

This gun is a part nickel-steel and part gun-steel gun, consisting of liner, tube, jacket, seven hoops, and four locking rings. The liner, tube, jacket B_2 , B_3 , and D_1 hoops, and locking ring E_1 are of nickel steel; the other parts are of gun steel. The gun is hooped to the muzzle. The shoulder for yoke is located 44.5 inches from face of breech. The diameter of the gun over the chamber is 53.5 inches. The slide surface commences 131 inches from face of breech with a diameter of 49 inches and is 150 inches long, with one key set in on top of gun. The smallest diameter of the chase is 25.3 inches and the muzzle bell is 26.5 inches. The total length of the gun is 736 inches and of tube and liner 720 inches. Drop block breech mechanism.

16-INCH GUN, MARK II (50 CAL.).

The gun is similar to Mark I and consists of liner, tube, jacket, seven hoops, and four locking rings. The liner, tube, jacket B_2 , B_3 , and D_1 hoops, and locking ring E_1 are of nickel steel; the other parts are of gun steel. The gun is hooped to the muzzle. The shoulder for yoke is located 44.5 inches from face of breech. The diameter of the gun over the chamber is 56.5 inches. The slide surface commences 143 inches from face of breech with a diameter of 52 inches and is 159 inches long, with one key set in top of gun. The smallest diameter of the chase is 25.3 inches and the diameter of the muzzle bell is 26.5 inches. The total length of the gun is 816 inches and of the liner and tube 800 inches.

SUMMARY.

AUTOMATIC MACHINE RIFLES.

Mark.	Modification.	Length (cals.).	Breech mechanism.	Remarks.
I				Colt, .30 cal., using rim cartridge. Model of 1898.
I	1			Mark I and 6 mm. Colt modified to use cartridge with a can- nelure. Model of 1906.
6 mm.				Colt.
II				No guns.
II	1			Benét Mercié gun.

1-POUNDER GUNS.

I		40	I	Sponsell.
I		20.0	I	Hotchkiss short, light, Mark I, small case.
I	1	35	I-1	Hotchkiss light, long, Mark II.
II	Exp.	40	II Exp.	Driggs-Shroeder light, Mark I.
II		40	II	Driggs-Shroeder heavy, Mark I.
II	1	40	II-1	Driggs-Shroeder heavy, Mark II.
III		40	III	Hotchkiss heavy, long, Mark I.
IV		50	IV	Driggs-Shroeder heavy, long, Mark II.
V		40	V	Hotchkiss heavy, long, Mark II.
VI		42.5	VI	Maxim-Nordenfelt heavy, automatic, Mark I. Were modified to antiaircraft guns.
VII		30	VII	Maxim-Nordenfelt light, automatic, Mark I. Small case.
VIII		40	VIII	Hotchkiss heavy, Mark III. Semiautomatic.
IX			IX	Maxim-Nordenfelt light, automatic, Mark I.
X		40	V-1	Aeroplane gun.
XI		40	V-1	Line-throwing, smooth-bore gun.
XII		40	IX	Single-forging gun.
XIII		40	V	Do.

3-POUNDER GUNS.

I		40	I	Hotchkiss rapid fire, Mark I.
I	1	40	I	Hotchkiss rapid fire, Mark I. French manufacture.
II		45	II	Driggs-Shroeder rapid fire, Mark I.
III		45	III	Driggs-Shroeder rapid fire, Mark II.
IV		50	IV	Hotchkiss semiautomatic, Mark IV.
IV	1	50	IV	Gun, Mark IV, modified to take sight, Mark X.
V		50	V	Maxim-Nordenfelt semiautomatic, Mark I.
VI		50	VI	Maxim-Nordenfelt semiautomatic, Mark II.
VII		45	VII	Vickers Sons & Maxim semiautomatic, Mark III.
VIII		40	VIII	Hotchkiss-Armstrong.
IX			IX	Nordenfelt rapid fire, Mark I.
X		50	X	Hotchkiss semiautomatic.
X	1	50	X	Similar to Mark X, except for yoke thread and slide cylinder.
X	2	50	X	Similar to Mark X, modification 1, except that yoke is in one piece with jacket.
XI		50	XI	U. S. R. F. G. and P. Co. semiautomatic.
XI	1	50	XI	Similar to Mark XI, except for diameter of chase, and that short locking hoop replaces long locking ring.
XII			XII	Nordenfelt semiautomatic, Mark I.
XIII		40	XIII	Maxim rapid-fire gun, Mark M.
XIV		50	XIV	Driggs-Seabury Ordnance Corporation semiautomatic gun.

6-POUNDER GUNS.

Mark.	Modification.	Length (cals.)	Breech mechanism.	Remarks.
I	.....	40	I.....	Hotchkiss rapid fire, short, Mark I.
I	1	40	II.....	Same as Mark I, but of French manufacture; for saluting only.
I	2	40	I-1.....	French manufacture.
I	3	40	III.....	Hotchkiss-Armstrong rapid fire.
I	4	40	I.....	Gun Mark I retubed with alloy-steel tube.
II	.....	40	I.....	Same as Mark I, except trunnionless and different taper on forward end of jacket.
III	.....	45	I.....	Hotchkiss rapid fire, long Mark I. Similar to Mark II, except for position of sleeve thread and length.
III	1	45	I.....	Mark III retubed with alloy-steel tube.
IV	.....	30	IV.....	1 riggs-Shroeder rapid fire field gun.
IV	1	30	IV-1.....	Same as Mark IV, except has two solid lugs for elevating gear and no strengthening band.
V	.....	30	V.....	Lynch field gun. Same as Mark IV-1, except for breech.
VI	.....	45	VI.....	1 riggs-Shroeder rapid-fire, Mark I.
VI	1	45	VI.....	Mark VI retubed with alloy-steel tube.
VII	.....	45	II.....	Hotchkiss rapid-fire, long Mark II.
VII	1	45	II.....	Same as Mark VII, except for position of sleeve threads.
VII	2	45	II.....	Same as Mark VII, but better material.
VIII	.....	50	VI-1.....	1 riggs-Shroeder rapid-fire, Mark II.
IX	.....	42	VII, VII-1.....	Maxim semiautomatic, Mark II, gun steel.
IX	1	42	VII, VII-1.....	Identical with Mark IX, but is built of nickel steel and has muzzle bell.
IX	2	.....	VII-2.....	Maxim semiautomatic, Mark I. foreign manufacture.
X	.....	42	VIII.....	Nordenfelt rapid-fire gun, Mark II.
XI	.....	50	IX.....	1 riggs-Seabury semiautomatic, Mark I
XI	1	50	IX.....	Rebuilt Mark XI, old jacket but new tube and B 2 hoop.
XII	.....	.....	.....	1 avis nonrecoil gun.

3-INCH GUNS.

I	.....	21	I.....	Field gun. Piston screwed to gun.
I	1	21	I-1.....	Similar to Mark I, but with solid lug for piston rod and two keys on slide surface.
II	.....	50	.....	Built by American Ordnance Co.
II	1	50	II-2.....	Mark II, fitted with balancing sleeve.
II	2	50	II-2.....	Gun No. 101.
III	.....	50	III.....	The locking ring has V threads.
III	1	50	III.....	Same as Mark III, except that locking ring has U. S. threads.
III	2	50	III.....	Same as Mark III-1, but with longer locking ring.
III	3	50	VI.....	Mark III, III-1, and III-2, fitted with longer locking ring and screw-box liner.
III	4	50	VI.....	Nickel steel. Similar to Mark III-3 from breech to front of slide.
III	5	50	VI.....	Mark III-3 with cylindrical nickel-steel liner.
III	6	50	VI.....	Mark III-3 rebuilt, using nickel-steel tube.
III	7	50	VI.....	Mark III-3 with conical nickel-steel liner.
III	8	50	VI.....	Mark III-4 with conical nickel-steel liner.
III	9	50	VI.....	Mark III-6 with conical nickel-steel liner.
IV	.....	23.5	IV.....	Bethlehem Steel Co., landing gun.
V	.....	50	V.....	1 riggs-Seabury semiautomatic nickel-steel gun.
V	1	50	V-2.....	Identical with Mark V, except shoulder for slide stop.
V	2	50	V.....	Mark V, with cylindrical nickel-steel liner.
V	3	50	V, V-2.....	Mark V or V-1, with conical nickel-steel liner.
VI	.....	50	V-1.....	Similar to Mark V, except for length of slide and shoulder for slide stop and length of jacket.
VI	1	50	V.....	Mark VI, with shoulder for slide stop coned.

3-INCH GUNS—Continued.

Mark.	Modification.	Length (cals.).	Breech mechanism.	Remarks.
VII	.....	23	VII.....	Ehrhardt landing gun, manufactured by A. & B. Manufacturing Co.
VII	1	23	VII.....	Mark VII rebuilt, interchangeable with Mark VII.
VIII	.....	50	VIII.....	Proctor S. A. breech mechanism.
IX	.....	23	IX.....	Submarine gun, S. A.
X	.....	50	V-3.....	Antiaircraft gun, S. A.
X	1	50	V-3.....	Mark X, with conical nickel-steel liner.
X	2	50	V-3.....	Mark X, with breech housing in a separate piece.
XI	.....	23.5	XI.....	Bethlehem Steel Co., landing gun.
XII	.....	15	XIII.....	Bethlehem Steel Co., mountain gun.
XIII	.....	23	X.....	Driggs Ordnance Co., boat gun.
XIV	.....	23.5	XII.....	Poole Engineering & Machine Co., boat gun.
XV	.....	24	.....	Davis nonrecoil gun.

4-INCH GUNS.

I	.....	40	I.....	Loose ammunition. All guns converted.
I	1	40	IV.....	Mark I converted to use fixed ammunition.
II	.....	39	II.....	Same as Mark I, except for position of sleeve thread.
III	.....	40	III.....	
III	1	40	III-2.....	Same as Mark III, except for sleeve thread and length of chase hoops.
III	2	40	III-1.....	Same as Mark III-1, except for size of sleeve thread.
III	3	40	III, III-1, and III-2...	Same as Mark III-2, except for position of sleeve thread.
III	4	40	III-2.....	Marks III and III-1, with conical nickel-steel liner.
III	5	40	III-2.....	Marks III-2 and III-3, with conical nickel-steel liner.
IV	.....	40	IV and IV-1.....	
IV	1	40	IV-2.....	Mark IV, with conical nickel-steel liner.
V	.....	40	III, III-1, and III-2...	Similar to Mark IV, but has no faceplate and has different slide and yoke stop.
V	1	40	III-2.....	Mark V, with conical nickel-steel liner except gun No. 83, which has conical gun-steel liner.
VI	.....	40	V, V-1, V-2.....	Same as Mark V, except for breech mechanism.
VI	1	40	V-2.....	Mark VI, with conical nickel-steel liner.
VII	.....	50	VI and VI-1.....	
VII	1	50	VI-1.....	Mark VII, with conical nickel-steel liner.
VIII	.....	50	VII-1.....	Tube and jacket only, gun steel.
IX	.....	50	VIII.....	Tube and jacket only, nickel steel. Rifling one turn in 31.17 calibers and 0.025 inch deep.
IX	1	50	VIII.....	Mark IX, with conical nickel-steel liner. Rifling one turn in 25 calibers and 0.0375 inch deep.
IX	2	50	VIII.....	Mark IX, except chase is heavier. Rifling as in Mark IX-1.
IX	3	50	VIII.....	Mark IX, with short conical nickel-steel liner. Rifling as in Mark IX.
IX	4	50	VIII.....	Mark IX, with rifling deepened to 0.0375 inch.
IX	5	50	VIII.....	Mark IX-2, with rifling deepened to 0.05 inch.
IX	6	50	VIII.....	Marks IX, IX-1, 3, 4, and 8, with conical nickel-steel liner. Rifling one turn in 25 calibers and 0.05 inch deep.
IX	7	50	VIII.....	Marks IX-2 and 5, with conical alloy-steel liner. Rifling one turn in 25 calibers and 0.05 inch deep.
IX	8	50	VIII.....	Mark IX, with rifling deepened to 0.05 inch.
X	.....	50	IX.....	Antiaircraft, semiautomatic gun.

4.7-INCH GUNS.

Mark.	Modification.	Length (cals.).	Breech mechanism.	Remarks.
I		47	I.....	Vickers & Sons, small case.
II		42	II.....	Vickers & Sons, small case.
III		50	III-1.....	Armstrong, large case.
IV				

5-INCH GUNS.

I	1	31	II-2.....	Mark I converted to case gun and trunnions cut off.
II	.....	40	II-1.....	Case.
II	1	40	II-1.....	Same as Mark II, except length of chase and chase hoop and position of sleeve thread.
II	2	40	II-2.....	Same as Mark II-1, except for diameters of jacket and position of sleeve thread.
II	3	40	II and II-1, II-2.....	Same as Mark II-2, but without cylinder in rear thread.
II	4	40	II-1, II-2.....	Same as Mark II-3, but with muzzle bell.
II	5	35	II-2.....	Same as Mark II-4, but with muzzle cut off and new locking hoop.
II	6	40	II-1.....	Mark II-4 modified to fit mount Mark VIII and modification. Smaller breech.
II	7	40	II-2.....	Mark II-2, 3, and 4, with conical nickel-steel liner.
II	8	40	II-2.....	Mark II-6, with conical nickel-steel liner.
III	.....	40	III, III-1, and III-2.....	Case.
III	1	40	III, III-2.....	Mark III, with front end of jacket and locking hoop tapered.
III	2	40	III-2.....	Marks III and III-1, with conical nickel-steel liner.
IV	.....	40	.....	Originally No. 71; since converted to Mark IV-3.
IV	1	40	II-1, II-2.....	Similar to Mark III, but with groove for yoke and different length in rear of slide cylinder. Case.
IV	2	40	II-2.....	Mark IV-1 rebuilt, using nickel-steel tube and hoops.
IV	3	40	II-2.....	Mark IV-1, with conical nickel-steel liner.
IV	4	40	.....	Design for turning down Mark IV-3 to interchange with Mark II-4.
V	.....	50	IV.....	Bag gun, gun steel.
V	1	50	IV-1.....	Mark V, with conical nickel-steel liner hooped to muzzle, with gun steel hoop and nickel-steel locking ring.
V	2	50	IV-1.....	Same as Mark V-1, with special liner.
V	3	50	IV-1.....	Mark V rebuilt, with old jacket and C 1 hoop and new nickel-steel tube, and locking ring and gun steel B 2 hoop. Outside same as Mark V-1 except for position of locking ring.
VI	.....	50	IV, IV-1.....	Bag gun, nickel steel. Uniform twist rifling.
VI	1	50	IV, IV-1.....	Gun steel. Similar to Mark VI except for yoke shoulder and slide cylinder. Increasing twist rifling.
VI	2	50	IV-1.....	Same as Mark VI-1 except with Mark VI chamber.
VII	Type.	51	V type.....	Gun No. 357 now modified to Mark VII, modification 4.
VII	.....	51	V.....	Case, separate ammunition.
VII	1	51	V.....	Mark VII, with conical nickel-steel liner, case.
VII	2	51	VII-1.....	Mark VII converted to bag gun by inserting gas-check seat bushing.
VII	3	51	VII-1.....	Mark VII converted to bag gun by inserting a conical nickel-steel liner, and changing chamber.
VII	4	51	VII-1.....	Mark VII (type) lined and changed to bag gun No. 357 L.
VII	5	51	VII-1.....	Mark VII retubed and converted to bag gun.
VIII	.....	51	VII, VII-2.....	Identical with Mark VII, except is a bag gun.
VIII	1	51	VII-2.....	Marks VIII and IX, with conical nickel-steel liner.
IX	.....	51	VI exp.....	Identical with Mark VIII, except with Mark VII chamber. Case gun, originally No. 450, but gun modified to VIII-1.

6-INCH GUNS.

Mark.	Modification.	Length (cal's.).	Breech mechanism.	Remarks.
No mark		30		Wire wound. Bag gun.
I		30	I	Bag gun.
II	1	30	IV, IV-1	Case. Short breech liners of varying length.
II	2	30		Same as Mark II-1, but with complete cylindrical liner and outside slightly different. Case.
II	3	30	IV-1	Gun Mark II-1, with balancing hoop. Case.
III		30	III	Bag gun.
III	1	35	III	Same as Mark III, with longer tube, jacket, and C 4 hoop.
III	2	40	III	Bag gun.
III	3	30	IV, IV-1	Mark III converted to case gun by inserting chamber liner.
III	4	30	IV, IV-1	Mark III-3, with trunnions removed and threaded for sleeve.
III	5	35	IV, IV-1	Mark III-1, converted to case gun by inserting chamber liner.
III	6	40	IV	Mark III-2, converted to case gun by inserting chamber liner.
III	7			
III	8	40	IV-1	Mark III-2, converted to case gun by inserting complete liner.
III	9	30	IV	Mark III-3, converted to case gun by inserting complete liner.
IV		40	IV	Case. Outside similar to Mark III-2, but trunnionless and threaded for sleeve, and breech hoop lengthened 0.1 inch.
IV	1	40	Fletcher exp.	Similar to Mark IV, but heavier chase and muzzle and different position of thread.
IV	2	40	Dashiell	Mark IV-1, with breech cut off 1.8 inches.
IV	3	40	IV	Similar to Mark IV-1, but different position of thread and bronze sleeve added.
IV	4	40	IV-1	Identical with Mark IV-1, except for raised band near breech, location of thread, and smaller muzzle.
IV	5	40	IV-1	Identical with Mark IV-4, except has muzzle bell.
IV	6			
IV	7	40	Fletcher exp.	Mark IV-4, bored out for loose ammunition and faceplate and trunnion hoop added. Drilled and tapped for pressure gauges, gun No. 154.
IV	8	40	IV-1	Mark IV-4, with muzzle liner and separate muzzle bell.
IV	9	40	IV-1	Mark IV-4, rebuilt with nickel-steel tube and gun-steel locking and chase hoop.
IV	10	40	IV-1	Mark IV-4, with cylindrical nickel-steel liner, 2-step.
IV	11	40	IV-1	Mark IV-4, with cylindrical nickel-steel liner, 1-step.
IV	12	40	IV-1	Mark IV-4, with cylindrical nickel-steel liner.
IV	13	40	IV-1	Mark IV-5, with cylindrical nickel-steel liner.
V		50	V, V-1	Case, Armstrong.
VI	Exp.	45	VI	Bag gun, No. 197.
VI		50	VI	Bag gun.
VI	1	50	VI-1	Mark VI rebuilt with nickel-steel tube and hooped to muzzle.
VI	2	50	VI-1	Mark VI hooped to muzzle and lined with cylindrical nickel-steel liner.
VII		40	VII-1	Bethlehem Steel Co. case. Liner similar to Mark IV-5.
VII	1	40	VII-1	Mark VII, with cylindrical nickel-steel liner.
VIII		50	VI, VI-1	Bag gun.
VIII	1	50	VI, VI-1	Identical with Mark VIII, except for chamber.
VIII	2	50	VI, VI-1	Identical with Mark VIII, but has 36 rifling grooves.
VIII	3	50	VI-1	Marks VIII and VIII-1 and 2, with cylindrical nickel-steel liner and new chamber.
VIII	4	50	VI-1	Marks VIII and VIII-1 and 2, with conical nickel-steel liner and chamber as in Mark VIII-3.
IX		44	IX-1	Bethlehem Steel Co., case.
IX	1	44	IX-1	Mark IX lined with a conical alloy-steel liner.
X		45		Vickers Sons & Maxim Co.
XI		50		Vickers Sons & Maxim Co., wire-wound.
XII		53	X	With jacket reaching to muzzle.

7-INCH GUNS.

Mark.	Modification.	Length (cals.).	Breech mechanism.	Remarks.
I	.....	44	I exp.....	Gun steel, lined with cylindrical gun-steel liner.
II	.....	45	I, I-1, I-2.....	Nickel steel, hooped to muzzle.
II	1	45	I-1 and -2.....	Mark II, with conical nickel-steel liner.
II	2	45	I.....	Gun No. 2, with cylindrical nickel-steel liner.

8-INCH GUNS.

I	.....	30	I.....	Trunnions. Hooped to muzzle.
I	1	30	IV.....	Trunnionless. Not hooped to muzzle.
II	1	30	IV.....	Trunnionless. Hooped to muzzle.
III	Exp.	30	I-1.....	Trunnions. Hooped to muzzle.
III	.....	35	I-1.....	Trunnions. Not hooped to muzzle.
III	1	35	III.....	Outside dimensions over chamber and at muzzle same as Mark III; trunnions interchange with Mark III, but located differently.
III	2	35	III.....	Identical with Mark III-1, except measurements of tube.
III	3	40	III.....	Trunnions interchange with Mark III, but located differently.
III	4	35	III.....	Mark III, with ring on breech and tapered as on Mark III-1.
III	5	35	III-1.....	Mark III, with cylindrical nickel-steel liner and trunnion hoop removed, and gun threaded for slide.
IV	.....	35	III.....	Mark III-1, with trunnion hoop removed and gun threaded for sleeve.
IV	1	35	III.....	Mark IV, shortened 0.66 inch in rear of thread.
IV	2	35	III.....	Similar to Mark IV, except longer jacket and for position of thread.
IV	3	35	III, III-1.....	Identical with Mark IV, except has two hoops in rear of locking hoop.
IV	4	35	III.....	Identical with Mark IV, but has breech turned down for yoke.
IV	5	35	III.....	Identical with Mark IV-4, but for powder chamber.
IV	6	35	III.....	Nickel steel. Trunnionless. Screw-box liner.
IV	7	35	III.....	Similar to Mark IV-6, except for position of yoke.
IV	8	35	III.....	Mark IV-5, rebuilt and hooped to muzzle. No change in breech.
IV	9	35	III-1.....	Mark IV, with cylindrical nickel-steel liner.
IV	10	23	III.....	Gun No. 62 cut off for experimental purposes.
V	.....	40	V.....	Not hooped to muzzle.
V	1	45	V.....	Mark V, lengthened by inserting heavy nickel-steel liner and hooping muzzle.
V	2	45	V-1.....	Identical with Mark V-1, except for gas-check seat.
VI	.....	45	V.....	Hooped to muzzle.
VI	1	45	V.....	Mark VI, with cylindrical nickel-steel liner.
VI	2	45	VI.....	Mark VI, with different gas-check seat.
VI	3	45	V.....	Mark VI, with conical nickel-steel liner.
VI	4	45	VI.....	Mark VI-2, with conical nickel-steel liner.
VI	5	45	V.....	Mark VI-3, with special B 2 hoop. Gun No. 125.
VII	.....	23	VII.....	Howitzer mounted on 4-inch carriage.

10-INCH GUNS.

Mark.	Modification.	Length (cals.).	Breech mechanism.	Remarks.
		18	8-inch B. M. IV.....	Aerial torpedo gun, experimental.
I		31	I.....	Hooped to muzzle. Attached to carriage by straps.
I	1	31	I.....	Identical with Mark I, except small variations in hoops.
I	2	35	I.....	Hooped to muzzle. Strap recesses same as Mark I.
I	3	35	I.....	Same as Mark I-2, but different hooping forward of straps.
II		30	IV, V, V-1.....	Hooped to muzzle. Attached to carriage by straps.
II	1	30	V.....	Identical with Mark II, except at breech.
II	2	30	V.....	Converted 8-inch Hurst gun. Is the same as Mark II for 164.5 inches from breech.
III		40	VI.....	Hooped to muzzle. Screw-box liner.
III	1	40	VI.....	Identical with Mark III, except for chamber.
III	2	40	VI.....	Mark III and III-1, with conical nickel-steel liner.

12-INCH GUNS.

I		35	V-1.....	Hooped from muzzle to 6 inches from breech. Strap attachment.
I	1	35	III-1.....	Identical with Mark I, except hooped to breech.
I	2	35	IV.....	Mark I-1 with bands on C 3 hoop cut back to balance guns in mount Mark III-1.
II		35	V.....	Outside is identical with Mark I-1 for 214 inches from breech. Not hooped to muzzle.
II	1	35	V.....	Mark II, with cylindrical nickel-steel liner, different chamber, and locking ring added.
II	2	35	V.....	Mark II rebuilt. Outside dimensions as in Mark II-1.
III		40	VI.....	Not hooped to muzzle. Slides in carriage in recoil.
III	1	40	VI.....	Same as Mark III, but with smaller chamber.
III	2	40	VI.....	Same as Mark III-1, but only one long chase hoop.
III	3	40	VI, VI-1, and VI-2.....	Mark III and Mark III-1 and 2 lined with cylindrical nickel-steel liner hooped to muzzle and locking ring added.
IV		40	VI.....	Outside identical with Mark III for 234 inches from breech, but hooped to muzzle.
IV	1	40	VI-2.....	Mark IV lined with cylindrical nickel-steel liner.
V		45	VI, VI-1, and VII.....	Outside identical with Mark III for 234 inches, but hooped to muzzle.
V	1	45	VI-1 and 2.....	Mark V, with cylindrical nickel-steel liner and different chamber.
V	2	45	VI-2.....	Mark V, with conical nickel-steel liner and Mark V-1 chamber.
V	3	45	IX.....	Mark V-1 changed to suit new breech mechanism.
V	4	45	X.....	Do.
V	5	45	VI-2.....	Mark V, with conical nickel-steel liner, and small chamber.
V	6	45	X.....	Mark V-4 rebuilt with small chamber.
V	7	45	VI-2.....	Mark V or V Mods. 1, 2, or 5 rebuilt with small chamber.
VI		45	VII.....	Outside identical with Mark III for 198 inches, but hooped to muzzle.
VI	1	45	VI-2.....	Mark VI, with cylindrical nickel-steel liner.
VI	2	45	VI-2.....	Mark VI, with conical nickel-steel liner.
VI	3	45	VI-2.....	Mark VI, with conical nickel-steel liner and small chamber.
VII		50	VIII.....	Built up from cylindrical liner, inserted without shrinkage.
VII	1	50	VIII.....	Mark VII (type), with conical nickel-steel liner and changed hoops.
VII	2	50	VIII.....	Mark VII, with conical nickel-steel liner and new locking hoop D 3, and locking ring E 1.
VII	3	50	IX-1.....	Outside and inside, except gas-check seat, identical with Mark VII-2, but no liner, and different designs.

13-INCH GUNS.

Mark.	Modification.	Length (cals.).	Breech mechanism.	Remarks.
I	.....	35	I.....	Not hooped to muzzle. Strap attachment.
I	1	35	I.....	Mark I rebuilt, but same dimensions, except chamber.
I	2	35	.....	Marks I, I-1, and II-1, with cylindrical nickel-steel liner.
II	.....	35	II, II-1.....	Not hooped to muzzle. Yoke ring on gun.
II	1	35	II-1.....	Outside like Mark I and inside like Mark II-2.
II	2	35	II-1.....	Similar to Mark II, but with different chamber.
II	3	35	II-1.....	Marks II and II-2, with the Mark I-2 liner.

14-INCH GUNS.

I	.....	45	I.....	Part nickel and part gun steel.
I	1	45	II, II-1.....	Mark I, with cuttings in breech different.
I	2	45	III.....	Part nickel and part gun steel. Mark I, with cuttings in breech different.
I	3	45	III, III-1.....	Similar to Mark I-2, but D 3 hoop replaced by longer hoop and locking rings added.
I	4	45	I.....	Mark I lined with conical liner and new D 3 hoop and locking rings.
I	5	45	II-1.....	Mark I-1 lined with conical liner and new D 3 hoop and locking rings.
I	6	45	III-1.....	Mark I-2 lined with conical liner and new D 3 hoop and locking rings, and Mark I-3 with conical liner.
II	.....	45	II Exp.....	Originally type gun nickel steel similar to Mark I.
II	1	45	II (type).....	Mark II, conically lined and with new D 3 hoop and locking rings.
III	.....	45	III, III-1.....	Part nickel and part gun steel.
III	1	45	III-1.....	Mark I, with conical nickel-steel liner.
IV	.....	50	IV.....	Nickel-steel gun, conical liner inserted after assembly.
IV	1	50	IV-1.....	Mark IV, except no screw-box liner flange, and jacket and C 1 hoop 4 inches longer.
IV	2	50	IV.....	Mark IV, with slightly heavier liner.

16-INCH GUNS.

Type	.....	45	Type.....	Part nickel and part gun steel.
I	.....	45	I.....	Heavier than type gun. Conically lined.
II		50	I-1.....	Part nickel and part gun steel. Conically lined.

RALPH EARLE, *Chief of Bureau.*

NAVY DEPARTMENT,
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