(No Model.)

S. H. EMMENS.

GUN CARRIAGE.

No. 422,513. Patented Mar. 4, 1890.

Fig. 1.

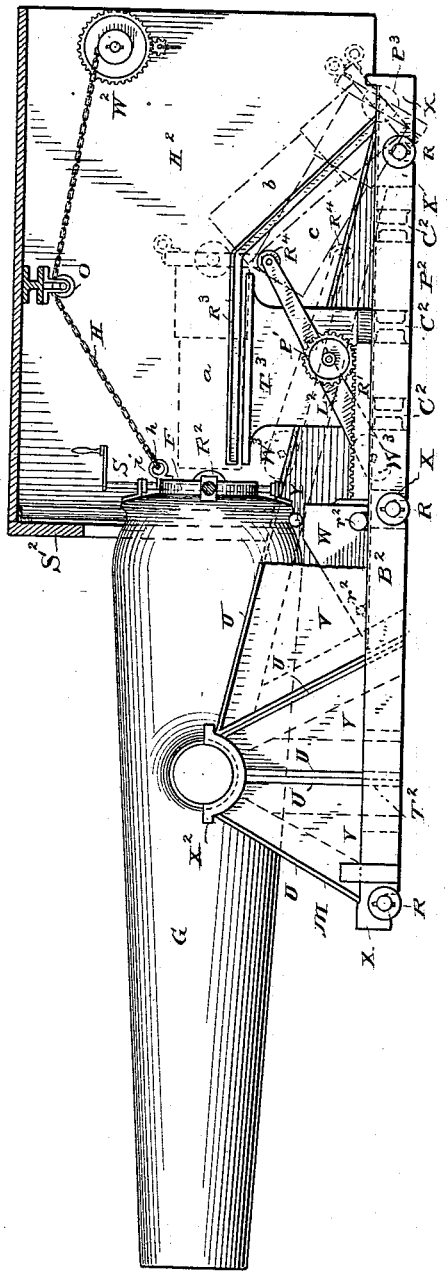
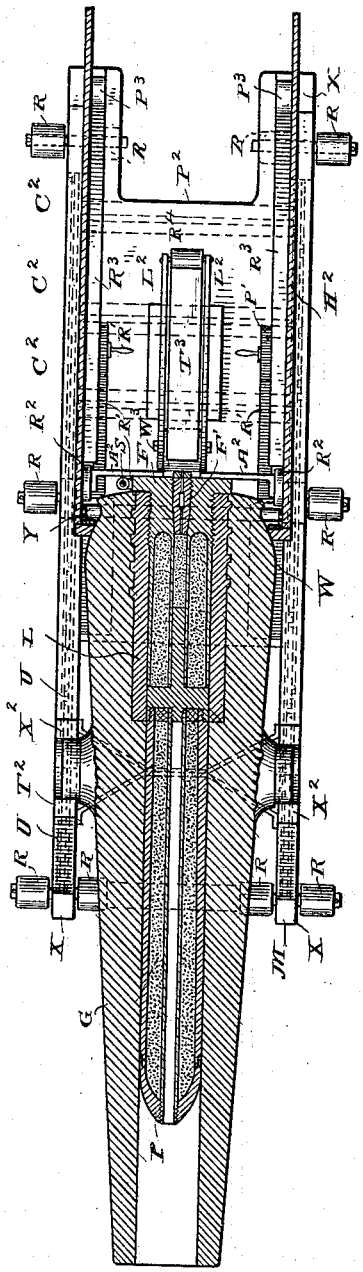


Fig. 2.



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STEPHEN H. EMMENS, OF LONDON, ENGLAND.

GUN-CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 422,513, dated March 4, 1890.

Application filed February 23, 1889. Serial No. 300,931. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN HENRY EMMENS, a subject of the Queen of Great Britain and Ireland, and a resident of London, England, temporarily residing at Harrison, in the State of New York, have invented a new and useful Improvement in Gun-Carriages, of which the following is a specification.

This invention consists in certain novel combinations of parts as hereinafter claimed, the whole primarily designed for embodiment in a carriage for a piece of existing ordnance converted into a "torpedo-howitzer," according to a separate invention set forth in my specification forming part of an application for Letters Patent for an "improvement in ordnance and projectiles for throwing high explosives," filed February 20, 1889, Serial No. 300,558. The improved gun-carriage and individual features thereof may also be used in connection with heavy ordnance of other types.

The objects of this invention are, first, to form a stiff and solid gun-carriage of wrought-iron or steel, which shall afford protection to the gunners against hostile fire; secondly, to facilitate withdrawing, lowering, and re-elevating the breech-plug by manual power; thirdly, to facilitate a further depression of the breech-plug out of the way of the projectile in loading, and, fourthly, to facilitate elevating and depressing the gun by manual power, as hereinafter more fully set forth.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of the drawings is a partly-sectionized side elevation of a converted Rodman gun mounted and operated according to this invention. Fig. 2 represents an axial horizontal section of the same and a plan of the parts at and below the plane of section.

Like letters of reference indicate corresponding parts in both figures.

G represents the gun, which may be any piece of heavy breech-loading ordnance having horizontal trunnions.

The particular gun shown in the drawings, and for which the carriage is primarily designed, is a converted cast-iron Rodman gun having a steel lining-tube L, Fig. 2, a high-explosive projectile P, a combined fermeture and charge-holder F as its breech-plug, a subsidiary fermeture F′, and screw or worm gear S for tightening and loosening the breech-plug. These parts (shown in the drawings) are more fully set forth in the specification of said application for patent, filed February 20, 1889, and their peculiarities and combinations form no part of the invention hereinafter claimed.

The carriage proper consists of a mount M, a rear platform P^2, a hood H^2, and a front shield S^2, all of wrought-iron or steel. The mount M is constructed as follows: Two longitudinal bearers B^2, each composed of two vertical plates, are provided at their ends and centers with bearing-blocks X, that rest on axles furnished with six pairs of rollers R. The front axle extends across from bearer to bearer, but the central and rear rollers work on short axles, as shown at the rear in Fig. 2. The bearers are rigidly connected with each other by cross-beams C^2, which support the rear platform P^2, and by a brace-tie T^2, near the front of the carriage. The bearers B^2 support upwardly-projecting struts U, of T-iron or steel, which converge at and immediately under bearings or socket pieces X^2, in which the trunnions of the gun rest. Said struts are united with vertical plates V, with those of the bearers B, and with each other where they adjoin, so as to form rigid and efficient supports for the gun.

The hood H^2 consists of steel plates forming plain side walls and a flat arch uniting the same, and is securely attached to the top of the rear pair of said struts U, from which its sides rise.

The shield S^2 is a plain steel plate closing the front of the hood, with the exception of such space as is necessary for the elevation and depression of the gun.

For the elevating and depressing operation a pair of horizontally-sliding wedges W are provided with anti-friction rollers r^2, Fig. 1, and mounted upon the front portion of the rear platform P^2, or supported in equivalent manner at the respective sides of the breech end of the gun. These wedges are moved backward and forward by racks and pinions R′ R′. The wedges coact with the respective ends of a yoke-bar Y, which extends across underneath the breech of the gun and is suitably attached to the latter.

The mechanical force required for with-

drawing or retracting and lowering the breech-plug after firing and for lifting the projectile and breech-plug into loading position is obtained by means of a windlass W^2, Fig. 1, an overhead snatch-block O, suspended from a cross-girder at the top of the hood H^2, and a handling-chain H, terminating in a hook *h*, to coact with which the rear rim of the breech-plug is provided at top with an eye *i*.

The breech-plug is further provided with a pair of laterally-projecting rigid arms A^2, which carry at their outer ends spindles for a pair of rollers R^2. The side walls of the hood H^2 are provided inside with fixedly-attached pieces of suitably-bent angle-iron, forming plate-rails R^3, to coact with and guide said rollers R^2, and pockets P^3 are formed at the lower extremities of said rails to hold said rollers in their outermost position.

Midway between the sides of the hood a central rest or table T^3 is erected upon the rear platform P^2, with its top at a proper height and of a suitable width to engage with the lowermost groove of the interrupted screw when the breech-plug is drawn out, and to suitably support the projectile and breech-plug preparatory to thrusting them into the breech of the gun in its loading position.

On the respective sides of the rest or table T^3 a pair of levers L^2 are pivoted to its central support by a horizontal pivot common to both. A roller R^4 is pivoted between their rear ends, and a counterbalance-weight W^3 is attached to them between their front ends. These parts are shown in their normal positions in full lines in Fig. 1. The object of the device is to support the front end of the breech-plug when it is pulled back from its position indicated by the dotted outline *a* in Fig. 1, to its retracted position indicated by the dotted outline *b*, where its rollers R^3 rest in the pockets P^3, and the breech-plug is no longer supported by the table T^3. Owing to the pivotal support afforded by said rollers R^3 and the yielding support so afforded by said roller R^4, the front end of the breech-plug is readily depressed until it occupies the position wholly below the level of the table T^3, indicated by the dotted outline *c*.

The operation of the above-described devices, as employed in connection with said combined fermeture and charge-holder F as the breech-plug, is as follows: The breech-plug is first loosened by turning the worm or screw gear S. The handling-chain H is then coupled to it by means of the hook and eye *h i*, and with the aid of the windlass W^2, rollers R^2, rails R^3, and table T^3, the breech-plug is readily retracted and lowered to said position *b*. The propelling-cartridges are then loaded into the chambers provided for them in the front of the breech-plug, and the plug is pushed down into said position C, so as to leave a clear way for the introduction of the projectile P. The latter is then lifted onto the table T^3 and thrust forward into the gun. Then the weight W^3 is depressed to its normal position and the front end of the plug is re-elevated by the levers L^2 and roller R^4, and from the position *b*, to which it is thus restored, the breech-plug is hoisted by the windlass W^2 and chain H, with the aid of the overhead block O, rollers R^2, and rails R^3, into said position *a*, from which it is thrust into the breech behind the projectile. The breech-plug is then tightened by means of the worm or screw gear S. A starting-cartridge is introduced through the axial bore, into which the subsidiary fermeture F′ fits, supposing the latter to be employed, and this fermeture F′ is then introduced and tightened. The gun is then ready for firing.

Having thus described the said improvement, I claim as my invention and desire to patent under this specification—

1. In combination with a gun having horizontal trunnions, a gun-carriage comprising longitudinal bearers, upwardly-projecting struts supported by said bearers, socket-pieces for trunnion-bearings supported by the converging upper ends of the struts at the respective sides of the mount, a protecting-hood supported by the rear pair of said struts, and a front shield attached to said hood, substantially as hereinbefore specified.

2. In combination with a gun having a longitudinally-removable breech-plug provided with laterally-projecting arms and rollers at the extremities of said arms, a carriage for the same having a rear platform and side walls, a fixed rest or table projecting above said platform close behind the gun, and guide-rails affixed to said side walls and coacting with said rollers, substantially as hereinbefore specified.

3. In combination with a gun having a longitudinally-removable breech-plug, a carriage for the same having a fixed rest or table close behind the gun, behind which table the breech-plug can be lowered, and levers at the sides of said table having at their rear ends a support for the front end of the lowered breech-plug, substantially as hereinbefore specified.

4. In combination with a gun having horizontal trunnions and a yoke-bar crossing underneath its breech, a carriage having trunnion-bearings, a rear platform and side walls, a pair of horizontally-sliding wedges supported by said platform under the respective ends of said yoke-bar, and provided with rearwardly-extending racks and gearing, the shafts of which are supported by the side walls of the carriage, for moving said wedges backward and forward, substantially as hereinbefore specified.

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