SERVICE HANDBOOK

OF THE

6-INCH TRENCH MORTAR

MARK I

AMI DEPOT 1969

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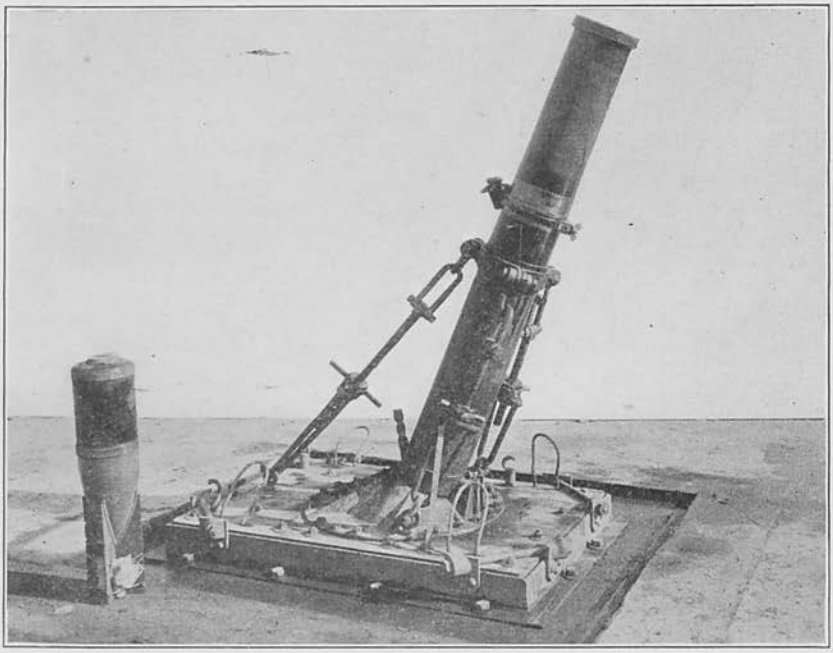
The following publication, entitled "Service Handbook of the 6-inch Trench Mortar, Mark I," is issued for the information and guidance of all concerned.

[062.1, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

JOHN J. PERSHING,
General of the Armies,
Chief of Staff.

OFFICIAL:
P. C. HARRIS,
The Adjutant General.



6-INCH TRENCH MORTAR MARK I

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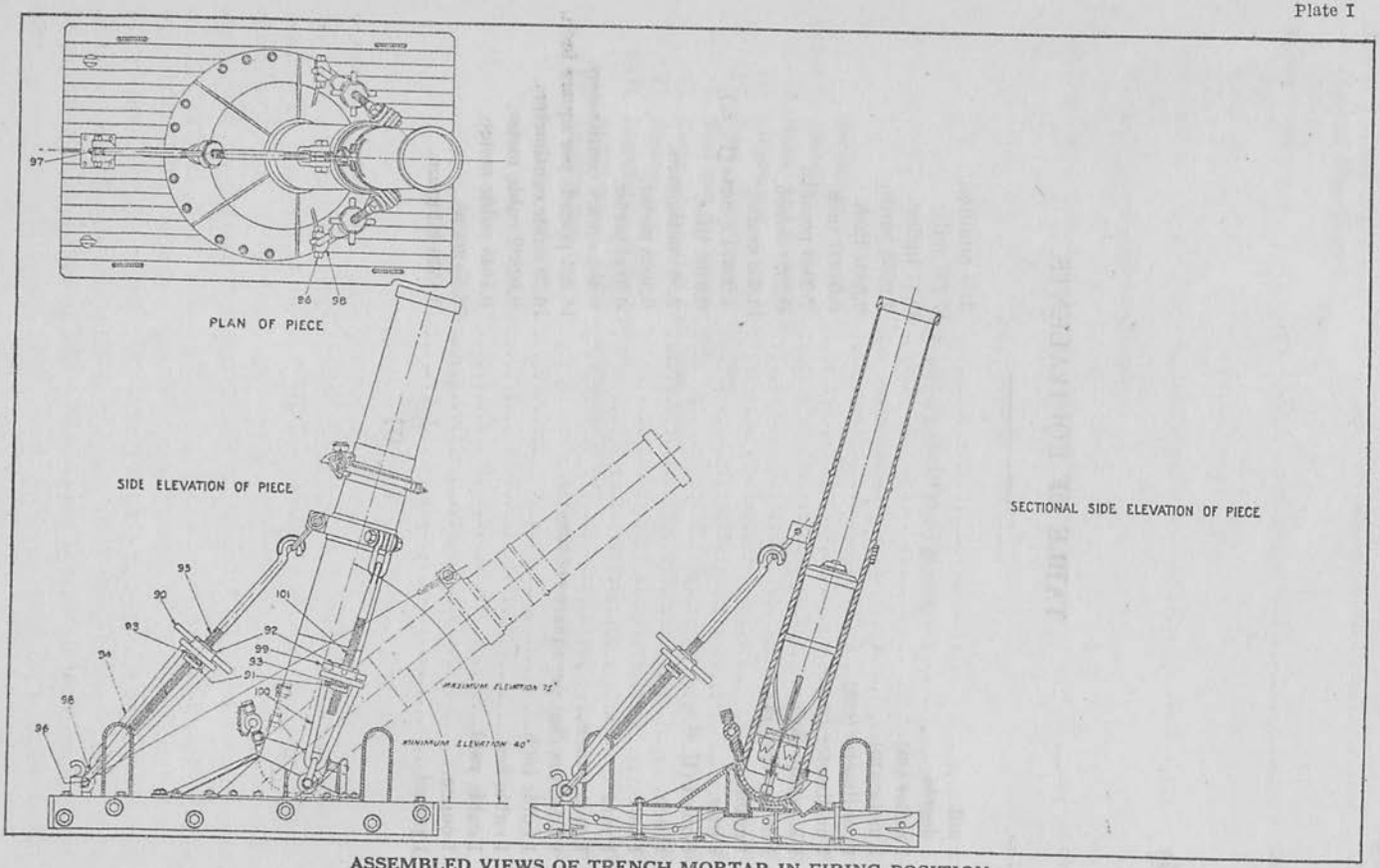
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TABLE OF EQUIVALENTS.

1 mil	3.37 minutes.
1 degree	17.777 mils.
1 meter (m)	39.37 inches.
1 meter (m)	1.0936 yards.
1 centimeter (cm)	0.3937 inch.
1 millimeter (mm)	0.03937 inch.
1 kilogram (kg)	2.2046 pounds.
1 dekagram (dk)	0.3527 ounce.
1 gram	15.432 grains.
1 liter	1.05671 quarts (U. S.).
1 quart (U. S.)	0.9463 liter.
1 inch	2.54 centimeters.
1 foot	0.3048 meter.
1 yard	0.9144 meter.
1 square inch	6.452 square centimeters.
1 kilogram (kg) per square centimeter	14.223 pounds per square inch.
1 cubic inch	16.39 cubic centimeters.
1 cubic foot	0.02832 cubic meter.
1 cubic yard	0.7645 cubic meter.
1 ounce	28.35 grams.
1 pound	0.4536 kilogram.



ASSEMBLED VIEWS OF TRENCH MORTAR IN FIRING POSITION.

6-INCH TRENCH MORTAR, MARK I.

GENERAL DESCRIPTION.

The 6-inch trench mortar, Mark I, is a short-range gun for high-angle fire, a type developed in the operations of trench warfare. Simplicity of design and lightness characterize the components of the piece, no part being of greater weight than will permit its removal by the gun crew without special appliances. The principle of auto-ignition is used, the propelling charge being automatically ignited by the impact of the shell with a firing pin at the end of its travel down the bore. The mortar is very effective against wire entanglements, machine-gun shelters, strong points, and other similar objectives. It is seldom used against personnel. The mortar mounted in firing position, and a sectional view with a projectile in the bore are shown on page 8.

The piece consists of:

Barrel with clinometer.
The platform, base, guys, and fittings.
The subbase.

The muzzle-loading barrel is made in one piece and has a smooth bore. It is furnished internally with an axial anvil or firing pin and externally with a guide stud and misfire plug, which permits of the introduction of a small powder charge with fuze for igniting the propelling charge in case of misfire.

The breech end of the barrel is closed and rests in a machined hemispherical socket in the base supported upon a wooden platform to which the barrel is stayed by three adjustable guys. The elevation, which varies from a minimum of 40° to a maximum of 75°, and lateral deviation is made by altering the length of the guys, which are adjustable by means of handwheels. These adjustments are determined by the setting of a clinometer attached to the barrel. A subbase is furnished with the mortar, made up of timbers and a rectangular iron frame, in which the platform fits. The subbase may in some cases be dispensed with, as shown on page 34.

The projectile is a cast-iron fragmentation shell with vanes, weighing approximately 53 pounds loaded, and containing a bursting charge of approximately 11 pounds of high explosive. The shell is fitted with a point-detonating fuze. The propelling charge consists of an ignition cartridge with clip and charges of sporting ballistite

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contained in silk bags held in place between the vanes by a propelling-bag holder. The range can be varied by changing either the elevation of the mortar or the weight of the propelling charge.

Weights, ballistics, etc.

Weight of barrel	pounds..	162
Weight of base	do....	75
Weight of platform	do....	160
Weight of subbase	do....	530
Weight of shell, loaded (approximately)	do....	53
Weight of shell box	do....	10
Weight of mortar, with platoon and spare parts boxes (approximately)	do....	1,500
Range, minimum	meters..	200
Range, maximum	do....	1,700

BARREL.

The barrel is made from a steel plate by the "cupping process" and is 57 inches long, bored to a diameter of 6.01 inches and flared slightly at the muzzle for the easy insertion of the projectile. The breech end, which is hemispherical, is machined to fit a socket in the base.

Near the middle of the barrel two rings are turned on the exterior which form shoulders approximately 2 inches apart, and between which is placed the barrel band. In the lower ring three equidistant notches are cut and these receive the lugs formed on the band to prevent it from turning.

At a point approximately $5\frac{5}{8}$ inches from the upper ring mentioned in the above paragraph and toward the muzzle another ring $\frac{3}{8}$ inch wide and about $7\frac{3}{16}$ inches in diameter is turned. This ring fits the groove in the quadrant of the clinometer and is the guide for the lateral adjustment of this instrument. Adjacent to the clinometer ring, graduations are engraved on the barrel on the right and left of a zero line, and are used for the traverse setting of the clinometer.

Two longitudinal notches are cut on the exterior of the muzzle, one on top in prolongation with the zero line and the other diametrically opposite on the bottom. Beginning at these notches and as a continuation of them, two white lines are painted extending the length of the barrel. These lines are used in sighting the mortar.[1]

The breech end of the barrel is pierced by three tapped holes. Diametrically opposite the zero line mentioned above with its axis passing through the center of the hemispherical breech and at right angles to the axis of the barrel, a hole is tapped in the barrel

[1] On the first 500 mortars only the one notch on the top of the muzzle was provided for sighting purposes. The additional notch and the white lines appear on all subsequent mortars.

to receive a guide stud. Upon this guide stud and the hemispherical breech depends the motion of the gun.

Diametrically opposite the guide-stud hole an inclined boss is made by building up metal by welding. A hole is drilled through this boss at approximately 34° with the barrel axis. The boss is then counterbored and tapped to take the misfire-plug adapter.

The third of these holes is drilled and tapped through the center of the breech end; its center line coinciding with the axis of the barrel. Into this hole is screwed the anvil or firing pin.

BARREL BAND.

The barrel band is used for attaching the three supporting guys to the barrel. It consists of three drop forgings which are machined to fit the barrel diameter between the two rings mentioned above. A small lug is swaged out on each of these segments and engages one of the three notches cut in the lower ring. These lugs prevent the band from sliding around the barrel. The segments are clamped together and to the barrel by means of bolts with washers and spacing bushings. The spacing bushings allow the segments to be drawn up without binding the clevices to which the guys are attached.

ANVIL OR FIRING PIN.

The anvil is a case-hardened steel pin which is screwed into the breech at the center and projects into the interior of the barrel. A copper washer between the shoulder of this pin and a spot face in the breech forms a gas-tight seal. By means of the hexagonal section, over which the anvil wrench fits, the anvil is screwed into place and tightened.

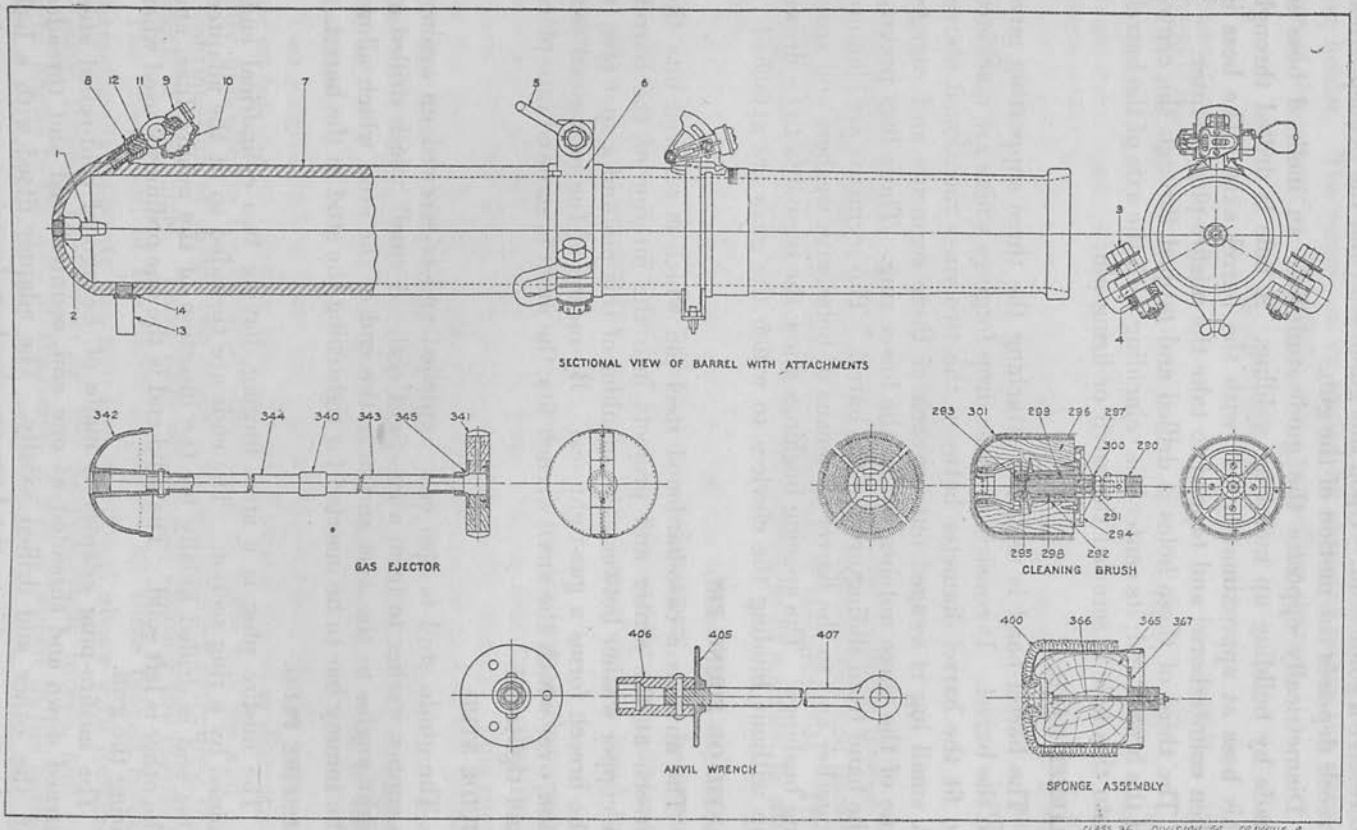
GUIDE STUD.

The guide stud is also case hardened and is screwed up against a copper washer to form a gas-tight seal. A small hole is drilled at right angles to the axis and near the end of the stud which allows the tommy bar to be inserted for tightening the stud in the barrel.

MISFIRE PLUG.

The misfire plug is a steel forging, having two cylindrical ends joined by a ring section. The ends are threaded to fit the adapter. One end is drilled axially for the insertion of the misfire fuze, and the other is left solid. The solid end is the one ordinarily used when firing the gun.

The misfire-plug adapter is made of hexagonal cold-rolled steel turned down and threaded at one end, counterbored and threaded at the other and drilled axially. The adapter fitted with a lock washer is screwed into the boss on the barrel, and once screwed in is never removed except for replacement if damaged.



SECTIONAL VIEWS OF BARREL AND ACCESSORIES.

The misfire-plug cap is made of hexagonal steel, bored and threaded to fit the threaded ends of the misfire plug. This cap is used to close the hole and also to protect the threads of the end of the misfire plug. It is attached to the misfire plug by means of rings and a chain.

(The personnel is directed to use the following identification numbers, nomenclature, piece marks, and drawing numbers when referring to parts of the BARREL in reports, correspondence, etc.)

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.	Spares per battery.	Where spares are carried.
	II	.....	.....	1 barrel, complete:			
				1 anvil, complete—			
1	II & VI	54-6-7	7A....	1 anvil	12	12	T. B.
2	II	54-6-7	7C....	1 washer, anvil	12	24	T. B.
		54-6-29	.....	1 band, barrel, complete—			
		54-6-29	.....	3 bolts, 0.75 by 3.75, complete—			
3	II	54-6-29	29D...	1 bolt, 0.75 by 3.75	36	.....	.....
		54-6-29	29E...	1 nut, crown, 0.75	36	.....	.....
		54-6-29	29G...	1 pin, split, 0.156($\frac{5}{32}$) by 1.5	36	144	T. B.
		54-6-29	29F...	2 washers, 0.75	192A	.....	.....
4	II	54-6-29	29B...	6 bushings	72	.....	.....
5	II	54-6-29	29A...	3 clevises	36	.....	.....
6	II	54-6-29	29C...	3 segments, band	36	.....	.....
7	II	54-6-36	36A...	1 barrel	12	.....	.....
	VI	.....	.....	1 plug, misfire, complete—			
				1 adapter, misfire plug, complete—			
8	II	54-6-7	7E....	1 adapter, misfire plug	12	12	T. B.
		54-6-7	7F....	1 washer, lock, 0.75	12	12	T. B.
				1 cap, misfire plug, complete—			
9	II	54-6-7	7H....	1 cap, misfire plug	12	12	T. B.
10	II	54-6-7	7K....	1 chain, misfire plug	12	12	.....
				1 plug, misfire, complete—			
11	II	54-6-7	7G....	1 plug, misfire	12	12	T. B.
12	II	54-6-7	7L....	1 washer, misfire plug	12	72	T. B.
				1 stud, guide, complete—			
13	II & VI	54-6-7	7B....	1 stud, guide	12	12	T. B.
14	II	54-6-7	7M....	1 washer, guide stud	12	24	T. B.

T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.

CLINOMETER.

The clinometer is the sighting instrument of the gun. Its action depends upon the leveling of a pair of cross bubbles in a manner somewhat similar to leveling the bubbles on the upper plate of a transit. The clinometer consists of a quadrant carrying a hinged bubble carrier containing longitudinal and traverse bubbles, and provided with a clamping bolt and wing nut. It also has a steel clamping band and clamping screw for attachment to the barrel.

The quadrant and bubble carrier are bronze castings so designed as to give the maximum air space and circulation between the barrel and the bubbles.[2] The bubble carrier straddles the quadrant and hinges about a bolt which passes through the lower ends of the two straddling arms of the bubble carrier and through the quadrant. The quadrant is graduated with an elevation scale and has an indicating line by which traverse setting can be made. An indicating

[2] The clinometers furnished with the first 500 mortars were deficient in the matter of air circulation between the bubbles and the barrel. The present improved clinometer is furnished with all subsequent mortars.

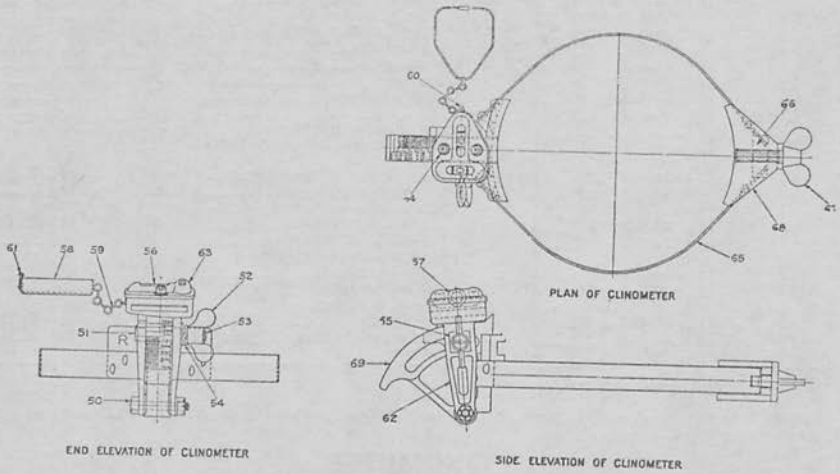
line is also scribed on the bubble carrier for elevation settings. These settings can be held by tightening the wing nut on the clamping bolt.

The clamping band is made of two steel strips each of which is riveted at one end to the quadrant. The opposite end of one is permanently fastened to a clamping nut. The loose end of the other can be hooked to the clamping nut thus forming a continuous band.

A clamping thumbscrew passing through a clamping screw seat and screwed into the clamping nut forms the means of fixing the clinometer in any position around the barrel.

The bubbles are ordinary curved spirit vials incased in a rubber tube, which has a section cut out to show the air bubble. The bubbles have two luminous bands painted equidistant from the leveling center.

Plate III.



CLINOMETER.

A bubble cover made of sheet brass is used to hold the bubbles in place and is fastened to the top of the bubble carrier by two screws.

A bubble-cover cap, also made of sheet brass, is attached to the bubble carrier by a chain.

GRADUATIONS.

The first lot of 500 mortars with their clinometers were graduated in degrees. All other clinometers are to be graduated in mils, in conformity with the American Artillery Practice.

METHOD OF USING THE CLINOMETER.

The clinometer is placed around the barrel, with the guide groove in the quadrant fitting over the ring on the barrel and the free end of the one clamping band hooked to the clamping nut on the other. The thumbscrew is then tightened, causing the clamping band to grip the barrel.

To lay for elevation.—Release the wing nut of the clamping bolt. Set the indicating line on the bubble carrier to the desired elevation on the elevation scale engraved on the quadrant. Tighten the wing nut.

To lay for traverse.—Release the thumbscrew of the clamping band. Move the clinometer around the barrel until the indicating line on the quadrant is set to the desired traverse on the traverse scale engraved on the barrel. Tighten the thumbscrew.

The guys are then adjusted so that both bubbles are exactly level. The barrel then points in the desired direction.

(The personnel is directed to use the following identification numbers, nomenclature, piece marks, and drawing numbers when referring to parts of the CLINOMETER in reports, correspondence, etc.)

Identification No.	Plate No.	Drawing No.	Piece-mark.	Name of part.	Quantity per one battery.	Spares per battery.	Where spares are carried.
	III & VI	51-6-31	.....	1 clinometer, complete:			
				1 bolt, 0.25 x 1.5, complete—			
50	III	51-6-32	32B...	1 bolt, 0.25 x 1.5	12	6	P. B.
		51-6-32	32D...	1 nut, crown, 0.25	12	6	P. B.
		51-6-32	32E...	1 pin, split, 0.062 ($\frac{1}{16}$) x 0.75	12	6	P. B.
		51-6-32	32C...	1 washer, 0.25	56B	6	P. B.
				1 bolt, clamping, square head, 0.312 ($\frac{5}{16}$) x 1.687 ($1\frac{11}{16}$), complete—			
51	III	51-6-33	33D...	1 bolt, clamping, square head, 0.312 ($\frac{5}{16}$) x 1.687 ($1\frac{11}{16}$).	12	6	P. B.
52	III	51-6-33	33A...	1 nut, wing, bubble carrier	12	6	P. B.
53	III	51-6-33	33B...	1 screw, thumb, wing nut	12	6	P. B.
54	III	51-6-33	33P...	1 washer, spring	12	6	P. B.
55	III	51-6-33	33C...	1 washer, wing nut	12	6	P. B.
				1 carrier, bubble, complete—			
				2 bubbles, spirit, complete—			
56	III	51-6-32	32L...	1 bubble, spirit	24	48	T. B. P. B.
57	III	51-6-32	32N...	1 tube, buffer	24	48	T. B. P. B.
		51-6-33	.....	1 cap, bubble cover, complete—			
58	III	51-6-33	33K...	1 cap, bubble cover	12	6	P. B.
				1 chain, jack, complete—			
59	III	51-6-33	33M...	1 chain, jack	12	6	P. B.
		51-6-33	33H...	1 link	12	6	P. B.
60	III	51-6-32	32H...	1 screw, fillister head, 0.086 x 0.187 ($\frac{3}{16}$).	12	6	P. B.
		51-6-33	33L...	1 rivet, round head, 0.062 ($\frac{1}{16}$) x 0.125. 33N to 33K.	12	6	P. B.
61	III	51-6-33	33N...	1 spring	12	6	P. B.
62	III	51-6-33	32A...	1 carrier, bubble	12	6	P. B.
				1 cover, bubble, complete—			
63	III	51-6-32	32M...	1 cover, bubble	12	6	P. B.
				2 screws, fillister head, 0.190 x 0.531 ($\frac{1}{4}\frac{7}{2}$), complete—			
64	III	51-6-32	32F...	1 screw, fillister head, 0.190 x 0.531 ($\frac{1}{4}\frac{7}{2}$).	24	12	P. B.
		51-6-32	32G...	1 washer, lock (for 0.190 screw).	24	12	P. B.
				1 quadrant—			
		51-6-32	.....	2 bands, clamping, complete—			
65	III	51-6-32	32P...	1 band, clamping	24	12	P. B.
		51-6-32	32S...	2 rivets, button head, 0.125 x 0.312 ($\frac{5}{16}$).	48	24	P. B.
		51-6-32	32Q...	2 rivets, round head, 0.187 ($\frac{3}{16}$) x 0.875. 32P to 32K.	24	12	P. B.
		51-6-32	32R...	2 rivets, round head, 0.187 ($\frac{3}{16}$) x 0.5. 32P to 32K.	24	12	P. B.
				1 seat, clamping screw, complete—			
66	III	51-6-33	33G...	1 nut, clamping	12	6	P. B.
67	III	51-6-33	33F...	1 screw, thumb	12	6	P. B.
68	III	51-6-33	33E...	1 seat, clamping screw	12	6	P. B.
69	III	51-6-32	32K...	1 quadrant	12	6	P. B.

T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.

GUYS.

ELEVATING GUY.

The elevating guy consists of a hairpin link, the end of which is closed by a plate. This plate carries the elevating nut. A handwheel is fastened integrally with the nut and a hook screw, the shank of which is threaded, is screwed into the nut and forms the means of quickly attaching the guy to the barrel by hooking to a clevis on the barrel band. The lower end of the hairpin is attached to an eyebolt on the platform by a shackle.

TRAVERSING GUYS.

The traversing guys are constructed similarly to, but shorter than, the elevating guys. They are attached to bolts passing through the steel base and into the platform.

NOTE.—*On the first 500 mortars, in place of the hook screw described above, a straight screw with a clevis at its upper end was furnished, All subsequent mortars are supplied with the improved hook-screw guys.*

(The personnel is directed to use the following identification numbers, nomenclature, piece marks, and drawing numbers when referring to parts of the GUYS in reports, correspondence, etc.)

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.	Spares per battery.	Where spares are carried.
	I	54-6- 9	.....	2 guys, elevating, complete:			
				1 handle, elevating, and nut, complete—			
90	I	54-6- 9	9D....	1 handle, elevating	24	3	P. B.
91	I	54-6-11	11A...	1 nut, elevating	72C	3	P. B.
92	I	54-6-11	11B...	1 nut, lock	72D	3	P. B.
93	I	54-6-11	11C....	1 washer, spring	72E	3	P. B.
94	I	54-6- 9	.....	1 link, hairpin, complete—			
		54-6- 9	9B....	1 hairpin	24	3	P. B.
		54-6- 9	9A....	1 plate, hairpin	24	3	P. B.
95	I	54-6- 9	9C.....	1 screw, elevating	24	3	P. B.
				1 shackle, lower, complete—			
				1 bolt, 0.625 by 3.062 ($3\frac{1}{16}$), complete—			
96	I	54-6-11	11E...	1 bolt, 0.625 by 3.062 ($3\frac{1}{16}$)	72F	3	P. B.
		54-6-11	11F...	1 nut, 0.625	72G	3	P. B.
97	I	54-6-11	11G...	1 bushing	72H	3	P. B.
98	I	54-6-11	11D...	1 shackle, lower	72K	3	P. B.
	I	54-6-10	.....	4 guys, traversing, complete:			
				1 handwheel, traversing, and nut, complete—			
99	I	54-6-10	10D...	1 handwheel, traversing	48	6	P. B.
91	I	54-6-11	11A...	1 nut, elevating	C	6	P. B.
92	I	54-6-11	11B...	1 nut, lock	D	6	P. B.
93	I	54-6-11	11C....	1 washer, spring	E	6	P. B.
100	I	54-6-10	.....	1 link, hairpin, complete—			
		54-6-10	10B...	1 hairpin	48	6	P. B.
		54-6-10	10A...	1 plate, hairpin	48	6	P. B.
101	I	54-6-10	10C....	1 screw, traversing	48	6	P. B.
				1 shackle, lower, complete—			
				1 bolt, 0.625 by 3.062 ($3\frac{1}{16}$), complete—			
96	I	54-6-11	11E...	1 bolt, 0.625 by 3.062 ($3\frac{1}{16}$)	F	6	P. B.
		54-6-11	11F...	1 nut, 0.625	G	6	P. B.
97	I	54-6-11	11G...	1 bushing	H	6	P. B.
98	I	54-6-11	11D...	1 shackle, lower	K	6	P. B.

T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.

BASE.

The base is a steel casting having a machined hemisperical socket connected to a supporting flange by a hollow truncated cone. The hollow cone is reinforced by ribs. The hemispherical socket is also supported by two hollow cylinders, the shorter one resting on a plate in the platform and the longer one machined to fit a shoulder on this plate. This longer hollow cylinder helps to take up the recoil of the gun. The base is fixed to the platform by bolts passing through the supporting flange.

Two guides are cast integrally with the base between which the guide stud moves. The interior surfaces of the guides are machined.

PLATFORM.

The platform, rectangular in shape, is made by joining with cabinet joints thin strips of oak and bolting them together. The grain of the oak runs lengthwise, giving it maximum strength. A circle of bolt holes, in which bolts are placed, fasten the cast-steel base to the platform. Centrally with this circle a steel plate is set into the platform and bolted to it with eight carriage bolts. This platform plate engages the longer hollow cylinder of the cast-steel base and helps to take up the recoil.

Four wire-rope handles are passed through the platform and fastened on the underside. These handles are used for carrying the platform. Special hook bolts provide a method of fastening the guys during the transportation of the platform and base. An eye-bolt with plate sunk into the platform forms the anchorage for the elevating guy, and two similar eyebolts, passed through the flange of the base and the platform, form the anchorage for the traversing guys.

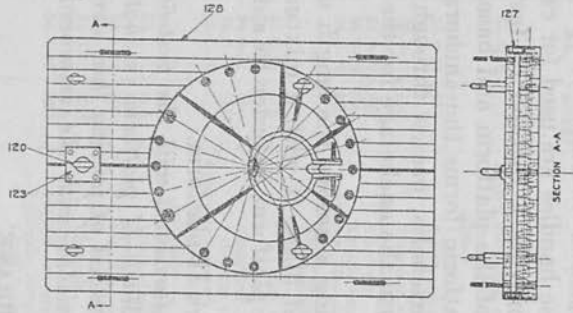
A sighting line, made by cutting a groove the length of the platform and on the center line, and filling it with a mixture of white lead and putty, is added to the platform in order to aid in setting up the mortar for firing.

This platform is known as Mark II platform.

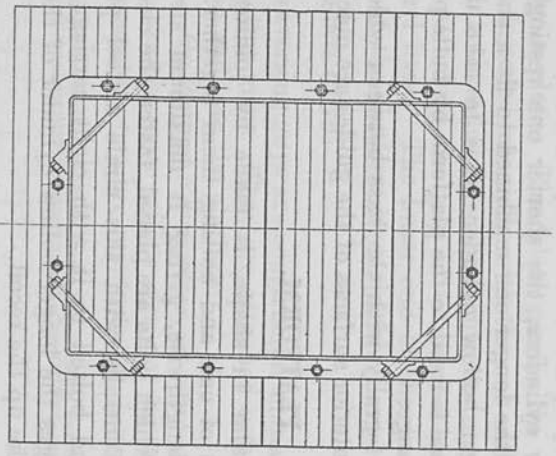
NOTE.—*Mark I platform was furnished with the first 500 mortars. This platform differs from the Mark II platform in that four large timbers are used instead of the method of joining thin strips together. All subsequent mortars are furnished with the improved Mark II platform.*

SUBBASE.

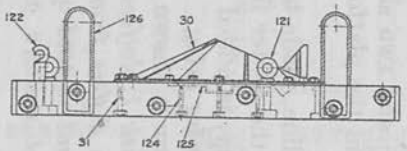
The subbase, rectangular in shape, is made up of eight timbers. Each of these timbers is built up of thin strips fitted together with a cabinet joint and bolted through, in the same manner as Mark II



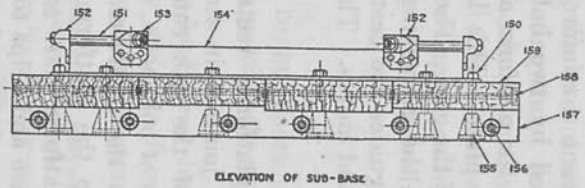
PLAN AND END ELEVATION OF PLATFORM AND BASE



PLAN OF SUB-BASE



ELEVATION OF PLATFORM AND BASE



ELEVATION OF SUB-BASE

CLASS 36 DIVISION 54 DRAWING 7

BASE, PLATFORM, AND SUBBASE.

platform. Four of the timbers are fitted with special socket nuts and form the lower layer of the subbase. The other four timbers run crosswise to the lower four, and have holes drilled through them corresponding to the location of the socket nuts. Rectangular sections are cut out of the adjacent surfaces of the two layers so that a system of interlocking is accomplished. This interlocking helps to take up the shock and also facilitate putting the base together.

An angle-iron frame, rectangular in shape, when placed on top of the timbers, forms a pocket into which the platform fits. Holes are drilled in the frame corresponding to those in the upper layer of timbers. Bolts passed through these holes and those in the upper timbers, are screwed into the socket nuts of the lower timbers, thus fastening the whole subbase together. Near the corners of the angle-iron frame, forged steel brackets are riveted. Through these brackets, and just high enough to clear the platform when it is placed inside of the frame, four retaining bolts are passed. These retaining bolts prevent the platform from jumping out of the frame when firing.

This subbase is known as the Mark II subbase.

NOTE.—*Mark I subbase which was furnished with the first 500 mortars differs from the Mark II subbase in that each of the eight timbers is made in one piece and interlocking pads one-half inch thick are screwed to each timber. All subsequent mortars are furnished with the improved Mark II subbase.*

(The personnel is directed to use the following identification numbers, nomenclature, piece marks, and drawing numbers when referring to parts of the BASE, PLATFORM, and SUBBASE in reports, correspondence, etc.)

BASE.

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.	Spares per battery.	Where spares are carried.
	IV	.....	.....	1 base, complete:			
30	IV	54-6-5	5A....	1 base.....	12	.....	
				18 bolts, 0.5 x 4, complete—			
31	IV & VI	54-6-5	5B....	1 bolt, 0.5 x 4.....	216	24	T. B.
		54-6-5	5C....	1 nut, crown, 0.5.....	216	24	T. B.
		54-6-5	5E....	1 pin, split, 0.125 x 1.25.....	216	.....	
		54-6-5	5D....	1 washer, 0.5.....	216	48	T. B.

T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.

PLATFORM.

Identification No:	Plate No:	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.	Spares per battery.	Where spares are carried.
	IV	.....	.....	2 platforms, complete:			
				1 bolt, eye, elevating guy, complete—			
120	IV	51-6-11	11H...	1 bolt, eye, elevating guy	24	.....	
		54-6-11	11K...	1 nut, 0.75	216L	.....	
		54-6-11	11L...	1 washer, 0.75	A	.....	
				2 bolts; eye; traversing guy; complete—			
121	IV	51-6-11	11M...	1 bolt, eye, traversing, guy	48	.....	
		54-6-11	11N...	1 nut, 0.75	L	.....	
		54-6-11	11P...	1 washer, 0.75	A	.....	
				2 bolts, hook, complete—			
122	IV	51-6-11	11Q...	1 bolt, hook	48	.....	
		54-6-11	11R...	1 nut, 0.75	L	.....	
		54-6-11	11S...	1 washer, 0.75	A	.....	
				1 plate, complete—			
123	IV	54-6-15	15E...	1 plate	24	.....	
		54-6-15	15F...	4 screws, wood, flathead, No. 12 x 2.5.	156M	.....	
				1 plate, platform, complete—			
				8 bolts, carriage, countersunk head, 0.375 x 3.625, complete—			
124	IV	54-6-15	15B...	1 bolt, carriage countersunk head, 0.375 x 3.625.	192	.....	
		54-6-15	15C...	1 nut, 0.375	192	.....	
		54-6-15	15D...	1 washer, 0.375	192	.....	
125	IV	54-6-15	15A...	1 plate, platform	24	.....	
				4 ropes, wire (handle), complete—			
		54-6-15	15K...	2 pieces, wire	192	.....	
126	IV	54-6-15	15G...	1 rope, wire	96	.....	
		54-6-15	15H...	2 staples, 0.75 long	192	.....	
				1 timber, platform, complete—			
				6 rods, tie, platform, 0.625 x 27.312 (27 5/8), complete—			
127	IV	54-6-40	40E...	1 rod, tie, platform, 0.625 x 27.312 (27 5/8).	144	.....	
		54-6-40	40G...	1 nut, platform, 0.625, 0.5 thick.	1,200N	.....	
		54-6-40	40F...	2 washers, 0.625	2,400P	.....	
128	IV	54-6-38	38A...	1 timber, platform	24	.....	

SUBBASE.

	IV	.....	.....	2 subbases, complete:			
				1 frame, angle iron, complete—			
150	IV & VI	54-6-2	2A....	12 bolts, 0.75 x 6.5	288	48	T. B.
		54-6-13	.....	4 bolts, retaining, 0.75 x 13.5, complete—	.....	.....	
151	IV	54-6-13	13A...	1 bolt, retaining, 0.75 x 13.5.	96	.....	
		54-6-13	13B...	1 nut, 0.75	L	.....	
152	IV	54-6-13	13C...	4 brackets, left-hand	96	.....	
153	IV	54-6-13	13G...	4 brackets, right-hand	96	.....	
154	IV	54-6-13	13E...	1 frame, angle iron	24	.....	
		54-6-13	13D...	6 rivets, countersunk head, 0.5 x 1.75.	144	.....	
				3-13C to 13E	.....	.....	
				3-13G to 13E	.....	.....	
				1 timber, subbase, bottom, complete—			
155	IV	54-6-13	13F...	12 nuts, socket	288	.....	
				24 rods, tie, subbase, bottom, 0.625 x 11.312 (11 5/8), complete—			
156	IV	54-6-40	40C...	1 rod, tie, subbase, bottom, 0.625 x 11.312 (11 5/8).	576	.....	
		54-6-40	40G...	1 nut, 0.625, 0.5 thick	N	.....	
		54-6-40	40D...	2 washers, 0.625	P	.....	
157	IV	54-6-39	39B...	4 timbers, subbase, bottom	96	.....	
				1 timber, subbase, top, complete—			
				20 rods, tie, subbase, top, 0.625 x 13.312 (13 5/8), complete—			
158	IV	54-6-40	40A...	1 rod, tie, subbase, top, 0.625 x 13.312 (13 5/8).	480	.....	
		54-6-40	40G...	1 nut, 0.625, 0.5 thick	N	.....	
		54-6-40	40B...	2 washers, 0.625	P	.....	
159	IV	54-6-39	39A...	4 timbers, subbase, top	96	.....	

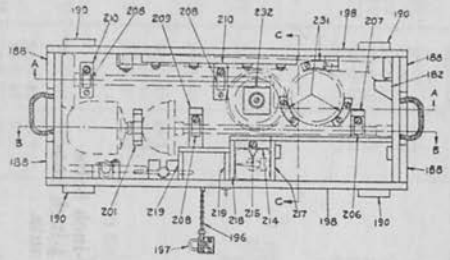
T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.

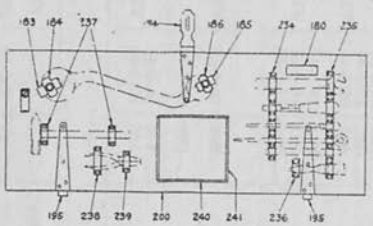
TOOL AND SPARE-PARTS BOX.

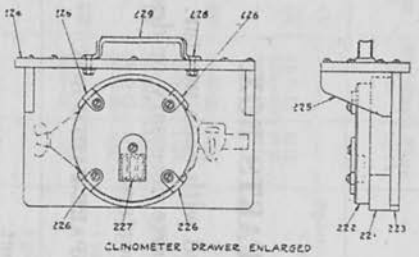
A tool and spare-parts box is supplied with each mortar. It contains all tools, accessories, and spare parts necessary or desirable to have as equipment for the individual mortars.

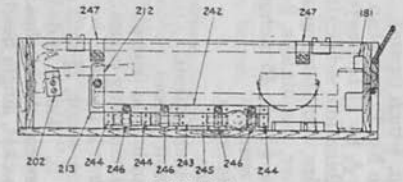
CONTENTS OF TOOL AND SPARE-PARTS BOX.

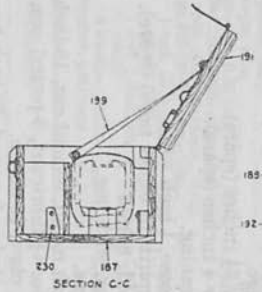
Quantity.	Name of part.
1	Anvil (spare).
1	Bar, pinch, $\frac{7}{8}$ by 36 inches.
1	Bar, tommy, $\frac{1}{2}$ inch round, 13 inches long.
1	Bag, sponge.
4	Bolt, $\frac{3}{4}$ by $6\frac{1}{2}$ inches (spare).
2	Bolt, $\frac{1}{2}$ by 4 inches (spare).
1	Brush, cleaning.
1	Brush, grease, 1 inch wide.
3	Bubble, spirit (in buffer tube) (spare).
1	Chisel, cold, 8-inch.
1	Clinometer, with bag.
1	Ejector, gas.
1	File, $\frac{1}{2}$-inch round, second cut, 10-inch.
1	Grease, No. $4\frac{1}{2}$ lubricant, 3-pound can.
1	Hammer, claw, 16-ounce.
1	Hammer, sledge, 9-pound, 30-inch handle.
1	Hammer, riveting, tinner's, $1\frac{1}{4}$-pound.
1	Handle, file, No. 2.
1	Head, sponge.
2	Nut, crown, $\frac{1}{2}$-inch (spare).
1	Oil, engine No. 1, quart can with spout.
12	Pin, split, $\frac{5}{32}$ by $1\frac{1}{2}$ inches (spare).
1	Plier, combination, side cutting.
1	Plug, misfire, complete (spare).
1	Screw driver, machinist's, 9-inch.
2	Sling, rope, $\frac{5}{8}$-inch, 45 inches long.
3	Sponge (2 spare).
1	Stud, guide (spare).
6	Table, range.
4	Washer, $\frac{1}{2}$-inch (spare).
2	Washer, anvil (spare).
2	Washer, guide stud (spare).
6	Washer, misfire plug (spare).
5	Waste, colored, pounds.
1	Wrench, cap screw, $1\frac{5}{8}$-inch opening.
1	Wrench, "S," double ended for $\frac{1}{2}$ and $\frac{3}{4}$-inch bolts.
1	Wrench, socket, double head, for $\frac{3}{8}$ and $\frac{1}{2}$-inch nuts.
1	Wrench, socket, single head, for $\frac{3}{4}$-inch nuts.
1	Wrench, guy lock nut.

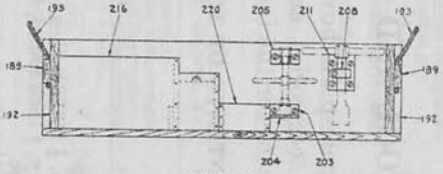












TOOL AND SPARE-PARTS BOX.

CLASS 36 DIVISION 34 DRAWING 17

(The personnel is directed to use the following identification numbers, nomenclature, piece marks, and drawing numbers when referring to parts of the TOOL and SPARE-PARTS BOX in reports, correspondence, etc.)

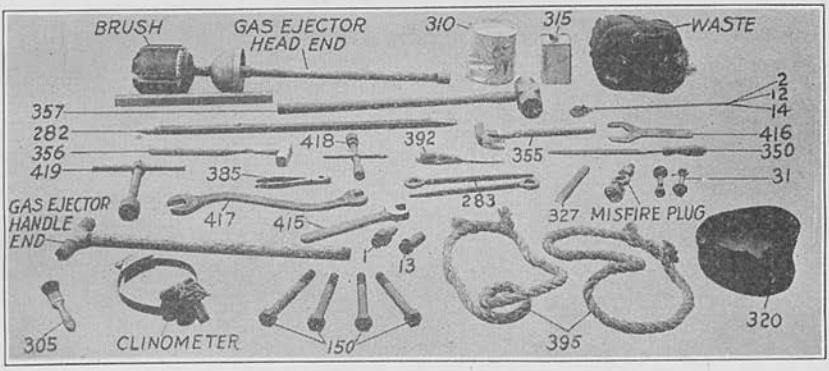
Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.
	V	76-19-1	.....	1 box, tool and spare parts, complete:	
				1 block, stop, clinometer drawer, complete—	
180	V	76-19-26	26X.....	1 block, stop, clinometer drawer.....	12
		76-19-2	2AA.....	4 nails, 6d.....	1,200Q
				1 block, stop, sledge hammer (upper), complete—	
181	V	76-19-26	26FA.....	1 block, stop, sledge hammer (upper).....	144
		76-19-2	2N.....	2 screws, wood, flathead, No. 12 x 2.25.....	312R
				1 block, stop, sledge hammer (side), complete—	
182	V	76-19-27	27C.....	1 block, stop, sledge hammer (side).....	12
		76-19-2	2N.....	2 screws, wood, flathead, No. 12 x 2.25.....	R
				1 block, S wrench, large, complete—	
183	V	76-19-26	26Z.....	1 block, S wrench, large.....	12
				1 button, S wrench, 0.25 x 2.25, complete—	
		76-19-2	2X.....	1 burr.....	273S
184	V	76-19-26	26CA.....	1 button, S wrench, 0.25 x 1 x 2.25.....	12
		76-19-2	2M.....	1 screw, wood, roundhead, No. 8 x 1.75.....	324T
		76-19-2	2R.....	2 screws, wood, flathead, No. 12 x 1.25.....	96U
				1 block, S wrench, small, complete—	
185	V	76-19-26	26AA.....	1 block S wrench, small.....	12
				1 button, S wrench, 0.25 x 0.875 x 2, complete—	
		76-19-2	2X.....	1 burr.....	S
186	V	76-19-26	26EA.....	1 button, S wrench, 0.25 x 0.875 x 2.....	12
		76-19-2	2M.....	1 screw, wood, roundhead, No. 8 x 1.75.....	T
		76-19-2	2R.....	2 screws, wood, flathead, No. 12 x 1.25	U
		76-19-1	.....	1 box, complete—	
				1 bottom, complete—	
187	V	76-19-1	1B.....	1 bottom.....	12
		76-19-1	1K.....	22 screws, wood, flathead, No. 10 x 1.625.....	1,344W
				4 cleats, end, complete—	
188	V	76-19-1	1G.....	1 cleat, end.....	48
		76-19-1	1K.....	8 screws, wood, flathead, No. 10 x 1.625.....	W
				2 cleats, handle, complete—	
189	V	76-19-1	1H.....	1 cleat, handle.....	24
		76-19-1	1K.....	6 screws, wood, flathead, No. 10 x 1.625.....	W
		76-19-1	.....	4 cleats, side, complete—	
190	V	76-19-1	1E.....	1 cleat, side.....	48
		76-19-1	1K.....	4 screws, wood, flathead, No. 10 x 1.625.....	W
				3 cleats, top, complete—	
191	V	76-19-1	1C.....	1 cleat, top.....	36
		76-19-1	1K.....	6 screws, wood, flathead, No. 10 x 1.625.....	W
192	V	76-19-1	1F.....	2 ends.....	24
193	.....	76-19-1	1W.....	2 handles, rope.....	30ZA
				1 hasp, hinge (with staple), complete—	
194	V	76-19-1	1P.....	1 hasp, hinge (with staple).....	18AB
		76-19-1	1L.....	8 screws, wood, flathead, No. 10 x 0.875.....	28SX
				2 hinges, chest, complete—	
195	V	76-19-1	1N.....	1 hinge, chest.....	33BB
		76-19-1	1L.....	8 screws, wood, flathead, No. 10 x 0.875.....	X
				1 lock and chain, complete—	
196	V	76-19-1	1R.....	1 chain, sash.....	15Z
197	V	76-19-1	1Q.....	1 lock, Yale.....	15AA
		76-19-1	1S.....	1 staple.....	15BA
				2 sides, complete—	
		76-19-1	1M.....	6 nails, 6d.....	Q
		76-19-1	1K.....	6 screws, wood, flathead, No. 10 x 1.625.....	W
198	V	76-19-1	1D.....	1 side.....	24
				1 strap, 0.125 x 1 x 19, complete—	
		76-19-2	2L.....	2 screws, wood, roundhead, No. 14 x 0.75....	30CA
199	V	76-19-2	2K.....	1 strap, 0.125 x 1 x 19.....	12
		76-19-2	2W.....	2 washers, 0.25.....	B
200	V	76-19-1	1A.....	1 top.....	12
				1 cleat, brush, complete—	
201	V	76-19-26	26B.....	1 cleat, brush.....	12
		76-19-2	2N.....	2 screws, wood, flathead, No. 12 x 2.25	R
				1 cleat, claw hammer, complete—	
202	V	76-19-26	26BA.....	1 cleat, claw hammer.....	12
		76-19-2	2N.....	2 screws, wood, flathead, No. 12 x 2.25	R
				1 cleat, double head socket wrench (lower)complete—	
203	V	76-19-26	26K.....	1 cleat, double head socket wrench (lower).....	12
204	V	76-19-26	26L.....	1 piece, side, 25 x 2 x 3.25	12
		76-19-2	2Q.....	2 screws, wood, flathead, No. 12 x 2.75.....	48DA
				1 cleat, double head socket wrench(upper)complete—	
205	V	76-19-26	26H.....	1 cleat, double head socket wrench (upper).....	12
		76-19-2	2Q.....	2 screws, wood, flathead, No. 12 x 2.75	DA

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.
				1 box, tool and spare parts, complete—Continued.	
				1 cleat, ejector (coupling end), complete—	
		76-19-2	2X	1 button, ejector cleat, complete—	
206	V	76-19-26	26F	1 burr	S
		76-19-2	2M	1 button, ejector cleat	12
207	V	76-19-26	26C	1 screw, wood, round head, No. 8 x 1.75	T
		76-19-2	2N	1 cleat, ejector (coupling end)	12
				2 screws, wood, flathead, No. 12 x 2.25	R
				1 cleat, ejector (head end), complete—	
				1 button, ejector handle, ejector and single head socket wrench cleat, complete—	
		76-19-2	2X	1 burr	S
208	V	76-19-26	26D	1 button, ejector handle, ejector and single head socket wrench cleat	48EA
		76-19-2	2M	1 screw, wood, round head, No. 8 x 1.75	T
209	V	76-19-26	26E	1 cleat, ejector (head end)	12
		76-19-2	2N	2 screws, wood, flathead, No. 12 x 2.25	R
				2 cleats, ejector handle, complete—	
				1 button, ejector handle, ejector and single head socket wrench cleat, complete—	
		76-19-2	2X	1 burr	S
208	V	76-19-26	26D	1 button, ejector handle, ejector and single head socket wrench cleat	EA
		76-19-2	2M	1 screw, wood, round head, No. 8 x 1.75	T
210	V	76-19-26	26A	1 cleat, ejector handle	12
		76-19-2	2N	2 screws, wood, flathead, No. 12 x 2.25	R
				1 cleat, single head socket wrench, complete—	
				1 button, ejector handle, ejector and single head socket wrench cleat, complete—	
		76-19-2	2X	1 burr	S
208	V	76-19-26	26D	1 button, ejector handle, ejector and single head socket wrench cleat	EA
		76-19-2	2M	1 screw, wood, round head, No. 8 x 1.75	T
211	V	76-19-26	26G	1 cleat, single head socket wrench	12
		76-19-2	2N	4 screws, wood, flathead, No. 12 x 2.25	R
				1 cleat, sledge hammer handle, complete—	
		76-19-2	2X	1 button, sledge and claw hammer, complete—	
212	V	76-19-26	26DA	1 burr	S
		76-19-2	2M	1 button, sledge and claw hammer	12
213	V	76-19-27	27B	1 screw, wood, round head, No. 8 x 1.75	T
		76-19-2	2N	1 cleat, sledge hammer handle	12
				2 screws, wood, flathead, No. 12 x 2.25	R
				1 compartment, clinometer and oil can, complete—	
214	V	76-19-26	26U	1 block, filler, complete—	
		76-19-2	2AA	1 block, filler	12
				4 nails, 6d	Q
		76-19-2	2X	1 button, complete—	
215	V	76-19-26	26T	1 burr	S
		76-19-2	2M	1 button	12
				1 screw, wood, round head, No. 8 x 1.75	T
216	V	76-19-26	26R	1 front, clinometer compartment, complete—	
		76-19-2	2AA	1 front, clinometer compartment	12
				20 nails, 6d	Q
		76-19-2	2AA	1 partition, 0.5 x 4.5 x 8.125, complete—	
217	V	76-19-26	26P	4 nails, 6d	Q
				1 partition, 0.5 x 4.5 x 8.125	12
		76-19-2	2AA	1 partition, 0.5 x 4.5 x 6.375, complete—	
218	V	76-19-26	26Q	4 nails, 6d	Q
				1 partition, 0.5 x 4.5 x 6.375	12
				1 compartment, small spares, complete—	
		76-19-2	2AA	2 pieces, end, complete—	
219	V	76-19-26	26M	3 nails, 6d	Q
				1 piece, end	24
		76-19-2	2AA	1 piece, side, 0.5 x 3 x 5.75, complete—	
220	V	76-19-26	26N	10 nails, 6d	Q
	V	76-19-2		1 piece, side, 0.5 x 3 x 5.75	12
221	V	76-19-27	27Q	1 drawer, clinometer, complete—	
				1 block, lower support, clinometer	18 FA
222	V	76-19-27	27R	1 block, upper support, clinometer, complete—	
		76-19-2	2P	1 block, upper support, clinometer	12
				4 screws, wood, flathead, No. 12 x 1.75	207 GA
223	V	76-19-27	27L	1 board, base, complete—	
		76-19-2	2R	1 board, base	12
		76-19-2	2P	4 screws, wood, flathead, No. 12 x 1.25	U
				4 screws, wood, flathead, No. 12 x 1.75	GA
224	V	76-19-27	27S	1 board, cover, complete—	
		76-19-2	2M	1 board, cover	12
225	V	76-19-27	27M	9 screws, wood, round head, No. 8 x 1.75	T
				2 braces, end	24

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.
				1 box, tool and spare parts, complete—Continued.	
				1 drawer, clinometer, complete—Continued.	
				4 buttons, clinometer, complete—	
		76-19-2	2X	1 burr	S
226	V	76-19-27	27P	1 button, clinometer	48
		76-19-2	2M	1 screw, wood, round head, No. 8 x 1.75	T
				1 button, retaining, bubble, complete—	
		76-19-2	2X	1 burr	S
227	V	76-19-27	27N	1 button, retaining, bubble	12
		76-19-2	2M	1 screw, wood, round head, No. 8 x 1.75	T
				1 handle, complete—	
				2 bolts, countersunk, head, 0.190 x 1.5, complete—	
		76-19-2	2DA	1 burr, 0.187 ($\frac{3}{16}$)	36HA
		76-19-2	2U	1 nut, 0.190	36KA
228	V	76-19-2	2T	1 screw, countersunk head, 0.190 x 1.5	36 LA
229	V	76-19-2	2Z	1 handle	18MA
				2 guides, clinometer drawer, complete—	
230	V	76-19-26	26W	1 guide, clinometer drawer	24
		76-19-2	2S	2 screws, wood, flathead, No. 6 x 1	48
				1 guide, grease can, complete—	
				3 blocks, guide, grease can, complete—	
231	V	76-19-26	26S	1 block, guide, grease can	36
		76-19-2	2P	2 screws, wood, flathead, No. 12 x 1.75	GA
				1 holder, sponge, complete—	
232	V	76-19-27	27E	1 holder, sponge block	12
		76-19-2	2P	1 screw, wood, flathead, No. 12 x 1.75	GA
233	V	76-19-1	1Z	1 list, contents	12
234	V	76-19-2	2D	1 strap, 0.125 x 0.75 x 12, complete—	
		76-19-2	2BA	1 strap, 0.125 x 0.75 x 12	12
				18 tacks, upholsterers, 0.75 long	792NA
235	V	76-19-2	2C	1 strap, 0.125 x 0.75 x 17, complete—	
		76-19-2	2BA	1 strap, 0.125 x 0.75 x 17	12
				22 tacks, upholsterers, 0.75 long	NA
236	V	76-19-2	2H	1 strap, 0.125 x 0.75 x 2.5, complete—	
		76-19-2	2BA	1 strap, 0.125 x 0.75 x 2.5	12
				4 tacks, upholsterers, 0.75 long	NA
237	V	76-19-2	2G	2 straps, 0.125 x 0.75 x 3.25, complete—	
		76-19-2	2BA	1 strap, 0.125 x 0.75 x 3.25	12
				4 tacks, upholsterers, 0.75 long	NA
238	V	76-19-2	2E	1 strap, 0.125 x 0.75 x 5, complete—	
		76-19-2	2BA	1 strap, 0.125 x 0.75 x 5	12
				4 tacks, upholsterers, 0.75 long	NA
239	V	76-19-2	2F	1 strap, 0.125 x 0.75 x 4, complete—	
		76-19-2	2BA	1 strap, 0.125 x 0.75 x 4	12
				4 tacks, upholsterers, 0.75 long	NA
		76-19-2	2CA	2 strips, table of contents, 0.125 x 0.25 x 10.5, complete—	
				5 nails, cigar box, No. 18 x 0.5	258PA
240	V	76-19-2	2A	1 strip, table of contents, 0.125 x 0.25 x 10.5	12
		76-19-2	2CA	2 strips, table of contents, 0.125 x 0.25 x 8, complete—	
				4 nails, cigar box, No. 18 x 0.5	PA
241	V	76-19-2	2B	1 strip, table of contents, 0.125 x 0.25 x 8	24
				1 support, misfire plug, anvil, and guide stud, complete—	
				1 block, guide, misfire, complete—	
242	V	76-19-27	27D	1 block, guide, misfire	12
		76-19- 2	2AA	7 nails, 6d	Q
				1 block, spacing, 1.25 x 1.5 x 3, complete—	
243	V	76-19-27	27G	1 block, spacing, 1.25 x 1.5 x 3	12
		76-19- 2	2AA	4 nails, 6d	Q
				3 blocks, spacing, 1 x 1.25 x 1.5, complete—	
244	V	76-19-27	27H	1 block, spacing, 1 x 1.25 x 1.5	36
		76-19- 2	2AA	2 nails, 6d	Q
				1 block, spacing, misfire, complete—	
245	V	76-19-27	27F	1 block, spacing, misfire	12
		76-19- 2	2AA	7 nails, 6d	Q
				4 buttons, misfire, complete—	
		76-19- 2	2X	1 burr	S
246	V	76-19-27	27K	1 button, misfire	48
		76-19- 2	2M	1 screw, wood, round head, No. 8 x 1.75	T
				2 supports, pinch bar, complete—	
		76-19- 2	2N	2 screws, wood, flathead, No. 12 x 2.25	R
247	V	76-19-27	27A	1 support, pinch bar	24

T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.

Plate VI



TOOLS, ACCESSORIES, AND SPARE PARTS

TOOLS AND ACCESSORIES.

A complete list of tools and accessories is given on page 28 of this book. Mechanics and others are cautioned against using tools or accessories for any purpose other than those for which they are intended. When tools and accessories are not in use they should be stored in their proper place in the box provided for same.

ANVIL WRENCH.

The anvil wrench is a long socket wrench which fits the hexagonal base of the anvil and is used for screwing it into place. A large disk serves as a guide to center the wrench. The wrench is seldom used in the field and is carried in the platoon box, from which it may be obtained when necessity requires the removal of the anvil.

BARREL-CARRYING BAR.

A barrel-carrying bar made of oak 8 feet long and turned to 2.25 inches in diameter is supplied with each mortar.

PLATFORM-CARRYING BAR.

Two oak platform-carrying bars 6 feet long and turned to 2 inches in diameter are supplied with each mortar.

CLEANING BRUSH.

The cleaning brush is made up of four wooden segments covered with card wire and fastened to a spindle. Four springs also fastened to the spindle and working against the inner surfaces of the wooden segments make the outside diameter of the brush adjustable. This takes care of the wearing down of the card wire. The spindle is fitted with a bushing which is screwed into the opening in the gas ejector head whenever the brush is used.

In action, the brush is pushed down the barrel of the gun, rotated, and pulled back. This action is repeated until any substance which may have been burned fast to the inside of the barrel is removed.

CLINOMETER COLLAR.

The clinometer collar is a steel ring made in two halves hinged together. It fits loosely over the clinometer guide ring on the barrel, protecting it from injury during transportation. A split pin chained to one half is used to hold the two halves together when in place around the barrel.

GAS EJECTOR.

The gas ejector consists of a cast aluminum head that fits the bore, fastened to one end of a tubular stem at the other end of which is a handle. The head has a hole through it concentric with the hole in the stem. This hole is threaded to receive the wire cleaning brush or the sponge head whenever it is desirable to clean or sponge out the bore.

The gas ejector is pushed down the barrel and forces the burnt gases up through the handle and out of the gun. When the ejector is removed cold air is drawn through the handle into the gun.

SPONGE.

A sponge made with a head of hardwood and a sheepskin covering lined with canvas is also used as a cleaning agent for the barrel. This sponge is screwed into the opening of the gas-ejector head whenever it is desirable to sponge out the barrel. A sponge-cover bag to cover the sponge when not in use is supplied.

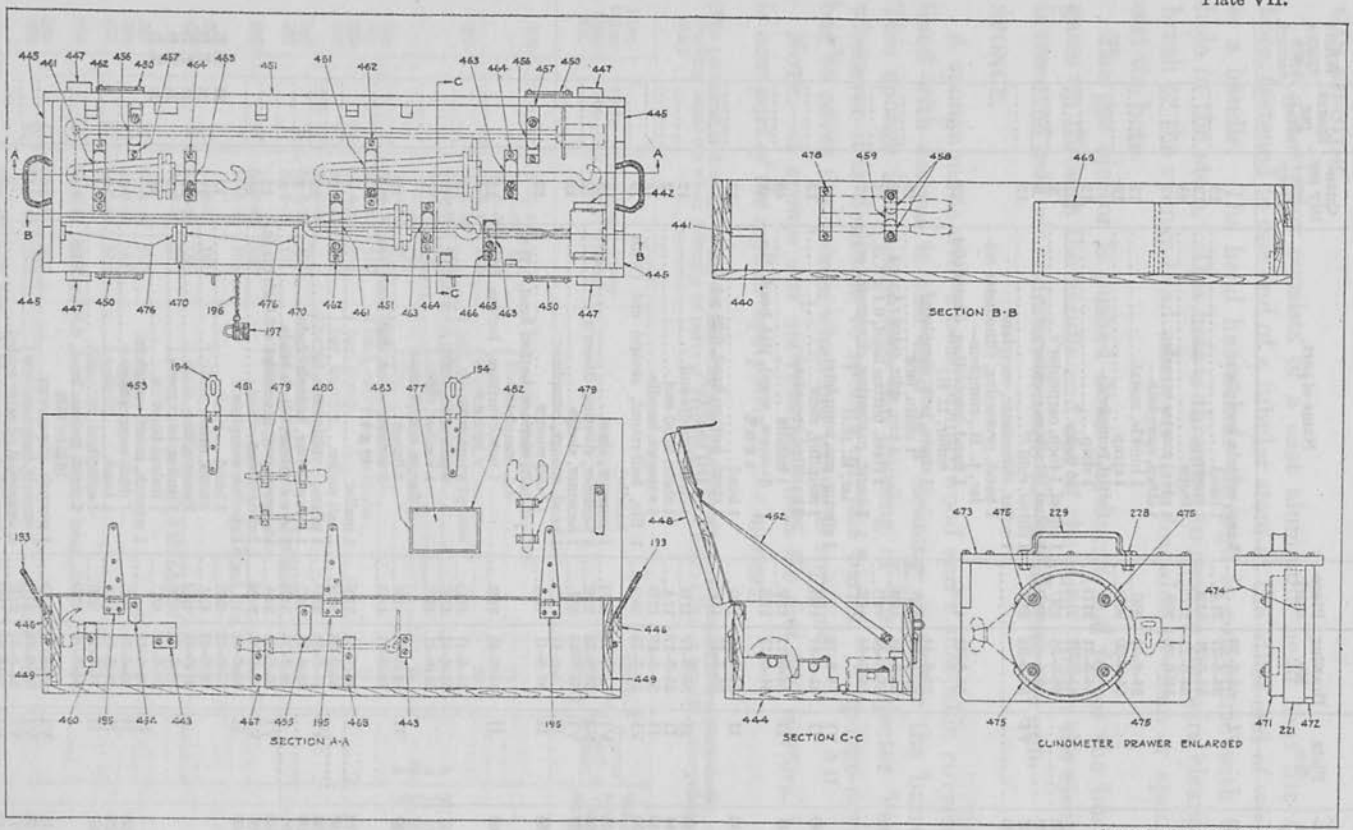
NOTE.—*A sponge was not furnished with the first 500 mortars, but is now part of the regular equipment of the mortar.*

(The personnel is directed to use the following identification numbers, nomenclature, piece marks, and drawing numbers when referring to parts of TOOLS and ACCESSORIES in reports, correspondence, etc.)

Identification No.	Plate No.	Drawing No.	Piece-mark.	Name of part.	Quantity per one battery.	Spares per battery.	Where spares are carried.
270	.....	51-6-43	.....	1 bag, cover, sponge, complete:			
		51-6-43	43C...	1 band	12	.....	
		51-6-43	43A...	1 cord, draw	12	.....	
		51-6-43	43B...	1 crown, bag	12	.....	
275	.....	51-6-26	.....	1 bag, clinometer, complete:			
		51-6-26	26B...	1 bag, clinometer	12	6	P. B.
		51-6-26	26C...	1 cord	12	6	P. B.
		51-6-26	26D...	8 eyelets	96	48	P. B.
		51-6-26	26A...	1 flap	12	6	P. B.
280	.....	54-6-34	34G...	1 bar, carrying, barrel	12	.....	
281	.....	54-6-34	34F...	2 bars, carrying, platform	24	.....	
282	VI	54-6-35	35A...	1 bar, pinch	12	.....	
283	VI	54-6-35	35B...	1 bar, tommy	12	.....	
	II & VI	54-6-18	.....	1 brush, complete:			
290	II	54-6-19	19F...	1 bushing	12	.....	
291	II	54-6-19	19L...	1 nut, check, 0.625 x 0.375 thick	12	.....	
292	II	54-6-19	19D...	4 plates, guide, complete— 1 plate, guide	48	.....	
		51-6-19	19E...	2 screws, wood, flat head, No. 8 x 1.	96	.....	
293	II	54-6-18	18D...	1 plate, guide, inner	12	.....	
294	II	54-6-18	18C...	1 plate, guide, outer	12	.....	
		54-6-19	19G...	1 rivet, button head, 0.187 ($\frac{3}{16}$) x 1. 9F to 19A.	12	.....	
295	II	54-6-19	19C...	1 screw, fixing	12	.....	
296	II	54-6-18	18E...	4 segments, wood	48	.....	
297	II	54-6-19	19A...	1 spindle	12	.....	
298	II	54-6-19	19B...	4 springs, complete— 2 screws, fillister head, 0.190 x 0.312 ($\frac{3}{16}$).	96	.....	
299	II	54-6-19	19K...	1 spring	48	.....	
300	II	54-6-19	19H...	1 washer, spring	12	.....	
		51-6-18	18B...	4 wires, card, complete— 22 tacks, brush	1,056	.....	
301	II	51-6-18	18A...	1 wire, card	48	.....	
305	VI	51-6-35	35E...	1 brush, grease, small	12	.....	
310	VI	.....	.....	1 can, grease	12	.....	
315	VI	54-6-35	35N...	1 can, oil	12	.....	

Identification No.	Plate No.	Drawing No.	Piece-mark.	Name of part.	Quantity per one battery.	Spares per battery.	Where spares are carried.
320	VI	54-6-20	.....	1 cap, muzzle, complete:			
		54-6-21	21A...	1 band	12	.....	
		54-6-21	21B...	1 crown	12	.....	
		54-6-21	21C...	4 loops	48	.....	
		54-6-20	20A...	1 plug, mortar muzzle	12	.....	
				1 strap, complete—			
		54-6-20	20C...	1 buckle, metal	12	.....	
		54-6-20	20B...	1 strap	12	.....	
				1 strip, complete—			
		54-6-21	21D...	1 strip	12	.....	
		54-6-21	21E...	16 tacks	192	.....	
325	.....	56-6-35	35C...	1 chisel, 1-inch, carpenter's	3	.....	
326	.....	56-6-35	35D...	1 chisel, 2-inch, carpenter's	3	.....	
327	VI	56-6-35	35F...	1 chisel, cold	12	.....	
335	.....	.....	.....	1 collar, clinometer, complete:			
				1 band, protecting, clinometer collar, L. H., complete—			
		54-6-44	44A...	1 band, protecting, clinometer collar, L. H.	12	.....	
		54-6-44	.....	1 chain, jack, complete:			
		54-6-44	44C...	1 chain, jack	12	.....	
		54-6-44	44B...	1 pin, split, 0.109 ($\frac{7}{64}$) x 1	12	.....	
		54-6-44	44D...	1 rivet, button head, 0.1 x 0.75	12	.....	
		54-6-44	44E...	1 band, protecting, clinometer collar, R. H.	12	.....	
	II & VI	54-6-17	.....	1 ejector, gas, complete:			
340	II	54-6-17	17C...	1 coupling, stem	12	.....	
				2 handles, complete:			
341	II	54-6-17	17F...	1 handle	48	.....	
		54-6-17	17E...	1 screw, wood, flat head, No. 8 x 0.5.	48	.....	
342	II	54-6-17	17G...	1 head	12	.....	
		54-6-17	17H...	1 rivet, button head, 0.25 x 1.75 17G to 17A.	12	.....	
343	II	54-6-17	17B...	1 stem, handle end	12	.....	
344	II	54-6-17	17A...	1 stem, head end	12	.....	
345	II	54-6-17	17D...	1 support, handle	12	.....	
350	VI	54-6-35	35G...	1 file, half-round, second cut (with handle).	12	.....	
355	VI	54-6-35	35H...	1 hammer, claw	15	.....	
356	VI	54-6-35	35K...	1 hammer, riveting, tinner's	12	.....	
357	VI	54-6-35	35L...	1 hammer, sledge	12	.....	
	II	54-6-41	.....	1 head, sponge, complete:			
365	II	54-6-41	41A...	1 head sponge	12	.....	
				1 bolt, carriage, button head, 0.25 x 6.5, complete—			
366	II	54-6-41	41B...	1 bolt, carriage, button head, 0.25 x 6.5.	12	.....	
		54-6-41	41D...	1 nut, 0.25	12	.....	
		54-6-41	41E...	1 pin, split, 0.093($\frac{3}{32}$) x 0.5	12	.....	
		54-6-41	41C...	1 washer, 0.25	B	.....	
				1 flange, complete—			
367	II	54-6-41	41F...	1 flange	12	.....	
		54-6-41	41G...	8 screws, wood, flat head, No. 10 x 1.	252QA	.....	
375	.....	54-6-34	34N...	1 mallet	3	.....	
380	.....	54-6-35	35M...	1 nail puller	3	.....	
385	VI	54-6-35	35P...	1 pliers, combination	12	.....	
390	.....	54-6-31	31C...	1 screw driver, 12-inch blade	3	.....	
391	.....	54-6-31	31B...	1 screw driver, 4-inch blade	3	.....	
392	VI	56-6-31	31A...	1 screw driver, machinist's, 9-inch blade	12	.....	
395	VI	54-6-34	34M...	2 slings, rope	24	.....	
400	II	54-6-42	.....	1 sponge, complete:			
		54-6-42	42E...	1 band	12	24	T. B.
		54-6-42	42A...	1 cord, draw	12	24	T. B.
		54-6-42	42D...	1 crown, bag	12	24	T. B.
		54-6-42	42B...	1 lining, bag crown	12	24	T. B.
		54-6-42	42C...	1 lining, band	12	24	T. B.
	II	54-6-16	.....	1 wrench, anvil, complete:			
405	II	54-6-16	16C...	1 disk, supporting	3	.....	
406	II	54-6-16	16A...	1 head	3	.....	
407	II	54-6-16	16B...	1 spindle	3	.....	
		54-6-16	16D...	1 rivet, button head, 0.375 x 2.625 16A to 16B.	3	.....	
415	VI	56-6-34	34D...	1 wrench, cap screw	12	.....	
416	VI	56-6-34	34L...	1 wrench, lock nut, guy	15	.....	
417	VI	54-6-34	34E...	1 wrench, S, double ended	12	.....	
418	VI	54-6-34	34H...	1 wrench, socket, double headed	12	.....	
419	VI	54-6-34	34K...	1 wrench, socket, single headed	12	.....	

T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.


SECTION B-B
SECTION A-A
SECTION C-C
CLINOMETER DRAWER ENLARGED
CLASS 36 DIVISION 54 DRAWING 18

PLATOON BOX.

PLATOON BOX.

A platoon box is furnished with each platoon. It contains equipment and spare parts which might be necessary for replacements should parts become broken on the mortar, but which are not needed in as large amounts as those carried in the tool and spare parts box.

CONTENTS OF PLATOON BOX.

Quantity.	Name of part.
1	Chisel, carpenter's, 2-inch mortise.
1	Chisel, carpenter's, 1-inch mortise.
2	Clinometer, with bag (spare).
1	Guy, elevating (spare).
2	Guy, traversing (spare).
1	Hammer, claw, 16-ounce.
1	Mallet, hickory.
1	Nail puller.
1	Screw driver, 4-inch.
1	Screw driver, 12-inch.
1	Wrench, anvil.
1	Wrench, guy lock nut.

The personnel is directed to use the following identification numbers, nomenclature, piece marks, and drawing numbers when referring to parts of the PLATOON BOX in reports, correspondence, etc.)

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.
	VII	75-19-12	.....	1 box, platoon, complete:	
				1 block, spacer, complete—	
440	VII	76-19-15	15C.....	1 block, spacer.....	3
		76-19-13	13X.....	6 nails, 5d.....	39RA
				1 block, stop, 1.375 x 1.5 x 3.5, complete—	
441	VII	76-19-15	15D.....	1 block, stop, 1.375 x 1.5 x 3.5.....	3
		76-19-13	13X.....	3 nails, 5d.....	RA
				1 block, stop, 0.75 x 0.75 x 3.5, complete—	
442	VII	76-19-15	15E.....	1 block, stop, 0.75 x 0.75 x 3.5.....	3
		76-19-13	13X.....	4 nails, 5d.....	RA
				2 blocks, stop, 1.375 x 1.5 x 2.5, complete—	
443	VII	76-19-14	14F.....	1 block, stop, 1.375 x 1.5 x 2.5.....	6
		76-19-13	13F.....	2 screws, wood, flathead, No. 12 x 1.5	39SA
		75-19-12	.....	1 box, complete—	
				1 bottom, complete—	
444	VII	76-19-12	12B.....	1 bottom.....	3
		76-19-12	12K.....	38 screws, wood, flathead, No. 10 x 2	348TA
				4 cleats, end, complete—	
445	VII	76-19-12	12G.....	1 cleat, end.....	12
		76-19-12	12K.....	8 screws, wood, flathead, No. 10 x 2.....	TA
				2 cleats, handle, complete—	
446	VII	76-19-12	12H.....	1 cleat, handle.....	6
		76-19-12	12K.....	6 screws, wood, flathead, No. 10 x 2	TA
				4 cleats, side, complete—	
447	VII	76-19-12	12E.....	1 cleat, side.....	12
		76-19-12	12K.....	4 screws, wood, flathead, No. 10 x 2	TA
				3 cleats, top, complete—	
448	VII	76-19-12	12C.....	1 cleat, top.....	9
		76-19-12	12K.....	6 screws, wood, flathead, No. 10 x 2	TA
449	VII	76-19-12	12F.....	2 ends.....	6

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.
				1 box, platoon, complete—Continued.	
				1 box, complete—Continued.	
450	VII	76-19-12	12X	4 handles, chest, complete—	
		76-19-12	12L	1 handle, chest	12
193	VII	76-19-12	12Z	5 screws, wood, flathead, No. 10 x 1	QA
				2 handles, rope	ZA
194	VII	76-19-12	12Q	2 hasps, hinge (with staple), complete—	
		76-19-12	12M	1 hasp, hinge (with staple)	AB
				8 screws, wood, flathead, No. 10 x 0.875	48
195	VII	76-19-12	12P	3 hinge, chest, complete—	
		76-19-12	12L	1 hinge, chest	BB
				8 screws, wood, flathead, No. 10 x 1	QA
196	VII	76-19-12	12S	1 lock and chain, complete—	
197	VII	76-19-12	12R	1 chain, sash	Z
		76-19-12	12T	1 lock, yale	AA
				1 staple	BA
		76-19-12	12N	2 sides, complete—	
		76-19-12	12K	6 nails, 6d	Q
451	VII	76-19-12	12D	6 screws, wood, flathead, No. 10 x 2	TA
				1 side	6
		76-19-12	12DA	1 strap, 0.125 x 1 x 28, complete—	
452	VII	76-19-12	12CA	2 screws, wood, round head, No. 14 x 0.75	CA
		76-19-12	12EA	1 strap, 0.125 x 1 x 28	3
453	VII	76-19-12	12A	2 washer, 0.25	B
				1 top	3
454	VII	76-19-14	14P	1 button, claw hammer, complete—	
		76-19-13	13H	1 button, claw hammer	3
				1 screw, wood, flat head, No. 12 x 1.75	GA
455	VII	76-19-14	14K	1 button, nail puller, complete—	
		76-19-13	13L	1 button, nail puller	3
				1 screw, wood, flat head, No. 12 x 2.5	M
		76-19-13	13Q	2 cleats, anvil wrench, complete—	
456	VII	76-19-15	15G	1 button, anvil wrench, complete—	
		76-19-13	13C	1 burr	S
457	VII	76-19-15	15F	1 button, anvil wrench	6
		76-19-13	13L	1 screw, wood, round head, No. 8 x 1.25	99UA
				1 cleat, anvil wrench	6
				2 screws, wood, flathead, No. 12 x 2.5	M
		76-19-13	13Q	1 cleat, chisel, complete—	
458	VII	76-19-15	15H	2 buttons, chisel cleat, complete—	
		76-19-13	13C	1 burr	S
459	VII	76-19-14	14M	1 button, chisel cleat	6
		76-19-13	13E	1 screw, wood, round head, No. 8 x 1.25	UA
				1 cleat, chisel	3
				2 screws, wood, flathead, No. 12 x 1.375	30WA
460	VII	76-19-14	14C	1 cleat, claw-hammer complete—	
		76-19-13	13F	1 cleat, claw-hammer	3
		76-19-13	13L	1 screw, wood, flathead, No. 12 x 1.5	SA
				1 screw, wood, flathead, No. 12 x 2.5	M
				3 cleats, elevating and traversing guy (large) complete—	
		76-19-13	13Q	1 button, elevating and traversing guy cleat (large) complete—	
461	VII	76-19-14	14D	1 burr	S
				1 button, elevating and traversing guy cleat (large).	9
		76-19-13	13C	1 screw, wood, round head, No. 8 x 1.25	UA
462	VII	76-19-14	14A	1 cleat, elevating and traversing guy (large)	9
		76-19-13	13L	2 screws, wood, flathead, No. 12 x 2.5	M
				3 cleats, elevating and traversing guy (small) complete—	
		76-19-13	13Q	1 button, elevating and traversing guy cleat (small) and mallet cleat, complete—	
463	VII	76-19-14	14E	1 burr	S
				1 button, elevating and traversing guy cleat (small) and mallet cleat.	12XA
		76-19-13	13C	1 screw, wood, round head, No. 8 x 1.25	UA
464	VII	76-19-14	14B	1 cleat, elevating and traversing guy (small)	9
		76-19-13	13L	2 screws, wood, flathead, No. 12 x 2.5	M
				1 cleat, mallet, complete—	
		76-19-13	13Q	1 button, elevating and traversing guy cleat (small) and mallet cleat, complete—	
463	VII	76-19-14	14E	1 burr	S
				1 button, elevating and traversing guy cleat (small) and mallet cleat.	XA
		76-19-13	13C	1 screw, wood, round head, No. 8 x 1.25	UA
465	VII	76-19-15	15A	1 cleat, mallet	3
466	VII	76-19-15	15B	1 piece, side, mallet	3
		76-19-13	13K	2 screw, wood, flathead, No. 12 x 2	6

Identification No.	Plate No.	Drawing No.	Piece mark.	Name of part.	Quantity per one battery.
				1 box, platoon, complete—Continued.	
				1 cleat, nail puller (large) complete—	
467	VII	76-19-14	14G	1 cleat, nail puller (large)	3
		76-19-13	13M	2 screws, wood, flathead, No. 12 x 3	6
				1 cleat, nail puller (small) complete—	
468	VII	76-19-14	14H	1 cleat, nail puller (small)	3
		76-19-13	13L	2 screws, wood, flat head, No. 12 x 2.5	M
				1 compartment, clinometer, complete—	
				1 partition, 0.5 x 8.25 x 27, complete—	
		76-19-13	13W	20 nails, 6d	Q
469	VII	76-19-14	14W	1 partition, 0.5 x 8.25 x 27	3
				2 partitions, 0.5 x 4.5 x 8.25, complete—	
		76-19-13	13W	4 nails, 6d	Q
470	VII	76-19-14	14X	1 partition, 0.5 x 4.5 x 8.25	6
	VII	76-19-13		2 drawers, clinometer, complete—	
221	VII	76-19-14	14S	1 block, lower support, clinometer	FA
				1 block, upper support, clinometer, complete—	
471	VII	76-19-14	14Q	1 block, upper support, clinometer	6
		76-19-13	13H	4 screws, wood, flathead, No. 12 x 1.75	GA
				1 board, base, complete—	
472	VII	76-19-14	14U	1 board, base	6
		76-19-13	13F	4 screws, wood, flathead, No. 12 x 1.5	SA
		76-19-13	13E	4 screws, wood, flathead, No. 12 x 1.375	WA
				1 board, cover, complete—	
473	VII	76-19-14	14T	1 board, cover	6
		76-19-13	13C	7 screws, wood, roundhead, No. 8 x 1.25	UA
474	VII	76-19-14	14N	2 brackets, end	12
				4 buttons, clinometer, complete—	
		76-19-13	13Q	1 burr	S
475	VII	76-19-14	14R	1 button, clinometer	24
		76-19-13	13C	1 screw, wood, roundhead, No. 8 x 1.25	UA
				1 handle, complete—	
				2 bolts, countersunk head, 0.190 x 1.5, complete—	
		76-19-13	13BA	1 burr, 0.187 ($\frac{3}{16}$)	HA
		76-19-13	13P	1 nut, 0.190	KA
228	VII	76-19-13	13N	1 screw, countersunk head, 0.190 x 1.5	LA
229	VII	76-19-13	13R	1 handle	MA
				4 guides, clinometer drawer, complete—	
476	VII	76-19-15	15K	1 guide, clinometer drawer	12
		76-19-13	13D	2 screws, wood, flathead, No. 10 x 1	QA
477	VII	76-19-12	12BA	1 list, contents	3
				1 socket, chisel, complete—	
		76-19-13	13G	2 screws, wood, flathead, No. 12 x 1.625	6
478	VII	76-19-14	14L	1 socket, chisel	3
				4 straps, 0.125 x 0.75 x 3.5, complete—	
479	VII	76-19-13	13S	1 strap, 0.125 x 0.75 x 3.5	12
		76-19-13	13AA	4 tacks, upholsterers', 0.75 long	NA
				1 strap, 0.125 x 0.75 x 4, complete—	
480	VII	76-19-13	13T	1 strap, 0.125 x 0.75 x 4	3
		76-19-13	13AA	4 tacks, upholsterers', 0.75 long	NA
				1 strap, 0.125 x 0.75 x 2, complete—	
481	VII	76-19-13	13U	1 strap, 0.125 x 0.75 x 2	3
		76-19-13	13AA	4 tacks, upholsterers', 0.75 long	NA
				2 strips, table of contents, 0.125 x 0.75 x 8, complete—	
		76-19-13	13Z	4 nails, cigar box, No. 18 x 0.5	PA
482	VII	76-19-13	13A	1 strip, table of contents, 0.125 x 0.75 x 8	6
				2 strips, table of contents, 0.125 x 0.75 x 5, complete—	
		76-19-13	13Z	3 nails, cigar box, No. 18 x 0.5	PA
483	VII	76-19-13	13B	1 strip, table of contents, 0.125 x 0.75 x 5	6

T. B.=Tool and spare-parts box.
P. B.=Platoon box.
Letters A to BB in column 6 indicate that the part occurs elsewhere in these lists. The total quantity is given where it first occurs.

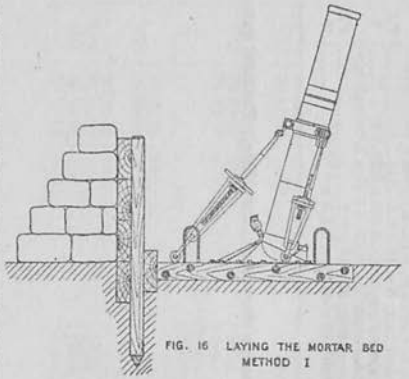


FIG. 16 LAYING THE MORTAR BED METHOD I

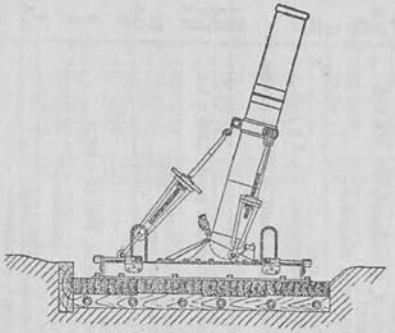


FIG. 17 LAYING THE MORTAR BED METHOD II

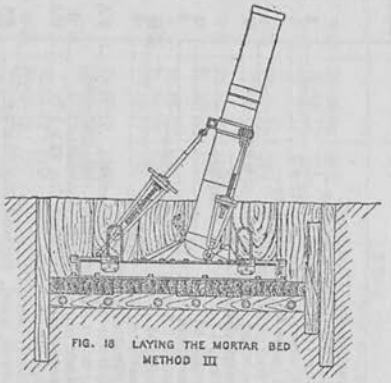


FIG. 18 LAYING THE MORTAR BED METHOD III

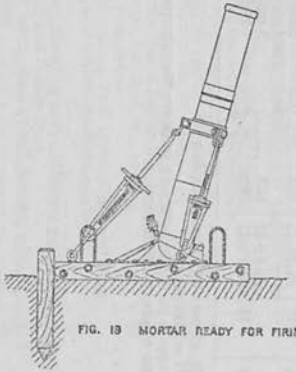


FIG. 19 MORTAR READY FOR FIRING

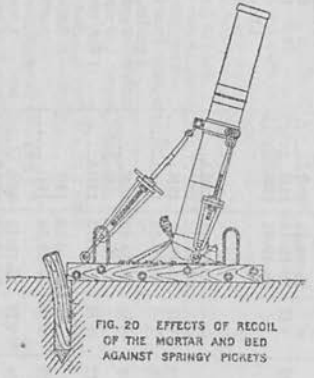


FIG. 20 EFFECTS OF RECOIL OF THE MORTAR AND BED AGAINST SPRINGY PICKETS

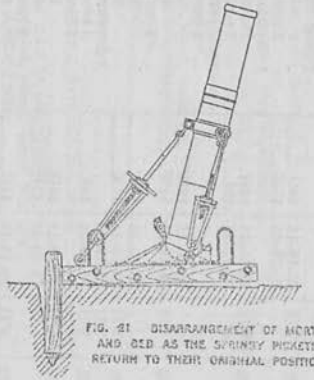


FIG. 21 DISARRANGEMENT OF MORTAR AND BED AS THE SPRINGY PICKETS RETURN TO THEIR ORIGINAL POSITION

6-INCH TRENCH MORTAR MARK I; INSTALLATION OF THE MORTAR.

INSTALLATION.

A careful installation of the mortar in its emplacement will go far toward preventing accidents and insuring steady flight of the projectile. In hard ground a layer of earth free from rock and gravel should be interposed between the subbase and the ground. In swampy ground a large platform made of timbers and sandbags should be prepared to receive the regular subbase.

The minimum elevation at which the shell will pass over the parapet must be ascertained and care taken that no trees or other obstacles are in the path of the projectile. It is important that the emplacement be well drained.

LAYING THE MORTAR BED.

The following methods of laying the mortar bed have been copied from the preliminary notes on the 6-inch Newton trench mortar which were received from England. The nature of the terrain and conditions under which the mortar is fired will govern the method employed in laying the bed.

Method 1 (Fig. 16).—When this method of laying the bed is employed, six pickets must be used, two being driven into the earth at the rear of the platform and two on each side. The rear pickets must be supported by a solid backing, as shown in the diagram, so as to prevent any movement of the bed to the rear when the mortar is fired.

Method 2 (Fig. 17).—In the second method of laying, the platform is supported by the subbase. A 3-inch plank, approximately 9 inches wide and 5 feet long, is placed broad face against the rear edge of the subbase, so as to increase the bearing area over which the backward thrust of the piece is distributed.

Method 3 (Fig. 18).—With this method of laying the mortar platform the subbase is also used, and is laid at the bottom of a recess and supported all round by 3-foot lengths of 3-inch timbers. The subbase is held in place by two sets of wedges which are driven between the front edge and the 3-inch timbers.

In any of the above methods of laying the mortar bed the mortar platform will be further secured by sandbag weighting, as many filled sandbags as it is practicable to place on the platform being used; but care must be taken that the sandbag weighting is kept clear of the elevating and traversing guys so as not to impede the working of the mortar.

Extreme care must be taken that a solid backing is provided for the mortar platform, but more particularly so when the first method is employed, as, especially on sandy soil and when long pickets are used, considerable movement, due to springiness of the pickets, is likely to occur, with consequent irregular shooting of the mortar.

For ranges greater than 500 yards the subbase must be used with the platform, or an equivalent arrangement, to make a 6-inch thickness of supporting timbers. Figures 19, 20, and 21 show the action of the mortar and bed when not solidly supported.

ASSEMBLING.

To assemble the piece, the subbase is first laid, the angle-iron frame attached, and the platform set in and fastened down with the retaining bolts. The rounded end of the barrel is placed in the socket of the base with the guide stud between the vertical guides. The muzzle is then raised sufficiently to engage the elevating hook with its proper clevis on the barrel band. The two traversing guys are then attached to their clevises, the clinometer set, and the guys adjusted and tightened. Care must be used to have the guys as tight as possible to prevent any hammering action between the barrel and the base.

DEMOUNTING.

To demount the mortar the clinometer is first removed, the traversing guys unscrewed, and the hooks disengaged from their clevises. The muzzle is then elevated and the hook of the elevating guy disengaged from its clevis. The muzzle cap is placed upon the muzzle of the gun and strapped, the clinometer placed in the tool and spare-parts box, the free ends of the guys attached to the hooks on the platform provided for this purpose, the platform removed from the subbase, and the subbase disassembled. The mortar is then ready for transportation.

FIRING.

Before firing, the shells are equipped with the propelling charge, ignition cartridge, and clip. The adapter plug is removed and the fuze screwed in, but the safety screw is not withdrawn. The mortar is set up as described on page 35 of this pamphlet, and elevated and traversed to give the range and direction desired. Just before firing, the safety screws on the fuzes are removed. The shell is then placed vane end first in the muzzle of the gun and allowed to drop of its own weight. As it nears the bottom of the barrel, the ignition clip strikes on the anvil, and sets off the ignition cartridge. This in turn ignites the propelling charge which throws the shell from the gun.

MISFIRES.

Should the ignition cartridge fail to function, the misfire plug is unscrewed from the barrel and the misfire charge, consisting of a slow-burning blasting fuze, to the end of which is fastened a small bag of black powder, is inserted into the barrel of the gun, bag end first. A short section of the blasting fuze is left projecting from the barrel and is threaded through the opening in one end of the misfire plug. The misfire plug is then screwed into place and the fuze lighted with a special lighter which is attached to each misfire charge. The flash from the bag of powder on the end of the blasting fuze ignites the propelling charge and the shell is thrown from the gun.

PRECAUTIONS.

Under no circumstance during firing should anyone pass in front of or near the muzzle of the mortar, as there is quite a flash from the muzzle, especially when the long range charges are being employed. Care should be taken so that the man firing does not get burned by trying to fire the piece too rapidly.

Owing to a possible chance of premature, the man firing the piece should be protected by placing a pile of sandbags between himself and the mortar, and as soon as the shell is dropped into the muzzle of the gun, he should take cover.

Keep the mortar and shells clean and free from oil. Oil means smoke; dirt means misfires. Should the interior of the barrel become sticky and misfires occur repeatedly, the surfaces should be cleaned with coal oil.

See that the elevating and traversing guys are always tight.

Great care should be taken not to remove the safety screw from the fuzes too long before firing takes place.

After firing several shots, the clinometer should be observed, and, if necessary, adjustments made to obtain the desired elevation and traverse.

CARE AND PRESERVATION.

GENERAL DIRECTIONS.

The barrel must always be kept clean and free from rust and débris, and the bore slightly greased. If the mortar is not to be used for some time, the interior of the barrel should be cleaned with coal oil and then coated with a light oil. Thick lubricating oil should not be used for this purpose, as it chars and tends to clog the barrel.

The anvil should be examined from time to time, and if found worn so as to be likely to cause misfires, it should be replaced, care being taken that the new anvil is tightly screwed home against its copper washer.

The guide stud on the exterior of the barrel should occasionally be examined, and, if found loosened by vibration, tightened to insure against gas leakage.

The guide-stud groove on the base should be kept free from earth, which may cause the guide stud to be broken off.

After firing, the bore should be cleaned and dried carefully, a light coat of oil applied, and the muzzle cap put on.

Special attention should be given to the elevating and traversing guys. Care should be taken that they do not become bent during transportation. They should be kept clean and greased at all times.

The other parts of the material should be kept clean and in good condition.

The base should be frequently inspected for cracks and the platform always kept free from earth.

In mounting and demounting care should be taken not to injure the projecting misfire plug.

PAINTING.

All parts of the mortar are painted an olive drab except the bore and anvil, a portion of the exterior of the barrel where the clinometer fits, the ball end of the barrel, the guide stud, the misfire adapter, the machined socket of the base, the threaded portions of the guys, and the clinometer.

All parts of the clinometer are black enameled except sliding surfaces and surfaces containing markings or graduations.

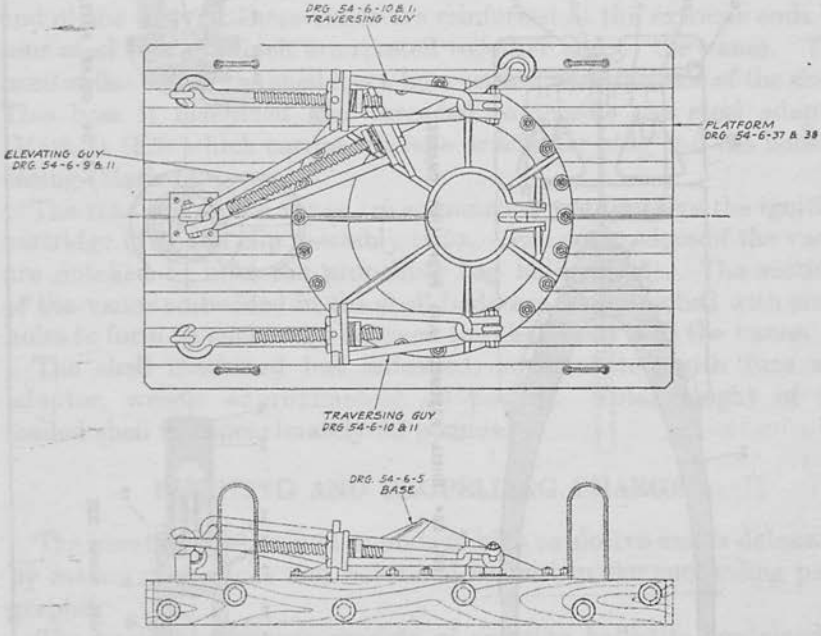
All exterior surfaces of both the platoon and the tool and spare-parts boxes are painted olive drab; the interior surfaces are shellaced.

TRANSPORTATION.

In general the transportation is by motor truck, but in moving about the field the main component parts of the mortar can be carried by the personnel in the following manner:

BARREL.

By the use of the carrying bar and two slings provided for this purpose, one of which is placed around the muzzle end and the other around the breech end, the barrel can be carried by two men.



ARRANGEMENT OF GUYS FOR TRANSPORTATION.

PLATFORM.

Two platform carrying bars slipped through the wire loops on the platform will allow either two or four men to carry it.

SUBBASE.

The subbase and angle-iron frame must be taken down and then distributed for transportation.

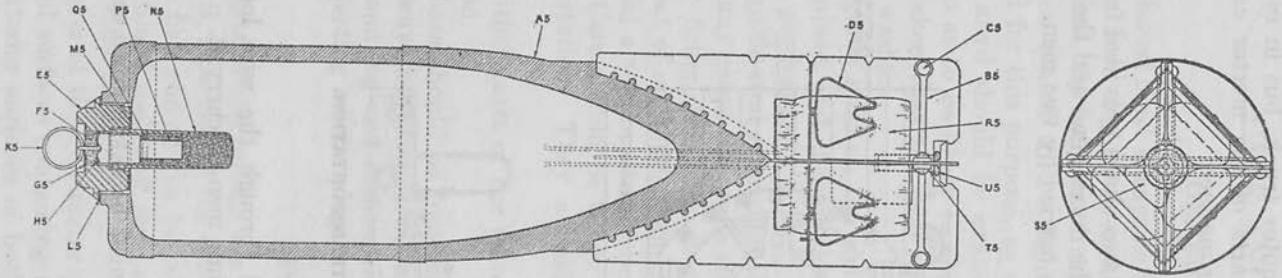


FIG. 22. SHELL ASSEMBLY AND PROPELLING CHARGE

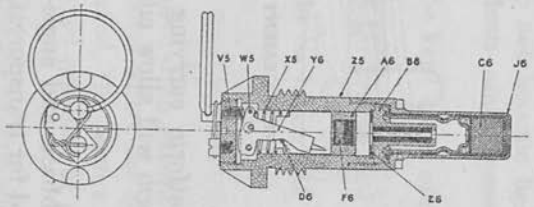


FIG. 23 NON-DELAY FUZE, MARK XVI

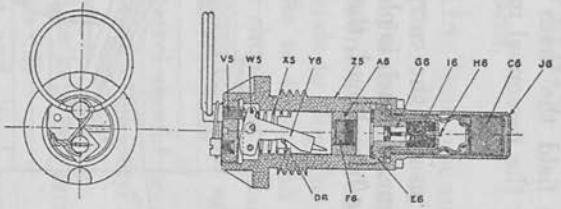


FIG. 24 DELAY FUZE, MARK XVI

AMMUNITION.

SHELL.

The body of the shell is made of cast iron having two bourrelets which are machined. Two vanes, made from sheet steel with holes and sections properly punched, are cast integrally with the pointed end of the body. These vanes are reinforced at the extreme ends by four steel braces, which are riveted together and to the vanes. The nose or flat end of the shell has a boss central with the axis of the shell. This boss is machined and threaded to receive the steel adapter (Mark I) (E5) which carries the fuze or adapter plug and the booster casing (Mark I).

The rear end of the vanes are so punched as to receive the ignition cartridge (T5) and clip assembly (U5). The outer edges of the vanes are notched to hold the propelling bag holder (D5). The sections of the vanes embedded in the shell body are also punched with small holes to form an anchorage between the shell body and the vanes.

The shell machined but unloaded, and unfitted with fuze and adapter, weighs approximately 40 pounds. Total weight of the loaded shell is approximately 53 pounds.

BURSTING AND PROPELLING CHARGES.

The bursting charge is 11 pounds of high explosive and is detonated by means of the fuze and booster described in the succeeding paragraphs.

The propelling charge consists of sporting ballistite contained in silk bags of 1 and 2 ounce capacity. With these two sizes of bags a number of combinations can be obtained and the range can be varied according to these combinations. The maximum charge is 9 ounces and the minimum, 3 ounces. The bags containing the propelling charge are tucked under and held close to the vanes by the propelling-bag holder (D5).

The ignition cartridge is made by cutting a standard rifle cartridge body (Enfield .303 or U. S. .30 model 1898) to approximately 1⅝ inches length and filling to its maximum capacity with grade A1 black powder and sealing with a paper seal. The primer used is a standard rifle cartridge primer.

AMMUNITION.

Symbol.	Quantity.	Nomenclature.	Material.	Location and purpose.
A5	1	Shell, including vanes	Cast iron (vanes, steel)	Contains explosive; vanes stabilize flight of shell.
B5	4	Vane braces	Forged steel	Riveted to vanes; strengthens vanes.
C5	4	Rivet	Steel	Attaches braces (B5) to vanes.
D5	1	Propelling bag holder	do	Wrapped around vanes; holds propelling charge in place.
E5	1	Adapter	do	In nose of shell (A5); carries fuze and booster casing.
F5	1	Adapter plug	Felt	Plugs adapter (E5) before fuze is inserted.
G5	1	Adapter-plug washer (outside).	Tin	On top of adapter plug (F5).
H5	1	Adapter-plug washer (inside).	Copper	Below adapter plug (F5).
K5	1	Ring and link	Steel	In adapter plug (F5) to remove plug.
L5	1	Washer	Lead	Around adapter (E5); forms gastight joint.
M5	1	do	Felt	On lower surface of adapter (E5) to prevent contact between adapter and explosive.
N5	1	Booster casing	Steel	Attached to adapter (E5); holds fuze socket (P5) and booster charge.
P5	1	Fuze socket	Brass (or other metal)	Inside booster casing (N5); provides space for fuze.
Q5	1	Washer	Felt	In booster casing (N5), around fuze socket (P5); holds booster charge in place.
R5	4	2-ounce powder bag		For propelling charge.
S5	1	1-ounce powder bag		Do.
T5	1	Ignition cartridge		Ignites propelling charge (S5 and R5).
U5	1	Ignition-cartridge clip		Holds ignition cartridge (T5) in shell vanes.

FUZE.

V5	1	Safety screw	Steel	In head of fuze. Prevents premature detonation during transportation.
W5	1	Shear pin	Soft aluminum	Passes through striker and closing cap; retains striker in central position after arming.
X5	1	Creep spring	Steel	In body of fuze. Retains percussion pellet in rear of body after arming.
Y6	1	Firing-pin or striker	do	In body of fuze. Used to fire primer.
Z5	1	Body	Brass	Upper half of fuze. Incloses the mechanical parts.
A6	1	Percussion pellet	do	In body of fuze; used to arm striker and contains the primer.
B6	1	Relay carrier	do	In detonator socket; relays flame from primer to detonator.
C6	1	Detonator	Copper casing and fulminate of mercury.	In detonator socket; used to burst detonator socket and detonate booster.
D6	1	Pin	Steel	In percussion pellet; used to move striker from safe position to armed position.
E6	1	Pellet stop washer	Soft lead	Lower end of body; used to prevent rebound of percussion pellet at set-back.
F6	1	Primer	Copper shell and high explosive.	In percussion pellet; starts firing of fuze at impact.
G6	1	Retard carrier	Brass	In detonator socket; gives delay due to slow burning of powder.
H6	1	Quick match	Cotton yarn covered with powder.	In relay cup; gives added intensity to relay pellet.
I6	1	Relay cup	Brass	In detonator socket; relays flame from retard carrier to detonator.
J6	1	Detonator socket	do	Lower half of fuze; contains detonator, relay cap, and retard carrier.

FUZES.

The detonation of the 6-inch trench mortar shell originates with the functioning of the trench mortar fuze, Mark XVI, either the delay or the nondelay type, shown on Plate IX, figures 23 and 24. The delay type of fuze is used whenever the shell is to be employed for demolition purposes. The nondelay type is used when it is desired to employ the shell for fragmentation purposes as used in destroying barbed wire entanglements, etc. The mechanical features of the two types of fuzes are identical—the only difference being in the loading—the nondelay type having a relay carrier which in the delay type is replaced by a retard carrier and a relay cup. This fuze, while nondelay in action, nevertheless is not instantaneous, for its functioning depends upon a retardation of the velocity of the shell, while to be instantaneous it would be necessary to employ the principle of retardation of the velocity of a striker or pellet without affecting the velocity of the shell.

For safety in transportation the fuzes are shipped with a safety screw inserted, which causes the striker to be deflected to one side and out of alignment with the primer.

Referring to figures 23 and 24, the use and functioning of the fuze is as follows: After being inserted in the adapter of the shell and before entering the shell in the mortar, it is necessary to remove the safety screw (V5). By taking hold of the key ring and giving the screw a partial turn, the sealing wire is very easily broken and removal of the safety screw can be accomplished. The safety-screw closing disk is then moved to the central position of the head so as to close the opening left by the removal of the safety screw, which is necessary in order to eliminate the possibility of dirt entering the fuze at impact and causing failure. With the ignition of the propelling charge and the resulting acceleration of the shell, the percussion pellet (A6) moves to the rear relative to the shell. At the same time the striker (Y6) moves to the central position of the fuze. This is actuated by the pin (D6) in the percussion pellet bearing against the cam side of the striker. The percussion pellet (A6) is retained in its rear position of the fuze body by the action of the creep spring (X5). A soft lead washer (E6) is inserted at the lower end of the fuze body so as to absorb the shock of the percussion pellet and to eliminate any rebound action. The fuze is now in the armed condition which it retains during the course of flight. At impact with the ground, the velocity of the shell being retarded, the percussion pellet (A6) moves forward, compressing the creep spring (X5), causing the striker (Y6) to pierce the fulminate primer (F6), thus starting the ignition. When the striker (Y6) is moved to the central position of the fuze, due to the initial acceleration of the shell, the aluminum

shear wire (W5) is thus bent and this aluminum wire is of such a temper as to retain the striker (Y6) in its central position when the percussion pellet (A6) moves forward at impact.

If the nondelay-type fuze is in use, the ignition of the primer (F6) ignites the black powder in the relay carrier (B6) which in turn transmits the flame, giving a spit of fire sufficient to ignite the detonator (C6). If the delay-type fuze is in use, the ignition of the primer (F6) is communicated to the retard carrier (G6) which is loaded with compressed fine black powder, and the burning of this powder pellet then occupies a time of approximately 0.20 second. It is the slow burning of this powder pellet which gives the delay action of the fuze. From there the flame is communicated to the relay cup (I6) loaded with coarse black powder, which in turn ignites the detonator (C6). The insertion of quick match (H6) threaded through the central hole of the relay cup (I6) gives an added intensity to, and assurance of, the burning of the powder pellet in the relay cup.

The firing of the detonator (C6) in the detonator socket (J6) causes the detonation of the high-explosive filling in the booster which surrounds the detonator socket and this in turn causes the detonation of the bursting charge in the shell.

RANGE TABLE, 6-INCH TRENCH MORTAR, MARK I.

6-Inch Trench Mortar Shell, Mark I, Fuze, Mark XVI; weight, 52 pounds 10 ounces= 23.85 kilograms.

ZONE I.

[Charge, 3 ounces ballistite. M. V.=68 m/s.]

Elevation.		Range (meters).	Time of flight (seconds).	Change in range for 100 mgm. change in weight of liter of air (meters).	Change in range for 10 m/s following wind (meters).	Deflection due to 10 m/s cross wind.		50 per cent zone for range (meters).	50 per cent zone for deflection.	
Degrees.	Mils.					Meters.	Mils.		Meters.	Mils.
40	711	389	8.5	5	19	12	31	48	13	33
45	800	389	9.3	6	22	13	33	66	14	36
50	889	382	10.0	6	24	14	37	83	15	39
52	924	375	10.3	6	25	15	39	84	15	41
54	960	368	10.6	6	25	15	41	84	16	43
56	996	358	10.9	5	26	15	43	81	16	45
58	1,031	346	11.1	5	26	15	45	76	16	46
60	1,067	333	11.4	5	27	16	47	71	16	48
61	1,084	325	11.5	5	27	16	49	68	16	49
62	1,102	318	11.6	5	27	16	50	65	16	51
63	1,120	311	11.7	5	28	16	51	61	16	53
64	1,138	303	11.8	4	28	16	53	58	17	55
65	1,156	295	11.9	4	28	16	54	55	17	57
66	1,173	287	12.0	4	28	16	56	52	17	59
67	1,191	279	12.1	4	28	16	58	49	17	61
68	1,209	270	12.2	4	27	16	59	47	17	63
69	1,227	260	12.3	4	27	16	61	44	17	65
70	1,244	250	12.4	4	27	16	63	42	17	68
71	1,262	241	12.5	3	27	16	66	40	17	71
72	1,280	231	12.6	3	26	15	69	39	17	74
73	1,298	221	12.7	3	26	15	72	38	17	77
74	1,316	211	12.7	3	25	15	76	37	17	81
75	1,333	199	12.8	3	25	15	80	36	17	85

ZONE II.

[Charge, 4 ounces ballistite. M. V.=89 m/s.]

Elevation.		Range (meters).	Time of flight (seconds).	Change in range for 100 mgm. change in weight of liter of air (meters).	Change in range for 10 m/s following wind (meters).	Deflection due to 10 m/s cross wind.		50 per cent zone for range (meters).	50 per cent zone for deflection.	
Degrees.	Mils.					Meters.	Mils.		Meters.	Mils.
40	711	658	11.1	9	28	16	25	57	16	25
45	800	658	12.1	10	32	18	27	75	17	26
50	889	641	13.1	10	35	20	31	91	19	30
52	924	628	13.4	10	37	20	32	93	19	31
54	960	613	13.8	10	38	21	34	92	20	33
56	996	596	14.1	10	38	22	36	90	20	34
58	1,031	577	14.4	9	39	22	38	85	20	35
60	1,067	554	14.7	9	39	23	40	80	21	37
61	1,084	543	14.9	9	39	23	42	76	21	38
62	1,102	530	15.0	9	39	23	43	73	21	40
63	1,120	517	15.2	8	39	23	45	69	21	41
64	1,138	504	15.3	8	39	23	46	66	21	42
65	1,156	491	15.4	8	39	23	47	63	21	44
66	1,173	477	15.6	8	39	23	48	60	21	45
67	1,191	462	15.7	7	39	23	50	57	22	47
68	1,209	447	15.8	7	39	23	52	55	22	49
69	1,227	431	15.9	7	38	23	54	52	22	51
70	1,244	415	16.0	7	38	23	56	50	22	53
71	1,262	398	16.1	6	38	23	58	48	22	55
72	1,280	382	16.2	6	38	23	60	47	22	58
73	1,298	365	16.3	6	37	23	63	46	22	61
74	1,316	347	16.4	5	37	23	66	45	22	64
75	1,333	328	16.5	5	36	23	70	44	22	67

RANGE TABLE, 6-INCH TRENCH MORTAR, MARK I.

6-Inch Trench Mortar Shell, Mark I, Fuze, Mark XVI; weight, 52 pounds 10 ounces= 23.85 kilograms.

ZONE III.

[Charge, 5 ounces ballistite. M. V.=107 m/s.]

Elevation.		Range (meters).	Time of flight (seconds).	Change in range for 100 mgm. change in weight of liter of air (meters).	Change in range for 10 m/s following wind (meters).	Deflection due to 10 m/s crosswind.		50 per cent zone for range (meters).	50 per cent zone for deflection.	
Degrees.	Mils.					Meters.	Mils.		Meters.	Mils.
40	711	947	13.2	14	35	19	20	66	20	21
45	800	946	14.5	15	39	22	23	83	21	22
50	918	918	15.7	15	43	24	26	100	23	25
52	924	900	16.1	15	45	25	28	101	23	26
54	960	879	16.6	15	46	26	30	100	24	27
56	996	855	17.0	14	47	27	32	98	24	28
58	1,031	827	17.3	13	48	28	34	93	25	30
60	1,067	796	17.7	13	49	29	36	88	25	31
61	1,084	779	17.8	12	49	29	37	84	25	32
62	1,102	762	18.0	12	49	29	38	81	26	34
63	1,120	744	18.2	12	49	30	40	78	26	35
64	1,138	725	18.3	11	50	30	41	74	26	36
65	1,156	705	18.5	11	50	30	42	71	26	37
66	1,173	685	18.6	11	50	30	44	68	27	39
67	1,191	664	18.8	10	50	30	46	65	27	40
68	1,209	642	18.9	10	50	31	48	63	27	42
69	1,227	620	19.0	9	49	31	50	61	27	44
70	1,244	596	19.2	9	49	31	52	59	27	45
71	1,262	572	19.3	9	49	31	54	57	27	47
72	1,280	547	19.4	8	49	31	57	55	27	50
73	1,298	522	19.5	8	48	31	59	54	28	53
74	1,316	495	19.6	7	48	30	61	53	28	57
75	1,333	468	19.7	7	48	30	64	52	28	60

ZONE IV.

[Charge, 6 ounces ballistite. M. V.=120 m/s.]

Elevation.		Range (meters).	Time of flight (seconds).	Change in range for 100 mgm. change in weight of liter of air (meters).	Change in range for 10 m/s following wind (meters).	Deflection due to 10m/s crosswind.		50 per cent zone for range (meters).	50 per cent zone for deflection.	
Degrees.	Mils.					Meters.	Mils.		Meters.	Mils.
40	711	1,161	14.8	18	40	23	20	76	23	20
45	800	1,160	16.2	19	45	26	22	92	25	22
50	889	1,124	17.4	19	49	29	25	108	27	24
52	924	1,104	17.8	19	50	30	27	110	27	25
54	960	1,078	18.3	19	51	31	29	109	28	26
56	996	1,048	18.7	18	53	32	31	107	28	27
58	1,031	1,013	19.2	18	54	33	33	102	29	28
60	1,067	975	19.6	18	55	34	34	96	29	30
61	1,084	954	19.8	17	55	34	36	93	30	31
62	1,102	932	20.0	17	56	35	38	89	30	32
63	1,120	910	20.2	16	56	35	39	86	30	33
64	1,138	887	20.4	16	56	36	40	83	31	35
65	1,156	862	20.5	15	56	36	42	79	31	36
66	1,173	836	20.7	15	57	36	43	76	31	37
67	1,191	810	20.9	15	57	36	45	74	31	38
68	1,209	783	21.0	14	57	37	47	71	32	40
69	1,227	755	21.2	14	57	37	49	69	32	42
70	1,244	726	21.3	13	57	37	51	67	32	44
71	1,262	696	21.5	13	57	37	53	65	32	46
72	1,280	666	21.6	12	57	37	55	63	32	48
73	1,298	635	21.8	11	57	37	57	62	32	50
74	1,316	603	21.9	11	57	36	60	61	32	53
75	1,333	570	22.0	10	56	36	63	60	32	56

RANGE TABLE, 6-INCH TRENCH MORTAR, MARK I.

6-Inch Trench Mortar Shell, Mark I, Fuze, Mark XVI; weight, 52 pounds 10 ounces = 23.85 kilograms.

ZONE V.

[Charge, 7 ounces ballistite. M. V.=131 m/s.]

Elevation.		Range (meters).	Time of flight (seconds).	Change in range for 100 mgm. change in weight of liter of air (meters).	Change in range for 10 m/s following wind (meters).	Deflection due to 10 m/s cross wind.		50 per cent zone for range (meters).	50 per cent zone for deflection.	
Degrees.	Mils.					Meters.	Mils.		Meters.	Mils.
40	711	1,353	16.4	22	46	25	18	81	27	20
45	800	1,352	17.9	23	51	29	21	99	29	22
50	889	1,315	19.3	24	56	32	24	115	31	24
52	924	1,290	19.9	24	58	34	26	117	32	25
54	960	1,260	20.4	24	60	35	28	116	33	26
56	995	1,225	20.9	23	61	36	30	114	34	28
58	1,031	1,185	21.4	23	62	38	32	109	35	30
60	1,067	1,140	21.8	22	63	39	34	103	35	31
61	1,084	1,116	22.0	21	64	39	35	100	35	32
62	1,102	1,092	22.2	20	64	40	37	97	36	33
63	1,120	1,065	22.4	20	64	40	38	93	36	34
64	1,138	1,037	22.5	19	65	41	40	90	36	35
65	1,156	1,008	22.7	19	65	41	41	87	36	36
66	1,173	980	22.9	18	65	41	42	84	37	38
67	1,191	950	23.1	18	66	42	44	81	37	39
68	1,209	918	23.2	17	66	42	46	79	37	40
69	1,227	885	23.4	17	66	42	47	77	37	42
70	1,244	852	23.5	16	66	42	49	75	38	45
71	1,262	818	23.7	16	66	42	51	73	38	47
72	1,280	783	23.8	15	66	42	54	71	38	49
73	1,298	748	23.9	14	66	42	56	70	39	52
74	1,316	711	24.1	14	65	42	59	69	39	55
75	1,333	672	24.2	13	65	41	61	68	39	58

ZONE VI.

[Charge, 8 ounces ballistite. M. V.=140 m/s.]

Elevation.		Range (meters).	Time of flight (seconds).	Change in range for 100 mgm. change in weight of liter of air (meters).	Change in range for 10 m/s following wind (meters).	Deflection due to 10 m/s cross wind.		50 per cent zone for range (meters).	50 per cent zone for deflection.	
Degrees.	Mils.					Meters.	Mils.		Meters.	Mils.
40	711	1,524	17.3	26	50	28	18	89	30	20
45	800	1,522	19.0	28	56	32	21	108	33	22
50	889	1,483	20.5	29	61	36	24	124	36	24
52	924	1,458	21.1	28	63	37	25	125	37	25
54	960	1,426	21.7	28	65	39	27	124	38	26
56	995	1,388	22.2	27	66	40	29	121	38	27
58	1,031	1,343	22.7	26	68	42	31	117	39	29
60	1,067	1,290	23.2	25	69	43	33	111	40	31
61	1,084	1,262	23.4	25	69	44	35	108	40	32
62	1,102	1,233	23.6	24	70	44	36	105	41	33
63	1,120	1,202	23.9	23	70	45	37	101	41	34
64	1,138	1,170	24.1	23	71	45	38	98	41	35
65	1,156	1,136	24.3	22	71	45	40	95	41	36
66	1,173	1,102	24.4	21	71	46	42	92	42	38
67	1,191	1,067	24.6	21	72	46	43	89	42	39
68	1,209	1,030	24.8	20	72	46	45	87	42	41
69	1,227	993	25.0	19	72	46	47	85	42	42
70	1,244	955	25.2	18	72	47	49	83	43	43
71	1,262	915	25.3	18	72	47	51	81	43	46
72	1,280	875	25.4	17	72	47	53	79	43	49
73	1,298	833	25.6	16	72	46	55	78	43	52
74	1,316	791	25.8	15	72	46	58	77	44	56
75	1,333	748	25.9	14	72	46	61	76	44	59

RANGE TABLE, 6-INCH TRENCH MORTAR, MARK I.

6-Inch Trench Mortar Shell, Mark I, Fuze, Mark X VI; weight, 52 pounds 10 ounces= 23.85 kilograms.

ZONE VII.

[Charge, 9 ounces ballistite. M. V.=149 m/s.]

Elevation.		Range (meters).	Time of flight (seconds).	Change in range for 100 mgm. change in weight of liter of air (meters).	Change in range for 10 m/s following wind (meters).	Deflection due to 10 m/s cross wind.		50 per cent zone for range (meters).	50 per cent zone for deflection.	
Degrees.	Mils.					Meters.	Mils.		Meters.	Mils.
40	711	1,702	18.3	33	56	33	19	96	34	20
45	800	1,700	20.0	34	62	38	22	115	37	22
50	889	1,655	21.5	34	68	42	25	131	40	24
52	924	1,625	22.1	33	70	44	27	132	41	25
54	960	1,589	22.7	33	72	46	29	131	42	26
56	996	1,547	23.3	32	73	47	31	129	43	28
58	1,031	1,499	23.8	32	75	49	33	125	44	29
60	1,067	1,443	24.3	30	76	50	35	119	44	30
61	1,084	1,414	24.6	30	77	51	36	116	45	32
62	1,102	1,383	24.8	29	77	52	38	113	45	33
63	1,120	1,350	25.0	28	78	52	39	109	46	34
64	1,138	1,315	25.2	28	78	53	40	106	46	35
65	1,156	1,279	25.5	27	78	53	41	103	46	36
66	1,173	1,241	25.7	26	79	53	43	100	47	38
67	1,191	1,202	25.9	25	79	54	45	97	47	39
68	1,209	1,162	26.1	24	79	54	46	95	47	41
69	1,227	1,120	26.3	24	79	54	48	93	48	43
70	1,244	1,075	26.5	23	80	54	50	91	48	45
71	1,262	1,030	26.6	22	80	54	52	89	48	47
72	1,280	983	26.8	21	80	54	55	87	48	49
73	1,298	935	27.0	20	80	54	58	85	49	52
74	1,316	888	27.1	19	80	54	61	84	49	55
75	1,333	840	27.3	18	80	54	64	83	50	59