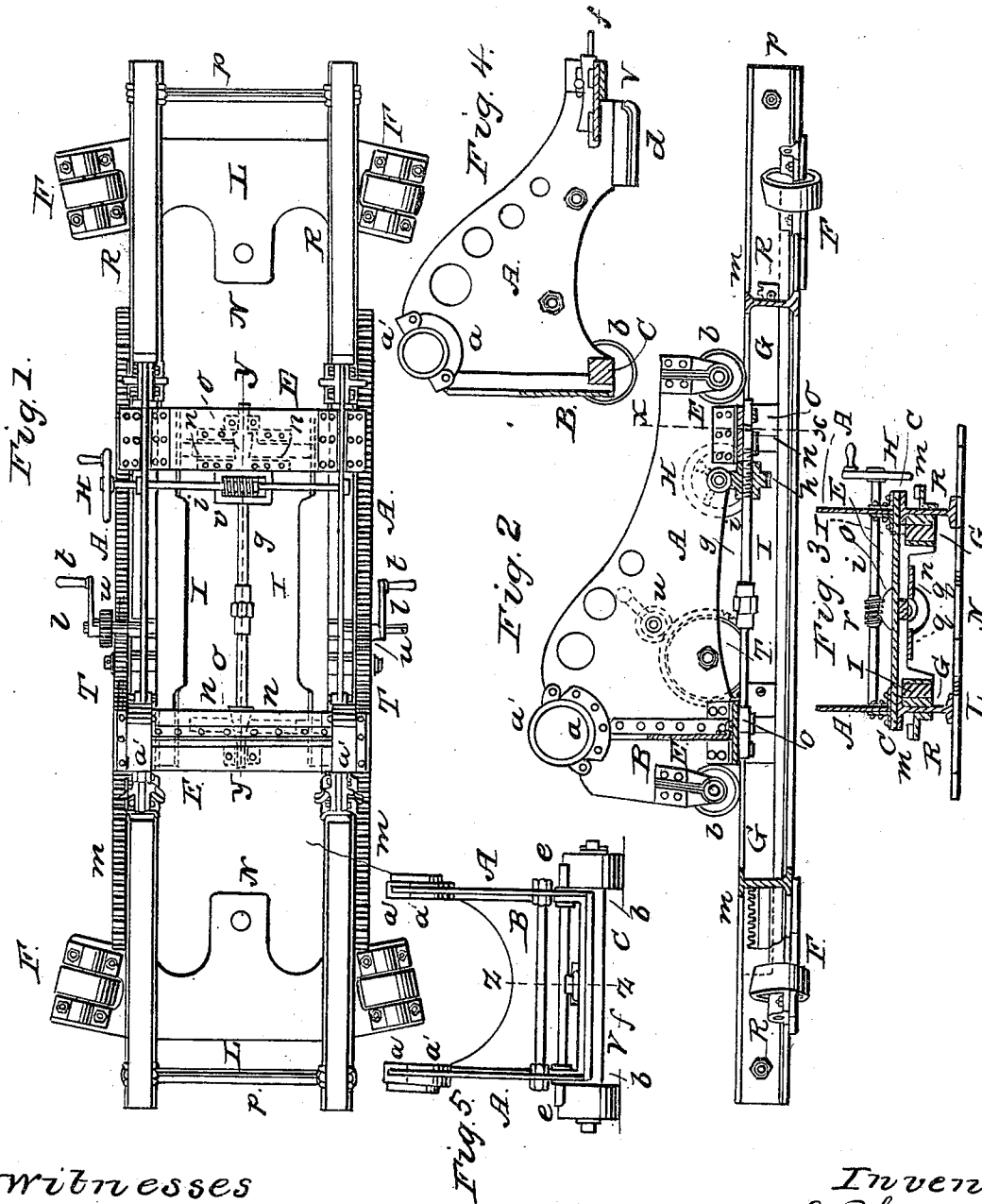


G. R. WILSON.
Gun Carriage.

No. 86,720.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN GUN-CARRIAGES.

Specification forming part of Letters Patent No. 86,720, dated February 9, 1869.

To all whom it may concern:

Be it known that I, G. R. WILSON, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Gun-Carriages and methods of operating the same; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention consists, first, in a novel method of constructing carriages for ordnance; second, in a novel construction of the chassis, and of the securing and arranging of the gun-carriage thereon; third, in providing the carriage and chassis with devices for operating the gun; and, fourth, in a novel method of checking the recoil of the gun and its carriage, all as hereinafter more fully explained.

In the accompanying drawings, Figure 1 is a top-plan view of the chassis and carriage mounted thereon, complete. Fig. 2 is a side elevation, with a portion of the chassis broken away and the carriage shown in section. Fig. 3 is a transverse vertical section on the line *x x* of Fig. 2. Fig. 4 is a longitudinal vertical section of a modified form of the carriage on the line *z z* of Fig. 5, and Fig. 5 is a front elevation of the same.

In the construction of my improved gun-carriage, I provide plates of wrought-iron, of suitable thickness—half an inch, more or less—of sufficient size to form an entire side piece, from which I cut out, in suitable form, as represented by A, Figs. 2 and 4, duplicate pieces, these pieces having holes cut in them, as shown, to any desired extent, to render them as light as possible consistent with the required strength. These side plates A are then united near their front by a cross-plate, B, and also across the bottom, both front and rear, by plates E, these cross-plates B and E having their ends bent at a right angle to form flanges, by which they are firmly riveted

to the side plates A, as represented in Fig. 2. The frame thus constructed is mounted on truck-wheels *b* at both front and rear, the truck-wheels being secured to the side plates A, as shown in Fig. 2.

Bearings for the trunnions of the gun are formed by riveting to the top of the plates A, near the front, semicircular boxes *a*, which fit into corresponding recesses cut in the edge of the plates, the pieces *a* having flanges fitting down on each side of the plate, by which they are securely riveted to the plates A, as shown in Figs. 2, 4, and 5. Above these pieces are secured, by a bolt at each end, a semicircular strap of metal, *a'*, it being so arranged that when one of the bolts is withdrawn the strap can be turned up on the remaining bolt as a hinge.

Upon the outside of each plate A is secured a spur-gear wheel, T, which gears with a pinion, *u*, having a crank, *t*, attached rigidly thereto, this pinion and crank being mounted loosely on a stud or journal, *l*, on which it can be moved to and fro far enough to throw it in and out of gear with the wheel T, at pleasure, for a purpose to be hereinafter explained.

Underneath the center, and longitudinally of the carriage, is secured a rod, *g*, which works in suitable guides secured to the under side of the cross-plates E, as represented in Figs. 1 and 2, this rod being made wedge-shaped at both ends, as represented by *o*, Figs. 1 and 2.

A screw-thread is cut on this rod *g* just in front of the rear plate E, and on it, at this point, is mounted a worm-wheel, *h*, having a corresponding thread, this wheel *h* being held in place by a stirrup, *v*, secured to the plate E, as shown in Fig. 1.

A rod, *i*, extends transversely across the carriage, being journaled in the plates A directly over the wheel or nut *h*, with the periphery of which it engages by means of a screw-thread, *r*, as represented in Figs. 1 and 3, the rod *i* being provided with a hand wheel or crank, H, by which it may be turned, thereby imparting a rotary motion to the nut or wheel *h*, which, in turn, gives to the rod *g* a longitudinal movement to and fro, according

as the crank H is turned in one or the other direction.

To the under side of each plate E is secured loosely, by suitable guides *g*, two sliding bars, *n*, these bars *n* being arranged in pairs transversely of the carriage, and having their inner ends abutting against the wedges *o* on the rod *g*, as shown more clearly in Fig. 3. The outer ends of these bars *n* are bent downward, so as to form strong flanges or angle-irons, which are firmly bolted to a wooden block, I, on each side, these blocks projecting below the bottom of the carriage and extending nearly its entire length, as shown in Fig. 1.

The carriage thus constructed is mounted on a chassis, consisting of two wrought-iron rails, R, connected at front and rear by a strong wrought-iron plate, L, having a projection, N, at its center, with a hole in it, as shown in Fig. 1, by which the chassis may be bolted or pivoted to the deck or bed, so as to be swung laterally either at the front or rear, as circumstances may require, there being rollers F secured at each end of these plates L, on which the chassis is moved laterally, as desired. The rails R are further secured together by strong rods *p* at each end, to prevent the possibility of their spreading apart. In making the chassis care is taken to have the rails R slightly converging toward their rear end for a special reason, as will be hereinafter explained.

To the inner sides of the rails R wooden rails or blocks G are firmly bolted, as shown in Figs. 2 and 3, these wooden rails or blocks lying directly alongside of the blocks I, which are attached to and move with the carriage, the blocks G extending nearly the entire length of the rails R.

It will thus be seen that when a gun is mounted on the carriage, and the latter run to the front end of the chassis, the blocks I can be adjusted or spread to the proper distance apart by turning the wheel H, and thus moving the wedges *o* which bear against the ends of bars *n*. When the carriage is at the front of the chassis in position for firing the gun, the blocks I should be so adjusted as to press very slightly or not at all against the blocks G, the convergence of the rails R and blocks G causing the blocks I to press against the blocks G with a constantly-increasing force, as the carriage is thrown back by the recoil of the gun.

By these means it will be observed that the gun and carriage are left free to move at the instant of its discharge, and when the charge is exerting upon the gun its maximum force, and that as the gun recoils there is brought to bear upon it a gradually and constantly increasing force to check it, thus relieving the gun of the excessive strain that is thrown upon it in all cases where the carriage is retarded in its backward movement by a regular and constantly equal force. At the same time, by properly adjusting the blocks I, the gun and

carriage can be stopped at any desired point with the greatest certainty and accuracy.

For the purpose of operating the gun—that is, of running it forward or backward, as occasion may require—I attach to the outside of each rail R a rack-bar, *m*, as shown in Figs. 1 and 2, the spur-wheels T on the sides of the carriage projecting down and engaging in these bars *m*, so that by turning the cranks *t* with their pinions *u*, and thus imparting motion to the wheels T, the carriage is moved forward or backward, as desired; and as the power is thus greatly multiplied, a much less number of men is rendered necessary to operate the gun, and this, especially in the case of the extremely heavy guns now employed, is very important.

To prevent the carriage from being dismounted from the chassis, and also to prevent the rails of the latter from being spread or separated by the pressure of the blocks I as the carriage is forced back by the discharge, the cross-bars E are made to extend out over and beyond the rails R; and to their outer ends, on their under side, are secured at each end metallic pieces or clamps *c*, which engage under the outer top flange of the rails R, as represented in Fig. 3, thus holding the carriage securely on the rails and preventing the latter from spreading.

The carriage and chassis, as here represented, are more especially adapted for use on shipboard, where the space between decks is necessarily limited, and where it is, therefore, an object to bring the carriage and gun as low down as possible.

It is obvious that when they are to be used in other positions they may be modified to suit the circumstances—as, for instance, when they are to be used where there is more vertical space, as in forts and similar situations, and where the parts may be made taller, then, in such cases, the rod *i* and worm-wheel *h* may be dispensed with, and the rod *g*, with its wedges *o*, may be operated by a hand-wheel, with a screw-hub working directly on the rear end of the rod *g*, which, in such case, would be made to project slightly behind the plate E for that purpose.

It is also obvious that, instead of making the rails of the chassis converging, they may be placed parallel, and the necessary convergence secured by using wooden blocks G, which should be wedge-shaped, or thicker toward their rear end, the result being the same.

In constructing carriages for what are termed “broadside-guns,” I construct them of wrought-iron side plates A, varying slightly in form, as shown in Fig. 4, and connect them at front by a similar cross-plate, B, and at the rear by a horizontal cross-plate, V, and intermediately by strong tie-bolts, as represented in Fig. 5. The front end is mounted on an axle, C, on which is secured a wheel, *b*, at each side, the rear ends of the carriage being provided with metallic blocks *d*, having their ends turned

up slightly, thus forming a kind of shoe or runner, on which the rear end of the carriage slides when the recoil takes place. An eye, *f*, is secured to the rear cross-bar *V*, and another eye, *e*, is secured to the rear end of the carriage at each side for attaching lines or blocks, as may be necessary for holding or moving the carriage.

By these means I produce a gun-carriage that is much lighter, stronger, and far more durable than those made of wood or cast-iron, and by means of the improvements in both carriage and chassis the recoil of the gun is controlled in a most efficient manner, with less strain of the gun than heretofore, while by means of the devices for operating the gun I dispense with fully one-half the number of men heretofore required. When a carriage of this kind is struck by a projectile it does not splinter, as did the wooden carriages, and thus the danger to the gun-crew is immensely lessened. A carriage of this kind, when struck and bent, can be heated and again pressed or hammered into shape and made fit for further use, whereas a wooden carriage struck in the same manner would be rendered useless.

In using the carriage mounted on the chassis, it will be apparent that the recoil will force it back so as to wedge it fast between the rails. In such case it is only necessary to move the rod *g* and its wedges *o* slightly, which will release the carriage, when it can be run forward, when the rod *g* should be moved an equal distance in the opposite direction, so as to insure proper friction on the blocks at the next fire. The cranks *t* and their pin-

ions *u* are arranged to slide on their journals *l*, so that when the carriage has been run forward they may be thrown out of gear with the wheels *T*, and thus prevent their being broken, or any one being injured by them accidentally, as they might be if left in gear when the gun is fired.

I am aware that gun-carriages have heretofore been made of cast-iron, and of iron plates riveted together so as to form tubes, and that they have been made of iron plates riveted together in connection with iron bars; but none of these are found, in practice, to answer fully the desired object, and I do not claim such; but,

Having thus described my invention, what I claim is—

1. A gun-carriage composed of a single thickness of wrought-iron plates, united as described, whereby all additional strengthening-bars are dispensed with.

2. The arrangement of the rack *m* on the chassis, and the wheels *T* and *u*, with the crank *t* on the carriage, for operating the latter, as herein described.

3. The herein-described method of checking the recoil of the gun—that is to say, by means of a constantly-increasing degree of friction, substantially as described.

4. The combination of the blocks *I*, arms *n*, and wedges *o*, when applied to a gun-carriage and arranged to operate as set forth.

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Witnesses:

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J. McKENNY.