3 Sheets--Sheet 1.

J. ERICSSON.

Improvement in Gun-Carriages.

No. 129,804. Patented July 23, 1872.

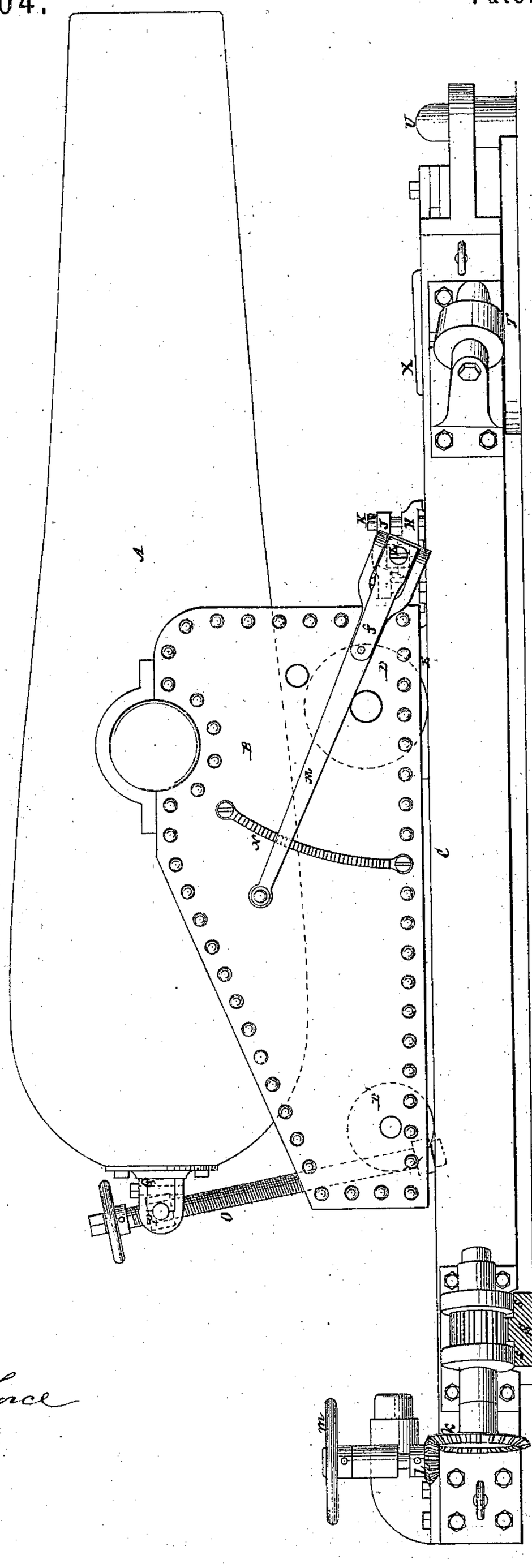

Fig. 1.

Witnesses:

Edwin C. Tracy
L. Taylor

J. Ericsson.

3 Sheets--Sheet 2.

J. ERICSSON.

Improvement in Gun-Carriages.

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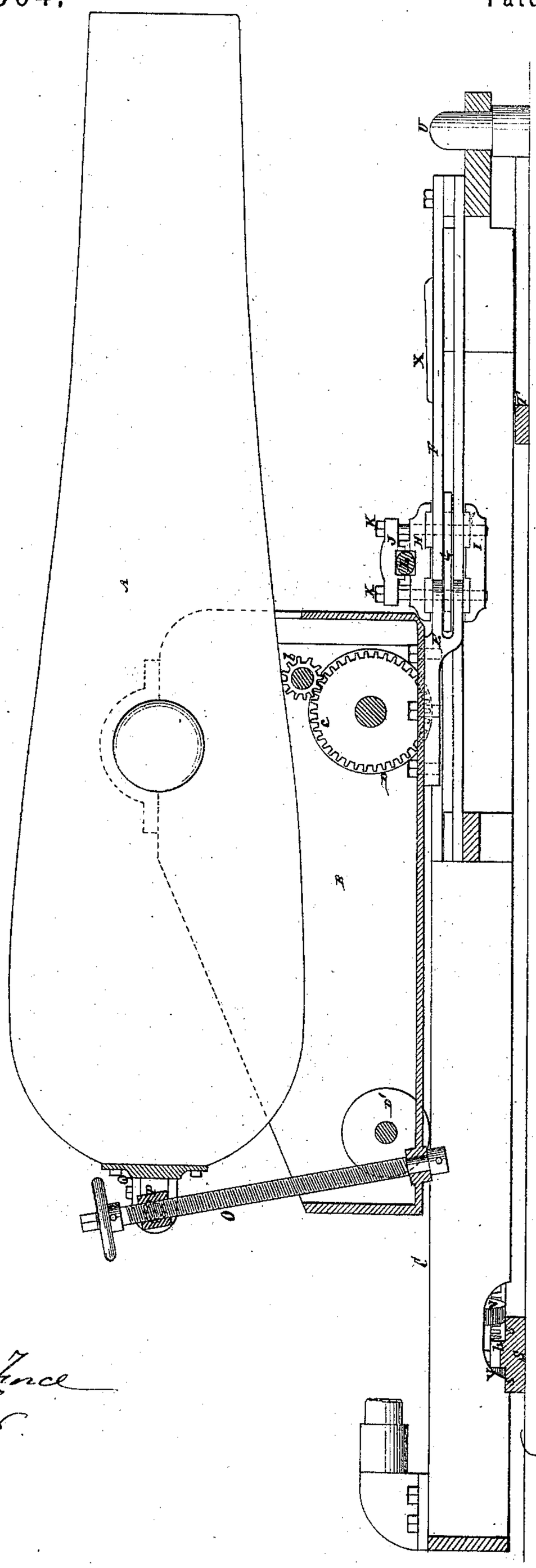

Fig. 2.

Witnesses:

Ephraim C. Ince

J. W. Taylor

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3 Sheets--Sheet 3.

J. ERICSSON.

Improvement in Gun-Carriages.

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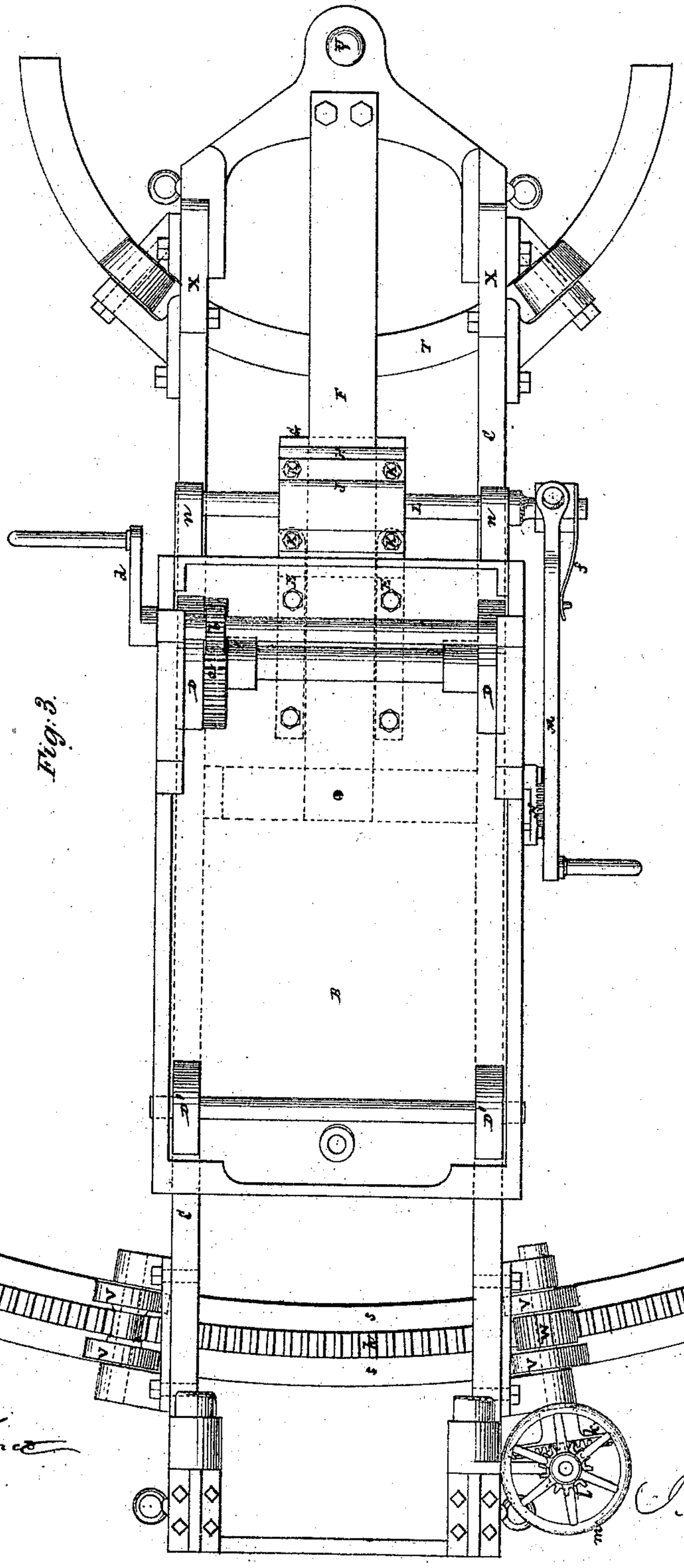

Fig. 3.

Witnesses:

Edward C. Force

S. Waylor

J. Ericsson

UNITED STATES PATENT OFFICE.

JOHN ERICSSON, OF NEW YORK, N. Y.

IMPROVEMENT IN GUN-CARRIAGES.

Specification forming part of Letters Patent No. **129,804**, dated July 23, 1872.

To all whom it may concern:

Be it known that I, JOHN ERICSSON, of the city, county, and State of New York, have invented certain new and useful Improvements in Gun-Carriages and Training-Gear for Heavy Ordnance; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a side view of a gun-carriage with its slides and tram-ways all constructed in accordance with my invention, and showing a gun mounted on the carriage; Fig. 2, a longitudinal vertical section of the same; and Fig. 3, a plan thereof, with the gun removed.

Similar letters of reference indicate corresponding parts throughout the several figures of the drawing.

One part of the invention consists in a novel construction and arrangement of the friction-clamp for holding the carriage on its slides, said clamp being placed in front of the carriage, and being secured to the under side of it by means of forks and held by adjusting-screws arranged to pass through the forks and clamp, whereby the friction-adjusting screws are rendered more readily accessible than when under the carriage, and the difficulty heretofore experienced of tightening the clamp is obviated. The invention likewise consists, in constructing the tram-way of the training-gear, by which the lateral training is effected, of duplicate curved trams, with a rack or cogs in between and formed of one and the same piece with the trams, whereby, in case of the sinking of the tram-way, the rack or cogs would also sink with it, so that the pinion connected with the carriage and operating within or on the rack, and the loose trucks which run upon the trams, will be prevented from binding, which they would be liable to do were the trams and racks in separate pieces, the one from the other. Furthermore, upon the axle of said pinion, which latter is made fast by a key or otherwise between the one pair of loose trucks, is a bevel-wheel operated by a bevel-pinion on an upright spindle that has its bearings attached to the slide, and which is operated by a horizontal hand-wheel to rotate the pinion which gears with the rack. This forms a very simple and efficient training mechanism. Again, and which constitutes an important improvement on the slides on which the carriage runs, said slides are constructed at their forward ends, on their top-faces, with inclined planes, and so that when the gun is run full out the forward portion of the carriage will rest upon the inclined planes, whereby, when firing the gun at a considerable elevation, the sudden downward pressure exerted is prevented from causing the trucks of the carriage to indent the slides, and the whole strain is thrown upon the carriage itself.

In the accompanying drawing, A represents the gun, and B its carriage. C C are the slides on which the carriage runs by means of front and back trucks D D^1, the forward pair, D, of which serves to effect the movement of the carriage by friction through a train of gear, *b c*, actuated by a crank or handle, *d*, the compressor or friction-clamp being suitably relieved for the purpose. The friction-clamp, which is arranged in front of the carriage, is connected with the latter on its under side by means of two forks or jaws, E E, rigidly secured to the under side of the carriage, and projecting in front of it on opposite sides of the stationary friction-slide F, which is composed of one bar above another, leaving a slot or opening in between them, through which a loose plate, G, connected with the clamp passes. H and I are upper and lower plates of the clamp, arranged to bear on the upper and under side of the slide F, and connected with one another, with the plate G, the forks E E, and a cap-plate, J, by adjusting-screws K K, that effect the tightening of the clamp when required, said screws fitting female threads in the lower clamping-plate I, and passing freely through the forks and other portions of the clamp, and resting at their heads on the cap-plate J. In this way the adjusting-screws not only serve to tighten the clamp and are readily accessible for such purpose, but they also connect the clamp with the carriage through the forks E. The clamp is operated—that is thrown on or off—by means of a cam-shaped shaft, L, arranged to pass between the plates H and J, and which is actuated by a lever, M, that may be controlled by a spring, *f*, and is put into lock with a rack,

N, at any point in the height of the latter, accordingly as it is required to operate the clamp and to give it more or less hold. This adjustment, however, which is variable, is irrespective of the fixed adjustment given to the clamp by the tightening-screws K K, that are necessary to provide against wear and to meet different exigencies. O is the screw by which the gun is elevated or depressed, as required. This screw turns in a free bearing in the lower portion of the carriage and is connected above with the gun through a swiveling or rocking nut, P, that has pivot-bearings in a cascabel-piece, Q, bolted to the gun at the base of its breech. This forms a very accurate and efficient means of adjustment, and, by the connection of the parts as described, the screw is relieved of all undue-strain. The training-gear for effecting the lateral training of the gun on tram-ways S T, from a bolt, U, as a center of motion, is arranged to work upon or in connection with two curved trams, *s s*, of the rear tram-way S by means of loose trucks V V disposed to run thereon and a pinion, W, fast on the shaft, which carries the one pair of said trucks. This pinion W gears with a curved rack, *h*, arranged between the trams *s s*, and cast or formed in one piece with said trams, so that in case of the sinking of the trams the rack will also sink with them, and the pinion W and loose trucks V V on either side of the latter will thereby be restrained from binding. Fast on the outer end of the shaft which carries the pinion W, and which works in bearings attached to the slide of the carriage, is a bevel-wheel, *k*, that has gearing with it a bevel-pinion, *l*, on a vertical shaft carried in bearings attached to the slide and operated by a horizontal hand-wheel *m*, for moving the training-pinion W as required. X X are the inclines on the face of the forward portions of the slides C C, for receiving the forward portion of the carriage or pieces *n n* bolted thereto when the gun is run full out, and whereby all sudden downward pressure produced by firing the gun at much of an elevation is borne by the carriage direct, and its trucks are accordingly prevented from indenting the slides C C.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The arrangement of the friction-clamp, provided with tightening-screws K K, in front of the carriage, in combination with the pieces or forks E E, by which the clamp is attached to the carriage, substantially as specified.

2. The friction-clamp, constructed of plates G, H, I, and J, in combination withthe adjusting-screws K K, the forks E E, the carriage B, the slotted slide F, and the cam-shaft L, essentially as described.

3. The tram-way S, composed of double trams *s s*, and intermediate rack *h*, formed of one and the same piece with the trams, in combination with the pinion W, the loose trucks V V, the bevel-wheels *k l*, and hand-wheel *m*, essentially as herein set forth.

4. The inclined planes X X, arranged at the forward ends of the upper portion of the slides C C, in combination with the carriage and its trucks, substantially as and for the purpose herein set forth.

J. ERICSSON.

Witnesses:

EPHRAIM C. FORCE,

S. W. TAYLOR.