

**INSTRUCTIONS FOR MOUNTING,  
USING AND CARING FOR  
DISAPPEARING CARRIAGE L. F.,  
MODEL OF 1898 FOR 6-INCH  
GUN, MODEL OF 1897 MI**

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Instructions for Mounting, Using and Caring for Disappearing Carriage L. F., model of 1898 for 6-inch gun, model of 1897 MI by Various

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**VARIOUS**

**INSTRUCTIONS FOR MOUNTING,  
USING AND CARING FOR  
DISAPPEARING CARRIAGE L. F.,  
MODEL OF 1898 FOR 6-INCH  
GUN, MODEL OF 1897 MI**



1. a.

WAR DEPARTMENT,  
OFFICE OF THE CHIEF OF ORDNANCE,  
*Washington, November 28, 1911.*

This manual is published for the information and government of the Regular Army and Organized Militia of the United States.

By order of the Secretary of War:

WILLIAM CROZIER,  
*Brigadier General, Chief of Ordnance.*

(3)



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**INSTRUCTIONS FOR MOUNTING, USING, AND CARING FOR DISAPPEARING  
CARRIAGE, L. F., MODEL OF 1898, FOR 6-INCH GUNS, MODEL OF 1897 M.**

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(EIGHT PLATES.)

[The points in italics are of importance or concern the safety of the carriage, and should be specially noted.]

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GENERAL DESCRIPTION.

**THE EMPLACEMENT** (Pl. I).—Emplacements for these carriages are entirely of concrete and can be arranged for a maximum field of fire of  $170^{\circ}$ . This limitation is not due to the inability of the carriage to traverse through  $360^{\circ}$ , but to the requirements of parapet protection for the matériel and cannoneers. The anchor bolts are set in concrete during the construction of the emplacement, the depressions for the thrust plates being also provided in the top surface.

**PRINCIPAL PARTS.**—Base ring, azimuth circle; traversing-roller system; racer; chassis; transom; top carriage; recoil and counter-recoil system; gun levers; crosshead; counterweight; elevating arm; traversing, elevating, retracting, and sighting mechanisms; sighting platform; lanyard attachment; firing pistol; and accessories, including ammunition trucks, shot tongs, and implements.

**ACTION OF CARRIAGE.**—Upon firing the piece the gun-lever axle moves to the rear, carrying the top carriage with it. The lower ends of the levers move vertically upward, being constrained by the crosshead traveling in the vertical crosshead guides. The trunnions of the gun move downward and to the rear in the arc of an ellipse.

The energy of recoil is absorbed partly by raising the counterweight and partly by the movement of the masses up the inclined chassis rails, but principally by the resistance of the recoil cylinders; and when the gun comes to rest it has the proper loading angle of  $5^{\circ}$ . After loading, the pawls are tripped, and the excess of the moment of the counterweight over the moment of the gun, etc., enables it to raise the gun to the firing position. If this excess be small, the velocity of the counterrecoil will be slow; but if more counterweight be added, the velocity will increase, and the time required for going into battery will decrease.

**BASE RING.**—The base ring is made in one piece of cast iron, and is held in place on the foundation by twelve 1.75-inch bolts. Twelve bronze screws for leveling the base ring are provided near the foundation bolts. They are set against steel plates in the foundation and are used to level the carriage. The base ring, in addition to having the lower roller path on its upper surface, forms the pintle for the carriage, and is provided with 12 holes for filling the cavity beneath the roller path with grouting after the base ring is in place and leveled.

**AZIMUTH CIRCLE AND POINTER.**—A brass azimuth circle, attached by countersunk screws to the top of the pintle of the base ring, is graduated in degrees, the numbers of which are to be added after the carriage is erected in its emplacement. The top of the racer is cut away on the left side to expose the azimuth circle; the azimuth pointer and subscale are fastened to the racer. The subscale has slotted holes to give it a lateral motion for adjustment, after which it is fixed in position by two dowels. The subscale is graduated in decimals of a degree, the least reading being 0.01 of a degree. The whole (azimuth subscale and pointer) is protected by a hinged bronze cover.

**RACER.**—The racer is made in one piece of cast steel and has an outside diameter of 9 feet. On the underside there is an annular projection 1.25 inches thick, which is bored to fit inside a corresponding projection from the base ring, forming the pintle. The pintle surface of the racer is provided with an oil groove, and is lubricated through four holes from the top of the racer, closed by bronze screw plugs. The upper roller path is also formed on the underside of the racer.

**TRAVERSING-ROLLER SYSTEM.**—The racer rests upon a circle of 20 live, conical, traversing rollers running on the base ring. These rollers are equally spaced in distance rings of wrought iron, which are united and stiffened by 10 separators. The rollers are of steel, forged with a solid trunnion at each end and flanged on the inner end to hold them concentric with the base ring.

A dust guard, made of steel, arranged in four sections, protects the traversing rollers and is bolted to the racer.

**CHASSIS AND TRANSOM.**—The two chassis of cast iron are bolted to the racer and are united near their middle points by a cast-steel transom. The upper surfaces of the chassis rails form the recoil-roller path and slope  $1^{\circ}$  to the front to facilitate the return of the piece to the firing position, thus reducing the necessary preponderance of the counterweight.

**TOP CARRIAGE AND RECOIL ROLLERS.**—The top carriage is made of gun iron, cast in one piece, and consists of two side frames containing the beds for the gun-lever axles and two recoil cylinders,