A. T. DAWSON & G. T. BUCKHAM.

SIGHTING APPARATUS FOR ORDNANCE.

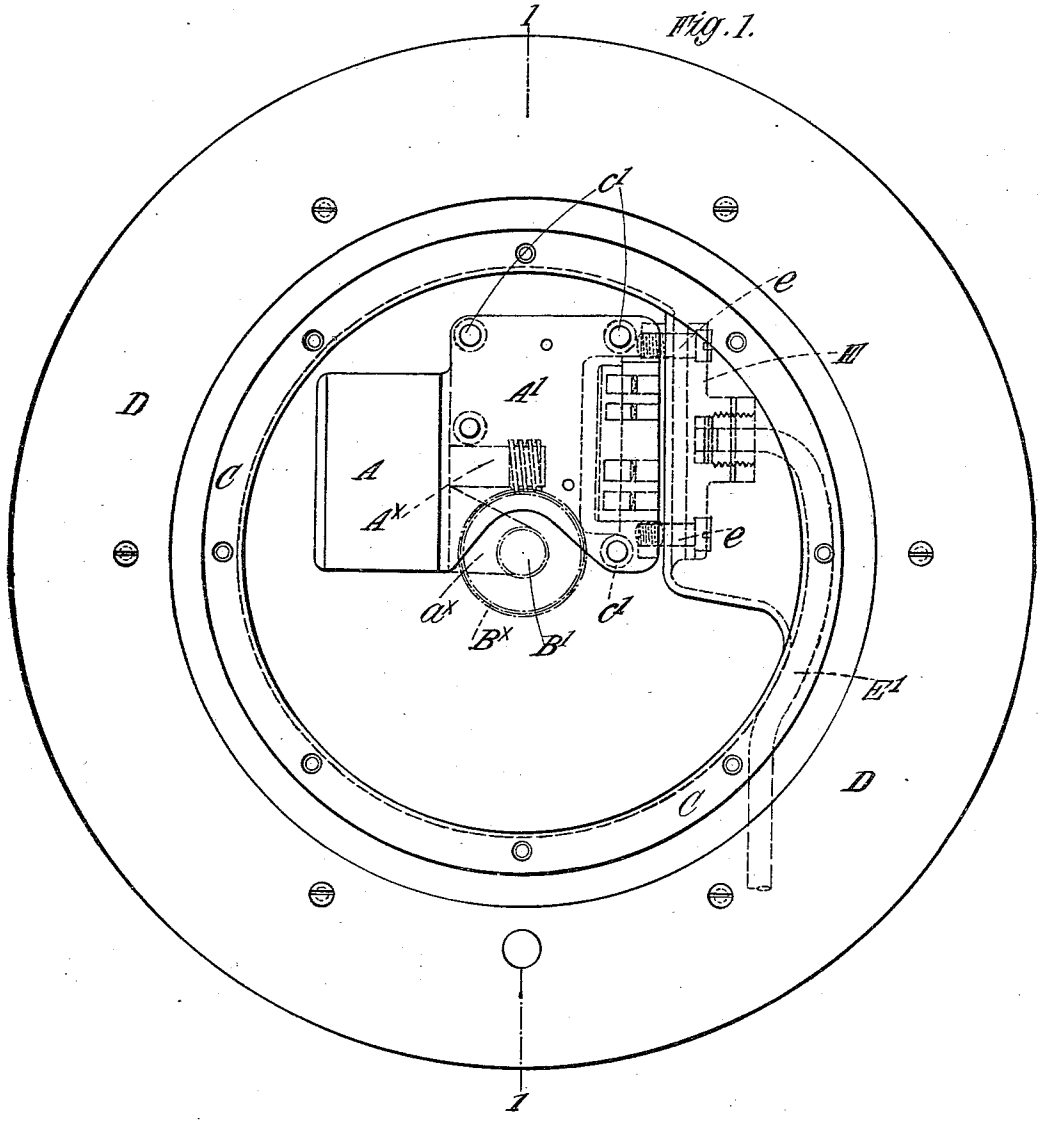
APPLICATION FILED DEC. 28, 1910.

1,026,660.

Patented May 21, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

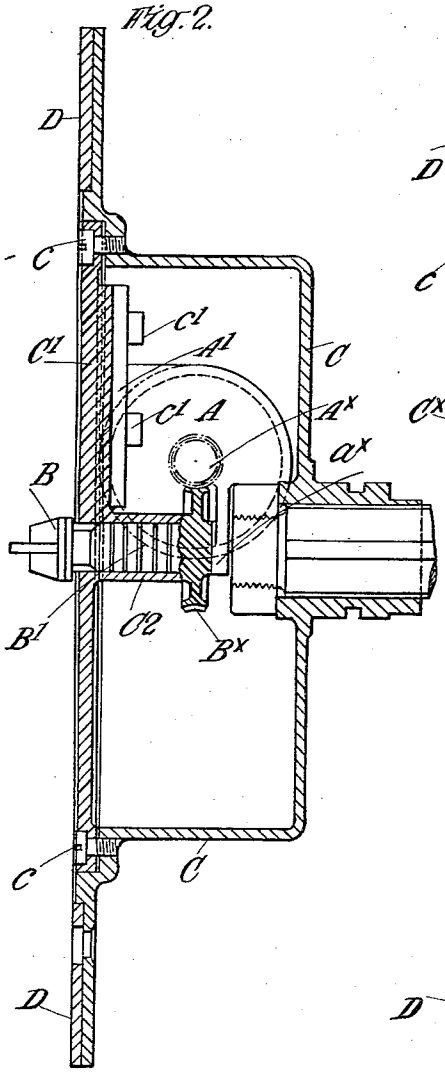
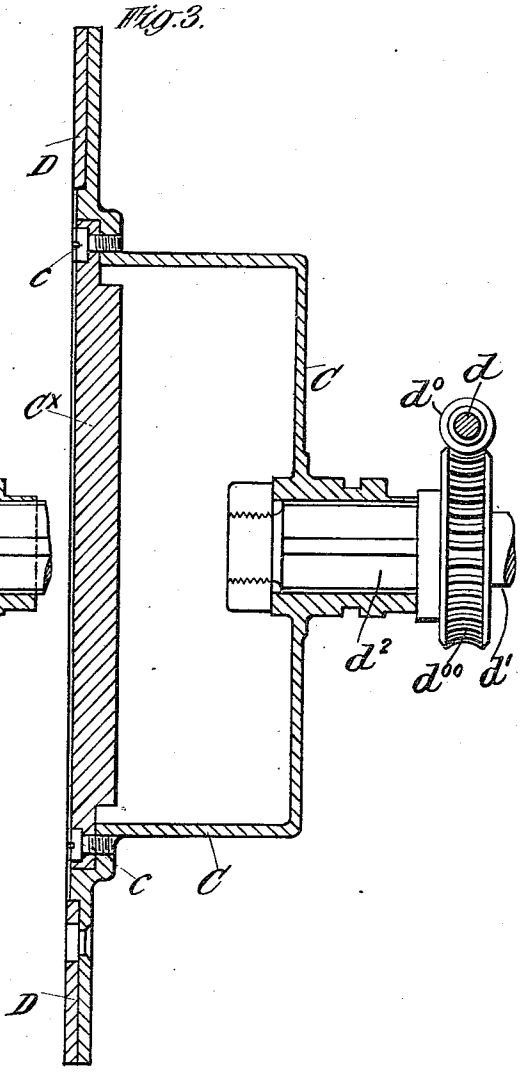


Fig. 3.



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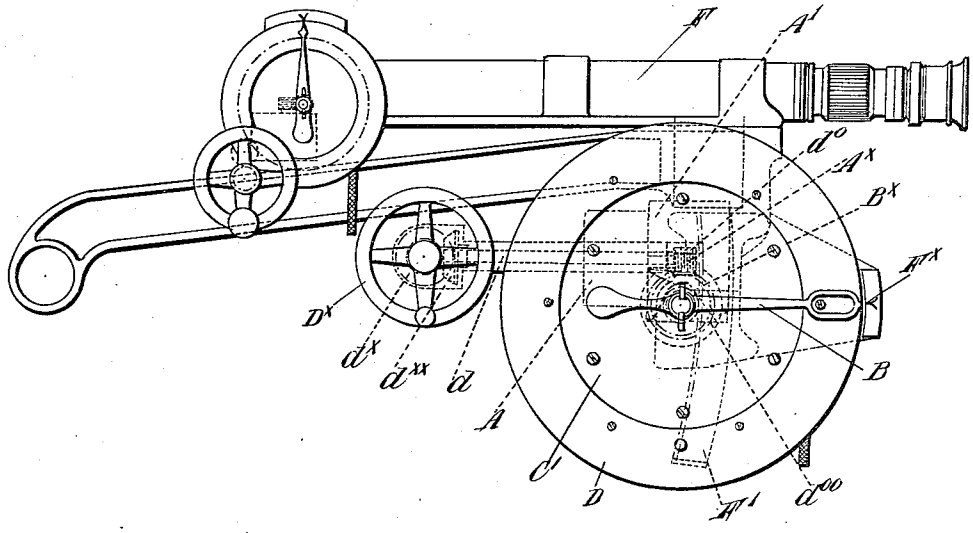
3 SHEETS—SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

ARTHUR TREVOR DAWSON AND GEORGE THOMAS BUCKHAM, OF WESTMINSTER, LONDON, ENGLAND, ASSIGNORS, BY MESNE ASSIGNMENTS, TO VICKERS LIMITED, OF WESTMINSTER, LONDON, ENGLAND.

SIGHTING APPARATUS FOR ORDNANCE.

1,026,660. Specification of Letters Patent. Patented May 21, 1912.

Application filed December 28, 1910. Serial No. 599,721.

To all whom it may concern:

Be it known that we, ARTHUR TREVOR DAWSON, knight, and GEORGE THOMAS BUCKHAM, both subjects of the King of Great Britain, residing at 32 Victoria street, Westminster, in the county of London, England, have invented certain new and useful Improvements in Sighting Apparatus for Ordnance, of which the following is a specification.

This invention relates to sighting apparatus of the kind in which a traveling pointer is actuated with respect to a range or deflection dial or drum through worm gearing by an electric motor controlled from a distant station whence the information relating to the sighting is transmitted.

We have proposed sighting apparatus of the above stated kind, in which after the pointer has been angularly displaced by the motor to the desired extent, the act of setting the sight for range or deflection to accord with the indications of the said pointer, causes the pointer to return to its zero or starting position with respect to an index attached to the sight, the range or deflection dial or drum being angularly displaced to a corresponding extent during this setting operation. In one constructional form of the above stated apparatus the electric motor which operates the aforesaid pointer, is connected to the inside of a casing which is angularly displaced during the setting of the sight, and to which is attached the range or deflection dial.

It is the chief object of the present invention to so arrange the electric motor that the latter together with the worm gearing connecting it with the pointer, and the pointer itself, can be readily attached to or removed from the sighting apparatus.

According to this invention the electric motor, the pointer, and the gearing connecting the motor with the pointer are mounted on a plate which is detachably secured in any convenient position to the casing carrying the range or deflection dial. The above stated parts thus constitute an independent unit which can be detached from the sighting apparatus for the purpose of testing, or for converting the sighting apparatus into one of ordinary construction, that is one in which the electrically actuated pointer is not employed, the parts removed being substituted by a plain plate which corresponds both as regards weight and balance with the parts removed so that no alteration is made in the balance of the gun mounting and (in the case of the deflection gear) in the balance of the sight also.

In order that our said invention may be clearly understood and readily carried into effect we will describe the same more fully with reference to the accompanying drawings, in which—

Figure 1 is a front view of the casing of the sighting apparatus with the front portion thereof removed. Fig. 2 is a section taken approximately on the line 1, 1 of Fig. 1. Fig. 3 is a view similar to Fig. 2 with the plate carrying the motor and the pointer actuated thereby removed and the plain plate substituted for the parts removed. Fig. 4 is a side elevation showing the improvements applied to the form of sighting apparatus hereinbefore described.

In these figures A is the motor, B is the pointer actuated thereby and C is the casing carrying the motor and the range or the deflection dial D.

E is the plate carrying the cable E′.

F is the sight, F′ its elevating rack and F^{x} the index or zero mark for the pointer B.

The plate C′ is circular in form and is secured in a recess in the front of the casing C by means of a number of screws *c* or the like. The dial D carrying the indications for range or deflection is annular in shape and secured to the casing by suitable means in a position concentric with the said plate C′. When the said plate is removed to convert the sighting apparatus as above mentioned, the opening in the casing is covered by means of the plain plate C^{x} as shown in Fig. 3.

The aforesaid circular plate C′ to which the motor A and its parts are attached is provided with a central inwardly projecting boss C^{2} which is formed with a hole to receive the spindle B′ of the pointer B. The said spindle also carries at its inner end a worm wheel B^{x} which gears with the worm A^{x} of the motor A the said spindle being prevented from moving longitudinally by a bracket *a*^{x} carried by the motor. The base plate A′ of the motor is secured to the inner surface of the circular plate C′ by screws

c'. The aforesaid casing C is connected to the sight elevating or the sight deflecting gear in a similar manner to that heretofore proposed by us.

The plate E carrying the cable E′ appertaining to the motor, is secured to the motor by means of screws e which pass through holes in the casing, the arrangement being such that a watertight joint is made with the casing and the cable is capable of being readily detached from the casing and attached to the motor when the latter is removed from the apparatus in order to be tested.

The kind of apparatus to which our invention is applied herein is that set forth in our co-pending application for U. S. Letters Patent, Serial No. 553554, filed April 5, 1910, in which the squared end d^2 (Fig. 3) of a spindle d' carrying the sight elevating pinion, engages in a corresponding hole in the casing C. The said spindle carries a worm wheel $d^{\circ\circ}$ (Figs. 3 and 4) with which engages a worm d° mounted on a longitudinal shaft d operated through bevel wheels $d^{\times}$, $d^{\times\times}$ from the sight elevating hand wheel $D^{\times}$. This arrangement is such that after the pointer B has been displaced by the motor A the act of setting the sight from the hand wheel $D^{\times}$ displaces the casing C, and consequently the pointer B, in the reverse direction to that in which the pointer was first actuated by the motor, until when the pointer is opposite the index mark $F^{\times}$, the sight has been set to an amount corresponding to the extent to which the pointer was displaced by its motor.

What we claim and desire to secure by Letters Patent of the United States is:—

1. In sighting apparatus for ordnance, the combination with the motor, the motor casing and the moving indicating member actuated by the motor, of means for detachably securing the said motor and the indicating member as an integral unit to the casing.

2. In sighting apparatus for ordnance, the combination with the electric motor, the motor casing and the moving pointer actuated by the motor, of means for detachably securing the said motor and the moving pointer as an integral unit to the casing.

3. In sighting apparatus for ordnance, the combination with the electric motor, the motor casing and the moving pointer actuated from the motor by gearing, of a plate carrying the said motor, the gearing and the pointer, and means for detachably securing the plate to the casing.

4. In sighting apparatus for ordnance, the combination with the electric motor, the motor casing and the moving pointer actuated by worm gearing, of a plate carrying the said motor, the gearing and the pointer, a substitute plate of the same weight and balance as the said plate carrying the motor, the gearing and the pointer and means for detachably securing either the last mentioned plate or the substitute plate to the casing.

5. In sighting apparatus for ordnance, the combination with the electric motor, the motor casing, the moving pointer, and means for returning the pointer to zero during the setting of the sight, of a plate, means for detachably securing the said plate to the casing and means for attaching the motor and the pointer to the said plate.

6. In sighting apparatus for ordnance, the combination with the range dial and its casing, the electric motor, its moving pointer, and means for returning the pointer to zero during the setting of the sight, of a plate, means for detachably securing the said plate to the casing and means for attaching the motor and the pointer to the said plate.

7. In sighting apparatus for ordnance, the combination with the deflection dial and its casing, the electric motor, its moving pointer, and means for returning the pointer to zero during the setting of the sight, of a plate, means for detachably securing the said plate to the casing and means for attaching the motor and the pointer to the said plate.

In testimony whereof we affix our signatures in presence of two witnesses.

ARTHUR TREVOR DAWSON.
GEORGE THOMAS BUCKHAM.

Witnesses:
ERNEST E. LARKINS,
HENRY KING.