

No. 785,966..

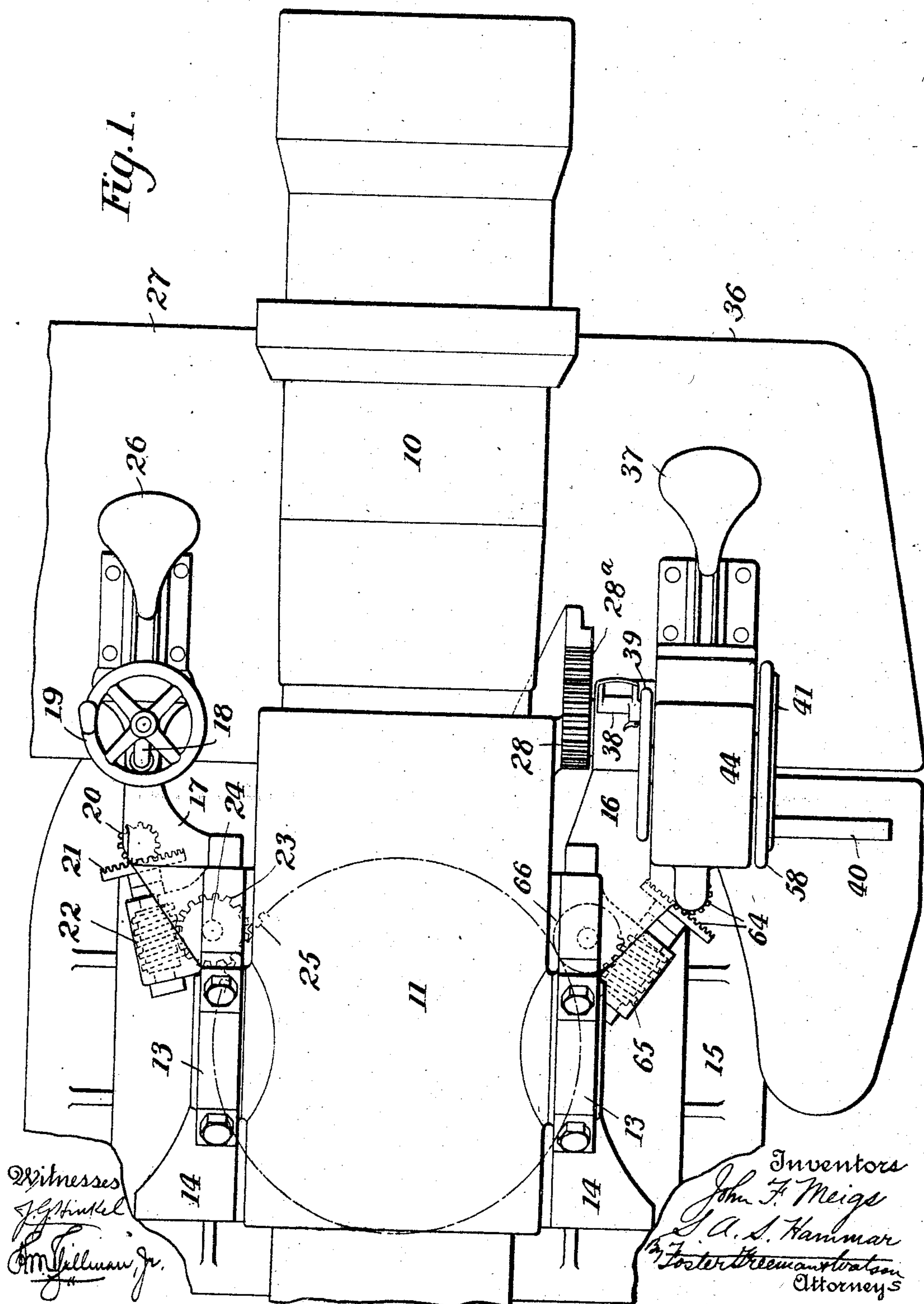
PATENTED MAR. 28, 1905.

J. F. MEIGS & S. A. S. HAMMAR.

# TRAINING AND ELEVATING MECHANISM FOR GUNS.

APPLICATION FILED JULY 21, 1904.

3 SHEETS—SHEET 1.



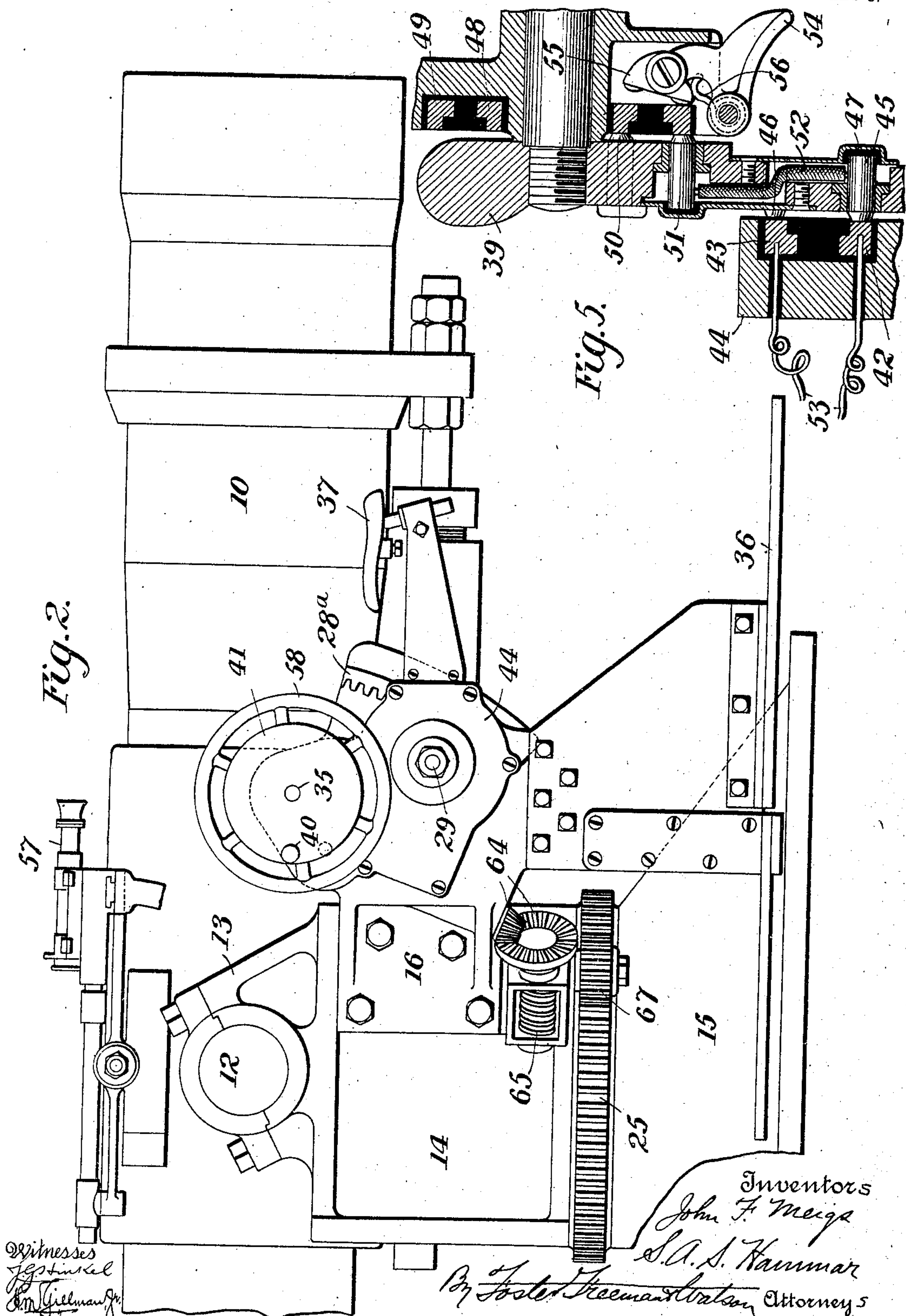
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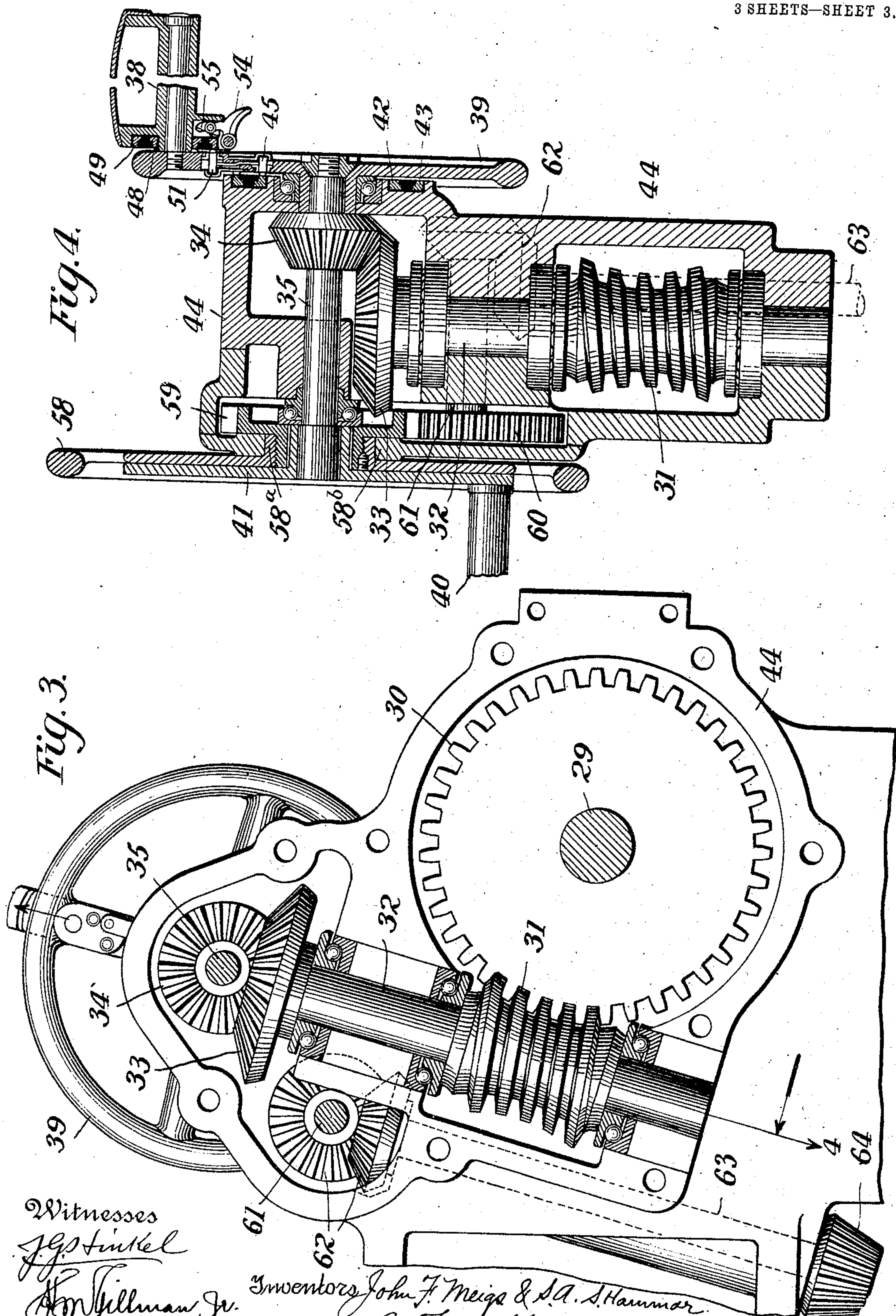
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3 SHEETS—SHEET 3.



Witnesses  
*J. G. Finkel*  
*Samuel Hillman, Jr.*

Inventors *John F. Meigs & S. A. S. Hammar*  
*By Foster Freeman & Watson, Attys*



# UNITED STATES PATENT OFFICE.

JOHN F. MEIGS AND SIGARD A. S. HAMMAR, OF SOUTH BETHLEHEM, PENNSYLVANIA, ASSIGNORS TO BETHLEHEM STEEL COMPANY, OF SOUTH BETHLEHEM, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## TRAINING AND ELEVATING MECHANISM FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 785,966, dated March 28, 1905.

Application filed July 21, 1904. Serial No. 217,487.

*To all whom it may concern:*

Be it known that we, JOHN F. MEIGS, a citizen of the United States, and SIGARD A. S. HAMMAR, a subject of the King of Sweden and Norway, residing at South Bethlehem, Northampton county, State of Pennsylvania, have invented certain new and useful Improvements in Training and Elevating Mechanism for Guns, of which the following is a specification.

This invention comprises various improvements in training and elevating mechanism for guns.

The invention includes means whereby a single operator may conveniently and effectively use the sighting devices of the gun while operating the gun-moving mechanism.

It also includes means whereby the operator may fire the gun while using the sighting devices and the gun-moving mechanism.

Combined with the elevating mechanism is a training-wheel, so that the operator in charge of the elevating may also, if necessary, change the horizontal position of the gun.

The invention will be described in connection with the accompanying drawings, in which—

Figure 1 is a plan view of part of a gun embodying the present invention. Fig. 2 is a left side elevation of the same. Fig. 3 is an enlargement of a part of Fig. 2, a portion of the casing being removed. Fig. 4 is a section on the line 4 of Fig. 3, and Fig. 5 is an enlargement of a portion of Fig. 4.

Referring to the drawings, 10 indicates a gun of any suitable construction which is supported in a sleeve 11, having trunnions 12 resting in bearings 13 of a yoke or carriage 14. The carriage 14 is suitably mounted to turn on a base 15. The carriage 14 is provided with suitable brackets or extensions 16 17, which support the elevating and training mechanism.

On one side of the gun is the usual training mechanism, and on the other side we provide an auxiliary training-wheel and also a novel elevating mechanism. As shown, the usual training mechanism is on the right looking

forward from the breech of the gun, and it comprises a shaft 18, having on its upper end a crank or hand wheel 19 and at its lower end a pinion 20, engaging the gear 21 on a short shaft carrying a worm 22. The worm 22 turns a worm-gear 23 on a vertical shaft 24, and a second gear on the shaft 24 engages with a fixed gear 25 on the base or pedestal 15. It will be evident that by turning the hand-wheel 19 the carriage will be rotated about its vertical axis on the pedestal. The gun may thus be trained on any object. A seat 26 and platform 27 are preferably provided for the gunner who operates the training mechanism.

On the left side of the gun is an elevating mechanism supported by the bracket 16. The gun is elevated by engagement of a pinion 28 with a rack 28<sup>a</sup>, attached to the sleeve 11. The pinion 28 is on the inner end of shaft 29, which carries a worm-gear 30 in mesh with the worm 31 on an inclined shaft 32, the upper end of which is driven through beveled gears 33 34, respectively, on said shaft 32 and a horizontal shaft 35. The shaft 35 is provided with two handles so arranged that an operator standing on a platform 36 or sitting on the seat 37 may turn the shaft with a minimum movement of his body, and be thus enabled to keep his eye at the same time on the sighting device. The preferred way of applying the handles, as shown in Figs. 1 and 4, is to arrange them on opposite ends of the shaft 35 and one hundred and eighty degrees apart. Thus, as shown, a handle 38 is connected to a wheel 39, fixed on one end of the shaft 35, and a second handle 40 is connected to a wheel 41, fixed on the other end of said shaft, the handles 38 and 40 being one hundred and eighty degrees apart. These handles are so proportioned and arranged that they may be grasped by the right and left hands of an operator sitting on the seat 37. It will be evident that the body of the operator would sway considerably if he attempted to operate the elevating mechanism with one hand and that by the use of two hands and the two handles arranged as de-



scribed he can operate the mechanism with much greater power and at the same time steady himself, so that he can keep his eye on the sighting device, thereby enabling him to sight the gun with greater speed and accuracy.

It will be evident that equivalent devices may be substituted for the connections between the handles 38 and 40 and the gearing which operates the elevating mechanism, it being only necessary that the two handles be adjacent to the sighting device and connected with said gearing and that they be arranged to move in opposite directions with respect to the operator while supplying power to the gearing. In other words, the handles are so arranged that while operating one moves toward the operator while the other moves away from him, and vice versa. We preferably make the outer handle 40 of double length, so that it may be grasped by two or more operators—that is, one or more in addition to the operator on the seat 37.

We preferably provide firing mechanism adapted to be operated by the hand grasping the handle 38. We have shown in Figs. 4 and 5 a circuit-closing device and parts of the circuit of an electrical firing mechanism. Referring to these figures, 42 43 are conducting-rings which are connected with the gear-casing 44 and suitably insulated therefrom. These rings are concentric with the shaft 35, and the wheel 39 carries suitable brushes 45 46, which travel on said rings and are held in contact with them by suitable springs 47. The handle 38 is also provided with a pair of insulated conducting-rings 48 49 concentric with its axis, and a second pair of spring-pressed brushes 50 and 51, carried by the wheel 39, constantly bear, respectively, on these rings. The brushes 45 and 51 are connected by a suitable conductor 52, and the brushes 46 and 50 are likewise connected. The rings 42 and 43 are connected with a circuit 53, which includes the firing device proper in the breech-block of the gun. One branch of this circuit may include the metal of the gun and carriage, if desired. The rings 48 49 of the handle 38 form the terminals of the circuit 53, and a circuit-closing device is mounted on the handle for closing the circuit. As shown, this device consists of a thumb-lever 54, mounted in the handle 38 and provided with a pivoted bridge 55, adapted to electrically connect the rings 50 and 51. A spring 56 holds the bridge normally out of contact with one of the rings. By pressing the trigger toward the axis of the handle the bridge is thrown into contact with both rings and the circuit completed, which effects the firing of the gun. It will be seen that the operator can fire the gun while holding the handle and even while moving the handle to operate the elevating mechanism. In other words, with the apparatus described he can simultaneously keep his eye on the sight, change the eleva-

tion of the gun, and fire it. 57 indicates a sighting device of any suitable construction.

An auxiliary training mechanism is arranged on the left side of the gun in conjunction with the elevating mechanism, so that the operator of the latter mechanism may also train the gun horizontally or assist in training it. The auxiliary training mechanism comprises a hand-wheel 58 adjacent to the wheel 41 and of greater circumference. The wheel 58 has a hub 58<sup>a</sup>, which turns in a bearing 58<sup>b</sup> in the casing or frame. The gear 59 is rigidly connected to the hub 58<sup>a</sup>, and it is connected, through gear 60, transverse shaft 61, beveled gears 62, inclined shaft 63, beveled gears 64, worm 65, worm-wheel 66, and pinion 67, with the stationary gear 25 on the pedestal.

The operation of the invention will be obvious from an inspection of the drawings in connection with the foregoing description.

It will be seen that the training and elevating of the gun and the sighting and firing may all be attended to by a single operator on the seat 37, or said operator may attend to the elevating while the operator on the right attends to the training, both being provided with sighting devices. Either one or both of these operators may be assisted by means of the elongated handle 40 and the auxiliary training-wheel 58.

Having described the invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination with a gun and its sighting device, of means for moving the gun comprising suitable gearing and two handles arranged adjacent to the sighting device, said handles being connected to said gearing and adapted to move in opposite directions with respect to the operator when operating the gearing, whereby the operator may move the gun and sight the same simultaneously.

2. The combination with a gun and its sighting device, of means for moving the gun comprising suitable gearing and two handles arranged adjacent to the sighting device, said handles being connected to said gearing and adapted to move in opposite directions with respect to the operator when operating the gearing, an electric firing-circuit, and a circuit-closer mounted on one of said handles, whereby the operator may adjust and sight and fire the gun simultaneously.

3. The combination with a gun and with means for moving the gun comprising suitable gearing, a crank-shaft, and two diametrically opposite handles connected to said shaft, of a sighting device adjacent to said handles, an electric firing-circuit, and a circuit-closer mounted on one of said handles, whereby the operator may adjust and sight and fire the gun simultaneously.

4. The combination with a gun and its sighting device, of mechanism for elevating the



gun comprising two handles arranged adjacent to the sighting device and adapted to move in opposite directions with respect to the operator when the elevating mechanism is operated, a training mechanism and a handle for operating said training mechanism said handle being also arranged adjacent to the sighting device, whereby a single operator may sight the gun and simultaneously move the training and elevating mechanism.

5. The combination with a gun and its sighting device, of suitable gearing for elevating the same comprising a crank-shaft and two crank-handles fixed thereon adjacent to the sighting device and arranged to move simultaneously in opposite directions with respect to the operator, a hand-wheel turning freely about said shaft, and gearing connecting said hand-wheel with the pedestal of the gun for training the gun.

6. The combination with a gun and its sighting device, of suitable gearing for moving the gun, a crank-shaft for operating said gearing, and two crank-handles connected with said shaft on opposite sides of the same, said handles

dles being adapted to be grasped by a single operator and arranged to move simultaneously in opposite directions with respect to the operator and one of said handles being elongated and adapted to be grasped by one or more additional operators.

7. The combination with a gun and with means for moving the gun comprising suitable gearing, and a crank having a rotatable handle for operating the same, of stationary conducting-rings concentric with the axis of said crank, conducting-rings carried by said handle, brushes carried by the crank and bearing on both sets of said rings for electrically connecting the stationary rings with the rings on the handles, and a circuit-closer carried by said handle.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN F. MEIGS.

SIGARD A. S. HAMMAR.

Witnesses:

EDWIN A. MILLER,

LEIGHTON N. D. MIXSELL.