

A. T. DAWSON & G. T. BUCKHAM.
ELECTRICAL APPARATUS FOR TRANSMITTING AND RECEIVING SIGNALS.
APPLICATION FILED OCT. 20, 1911.

1,064,682.

Patented June 10, 1913.

Fig. 1.

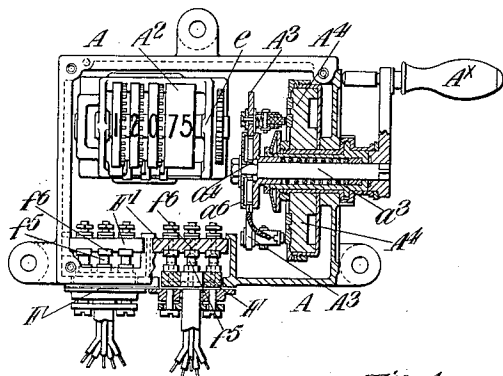


Fig. 4.

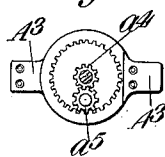


Fig. 3.

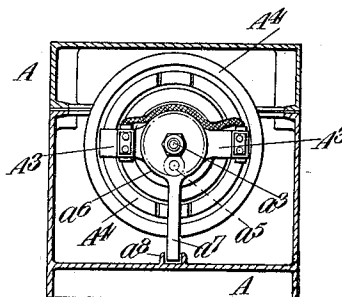
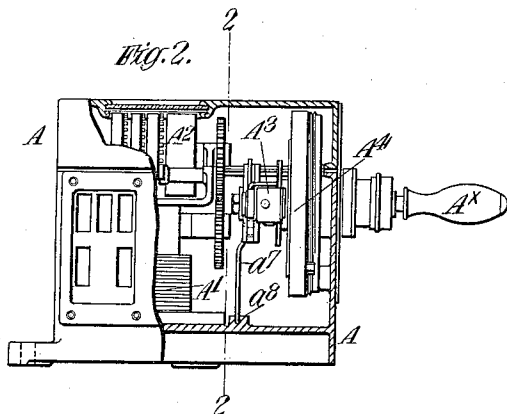


Fig. 2.



Witnesses

[Signature]
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Inventors

Arthur T. Dawson
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by

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UNITED STATES PATENT OFFICE.

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

ELECTRICAL APPARATUS FOR TRANSMITTING AND RECEIVING SIGNALS.

1,064,682.

Specification of Letters Patent.

Patented June 10, 1913.

Original application filed November 26, 1906, Serial No. 345,231. Divided and this application filed October 20, 1911. Serial No. 655,663.

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 Vickers House, Broadway, Westminster, in the county of London, England, formerly of 32 Victoria street, Westminster, aforesaid, have invented certain new and useful Improvements in Electrical Apparatus for Transmitting and Receiving Signals, of which the following is a specification.

This application is a division of applicants' prior application for Letters Patent filed November 26, 1906, Serial No. 345231.

Our invention relates to various improvements in electrical signaling apparatus of the kind set forth in the prior United States Patent No. 938830 for communicating from the conning tower of a ship or other fixed position the necessary information as regards range and deflection to a number of receiving instruments situated contiguous to the guns, so that the officer in charge can transmit such information from the conning tower to the sighting numbers of the various guns' crews simultaneously.

The apparatus disclosed in the prior patent comprises a dynamo-electric transmitting instrument at the sending station and a dynamo-electric receiving instrument at each of the receiving stations. Each of the instruments is furnished with a counting device mechanically connected with its armature, which is caused to intermittently rotate in a magnetic field by electric impulses sent through the armature windings by the actuation of a rotary hand switch coöperating with segmental contacts at the sending station, the said instruments thus acting like electric motors for operating the counting devices. One set of instruments and circuits is used for sending and receiving the range signals and another set for sending and receiving the deflection signals, each transmitting instrument being provided with its own rotary hand switch.

According to the present invention the rotary hand switch of the transmitting instruments is so arranged in conjunction with special internal annular gearing that the speed of movement of the switch arm and

therefore of the motor-armatures of all the instruments is reduced relatively to that of the movement of the crank handle actuating the switch. The switch arm and motor-armatures can thus be caused to rotate once for every two, three, four or other desired number of revolutions of the said crank handle.

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

Figure 1 is a front elevation partly in section of an improved range transmitting apparatus. Fig. 2 is a plan of the same with the cover partly broken away to show the interior. Fig. 3 is a cross section taken approximately on the line 2—2 of Fig. 2. Fig. 4 is an elevation showing a detached view of the rotary switch arm and the speed reducing gearing through which it is driven.

A is the casing of the range transmitting apparatus, of which A' is the electric motor, A² the counting device, and A³ the rotary switch arm which coöperates with the segmental contacts A⁴ as set forth in the prior patent referred to. A^x is the crank handle and a³ the crank spindle to which it is secured.

F is a terminal board situated removably in the end or side of the apparatus and carrying resilient contact pieces f⁵ which, when the terminal board is in place, form a resilient contact with terminal plates f⁶ attached to the underside of an upper terminal board F'. These terminal plates are electrically connected with the motors and their armatures in the receiving instruments and with the motor and the rotary hand switch in the transmitting apparatus.

On the inner end of the spindle a³ of the crank handle A^x is a pinion a⁴ which gears with an intermediate idle wheel a⁵ revolving on a stud pivoted to a gear plate a⁶ or cover supported by the said spindle and prevented from rotating by a tail a⁷ engaging with two stops a⁸ on the transmitter base. The idle wheel in turn gears with internal teeth on the rotary switch arm A³. By these means the said switch arm and consequently the motor armatures will rotate at a reduced

speed relatively to that of the crank spindle a^3 when the latter is actuated by its crank handle A^x .

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

1. In electric signaling apparatus, the combination with a dynamo-electric instrument and a counting device mechanically connected thereto, of a hand switch comprising
10 ing electrical contacts connected to the armature windings of the dynamo electric instrument, a rotary switch arm coöperating therewith, a crank handle, a spindle carrying said crank handle, and internal annular
15 reducing gear mechanically connecting the spindle and the rotary switch arm.

2. In electric signaling apparatus, the combination with a dynamo-electric instrument and a counting device mechanically
20 connected thereto, of a hand switch comprising

ing electrical contacts connected to the armature windings of the dynamo electric instrument, a rotary switch arm coöperating therewith, a crank handle, a spindle carrying said crank handle, a toothed wheel on
25 said spindle, teeth formed internally upon the switch arm and concentrically with the said spindle, a stationary cover plate, and an intermediate toothed wheel freely mounted
30 on said plate and gearing with the toothed wheel on the spindle and with the internally formed teeth on the switch arm.

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

ARTHUR TREVOR DAWSON.
GEORGE THOMAS BUCKHAM.

Witnesses:

HENRY KING,
JNO. R. CASWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."