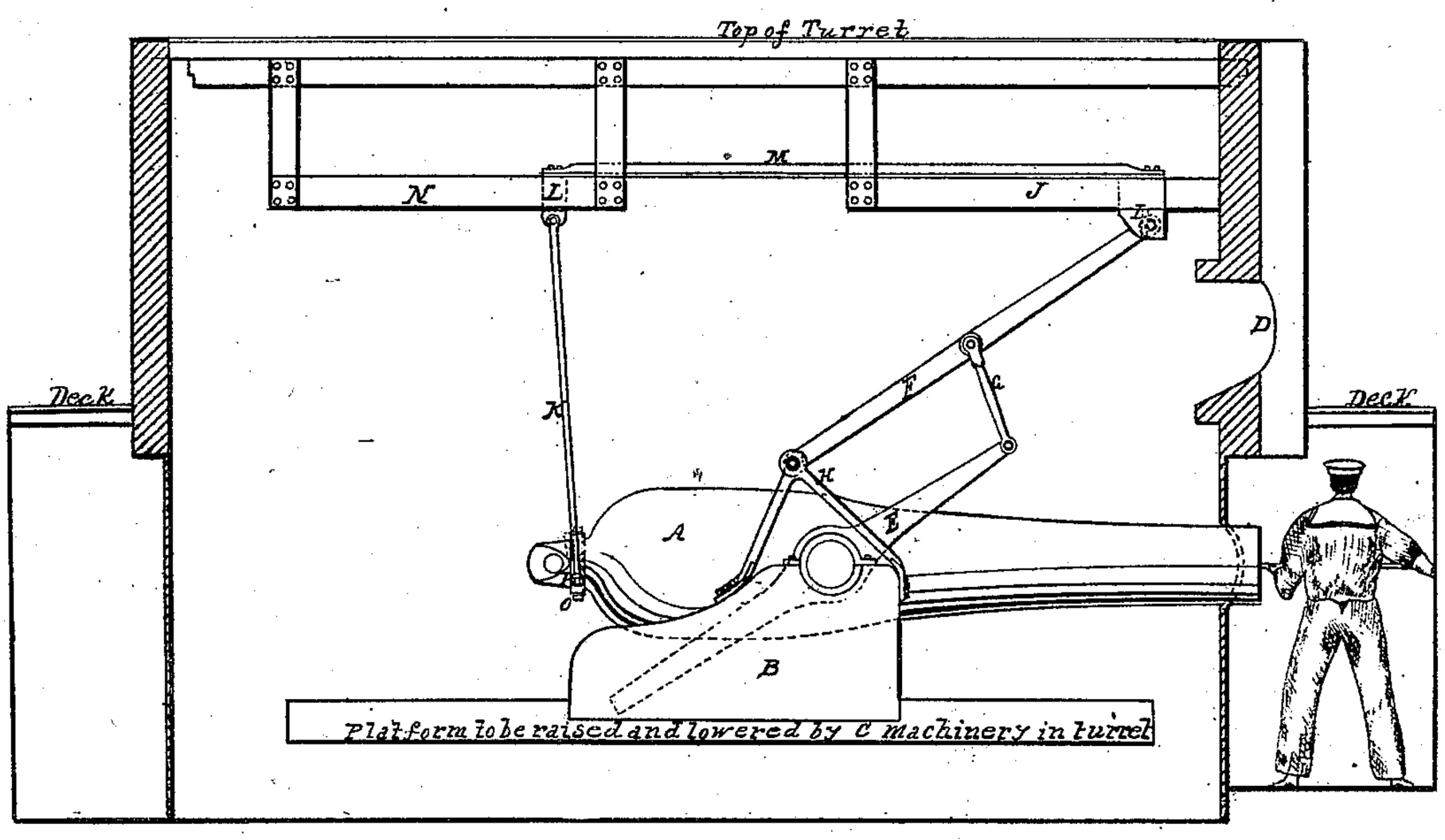
4 Sheets—Sheet 1.

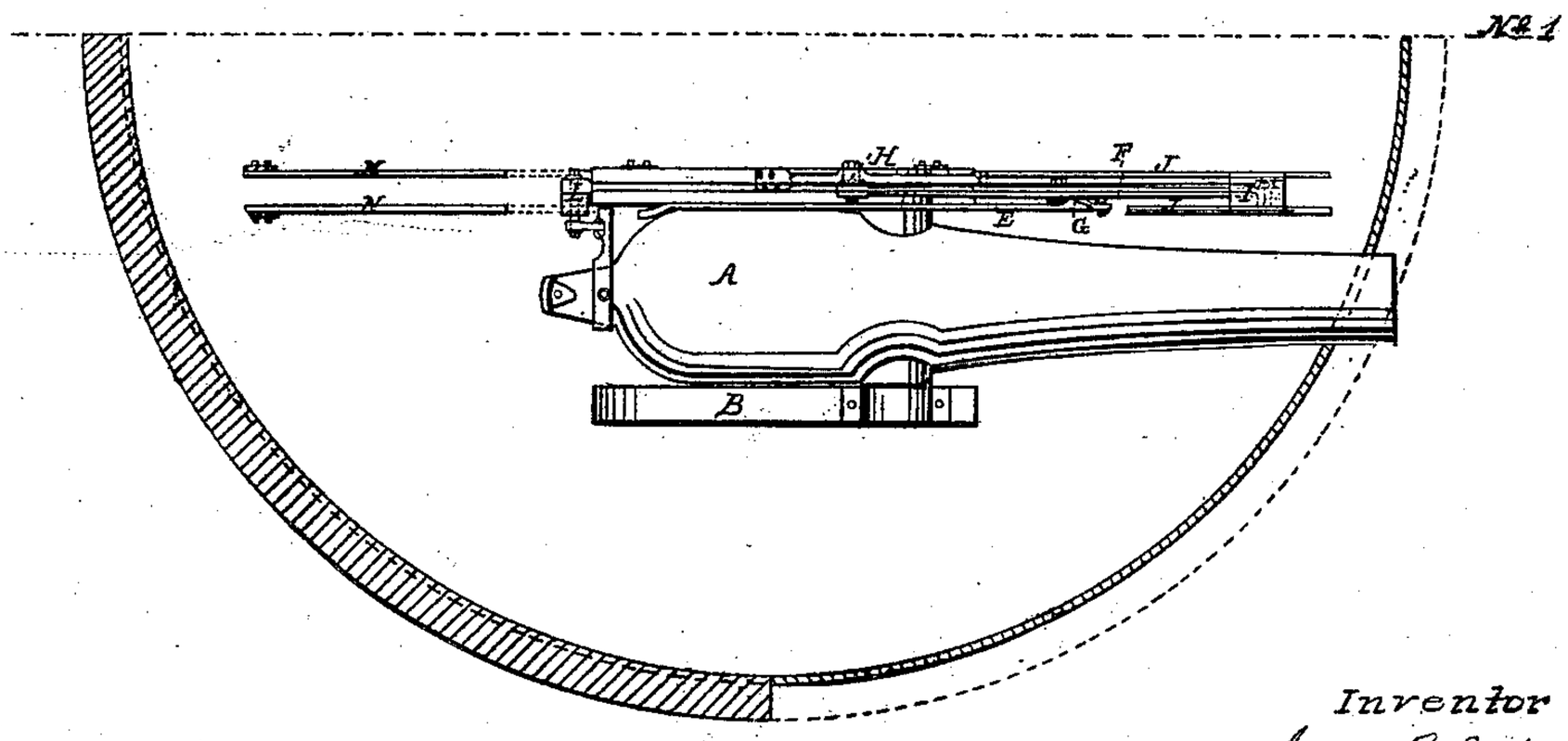
# J. B. EADS.

## Operating Heavy Ordnance.

No. 41,206.

Patented Jan. 12, 1864.




Witnesses
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J. D. Patten

Inventor
James B. Eads.
By atty A. B. Stoughton.

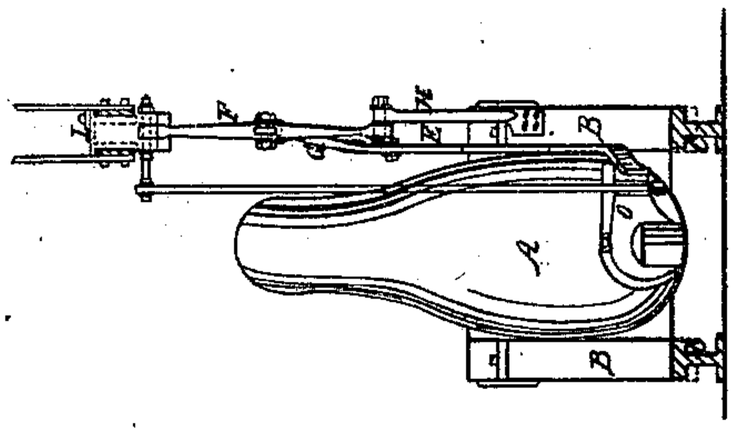
4 Sheets—Sheet 2.

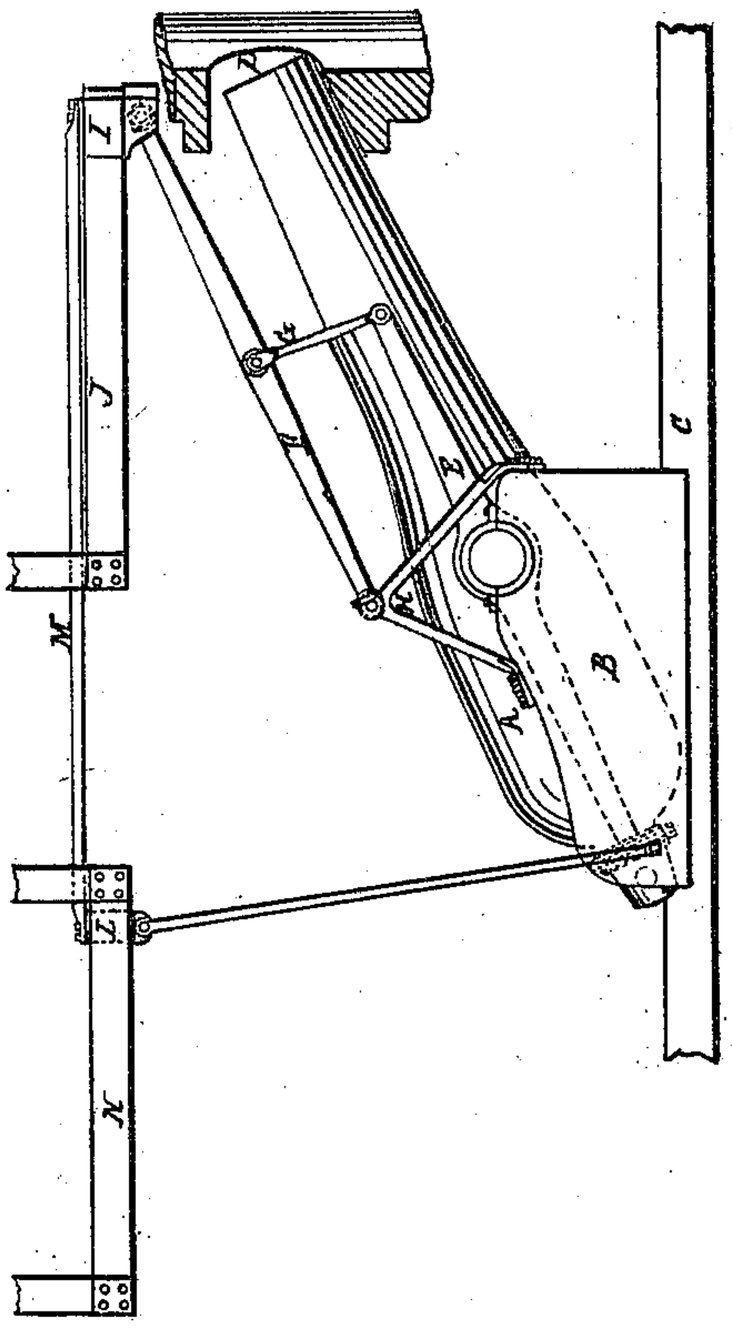
# J. B. EADS.

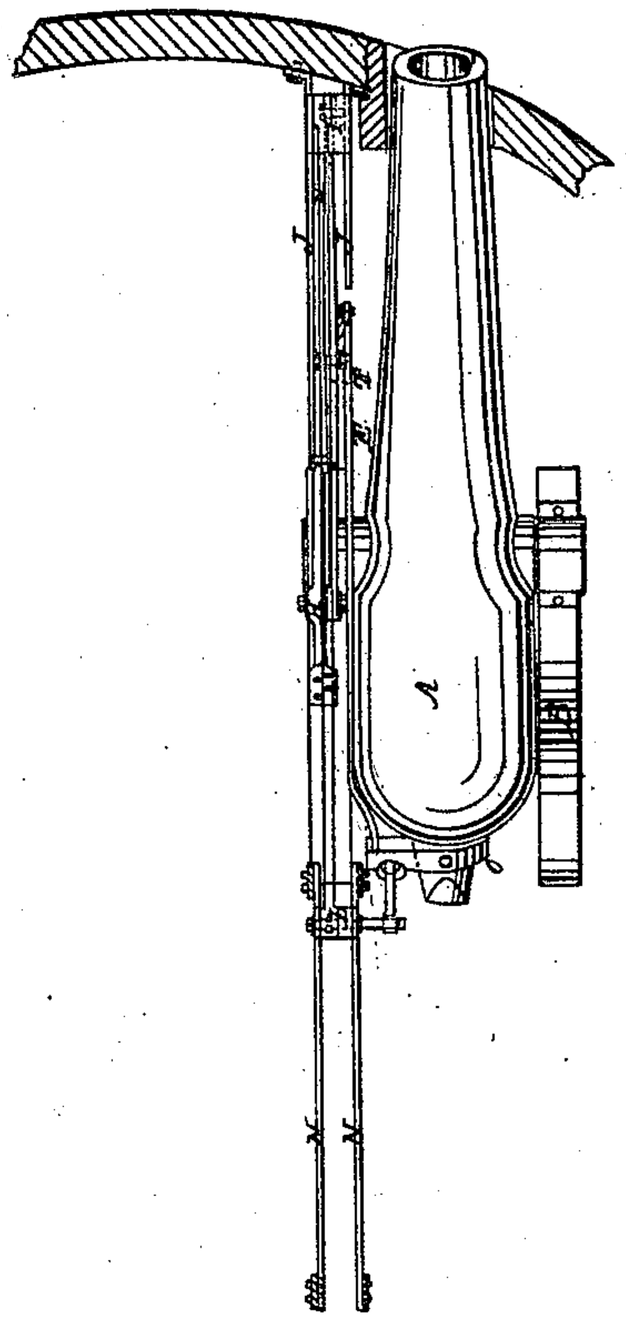
## Operating Heavy Ordnance.

No. 41,206.

Patented Jan. 12, 1864.







Witnesses
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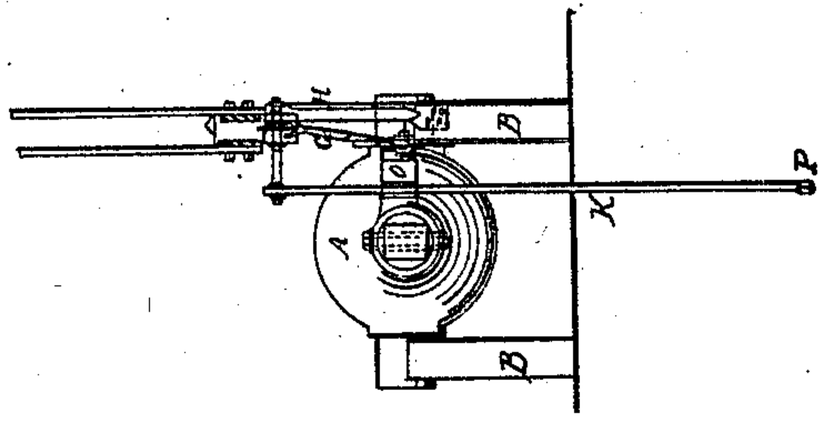
4 Sheets—Sheet 3.

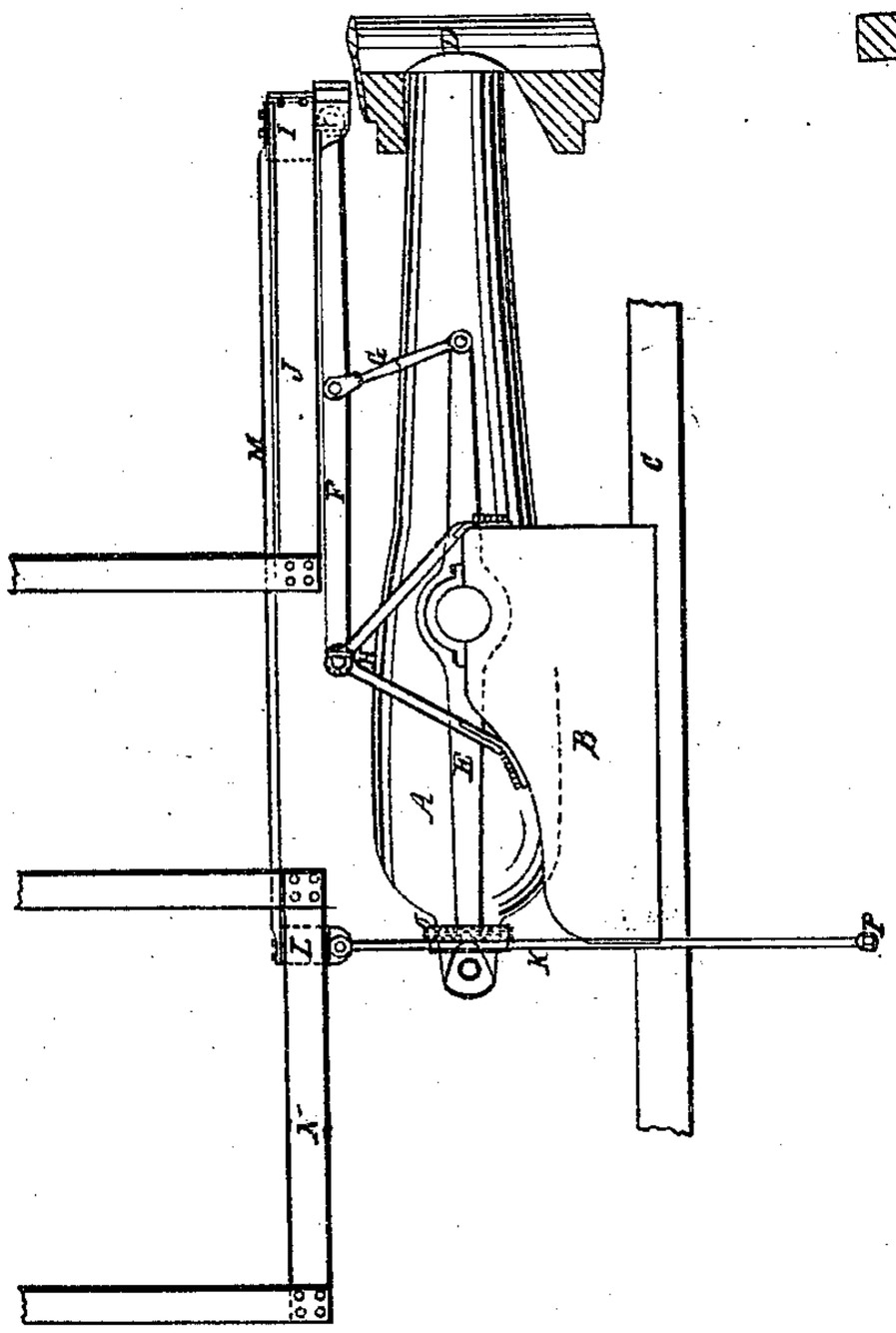
# J. B. EADS.

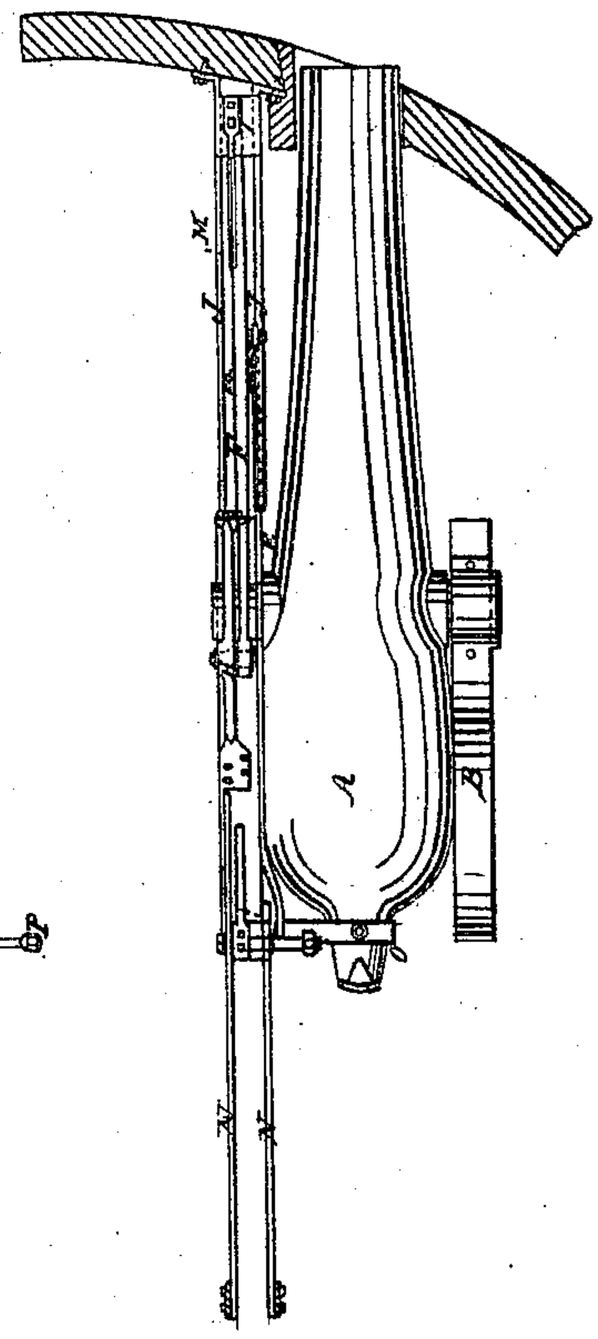
## Operating Heavy Ordnance.

No. 41,206.

Patented Jan. 12, 1864.




Witnesses
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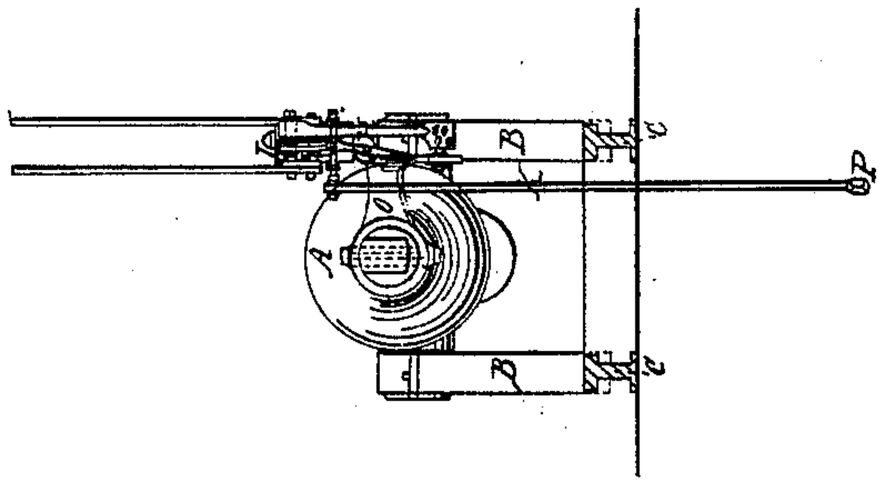
4 Sheets—Sheet 4.

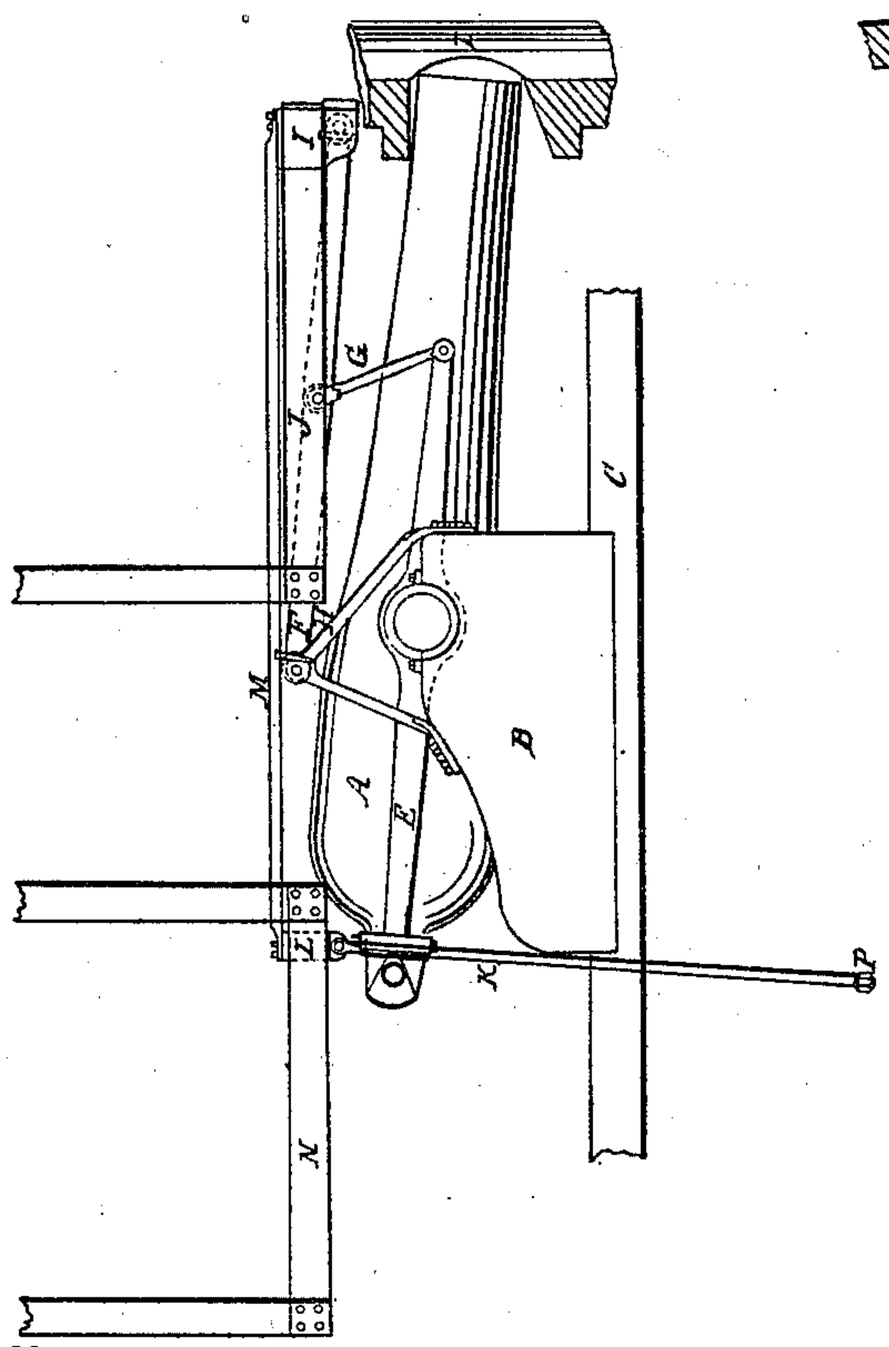
# J. B. EADS.

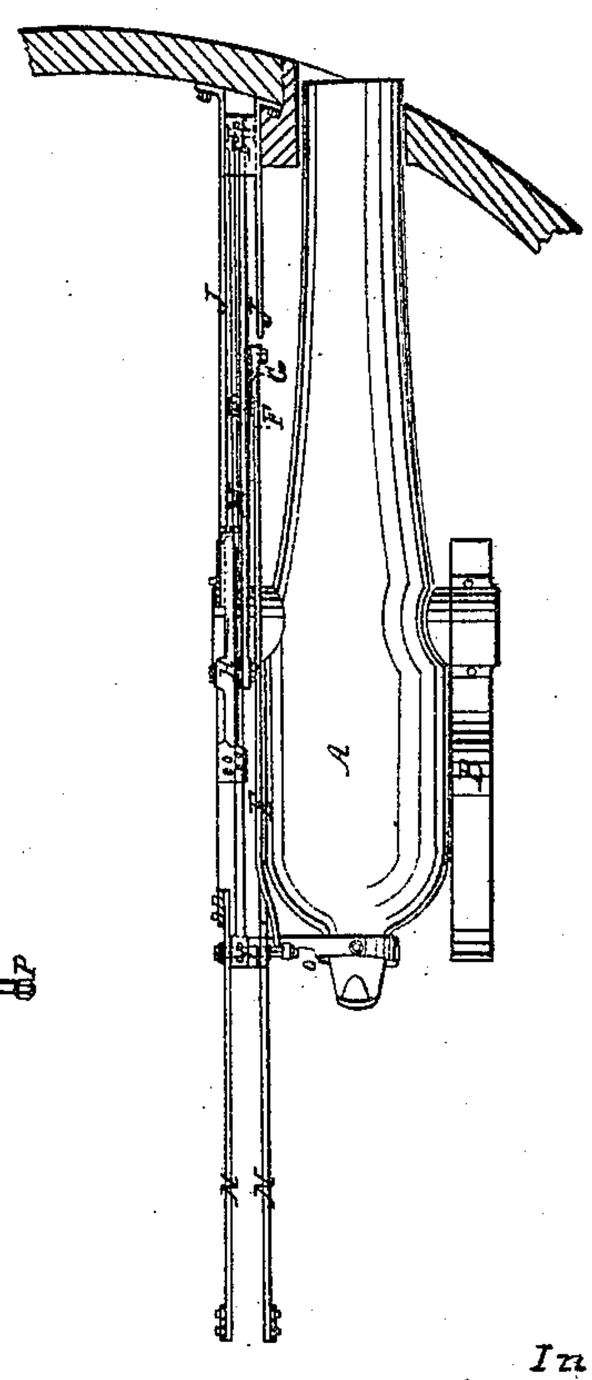
## Operating Heavy Ordnance.

No. 41,206.

Patented Jan. 12, 1864.




Witnesses
E Evans Jr
J D Patton

Inventor
James B Eads
By atty A B Stoughton

# UNITED STATES PATENT OFFICE.

JAMES B. EADS, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN OPERATING HEAVY ORDNANCE.

Specification forming part of Letters Patent No. **41,206**, dated January 12, 1864.

*To all whom it may concern:*

Be it known that I, JAMES B. EADS, of St. Louis, Missouri, have invented a new and useful Method of Operating Heavy Ordnance; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure No. I represents a vertical section of a revolving turret with a platform in it, which is made to raise and lower by any mechanical means suitable for that purpose. Upon this platform a gun-carriage is supported and arranged to be thrust forward and backward. Upon the gun-carriage is mounted a gun, and attached to the carriage and gun is the machinery for directing the gun. On this drawing the gun is seen below deck, and is run out through the turret-wall, ready for being loaded. On the same drawing is seen a top view of the gun in this position, the turret-wall being sectioned to show the thick portion which is above deck and the thin portion that is below deck. Fig. No. II represents the gun with its muzzle in the port-hole, ready for being fired at its greatest elevation. The same drawing represents a top and end view of the gun in this position. Fig. No. III represents the gun with its muzzle in the port-hole, ready for being fired at its horizontal or point-blank range. The same drawing represents a top and end view of the gun in this position. Fig. No. IV represents the gun with its muzzle in the port-hole, ready for being fired with its aim depressed. The same drawing represents a top and end view of the gun in this position. The sections of the turret in all the drawings represent the gun at the side of the turret, or arranged for mounting two guns in the same turret.

The object of my invention is to enable the gun to be brought to a convenient position for loading it when dropped below the port-hole, or under the deck of the ship, or below the roof of the fort in which it is used, and, finally, to so arrange the gun that it may be rapidly aimed and made ready for loading with the smallest possible amount of manual labor. By my invention the port-hole can be reduced to the smallest possible dimensions, and thus make those operating the gun much safer from danger, while the diminished amount of manual labor required in manipulating the gun will greatly lessen the expense attendant on the working of heavy ordnance.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same, referring to the drawings and the letters of reference thereon.

Like letters indicate like parts on all of the drawings.

A represents a gun mounted upon a carriage, B, in the usual manner.

C is the platform upon which the carriage is supported. This platform is actuated by any competent machinery, and raises high enough to obtain the desired depression in the aim of the gun, and lowers sufficiently to enable the gun to be loaded under deck. The carriage can be moved forward and backward by any suitable machinery on the platform C.

D represents the port-hole, the inside of which is enlarged to accommodate the elevation and depression of the breech of the gun.

E represents a lever through which the trunnion of the gun is inserted at its fulcrum.

F represents another lever, which is kept parallel with the lever E by the connecting-rod G, which is secured to the end of E and to the middle of the lever F, and also by the fastening or bracket H, which holds one end of F, and which fastening is secured to the gun-carriage. The pin in the bracket H is placed exactly at the same distance from the center of the trunnion (that is, the fulcrum of the lever E) that the end of E is held by the connecting-rod from the middle of F. The lever F is secured at the other end to a pin in the cross-head I. This cross-head moves on the guide-bars J J, which are placed exactly parallel with the platform upon which the gun-carriage moves, and they are of sufficient length to permit the cross-head to move with the gun-carriage, and these guide-bars are secured to the roof of the turret. If the four points representing the centers of the pins at each end of F, the center of the fulcrum of E, and the axis of the gun where the face of the muzzle intersects it be so arranged as to form a rhomboid, and the end of the lever E be connected to the middle of the lever F by a connecting-rod whose axis is parallel with a line drawn from the center of the pin in the bracket

and the center of the trunnion, the axis of the lever E will then be held parallel with the axis of the lever F when the platform rises and falls. If the end of the lever E be placed with its axis exactly parallel with that of the gun, and the end of the lever next to the breech of the gun be made to support that end of the gun, the latter will always have its axis parallel with the lever F; and as the latter lever has its end secured to the cross-head in the guide-bars, it follows that the muzzle of the gun will always be the same distance from the pin in the cross-head; and as this pin moves back and forth in a fixed horizontal line, it follows that the muzzle of the gun will always be brought to the same point in the wall of the turret or casemate, whether the breech of the gun be above or below the muzzle. Therefore the gun will only require a port-hole large enough to admit the muzzle to pass into it.

I have now explained the method of keeping the gun so that its muzzle will always find the same point at the greatest elevation and depression for which it is designed to be aimed, and will proceed to explain the method by which it is restored to a horizontal position when lowered below deck for loading. The lever E is made to support the breech of the gun by the short arm O, which is secured on the cascabel of the gun. This arm O is not attached to the lever E, but merely rests upon it by the preponderance of the breech of the gun. The rod K is secured at its upper extremity to the slide or cross-head L, which moves on the guide-bars N N, (which are secured to the top or roof of the turret,) and is connected to the cross-head I by the rod M. The rod K passes through a slot in the arm O, which admits of its free movement through it as the breech of the gun rises and falls. On the end of the rod K is a head or knob, which prevents the arm O from descending below it. Therefore when the platform has been sunk so low as to bring this knob in contact with the arm O, the breech of the gun is prevented thereby from descending lower. If the platform be now lowered still farther, the end of the lever E no longer supports the breech of the gun, but descends below and leaves it supported by the rod K. If the platform continues to descend, the muzzle of the gun falls, while the breech remains stationary. The platform should be arranged to fall low enough to bring the gun into a horizontal position, and it is then ready to be run out of an opening in the lower wall of the turret and loaded. The rod K can be made telescopic, so as not to be in the way of the platform in its rising and falling; or it may be of chain or wire rope. The arrangement of levers and guide-bars may be reversed and placed below the platform if sufficient depth of turret be had, and thus be where they are in less danger of being injured by the enemy.

The rod K may be dispensed with by having a support for the breech of the gun to rest upon when it descends to the proper point. This support will rest upon the lower part of the turret, or it may be accomplished by placing a pulley in the cross-head L, and over this pulley a rope of wire or a chain may pass, having one end secured to the cascabel of the gun, while the other may be secured to the turret and have a weight to take up the slack of it as the gun rises. The same effect can be accomplished by having one end of the rope secured to the cascabel and the other to the carriage or gun at the trunnions.

The lever F may be dispensed with by lowering the guide-bars to receive the end of the lever E, which should in that case be extended as far as possible toward the muzzle of the gun, the end of the lever E thus extended being secured to the pin in the cross-head I, which would be made to move in a line horizontal with the center of the port.

Having thus fully described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The use of a lever, E, secured to the gun, and held by a slide or other device at one end in such a manner as to direct the muzzle of the gun to the port-hole while the breech of the gun is raised or lowered.

2. The mechanical devices, substantially as described, for the purposes before mentioned.

JAS. B. EADS.

Witnesses:
E. COHEN,
JULIUS HIRSCH.