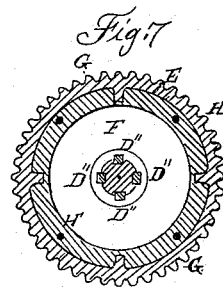
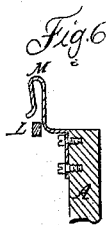
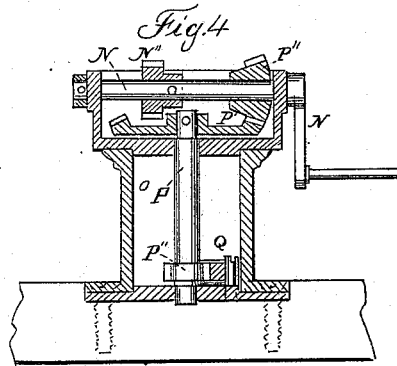
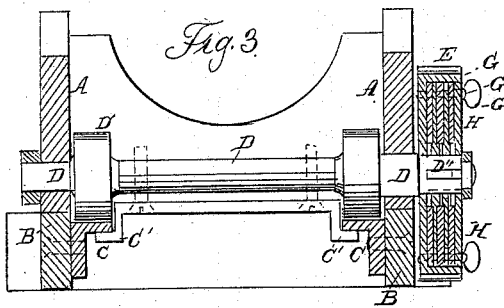
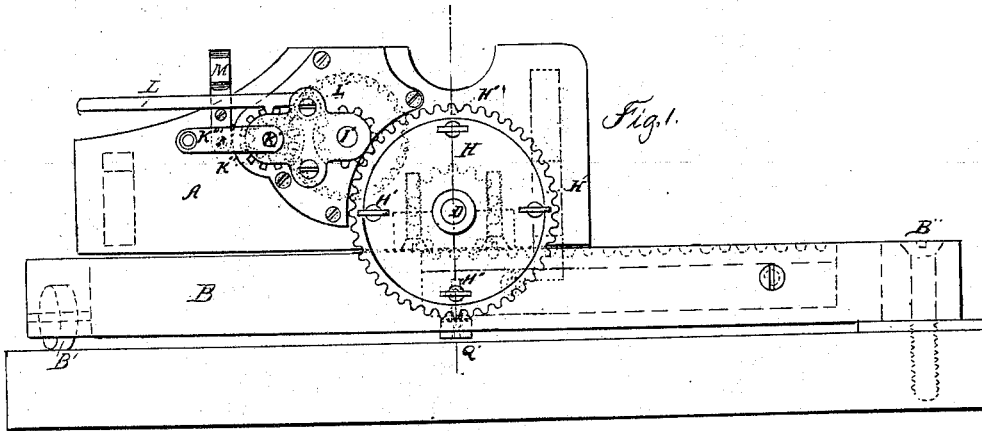


J. ERICSSON.
Operating Gun-Carriages.

No. 52,150.

Patented Jan. 23, 1866.



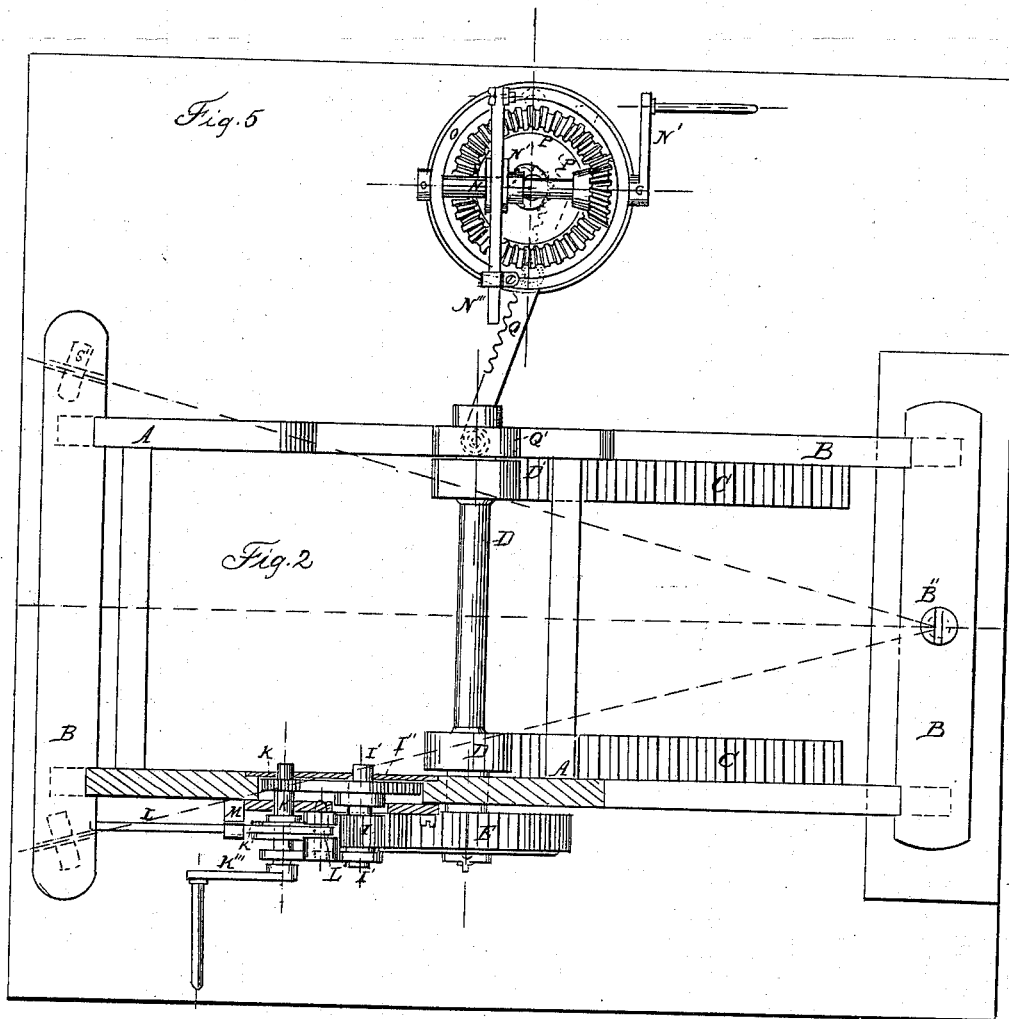
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UNITED STATES PATENT OFFICE.

JOHN ERICSSON, OF NEW YORK, N. Y.

IMPROVEMENT IN OPERATING GUN-CARRIAGES.

Specification forming part of Letters Patent No. 52,150, dated January 23, 1866.

To all whom it may concern:

Be it known that I, JOHN ERICSSON, of the city, county, and State of New York, have invented a new and useful Improvement in Checking the Recoil, Operating, and Pointing Cannons; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Much time is lost in the ordinary method of controlling by means of friction the recoil of heavy guns, in consequence of the time consumed in tightening and relieving the compressors which produce the required friction. Much danger is also incurred in working heavy guns on board of ship during bad weather at sea, because the compressors must be relieved in order to roll the gun out after being loaded. Any sudden lurch of the vessel while the compressors are thus relieved renders the gun uncontrollable and endangers the lives of the gunners as well as the safety of the gun and carriage. Much difficulty and danger are also experienced in training or pointing heavy guns on board of ship, particularly during bad weather.

The object of my invention is to overcome the difficulties thus enumerated.

In order to save the time lost in tightening and relieving the present friction-gear of gun-carriages, I employ a rotary compressor kept under constant pressure, composed of a series of circular metallic disks secured to an axle which passes through the side frames of the gun-carriage, said axle having attached to it pinions the teeth of which work into toothed racks bolted to the inside of the gun-slides. Between the before-named metallic disks are inserted wooden disks fixed within a cylindrical box made of brass or iron, the circumference of which is provided with cogs. This toothed cylindrical box I call a "box-wheel." Into said box-wheel is geared a pinion, which, by means of suitable hand-gear, enables the gunners to run the gun in and out. By means of this hand-gear the box-wheel may also be instantly locked, and the movement of the gun-carriage thereby at any time be checked. The training or pointing the gun

I effect by means of a toothed rack attached to the slides upon which the gun-carriage moves, said rack being actuated by a pinion attached to the lower end of a vertical shaft, which the gunners turn round by means of winches and cog-wheels.

Figure 1 represents a side elevation of the gun-carriage and slides; Fig. 2, a top view, and Fig. 3 a cross-section, of the same. Fig. 4 represents a sectional elevation, and Fig. 5 a top view, of the hand-gear and mechanism by means of which the gun is trained or pointed. Fig. 6 represents a side view of a spring-nipper by which the check-lever of the gun-carriage is held in proper position. Fig. 7 represents a front view of the rotary compressor, composed of the box-wheel and friction plates, by which the recoil of the gun is checked.

Similar letters of reference indicate corresponding parts.

In this example of my invention, A designates a gun-carriage, and B a slide-frame on which the carriage moves. B' are rollers supporting the said frame. B'' is a pivot round which the frame turns. C are toothed racks bolted to the inside of the longitudinal pieces of the frame. C' are guide-pieces attached to the under side of the gun-carriage for the twofold purpose of guiding the carriage and preventing it from jumping up from the slides during the discharge of the gun. D is an axle revolving in bearings formed in the sides of the gun-carriage. D' are pinions attached to the said axle, which pinions work into the toothed racks attached to the slides. E is a box-wheel revolving freely on the axle D. F are circular disks or plates, made of wrought-iron, prevented from turning on the axle D by means of keys D'', but allowed to slide longitudinally upon the axle. G are disks, made of hard wood, inserted between the wrought-iron disks, and prevented from turning within the box-wheel by lugs E', which project from the inside of the rim into the circumference of the said wooden disks. H is a plate, of cast-iron or brass, which covers the open end of the box-wheel and retains the metallic and wooden disks within the body of the wheel. H' are set-screws by which the loose plate H is pushed into the wheel, forcing the metallic

and wooden disks close together for the purpose of causing friction between the same. I is a pinion geared into the box-wheel E. I' is an axle supported by the side frame of the gun-carriage and a suitable bracket. To this axle the pinion I is secured, also the cog-wheel I". K is a pinion geared into the cog-wheel I" and attached to the axle K', which, like I', is supported by the side of the gun-carriage and a suitable bracket. To the axle K' are also attached a cog-wheel, K'', and a crank-handle, K'''. L is a lever-handle supported on a fulcrum, L', provided with a tooth on the under side, which fits the spaces between the cogs of K''. M is a spring-nipper attached to the side of the gun-carriage, for retaining the lever-handle L in an elevated position when required. N is a horizontal axle supported by bearings attached to a hollow pedestal, O, and operated by a crank-handle, N'. N'' is a cog-wheel attached to the horizontal axle N, to which cog-wheel is applied a lever-handle, N''', with a tooth on the under side similar to that of crank-handle L, and retained in an elevated position by means of a spring-nipper similar to M. P is a vertical axle supported by bearings attached to the pedestal O. P' is a conical cog-wheel secured to the upper end of the vertical shaft, into which cog-wheel is geared the conical pinion P'', attached to the horizontal axle N. P''' is a pinion attached to the lower end of the vertical axle P. Q is a toothed rack, composed of wrought-iron, geared into and operated by the pinion P'''. This toothed rack is secured to the frame on which the gun-carriage moves by means of a pivot or hinge at Q'. The extent of the field which the gun is intended to sweep will determine the length of the toothed rack.

Having thus described the manner of constructing the various parts necessary to carry out my improvement, I will now explain the manner of operating the same.

The set-screws H' should be tightened sufficiently to bring the metallic and wooden disks of the rotary compressor in close contact. The lever-handle L should be lifted full up and the gun loaded. The gun-carriage and gun should next be rolled out by the gun-

ners by means of the handle K'''. When full out the lever-handle L should be let down and the tooth on its under side allowed to enter between the cogs of the small cog-wheel K'' in order to lock the gear. After the discharge and recoil of the gun the same operation as that described will be repeated, excepting the tightening of the set-screws of the rotary compressor, which, when once adjusted, will remain unless increased charges of powder are employed, when the set-screws should receive additional tightening.

When operating the gun on board ship in a seaway, a person should be stationed ready to push down the lever-handle L in order to lock the gear in case the ship should take a sudden lurch and the weight of the gun overpower the gunners operating the crank-handle K'''. When the gun is to be pointed the lever-handle N''' should be lifted up and the crank-handle N' turned in the proper direction for pointing the gun as desired. When the gun is employed on board of ship, and the desired direction has been attained, and after the discharge of the gun, the lever-handle N''' should be let down and the gear locked in order to keep the slide-frame in a firm position during the succeeding manipulation of the gun.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A rotary compressor composed of a series of metallic disks secured to a shaft provided with pinions, which pinions, by means of toothed racks, check the recoil of cannon, said metallic disks being contained within a cog-wheel which revolves freely on the said pinion-shaft, and to which said cog-wheel is secured a series of disks, composed of wood or similar material, inserted between the metallic disks, substantially as described.

2. The toothed rack Q, pinions P''' and P'', and cog-wheel P, or their equivalents, for changing the direction of the slide-frame and pointing the gun, substantially as described.

J. ERICSSON.

Witnesses:

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096-150