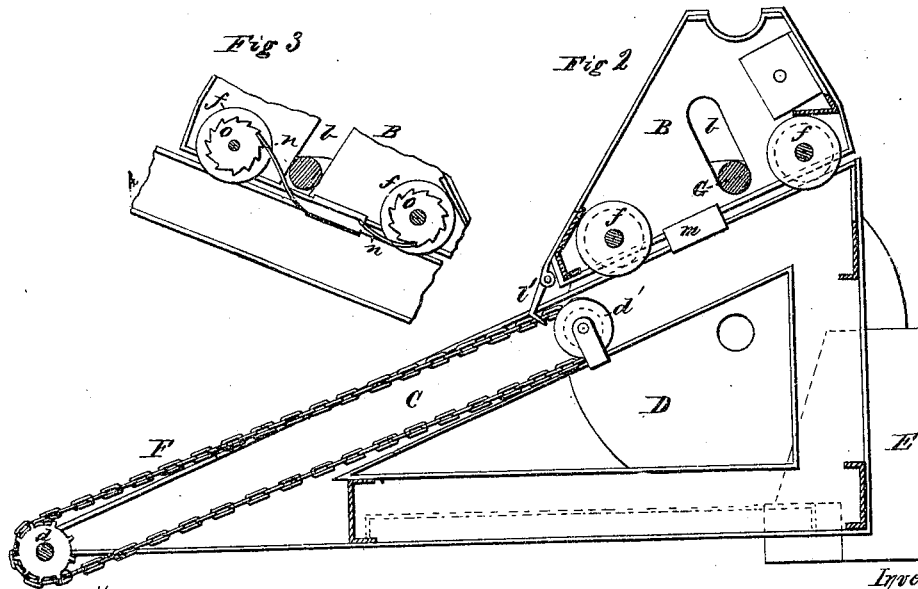
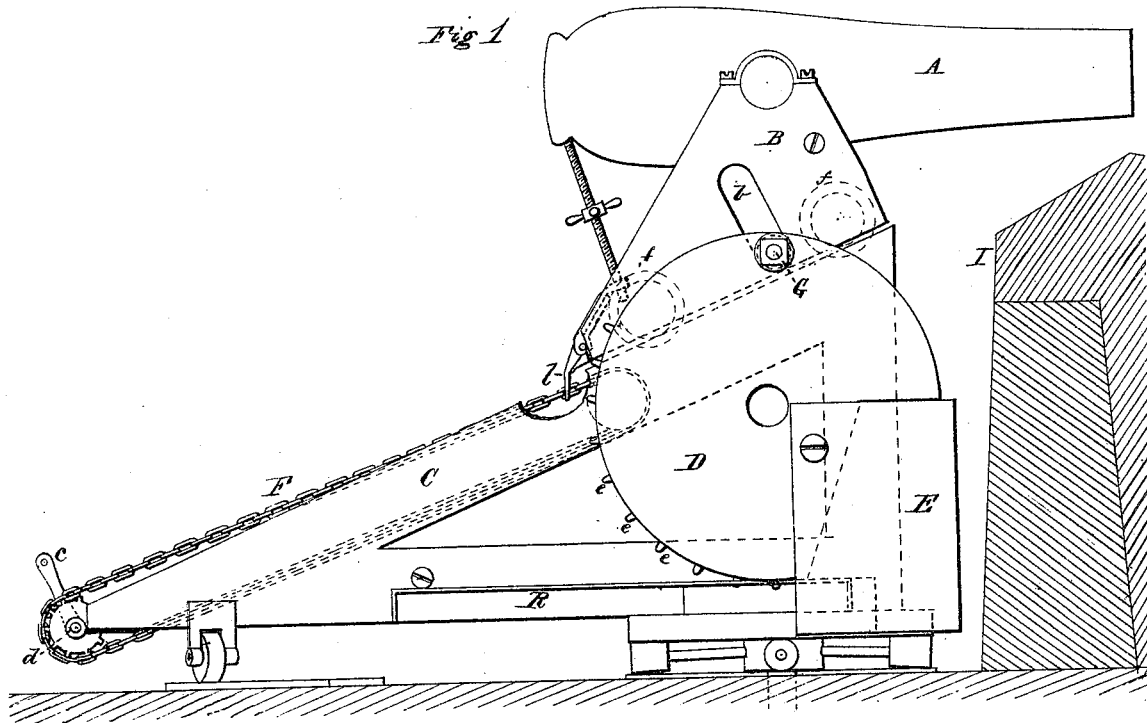


JOHN G. FOSTER.

Improvement in Counterpoise Gun-Carriages.

No. 114,430.

Patented May 2, 1871.



Witnesses
Harry King
Phil. T. Dodge

Inventor.
John G. Foster.
By Dodge & Munro
Attys.

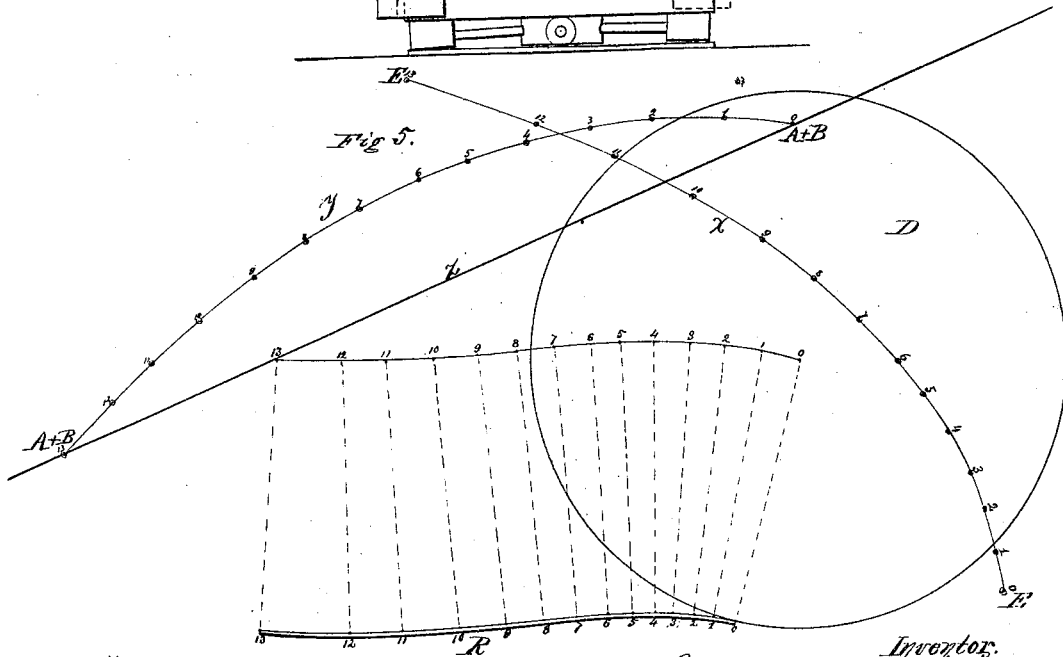
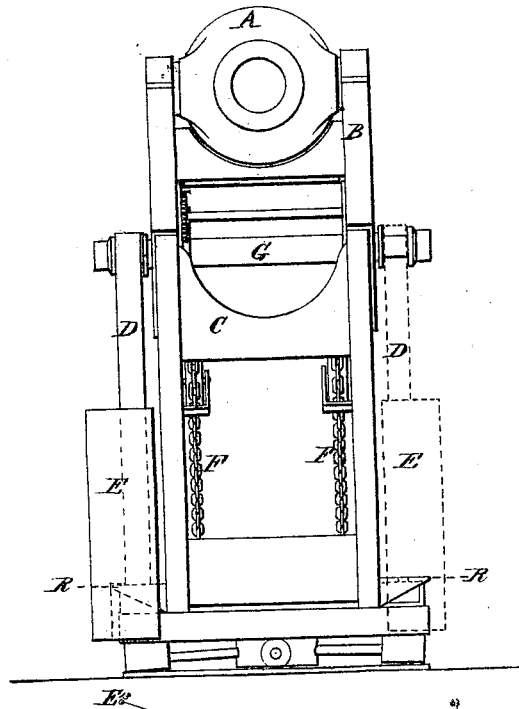
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Fig 4

Patented May 2, 1871.



Witnesses.

Harry King
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Inventor:

John G. Foster.
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United States Patent Office.

JOHN G. FOSTER, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 114,430, dated May 2, 1871.

IMPROVEMENT IN COUNTERPOISE GUN-CARRIAGES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN G. FOSTER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Counterpoise Gun-Carriages, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to counterpoise gun-carriages for ordnance; and

The invention consists in a novel construction and arrangement of the parts, and more especially of the method of combining the counterpoise-wheels and weights with the carriage of the gun, whereby the apparatus is rendered more efficient and perfect, as hereinafter explained.

Figure 1 is a side elevation of the apparatus with the gun in position for firing.

Figure 2 is a longitudinal vertical section of the same with the gun removed.

Figure 3 is an inside view of a portion of the gun-carriage.

Figure 4 is a front elevation, and

Figure 5 is a side elevation of a modification of the track on which the wheels of the counter-weights travel, said modification being intended to preserve a perfect equilibrium between the counterpoise-weights and the gun with its carriage.

In constructing my improved apparatus I provide an inclined traversing-carriage or chassis, C, as is usual in this style of mounting ordnance.

On this I mount the gun-carriage B, having the gun A mounted thereon, as shown in fig. 1, the cheeks of the carriage B having slots, *b*, cut in them, as shown in figs. 1 and 2, for a purpose hereinafter stated.

Transversely of the chassis C are located two shafts, *d* and *d'*, one at its rear end and the other at a point as high up as the rear end of the gun-carriage when the latter is run forward, each of these shafts being provided with sprocket-wheels, around which pass two endless chains, F, as shown in figs. 1, 2, and 4, though, if preferred, the wheels on the upper shaft may be smooth or grooved pulleys.

To the rear end of the carriage B are pivoted two pawls, *l* and *l'*, shown in figs. 1 and 2, which engage upon the chains F in such a manner that, when these chains are moved, the carriage B is forced along with them up the incline, the lower shaft *d* being provided with a crank or similar means for operating the chains, and thereby the carriage and its gun.

The carriage B is provided with two sets of flanged wheels, *f*, which travel on the inclined chassis; and onto these wheels or their axles are secured ratchet-

wheels *o* as shown in fig. 3 and in dotted lines in figs. 1 and 2.

A spring pawl, *n*, is connected to the carriage B, and made to engage with these ratchet-wheels *o* in such a manner that, when the carriage B is forced down the incline by the recoil of the gun, the wheels *f* are locked, and thus made to slide on the chassis, and thus assist in overcoming the recoil, they being free to revolve as the carriage is forced upward or forward.

At each side of the chassis, on its outer face, is secured a horizontal rail or flange, R, on which rest a large wheel, D, at each side, these wheels being connected by a strong shaft, G, which passes through the slots *b* in the carriage B, as represented in figs. 1 and 2.

If desired, another shaft may also be used to connect the wheels D rigidly together, it being located below the inclined rails in such a position as not to interfere with the motion of the wheels D.

To the front sides of these wheels D are attached weights E, of a size or weight sufficient to act as a counter-balance to the gun and its carriage, as shown in figs. 1, 2, and 4.

These weights, being thus located, are carried upward and backward by the wheels D as the latter are rolled backward on the rails R by the recoil of the gun and its carriage, the line of the center of gravity of these weights being indicated by the line *x* of fig. 4, the line *y* indicating the line of travel of the shaft G, while *z* indicates the line or face of the chassis.

In order to preserve a perfect equilibrium between the combined weight of the gun and its carriage and these counterbalancing-weights E the track or rails R, on which the wheels D travel, should be made as indicated in fig. 4, where they are represented as being slightly curved. This curvature is very slight, and its exact curves or configuration are to be determined by well-known mathematical formulas, which need not be herein repeated.

In order to prevent any torsional strain on the shaft G, which connects the wheels D, and keep the latter in proper position, and prevent them from tending to run off the rails R, they are provided, on a portion of their periphery, with a series of spurs or projections, *e*, which engage in corresponding holes in the rails, as represented in fig. 1.

The operation of the apparatus thus constructed will be readily understood:

The gun, being charged, is run up so as to fire over the parapet or breastwork I, and, when discharged, the recoil will force it back down the inclined

chassis C, the weights E counterbalancing the combined weight of the carriage and gun, as in similar devices of this class.

By this method of combining the wheels D and their weights E with the carriage and its gun I render the operation very complete, and overcome several difficulties which have heretofore existed in this class of gun-carriages or manner of mounting and operating ordnance.

Having thus described my invention,

What I claim is—

The counterpoise-wheels D having weights E attached, in combination with the gun-carriage B, said wheels being connected to each other and to the carriage by means of a shaft, G, passing through slots, or by equivalent means, substantially as described.

Witnesses:

JOHN G. FOSTER.

CHAS. B. F. ADAMS,

A. W. ADAMS.