

No. 668,602.

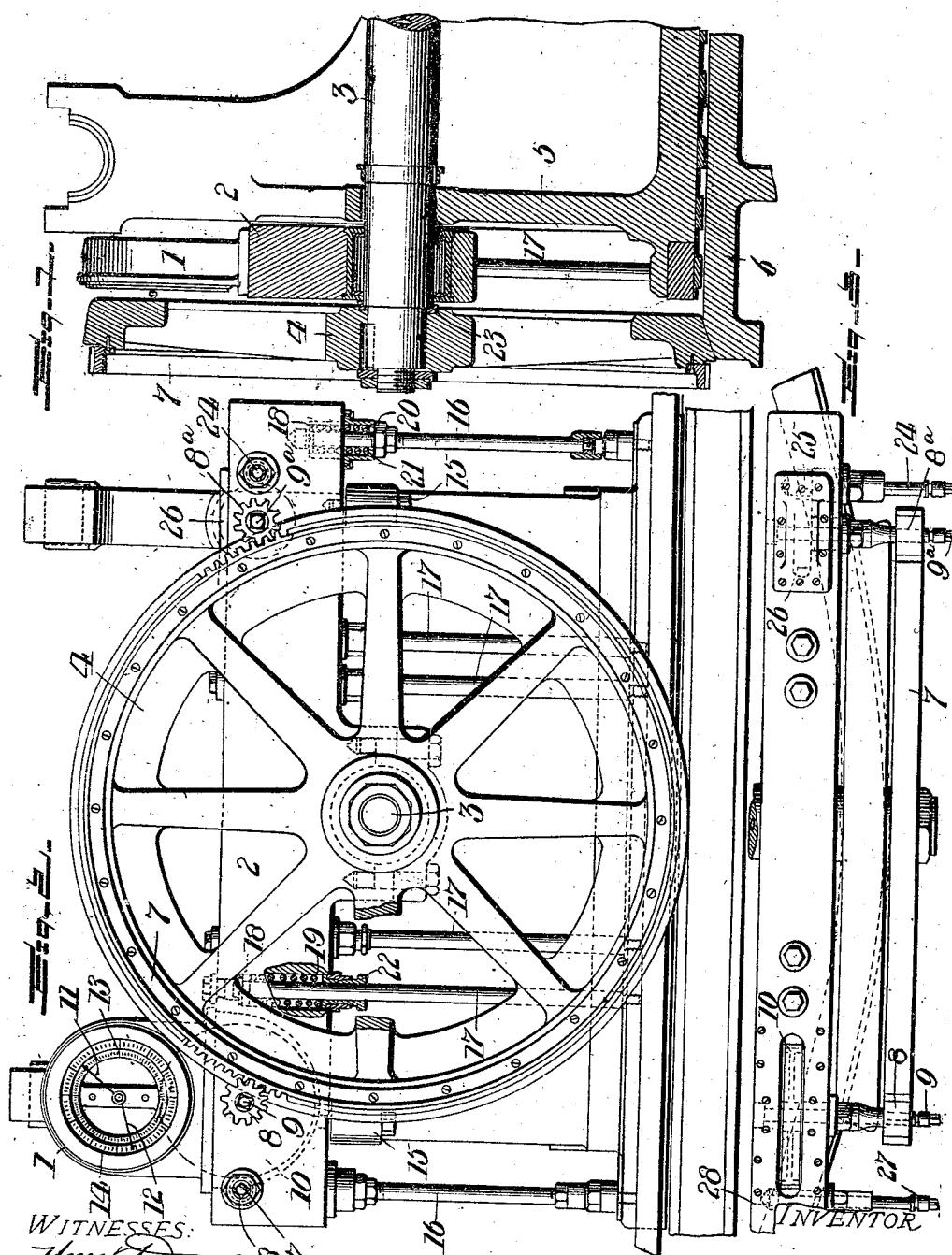
Patented Feb. 19, 1901.

A. H. EMERY.

INDICATING THE TRAVERSE OF GUN CARRIAGES.

(No Model.)

(Application filed Dec. 22, 1900.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALBERT H. EMERY, OF STAMFORD, CONNECTICUT.

INDICATING THE TRAVERSE OF GUN-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 668,602, dated February 19, 1901.

Original application filed November 1, 1900, Serial No. 35,133. Divided and this application filed December 22, 1900, Serial No. 40,803. (No model.)

To all whom it may concern.

Be it known that I, ALBERT H. EMERY, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Indicating the Traverse of Gun-Carriages, of which the following is a specification.

This is a division of my application filed November 1, 1900, Serial No. 35,133.

My invention is intended for use more especially in connection with large coast-defense guns; and it consists in mounting a complete traverse-indicator on a fixed or permanent seat on and so connected with the carriage as to show the angular rotation or traverse of the same.

The indicator may be connected directly with a wheel which is operated to traverse the carriage and rotate in harmony therewith, or it may be connected with any wheel which rotates in harmony with the angular movement of the carriage when it is traversed, such wheel, if necessary, being added especially for this purpose. If connected directly with the traverse-wheel—that is, a wheel that is driven directly to cause the rotation of the carriage—it will be desirable to have this wheel so constructed and operated that it will not slip when driving or rotating the carriage. This may be accomplished by the use of suitable gears, gearing the wheel to the bed or other stationary part of the carriage, or it may be done by giving sufficient pressure between the bearing-face of the traverse-wheel and the bed to prevent slipping when this wheel is turned to rotate the carriage. If this is not done, it would be well to connect the traverse-indicator when mounted on the carriage with the bed or some other fixed part by an independent wheel connected with the bed and traverse-indicator in such a way that the carriage cannot be traversed without moving the indicator in exact harmony therewith. I prefer this indicator to be rotary and to have its angular movements in exact harmony with the carriage and will illustrate my invention with an indicator so constructed and directly connected to the main traverse-wheel. It might be connected with any wheel that moves in

exact harmony with the angular motion of the carriage.

This invention is illustrated in the drawings forming a part of this specification, and in which—

Figure 1 is a sectional detail showing small portions of the gun-carriage, the bed on which it is traversed, the shaft of the traverse-wheel, the traverse-wheel and its gear, together with the load-beam and its contained bearing and the traverse-indicator mounted thereon. Fig. 2 is a front elevation of the parts, together with the pinions used to drive the gear of the traverse-wheel, showing also the method of connecting the traverse-wheel to the indicator and the adjoining load-springs arranged in connection with the load-beam to adjust the pressure between the traverse-wheel and the bed to prevent slipping. Fig. 3 is a plan showing a portion of the bed on which the traverse-wheel rests and the traverse-wheel with the mechanism for driving it, the traverse-indicator being removed and the gear which drives it being shown in dotted section.

1 represents a complete indicator mounted on the load-beam 2, in which the axis 3 of the traverse-wheel 4 is journaled.

5 shows a portion of one end of the carriage-body, and 6 a portion of the carriage bed, with its outer edge coned, on which the cone face of the traverse-wheel 4 runs in rotating the carriage about an axis in the center of this bed.

To the wheel 4 is secured a wheel 7, meshing with pinions 8 8^a, by either or both of which the traverse-wheel may be driven. These pinions 8 8^a are keyed to the shafts 9 9^a, on which they are mounted and through which they may be driven to rotate the traverse-wheel. The shaft 9 has keyed to it a gear 10. (Shown in dotted lines in Figs. 2 and 3.) The gear 10 is connected through a suitable system of gears (not here shown) with the two indicator-pointers 11 and 12, moving, respectively, over graduations 13 and 14.

The relations of the circumference of the traverse-wheel to that of its path on the bed on which it travels and the gearing between the traverse-wheel and indicator and the gearing in the indicator are such that the

pointer 11 revolves once per revolution of the carriage, having the same angular rotation as the carriage at all points, so that the graduation pointed out by this needle shows the exact revolution of the carriage in degrees. The relations of the gears in the indicator itself are such that the needle 12 makes one complete revolution for each degree passed over by the needle 11. These two needles to thus show the exact position of the carriages in degrees, minutes, and fractions of minutes.

The carriage should have some fixed zero-point at which both needles are set exactly at zero, and the indicator should have means to facilitate this adjustment. A suitable indicator having these several functions is described and claimed in my application filed November 1, 1900, Serial No. 35,133, of which this case is a division.

Shaft 3 has a tightly-fitting roller bearing in the load-beam 2. Rotation of the traverse-wheel causes the load-beam to move, which in turn moves the carriage by reason of the two vertical dowel-pins 15, screwed through lugs in the carriage and fitting openings in the load-beam, thus causing the whole carriage to rotate with it when the wheel 4 is rotated.

Two rods 16 and four rods 17 are secured to the carriage-body 5 at their lower ends and have at their upper ends heads, which rest on washers 18 and compress springs 19 and 20 against collars 21 and 22, secured to the bottom of the load-beam. Through these collars the pressure on the springs is put on the load-beam, by which it is transmitted to shaft 3, and thus mainly to the traverse-wheel, causing it to bear on the bed with sufficient pressure to prevent slipping when it is rotated, o as should slipping occur the traverse-indicator will not show the true angular position of the carriage. In any style of carriage where these provisions against slipping are insufficient a separate wheel may be provided to roll on the bed or some other stationary part of the carriage and then have the indicator mechanism geared to it instead of to the traverse wheel or mechanism.

Shaft 3 should be suitably secured against longitudinal motion. It carries a ring 23 against a shoulder near its outer end. Between this ring and the bottom of the recess in the hub of the wheel 4 may be placed thin rings or plates to carefully adjust the distance of the traverse-wheel from the center of the carriage, so that one revolution of the carriage will give exactly one revolution of the indicator-needle 11.

Shafts 9^a are usually driven by cranks placed on them, one man operating each crank. If it is desired to increase the driving power and decrease the speed of traverse, the crank may be removed from shaft 9^a and placed on a shaft 24, driving a pinion 25, geared to a wheel 26, (shown in dotted lines in Figs. 2 and 3,) keyed to the shaft 9^a, and through the latter and its pinion 8^a driving

the geared wheel 7, mounted on the traverse-wheel. If the crank used to operate shaft 9 be placed on the shaft 27, it may be made to drive the gear 10 through the pinion 28, keyed to said shaft 27, and thus move the carriage with still greater force, ease, and steadiness, enabling a single man standing directly in front of the indicator to traverse the carriage and observe its exact movements and position through the indicator.

Should there be trouble in observing the true position of the carriage, owing to slipping of traverse-wheel 4, an independent wheel 8^a may be geared to the indicator and operated by the motion of the carriage over the bed, the traverse-wheel in this case having no direct connection with the indicator. Such a case would be shown by the present drawings were the wheel to cease to be the traverse-wheel. In such use shafts 9^a, 24, and 27, with their pinions 8^a, 25, and 28, would be removed. The wheel 4 would no longer constitute the traverse-wheel of the carriage, but through the pinion 8, shaft 9, and gear 10 would, as before, operate the indicator, which, moving with the greatest ease, would not cause the wheel 4 to slip, and in this case the wheel and the indicator would move in entire harmony with the carriage. Of course were this done another traverse-wheel placed elsewhere or other means would have to be provided to traverse the carriage.

I have shown and described certain patentable features of a gun-carriage in disclosing the nature and objects of my present invention; but I do not claim these features in this case, for the reason that they are already claimed in my copending application originally filed April 13, 1893, renewed November 22, 1893, Serial No. 491,686.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with a gun-carriage and a fixed bed over which the carriage has angular movement when traversed; a complete traverse-indicating mechanism mounted upon the carriage and having driving connection engaged with the fixed bed through which it is driven to indicate the angle through which the carriage is traversed.

2. The combination of a gun-carriage containing a wheel journaled therein, the carriage-bed on which said wheel travels in traversing the carriage, and a complete traverse-indicator mounted on the carriage and driven by said wheel, to indicate the angular rotation of the said carriage.

3. The combination with a gun-carriage-traversing wheel, journaled in the carriage and traveling on the bed thereof, of a traverse-indicator connected with said wheel and indicating the angular rotation of the carriage.

4. In combination with a gun-carriage-traversing wheel rolling on the carriage-bed, a traverse-indicator containing mechanism

suitably geared to said wheel, whereby the angular movement of the carriage is shown by the indicator.

conical traverse-wheel and a bed having a conical surface on which the traverse-wheel travels in traversing a carriage; a complete traverse-indicator mounted on the carriage suitably connected with said wheel to show the angular movement of the carriage.

Signed at Washington, District of Columbia, this 22d day of December, 1900.

ALBERT H. EMERY.

Witnesses:

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EDWIN S. CLARKSON.

5. The combination with a gun-carriage, a wheel journaled in the carriage and rolling on the bed over which said carriage is traversed, driving connection rotating said wheel to traverse the carriage, and the traverse-indicator suitably mounted on said carriage, connected to said traverse-wheel, whereby it indicates the angular movement of the carriage.

10. 6. In combination with a gun-carriage, its