3 Sheets—Sheet 1.

W. P. MILLER.

Gun-Carriage.

No. 38,118. Patented Apr. 7, 1863.

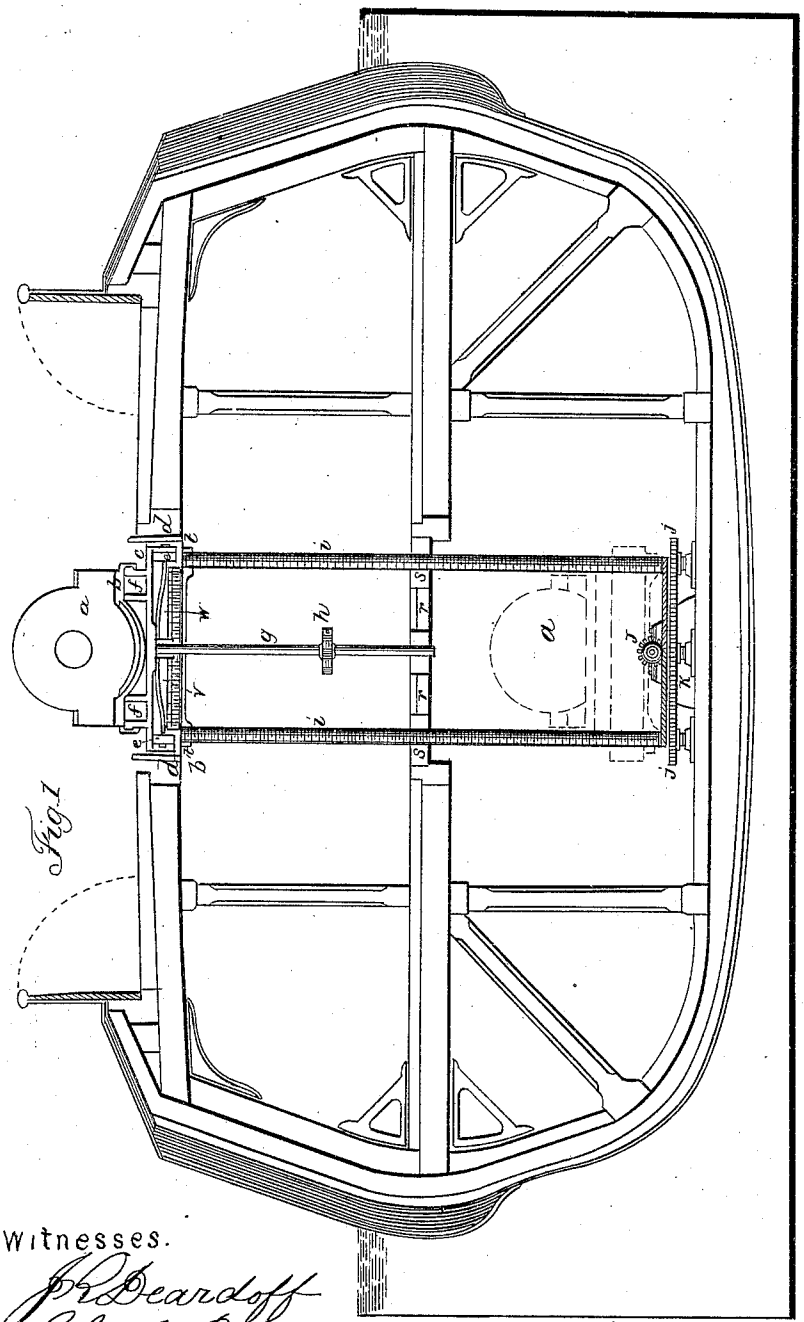


Fig. 1.

Witnesses.

J. R. Deardoff

Charles Roost

Inventor.

Warren P. Miller

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

3 Sheets—Sheet 2.

W. P. MILLER.

Gun-Carriage.

No. 38,118.

Patented Apr. 7, 1863.

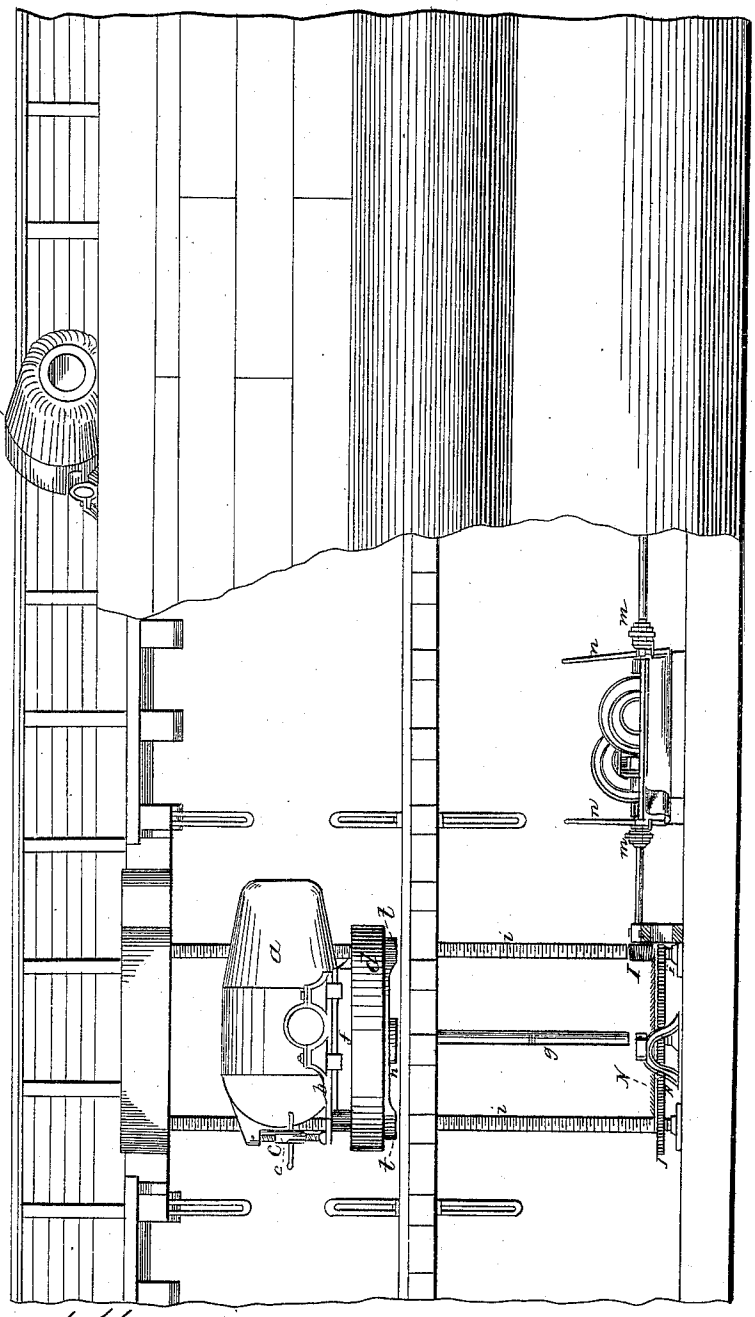


Fig. 2

J. R. Deardoff
Charles Roest

Warren P. Miller

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

3 Sheets—Sheet 3.

W. P. MILLER.

Gun-Carriage.

No. 38,118.

Patented Apr. 7, 1863.

Fig 3

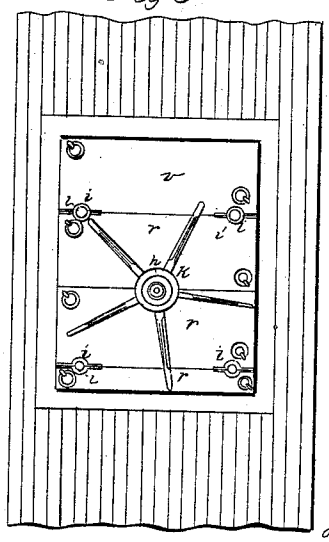


Fig 4

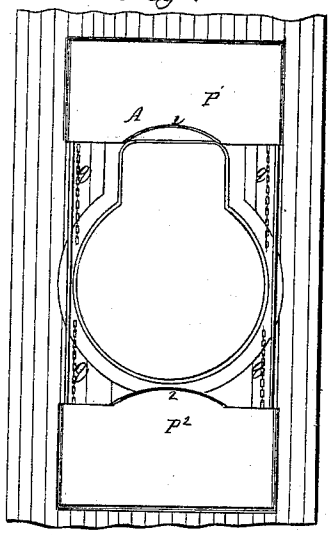


Fig. 7

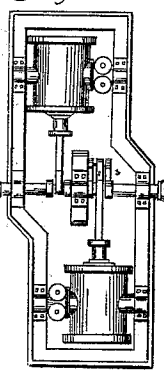


Fig. 6.

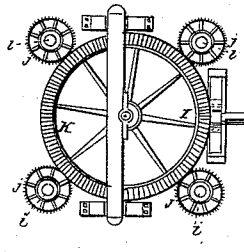


Fig. 8

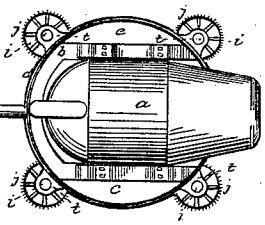
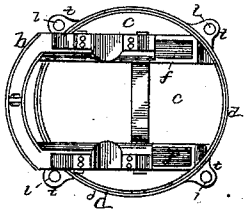


Fig. 5



Witnesses.

J. R. Beardoff

Charles Roost

Inventor.

Warren P. Miller

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WARREN P. MILLER, OF MARYSVILLE, CALIFORNIA.

IMPROVEMENT IN OPERATING ORDNANCE ON WAR-VESSELS.

Specification forming part of Letters Patent No. **38,118**, dated April 7, 1863.

To all whom it may concern:

Be it known that I, WARREN P. MILLER, of the city of Marysville, in the county of Yuba, in the State of California, have invented a new and Improved Mode of Operating Heavy Guns on Board Vessels of War; and I do hereby declare that the following is a full and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon, the same making a part of this specification, in which—

Figure 1 is a vertical transverse section of a vessel amidship, showing a section of a gun and carriage mounted above the deck; Fig. 2, a vertical longitudinal section of a vessel, showing a gun on the middle deck; also, a gun is shown as it appears above the casemate; Fig. 3, section of the middle deck, the capstan and bars lying on the hatches, as shown on Fig. 2; Fig. 4, view of the gunway through the upper deck, showing the iron hatches, the ways on which they slide, and the chains for working the same; Fig. 5, top view of the gun-carriage and turn-table with the slide thrown back in the position it assumes by the recoil of the gun when discharged. Fig. 6 represents the combination of gearing by which the screws are operated and its relative position with the engine; Fig. 7, top view of the engines for working the guns; Fig. 8, view of a gun and carriage as they appear when lowered into the hold, as shown by the dotted lines on sectional drawings, Fig. 1.

Like letters refer to like parts on the several drawings.

My said invention consists, first, in an improved combination of devices by means of which the guns may be raised above the upper deck to be fired, lowered to an intermediate deck to be loaded, and lowered to the bottom of the hold, so as to serve as ballast when not in use, as hereinafter explained; second, in an improved device for closing the aperture in the casemate through which the gun is raised and lowered; third, in an improved construction of sliding and removable capstan for training the gun when elevated and permitting it to be lowered, as hereinafter described.

Letters *a a* represent the gun or cannon; letters *b b*, gun-carriage; letters *c c*, turn-table; letters *d d*, frame or curb of turn-table; letters *e e*, wheels upon which the turn-table revolves; letters *f f*, chambers for gun-springs; letters *g g*, capstan-shaft; letters *h h*, capstan by which direction is given to the gun; letters *i i*, screws for raising and lowering the guns; letters *j j*, cog-wheels attached to the bottom of the screws; letters *k k*, toothed wheels working into the wheels *j j j j*; letters *l l*, pinion on the engine-shaft for turning wheel *k*; letters *m m*, couplings for connecting or detaching the engine; letters *n n*, levers for operating the couplings; letters *o o*, screws for elevating or depressing the gun; letters *p p*, hatches to cover the gunway; letters *q q*, chains for opening and closing the gunway; letters *r r*, hatches in the middle deck; letters *s s*, boxes attached to the hatches for the lateral support of the screws; letters *t t*, nuts through which the screws work; letters *w w*, index-hand attached to the turn-table; letters *v v*, a graduated scale of three hundred and sixty-five degrees.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A vessel may be built after any of the approved forms of iron-clads, with hatches in the decks of the proper size and form to allow the passage of the guns and carriages. Four screws are constructed with a cog-wheel attached to the foot of each, with the foot of each screw standing in a step resting in the hold of the ship, and at suitable distances apart, their top ends running in boxes secured to the upper deck. A wheel is placed centrally between the four screws and working into the wheels attached to the same. A pinion-wheel on the engine-shaft is made to work into a bevel-gear on the aforesaid central wheel, and thus the engine is made to turn the four screws at the same time. A circular frame is made with four nuts projecting from the sides, in size and form to correspond to the four screws. On the inner edge and bottom of the frame projects a ledge for wheels to roll upon. Said wheels support a turn-table, on the top of which is built up two chambers, fixed on the two opposite sides. Upon said chambers is constructed a slide or carriage upon which the gun rests. The guns are charged on the middle deck, then elevated above the casemate by means of the four screws operated by the engines. The hatch A is then drawn back against the turn-table to close that portion of the gunway not filled by the turn-table, for which purpose the front member, P′, of the sliding hatch is formed with a concav-

ity, as shown at 1, adapted to fit closely around the curb *d*, while the gun is up; and when the gun is down the said concavity 1 is filled by a corresponding projection, Q, upon the rear member, P^2. The gun is turned by means of the capstan, and its direction known by observing the hang which notes the degrees on the scale. A shot-proof lookout is constructed projecting above the deck, and provided with a scale which corresponds with that attached to the gun-frame. The officer at the lookout observes carefully the direction the object to be hit bears to the vessel, then calls out to the gunners the degrees and minutes. The gun now having been set as directed by the officer, it is fired in the usual way by means of a lanyard extending from the gun to within the casemate. The recoil is checked and gun returned to its former position by means of india-rubber springs fixed in the chambers under the trunnions. The followers that act against the springs are attached to the forward ends of the carriage, so that the springs may be the whole length of the chambers and admit of extensive action. After the gun has been discharged, the hatch A is drawn forward and gun lowered within the casemate. As it passes below the deck, the hatches may be drawn over the gunway by means of the chains and a windlass worked within the casemate. As the gun descends, the capstan-shaft passes down, while the capstan stops and rests on the hatches.

The turn-table frame is made to fit perfectly the opening in the deck, so that the screws are relieved from all lateral strain occasioned by the recoil of the gun.

When on a cruise or in heavy weather, the capstan may be unshipped from the turn-table, the middle hatches taken up, and the guns lowered into the hold, there to serve as ballast to counteract the effect of the heavy armor.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The combination of the movable hatches *r r* and boxes *s s* with the screws *i i*, gearing *j k l*, and nuts *t t*, the whole being constructed, arranged, and employed in the manner herein set forth, to raise the gun above the upper deck for firing, lower it to the intermediate deck for loading, and, when not in use, deposit it in the lower part of the hold as ballast, the hatches, when in position, serving also to preserve the screws from deflection, as explained.

2. The sliding hatches or gates $P' P^2$, formed, respectively, with a concavity, 1, and a projection, 2, in the described combination with the curb *d* of the turn-table, for the purposes specified.

3. The combination, with the turn-table *c*, of the removable shaft *g* and sliding capstan *h*, as herein shown and described, for the purpose of training the gun when elevated and permitting its descent either onto or below the intermediate deck, as described.

WARREN P. MILLER.

Witnesses:
CHARLES RAISH,
J. K. DEARDOFF.