(No Model.) 3 Sheets—Sheet 1.

G. W. RENDEL.

MOUNTING AND LOADING APPARATUS FOR GUNS.

No. 383,768. Patented May 29, 1888.

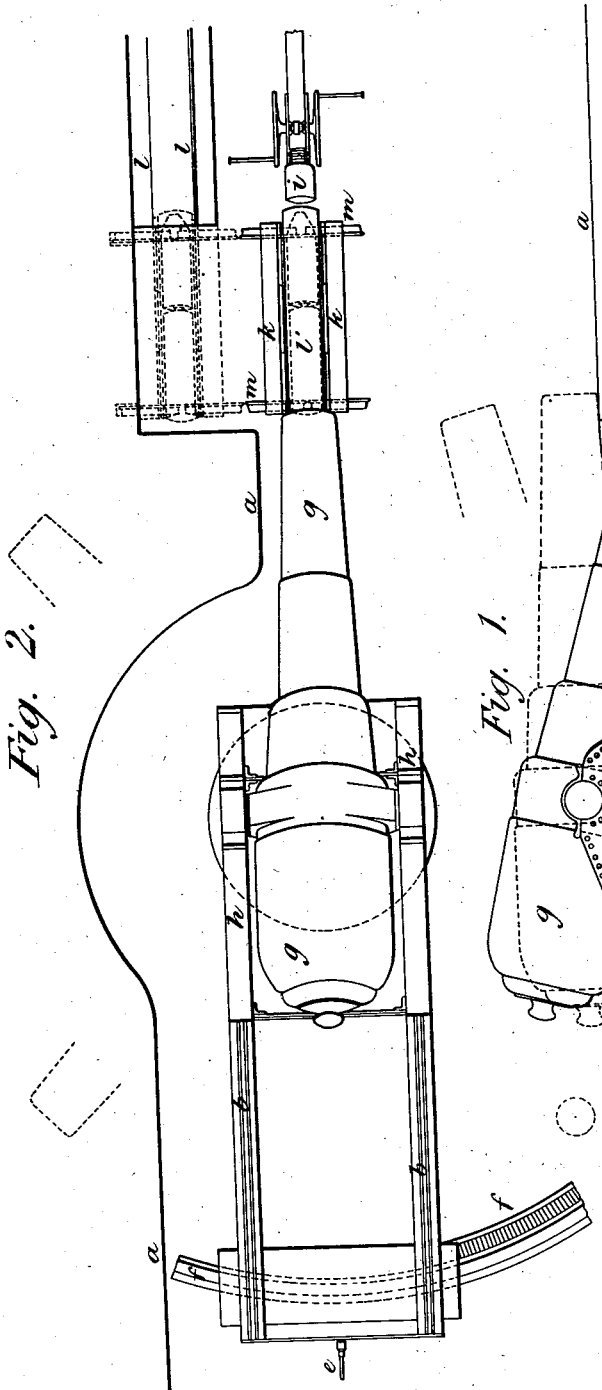

Fig. 2.

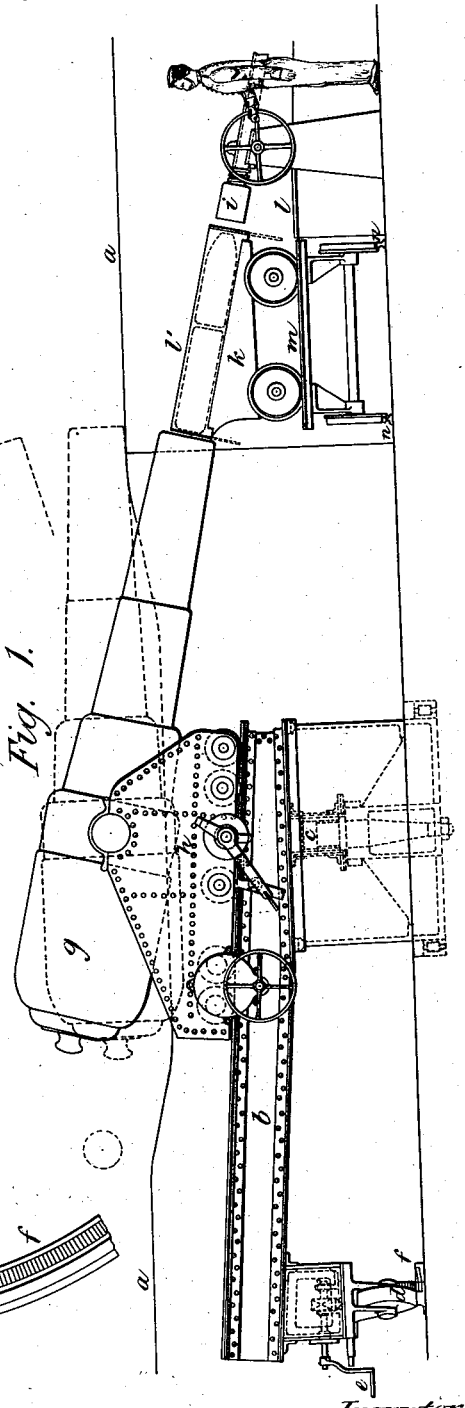

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

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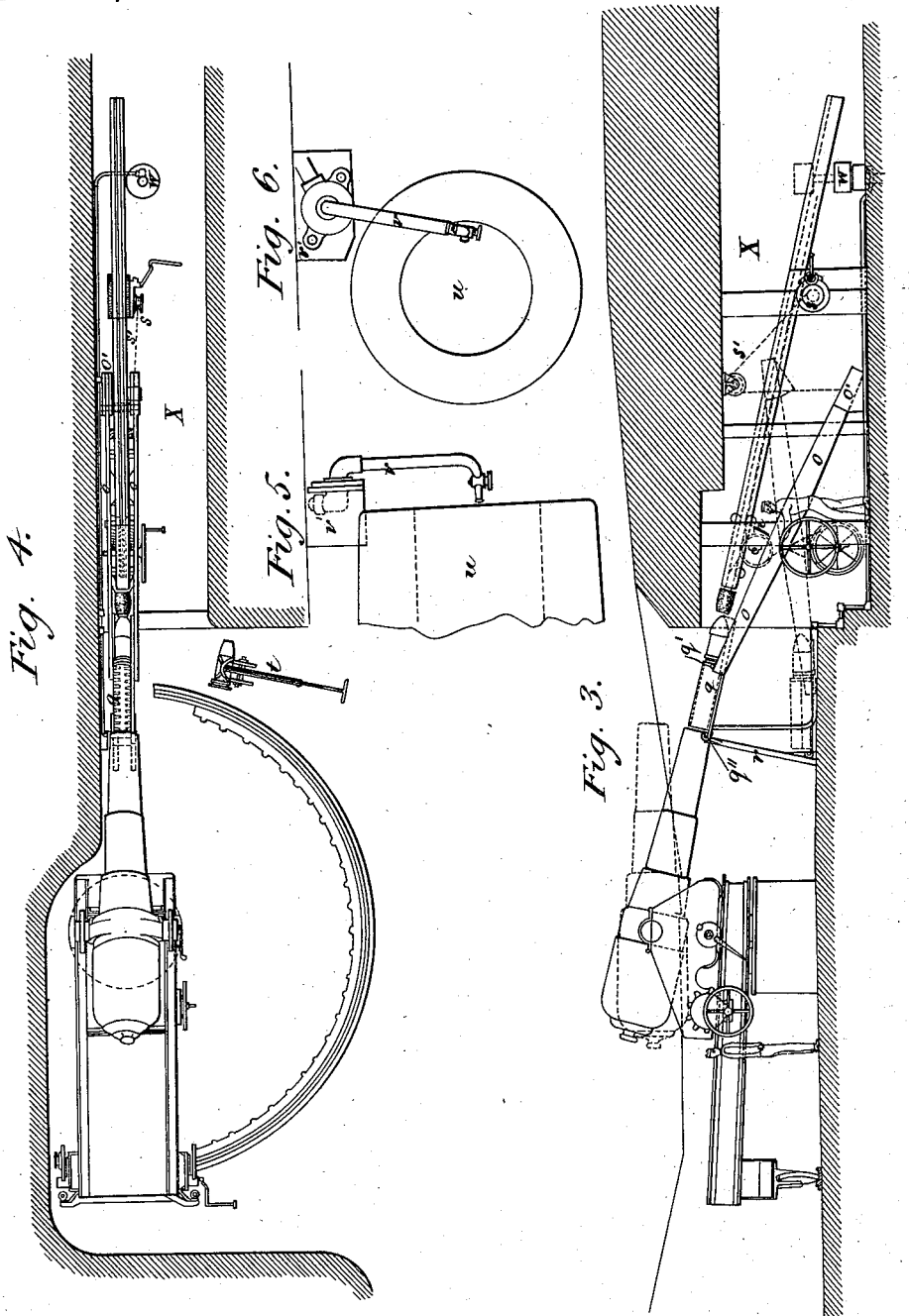

Witnesses.
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(No Model.) 3 Sheets—Sheet 3.

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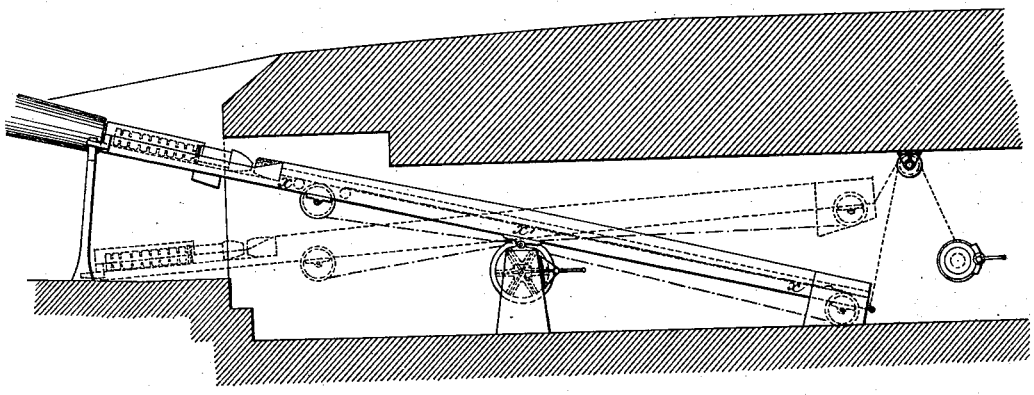
MOUNTING AND LOADING APPARATUS FOR GUNS.

No. 383,768. Patented May 29, 1888.

Fig. 1.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE WIGHTWICK RENDEL, OF NEWCASTLE-UPON-TYNE, ENGLAND.

MOUNTING AND LOADING APPARATUS FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 383,768, dated May 29, 1888.

Application filed June 7, 1887. Serial No. 240,543. (No model.) Patented in England June 7, 1878, No. 2,282.

To all whom it may concern:

Be it known that I, GEORGE WIGHTWICK RENDEL, a subject of the Queen of Great Britain, residing at Newcastle-upon-Tyne, England, civil engineer, have invented certain new and useful Improvements in Mounting Guns and in the Arrangement of Apparatus in Connection Therewith, (for which a patent has been granted to me in Great Britain dated June 7, 1878, No. 2,282,) of which the following is a specification.

The object of this invention is to mount guns "en barbette" in such manner and with such mechanical appliances that they may be easily and rapidly worked by a small number of men, who remain protected by a high parapet from all but vertical fire. The parapet is made everywhere of a height exceeding that of a man, and the gun and its carriage are mounted upon a pivoting-platform which is sufficiently elevated to enable the gun to fire freely over the parapet. The pivot is so placed that when the gun is run out it is immediately beneath its center of gravity. The gun-platform can therefore be moved with ease around the pivot when the gun is in this position, as it is at all times when motion about the pivot is required, for according to this system the gun is loaded as well as fired when run out along the platform.

The loading of the gun is effected by means of a mechanical rammer worked by a crank-handle, or in other convenient manner. This rammer is parallel to and under cover of the parapet. It is inclined upward and works in such a direction that when the gun has been suitably placed the head of the rammer is able to enter the muzzle and to pass up the bore.

The cartridge and the projectile are brought from the service-magazine to the gun by a trolley running along rails laid close against the parapet. They are arranged in their proper relative positions in a tube, which is closed at the ends by slides or covers. This tube having been placed upon the trolley, the trolley is run along the railway until it is landed upon a carriage running upon a transverse line of rails. The carriage, with the loaded trolley upon it, is then traversed a short distance, which brings the cartridge and the projectile into position to enter the gun. The slides or covers are then withdrawn from the ends of the tube, and the rammer being set in motion the charge is forced home. The gun being thus loaded, the muzzle is elevated, ready for firing, and the platform is rotated until the gun is brought to bear upon the object to be fired at.

The man aiming may stand upon the gun-platform, in which case he will be for the most part protected by the gun in front of him; or even this amount of exposure may be avoided by the use of reflecting-sights. After firing and the recoil of the gun with its carriage along the platform, the gun is allowed at once to run out along the inclined platform. It is then turned and its muzzle is depressed until the bore is aligned with the rammer, when it is ready to be again loaded.

In order that my invention may be most fully understood and readily carried into effect, I will proceed to describe the drawings hereunto annexed.

In the drawings, Figures 1 and 2 on Sheet 1 represent a gun mounted en barbette with appliances in connection therewith, the whole being arranged in accordance with my invention. Fig. 1 is an elevation, and Fig. 2 is a plan. Figs. 3 and 4 show a modification of the arrangement which admits of the men employed in loading being protected from vertical as well as direct fire. Fig. 3 is an elevation, and Fig. 4 a plan. Figs. 5 and 6 show a plan and elevation of the means adopted to avoid the necessity for sponging the gun. Fig. 7 shows in elevation another modification, in which the rammer and shot-lifter are combined into one apparatus.

In Figs. 1 and 2, *a a* is the line of the parapet extending in front of the gun, and laterally beyond or on one side thereof to a distance at the least sufficient to shelter the loading apparatus. This parapet is sufficiently high to afford complete protection from direct fire.

b is the gun-platform. It is elevated sufficiently to enable the gun to fire over the parapet. The platform *b* is supported at one end upon the pivot *c*, which is so placed in respect to it that when the gun is run out the center of gravity of the gun and carriage is immediately over the pivot, and the weight upon the wheels *d*, which support the platform at its other end, is then very small. In consequence of this arrangement, the platform can be

moved around the pivot, when the gun is run out, with great ease.

c is a cranked handle for actuating the spur-gear, by which this motion is communicated to the gun-platform. The motion is conveyed to a toothed wheel, which engages with the teeth of a rack formed upon the track *f*, on which the wheels *d d* run.

g is the gun, and *h* its carriage. Of these parts no detailed description is necessary. There is, as is usual, gear to control the gun in its recoil and running out; but I arrange the elevating-gear and the compressor-gear so that they are all below the level of the protecting parapet, and may be worked by men from the level of the battery-floor and under cover, instead of as usual from a plank on the platform itself.

i is the mechanical rammer. The ramrod is arranged to work in inclined guides, and to receive its motion from a crank-handle turned by manual labor. A pinion on the axis of the crank-handle in gear with a rack upon the ramrod is a convenient arrangement; or a wire or hemp rope attached to the rammer and passed round a drum in connection with the crank-gear; or, where hydraulic or other power is available, the ramrod may receive its motion in this way.

In the drawings the gun is represented in position for loading. It is run out to the full extent, and by turning the platform upon the pivot the gun is made to face the loading apparatus, and the muzzle being then depressed the bore is fairly aligned with the rammer.

k is a trolley adapted to run upon the railway *l*, leading to the service-magazine. Upon the trolley the cylindrical case *l'*, containing the charge, is placed.

m is a carriage which receives the loading-trolley when it arrives near the muzzle of the gun and running upon the transverse rails *n*. The carriage *m* carries the loading-trolley into such a position as to present the charge truly in front of the muzzle of the gun. The covers being then removed, the action of the rammer drives the charge home.

In place of a straight stiff rammer, I may, if desirable to economize space, or for other reasons, employ a flexible or jointed rammer, such as that described in my British patent, dated December 17, 1872, No. 3,826.

In the modifications shown at Figs. 3 and 4 the loading apparatus is inclosed in a loading-chamber, X, which is open only in front. The rammer is arranged in the manner already described, and it may be identical in form. The drawings, however, indicate the substitution of a chain and barrel for the rack and pinion as a means for communicating motion to the ramrod.

o is a lever mounted upon an axis carried by the uprights or supports *p p*. It is intended to raise the charge to the muzzle of the gun ready for the ramrod to force it home. The lever *o* supports the tray *q* by means of trunnions *q' q'*, with which the tray is provided. By rocking upon its axis the lever *o* is able to take the position indicated by the dotted lines in Fig. 3, and while it is in this position the charge is by any convenient means placed in the tray *q*. This having been done, the lever is made to assume the position shown in full lines, which brings the charge into position to be rammed home. As the lever *o* rises, lugs *q'' q''* upon the tray *q* come against studs projecting from the crutch *r*, upon which the muzzle of the gun is brought to rest preparatory to loading. By this means the tray is caused to tip in such a way as to bring the charge into the true alignment. The lever *o* carries a counterpoise at *o'*, and by a winch, *s*, and a chain, *s'*, this end of the lever is raised during the time occupied in aiming and firing the gun, and during this interval also the charge is put into the loading-tray, so that when the gun comes to the loading position all is in readiness, and it only remains to revolve the winch and the charge is at once carried up to the muzzle. The counterpoise coming to the ground may stop the lever *o* in the proper place; or counter-stops on the tray on the opposite side of the trunnions to *q'' q''*, limiting the range of the tray, will, in connection with the stops *q'' q''*, arrest the lever at the proper height.

t is a hand-barrow with a shot upon it, being brought forward to be deposited in the loading-tray *q*. In place of providing the lever *o* with a counterpoise by which its movement to raise the charge is rendered automatic, this movement may be produced directly by means of the winch. This would, however, involve some loss of time.

I usually make the rammer-head in a form to act as a sponge, also to clean the bore; but Figs. 5 and 6 show, to a larger scale, a means which I adopt to avoid the necessity for sponging the gun.

u is the muzzle of the gun, and *v* is a swiveling pipe connected with the box *v'*. This pipe is fitted with a stop-cock and nozzle, and by its means the gunner throws a jet of water up the bore of the gun before loading. Water is laid onto the box *v'* from the little accumulator *w*, the load of which is lifted after every round or so by any convenient means, and the accumulator is at the same time supplied with water from a bucket. The accumulator may conveniently be of a size to hold water sufficient for two or three rounds.

In the modification shown at Fig. 7 the rammer and shot-lifter are combined into one apparatus.

x is a lever capable of rocking upon a fulcrum at *x'*. This lever is counterpoised and moved by a winch and chain in the manner already described in respect to the lever *o* in the preceding figures. The fore end of the lever *x* forms the loading-tray. It receives the charge when the fore end of the lever is depressed, and by moving it upon its fulcrum raises the charge to the muzzle.

As the drawings indicate, the ramrod is actuated by means of a chain and barrel so ap-

plied as to leave the lever *x* free to rock. A crutch supports the muzzle of the gun when in the loading position, and serves also to stop the end of the lever *x* accurately in the position for loading. Such a crutch is represented in the drawings; but it may be dispensed with, if preferred, the gun being brought down to a stop upon the carriage, and projections upon the lever *x* coming against the muzzle of the gun when the charge is raised to the muzzle.

Having now particularly described the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The gun-mounting apparatus hereinbefore described, consisting of the combination of the platform, the vertical supporting-pivot near its front, the wheels supporting the rear end of the platform, the track for the supporting-wheels concentric with the platform-pivot, the gun-carriage adapted to recoil along the platform, the parapet extending both in front of and laterally beyond the gun-carriage, and the ramming apparatus, working parallel with the lateral extension of the parapet, protected by it and in line with the bore of the gun and close to its muzzle when run forward on its carriage, turned parallel with the parapet, and its muzzle depressed to receive the charge from the ramming apparatus, as set forth.

2. The combination of the platform supported at or near its front end by a vertical pivot just in rear of a parapet, the supporting-wheels at the opposite end of the platform, the track upon which these wheels run as the platform turns about its pivotal support, the gun and its carriage adapted to recoil along the platform, the ramming apparatus protected by the parapet, and at a short distance from the muzzle of the gun when the gun has been brought into its loading position by the turning of its platform, the railway for a trolley for conveying ammunition, and a railway transverse to the trolley-railway for a carriage for conveying the trolley and its load into a position between the muzzle of the gun and the rammer, substantially as and for the purpose set forth.

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Witnesses:
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