

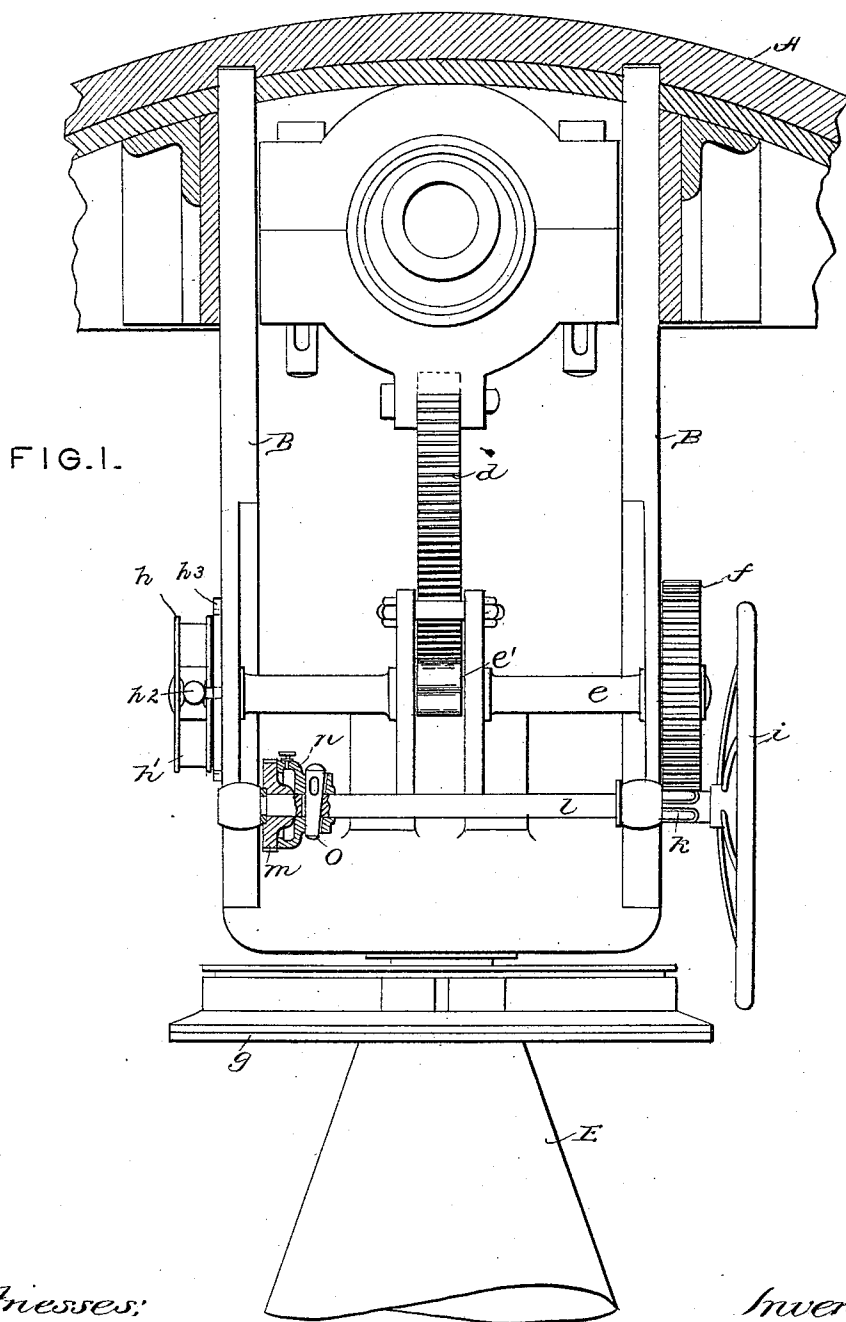
(No Model.)

2 Sheets—Sheet 1.

C. MARTIN.
APPARATUS FOR POINTING GUNS.

No. 472,895.

Patented Apr. 12, 1892.



Witnesses:
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Samuel H. Knight

Inventor
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Attorneys

(No Model.)

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FIG. II.

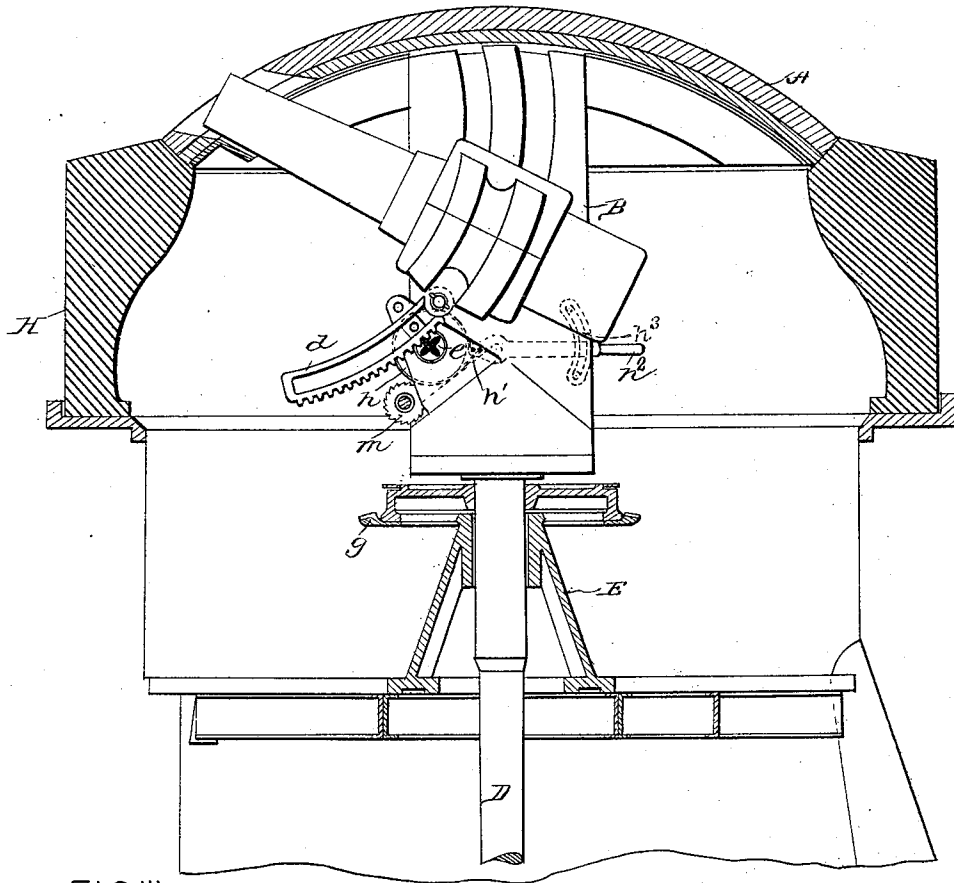


FIG. III.

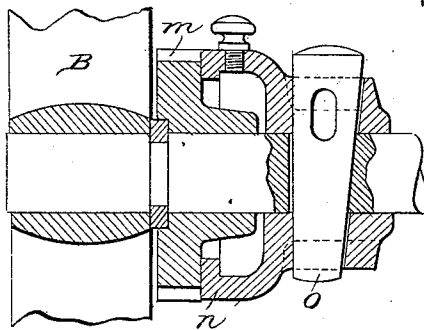
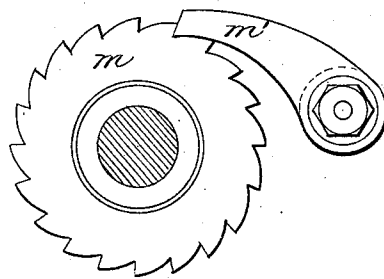


FIG. IV.



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UNITED STATES PATENT OFFICE.

CARL MARTIN, OF MAGDEBURG, GERMANY, ASSIGNOR TO THE GRUSON-WERK, OF SAME PLACE.

APPARATUS FOR POINTING GUNS.

SPECIFICATION forming part of Letters Patent No. 472,895, dated April 12, 1892.

Application filed February 3, 1891. Serial No. 380,056. (No model.)

To all whom it may concern:

Be it known that I, CARL MARTIN, a subject of the King of Prussia, and a resident of Magdeburg-Buckau, Prussia, German Empire, have invented certain new and useful Improvements in Apparatus for Pointing Guns, of which the following is a specification.

The invention hereinafter described relates to apparatus for pointing guns, and is designed to afford the means whereby a gun mounted in a minimum embrasure or an armor-plated gun-carriage will be automatically retained in any position to which it may be adjusted without the employment of a counter-weight. The elevation of the gun in such carriages is usually effected by raising and lowering the gun in arc-shaped guides in the cheeks of the gun-carriage. The centers of these arc-shaped guides are in a horizontal line extending through the embrasure and constituting an imaginary or virtual pivot or axis about which the gun is turned for vertical pointing or elevation.

In the armor-plated gun-carriage represented in the accompanying drawings, the elevation is effected by turning a horizontal shaft *l*, upon which is fixed a toothed pinion *k*, which is geared through the toothed wheel *f'*, shaft *e*, and pinion *e'*, with a toothed sector *d* secured to the gun, the center of the said sector coinciding with the virtual horizontal pivot of the gun.

In order to facilitate the pointing of the gun in carriages of the kind or class above referred to, the gun has heretofore been balanced by a counter-weight. In this manner the material advantage was obtained that the gun was retained at any angle of elevation to which it was adjusted, thus permitting the lowering of the gun to be effected without danger. In heavy guns this arrangement presents, however, the defect that the counter-weight is necessarily very heavy, and that the total weight of the movable parts is consequently considerably increased. Moreover, the space at disposal often renders the use of a counter-weight impracticable. Now if the counter-weight be dispensed with the raising of the gun either involves a greater expenditure of power or it takes place more slowly; but both of these circumstances are of slight

importance in the case of heavy guns, the firing of which cannot be effected with great rapidity under any circumstances. It is, however, necessary in this case to provide a device whereby the gun will be retained at any angle of elevation to which it may be adjusted. For this purpose use has heretofore been made in some cases of an ordinary friction-strap *h'*, Figure II, passed around a pulley on one of the shafts of the elevating-gear and applied to the said pulley by means of a lever when the gun was to be secured in position, the said strap being somewhat relaxed when the gun was to be raised or lowered. In this arrangement there was always danger that when the brake was not properly worked not only might the gun move downward with great velocity and destroy or injure the mechanism, but the hand-wheel upon the operating-shaft of the elevating-gear, being rapidly rotated by such downward movement, might injure the attendant. These inconveniences are obviated by the present invention, as it provides for the automatic checking of the descent of the gun.

In the accompanying drawings, Fig. I represents an armor-plated gun-carriage having the present improvement applied thereto. Fig. II is a side elevation of the same. Fig. III is an enlarged broken detail sectional view, showing more fully the ratchet-wheel and additional friction-brake; and Fig. IV is a detail view, principally in side elevation, of the pawl and ratchet of the additional brake mechanism.

A is the armor-plate shield or crown, which is rigidly connected with the two walls or cheeks *B'* of the gun-carriage. These cheeks are united at their lower ends by a strong connecting-piece and are balanced upon the pivotal column *D'* which is fitted to turn in the bracket *E'*, and is to be slightly raised by any suitable device when the armor-plated gun-carriage is to be turned for horizontal pointing or training.

The gun is provided on both sides with arc-shaped projections, which slide in corresponding guideways in the cheeks *B'* of the gun-carriage. The toothed sector *d* is attached to the gun at a point approximately in a vertical line intersecting the center of gravity of

the gun and is geared with a toothed pinion e' on the shaft e . This shaft receives its motion, through the medium of the toothed wheels $f' k$, from the shaft l , which is rotated by means of the hand-wheel i .

h' is a friction-strap brake encircling the pulley h on the shaft e and having its ends connected at different points to one end of a lever h^2 , pivoted to the support or gun-carriage B and adapted, as it is actuated by hand, to be controlled and held in a suitable rack h^3 , secured to said support or gun-carriage. When this strap is applied to the pulley, the gun is rigidly secured in the position to which it has been adjusted. This brake is, however, applied only when the gun has been elevated or depressed, as required, and is about to be fired.

A second brake mechanism, which is provided upon the shaft l , is always operative. This brake mechanism is represented in detail in Figs. III and IV. In the said figures, m is a ratchet-wheel, which is loosely mounted upon the shaft l and with which a pawl m' , suitably pivoted upon the support or gun-carriage, is adapted to engage.

n is a brake-disk, also mounted upon the shaft l , which is pressed by a wedge o , let into a corresponding opening in the shafts against the ratchet-wheel m . Should the wedge o be so tightened that a complete coupling of the brake-disk n with the ratchet-wheel m is effected, the gun could be raised but not lowered, as the pawl m' permits the turning of the shaft l only in one direction. The cotter o can, however, be tightened to such an extent that while the weight of the gun alone is not sufficient to overcome the friction produced between m and n a slight exertion of force upon the hand-wheel i is enough to move the gun slowly downward. By this means the danger of any sudden downward movement of the gun by reason of inattention during the service is entirely avoided. Moreover, the arrangement is of great practical value for the pointing of the gun, as the gun can not only be raised slowly, but can be lowered to the desired elevation and then retained in position, and can, therefore, be ad-

justed very accurately. The cotter o may also be tightened, so that the brake permits the gun to move slowly downward. In this case a reciprocal action takes place between the strap-brake and the automatic brake, inasmuch as the strap-brake serves for entirely stopping the gun, while the automatic brake serves as a safety device and assists the strap-brake. This arrangement of the automatic brake obviates various defects in the arrangements hitherto used, and enables armor-plated gun-carriages to be used for heavy guns with advantage.

I claim—

1. In an apparatus for raising and lowering guns, the combination, with the shaft controlling said apparatus, of the friction-brake comprising a ratchet-wheel loosely mounted upon said shaft and having means for retaining it against rotation in one direction, the friction-disk, and means adapted to hold said disk against said wheel, substantially as set forth.

2. The combination, with the gun raising and lowering mechanism and a shaft controlling the same, of the adjustable friction-brake consisting of the wheel and disk having connection, respectively, with said shaft and a fixed portion of the structure, one of which connections is rigid and the other of which operates in one direction only, and the wedge located between one of the disks and the part to which it is connected, all substantially as shown and described.

3. The combination, with the gun raising and lowering mechanism and the rotating shafts, which have working connection through reducing gear with said raising and lowering mechanism and with each other, of a hand-brake applied to one of said shafts, and an automatic friction-brake having ratchet connection with the other of said shafts, substantially in the manner and for the purpose set forth.

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