

J. C. BOWIE & J. H. PHELPS.
SAFETY PORTABLE MANUAL GENERATOR FOR IGNITING MINERS' SAFETY LAMPS.
APPLICATION FILED OCT. 11, 1907.

908,386.

Patented Dec. 29, 1908.

3 SHEETS—SHEET 1.

Fig. 1.

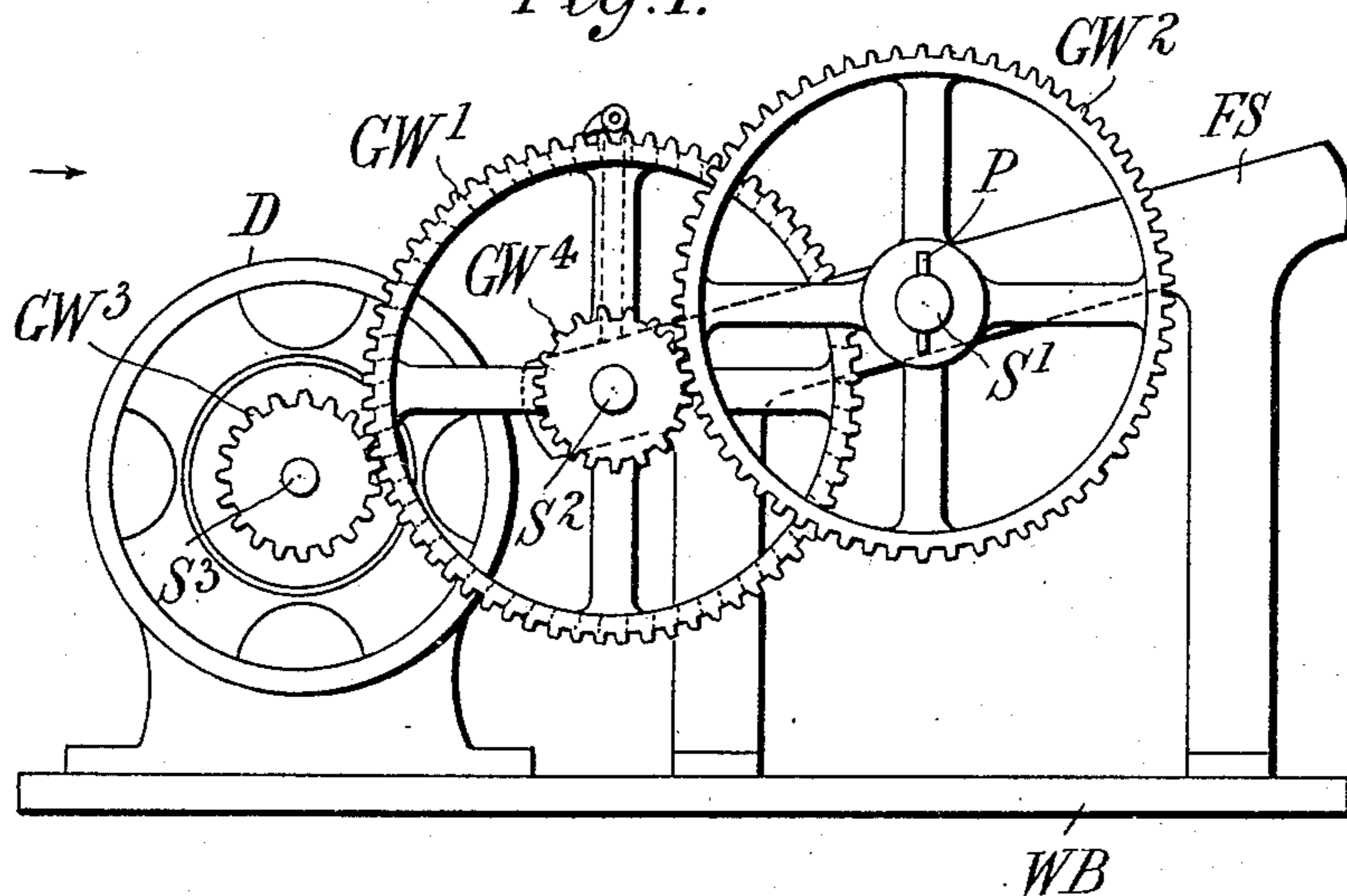
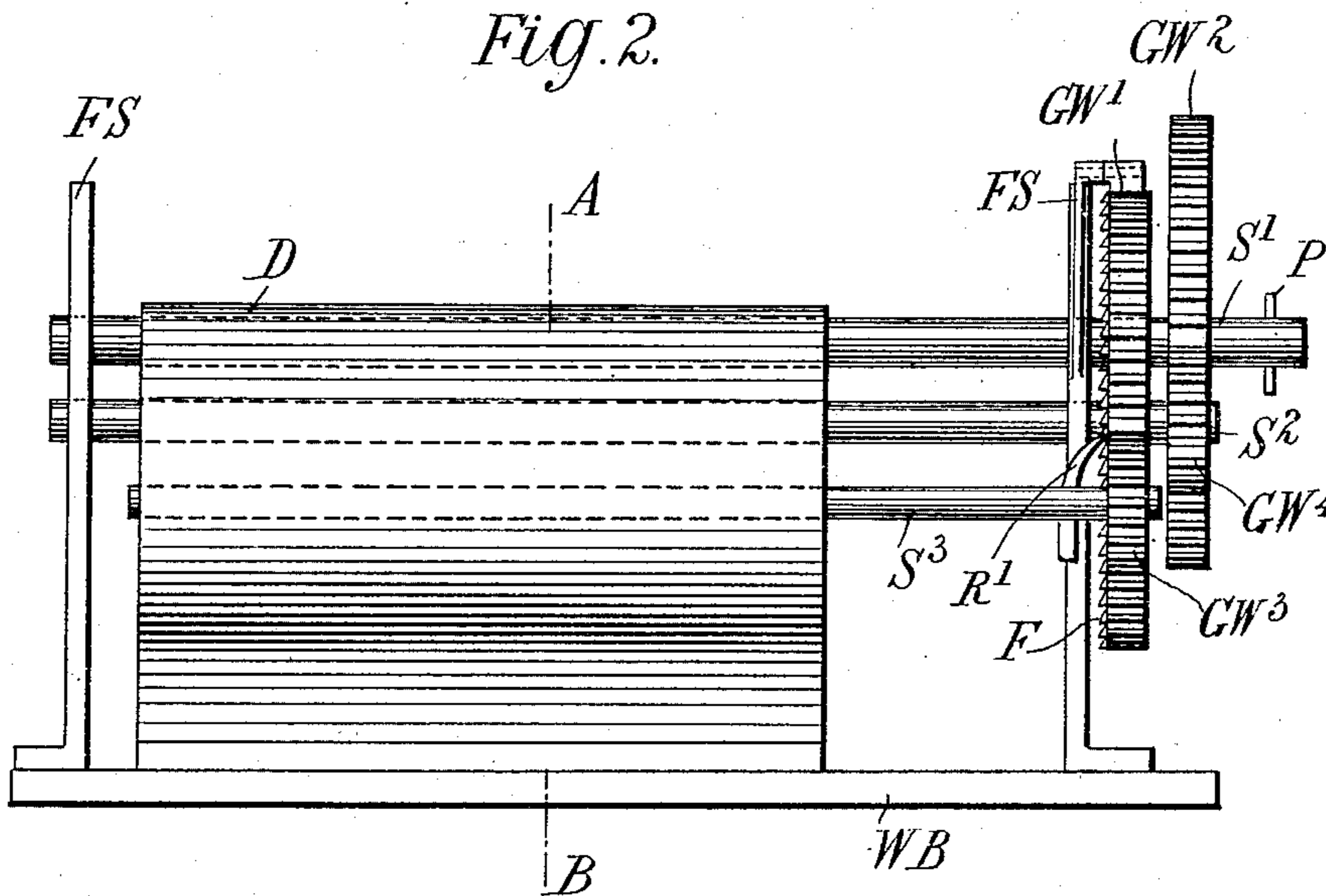


Fig. 2.



Witnesses.

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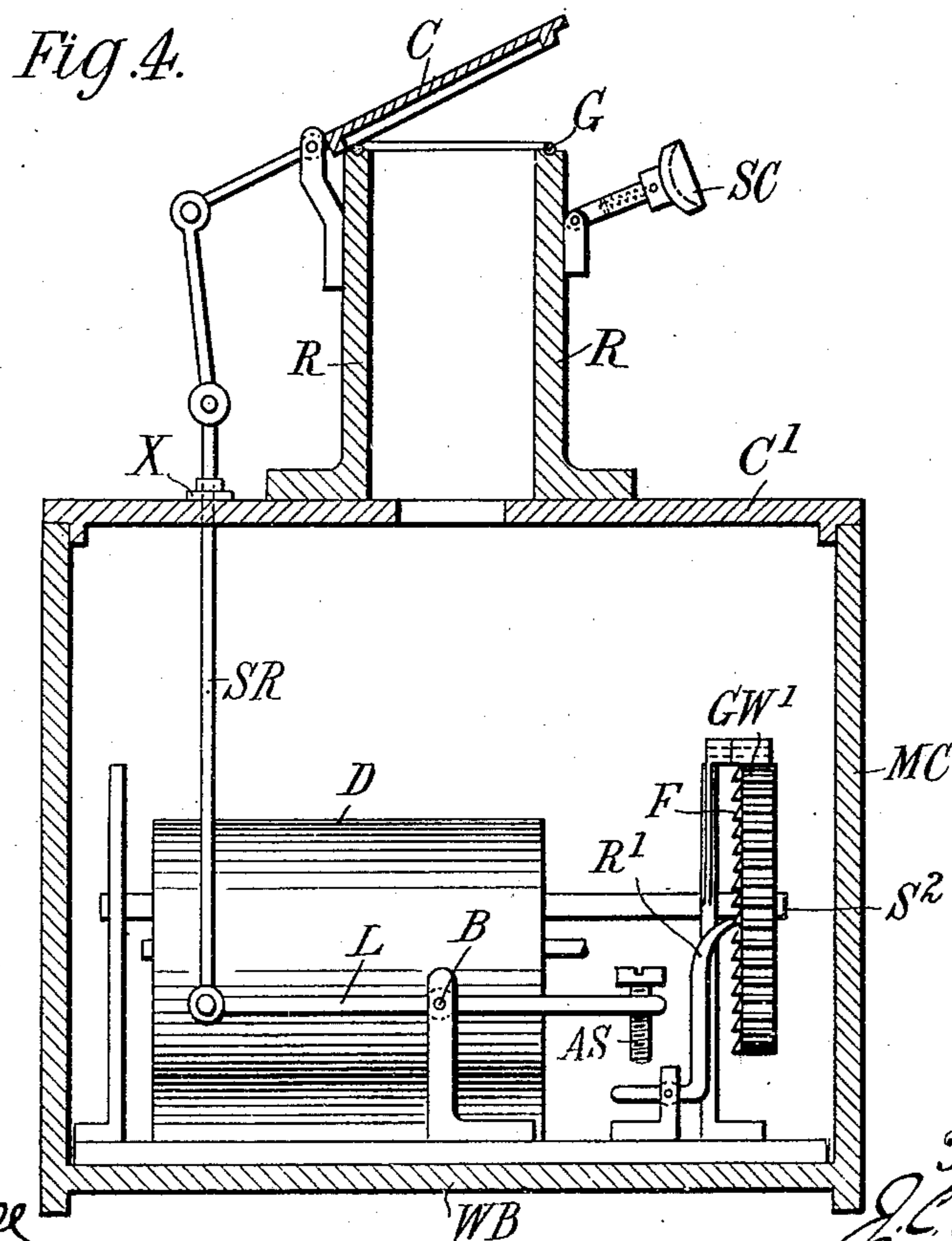
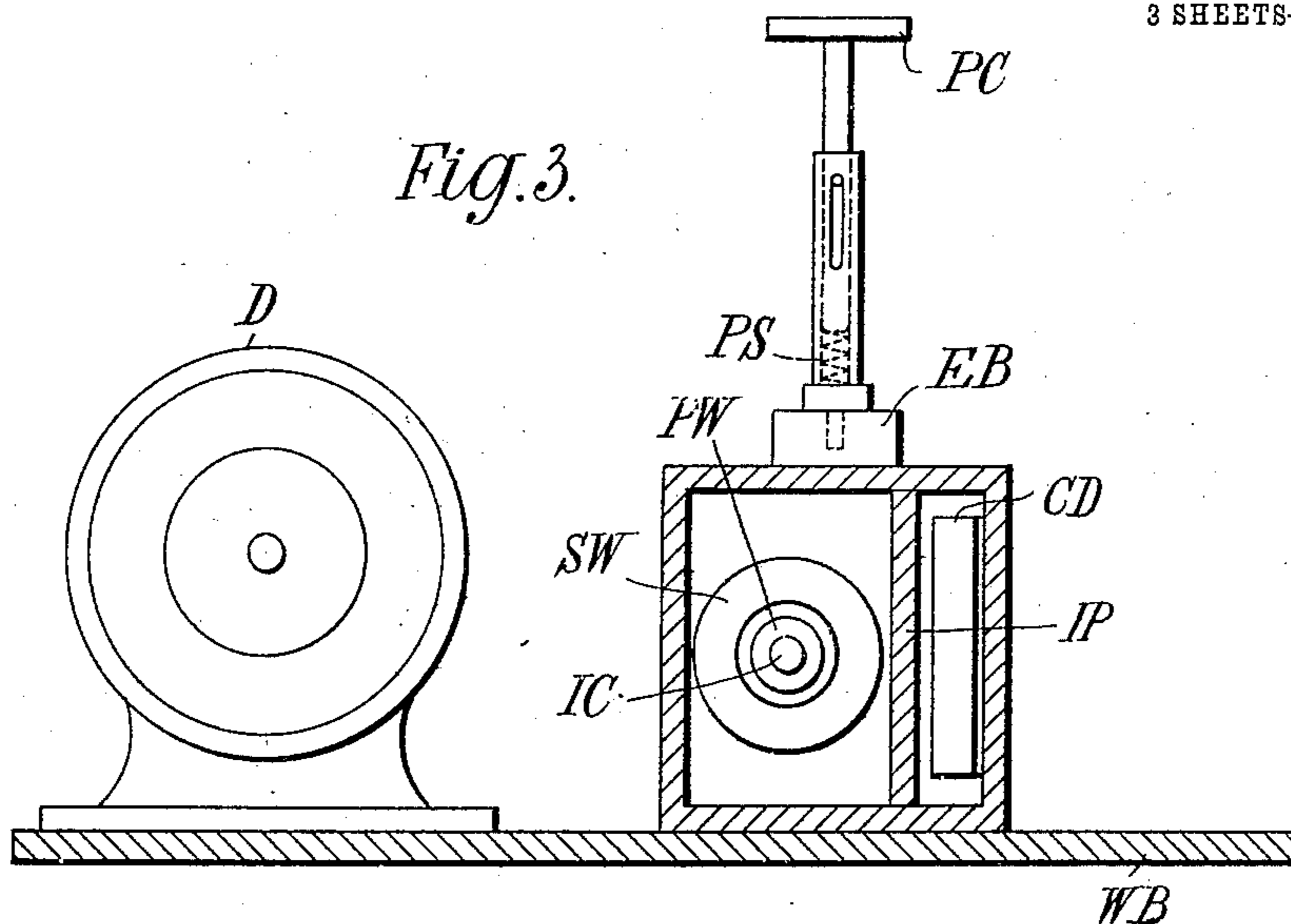
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their Attorneys.

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3 SHEETS—SHEET 2.



Witnesses.

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3 SHEETS—SHEET 3.

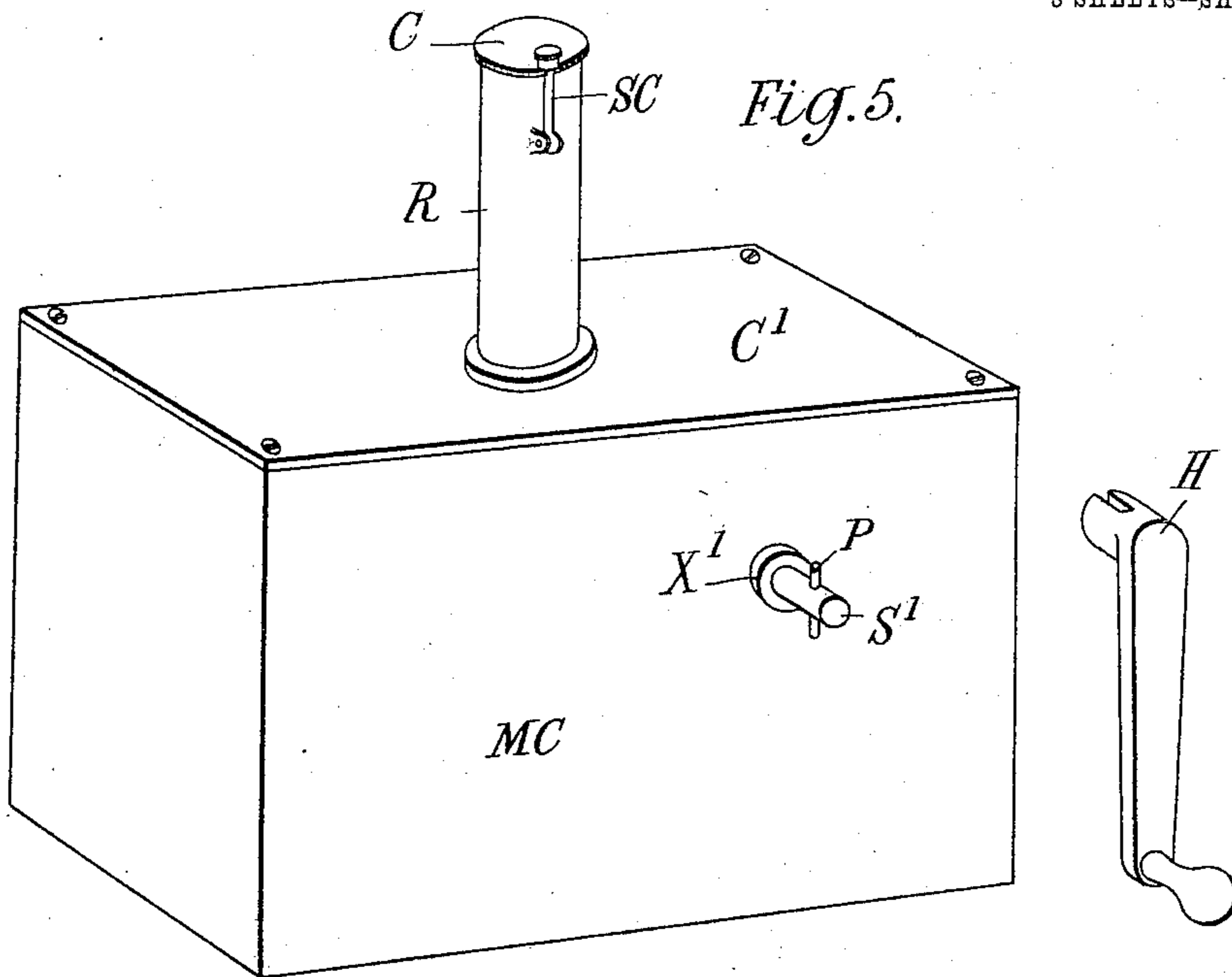
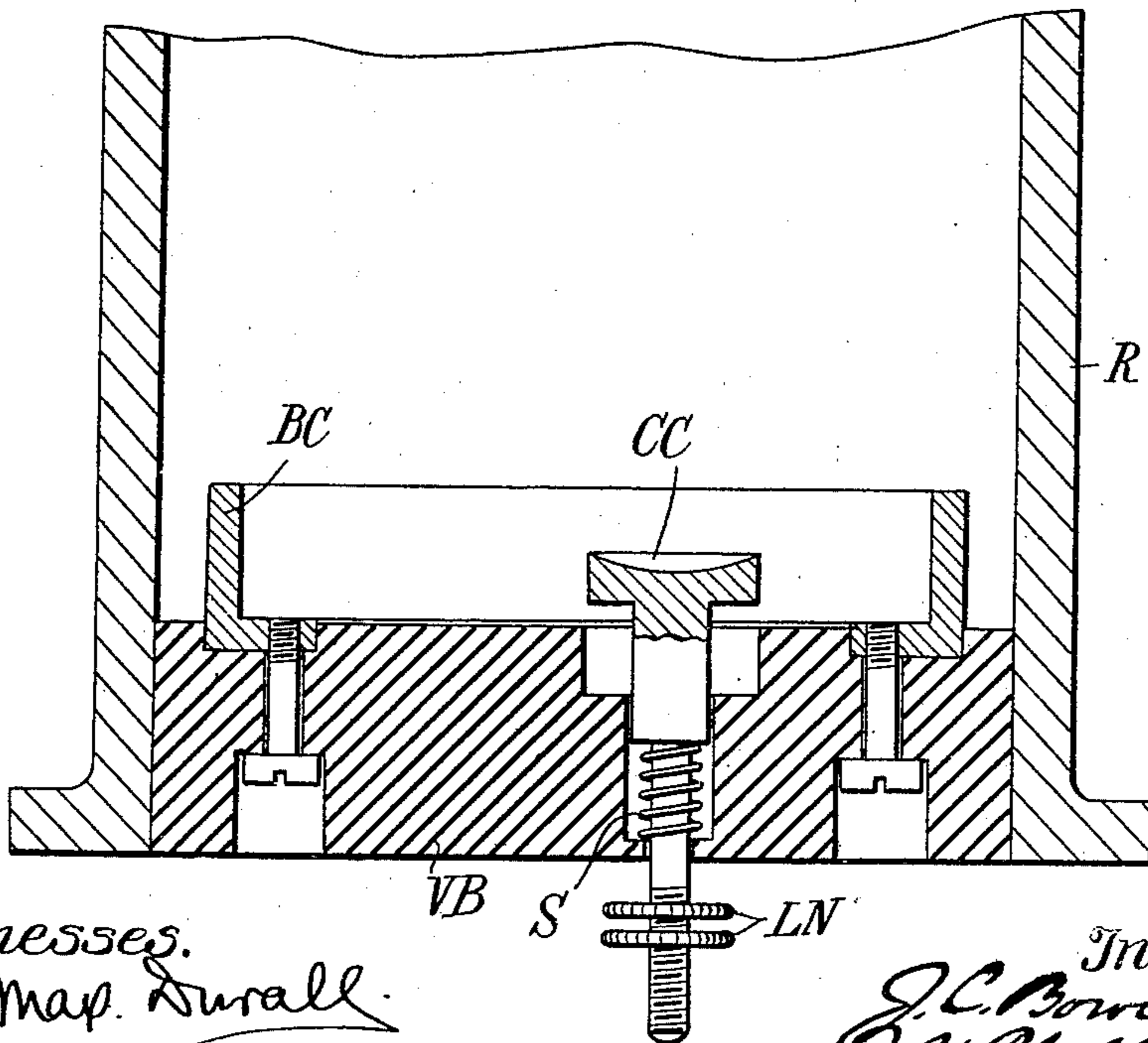


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN CUNNINGHAM BOWIE AND JOHN HENRY PHELPS, OF CARDIFF, ENGLAND, ASSIGNORS
TO JOHN CUNNINGHAM BOWIE, OF CARDIFF, ENGLAND.

SAFETY PORTABLE MANUAL GENERATOR FOR IGNITING MINERS' SAFETY-LAMPS.

No. 908,386.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed October 11, 1907. Serial No. 397,033.

To all whom it may concern:

Be it known that we, JOHN CUNNINGHAM BOWIE, gentleman, residing at 179 Newport road, Cardiff, Glamorgan, South Wales, and JOHN HENRY PHELPS, electrical engineer, residing at 11 Claude Place, Roath Park, Cardiff, Glamorgan, South Wales, both subjects of the King of Great Britain, have invented a new Safety Portable Manual Electric Generator for Lighting Miners' Safety-Lamps, of which the following is a specification.

This invention relates to an electrical device for lighting miners' safety lamps (such as are adapted to be lighted by an electric spark) of the type in which an electric generator and transformer are contained in a case and are connected to two terminals outside the case, on to which terminals the lamp is adapted to fit.

We are aware it has been proposed to provide a recess or cavity in the top of such a box into which recess or cavity the base portion only of the miner's lamp is placed, and to provide insulator rings of rubber or other suitable material within said recess or cavity so as to make an air-tight joint when the lamp is pressed down thereon.

Now our invention has for its object the combination of a dynamo or magneto machine, an induction coil or transformer, a condenser, an interrupter, a means for working the dynamo or magneto machine by hand and a special cup, cap, well or receptacle (hereinafter referred to as the "receptacle") into which the miner's lamp can be fitted, into one machine in such a way that the following (among other) advantages are obtained:—(1) The whole is in a light and portable form. (2) The miner's lamp can be readily and wholly inserted into said receptacle when required to be lighted. (3) It is impossible to produce a spark unless and until the lamp is entirely inserted in the said receptacle and the lid thereof is shut. (4) The electricity is produced by manual power when required and does not require to be stored. (5) No electric installation or battery is required. (6) The apparatus is gas-tight and there is no chance of an electric spark passing from the apparatus into or through the atmosphere of the mine. To this end the aforesaid

parts are combined and contained in a case which may advantageously be made of aluminium in order to secure lightness and the inside of the case or the base thereof is lined with an insulating lining of rubber ebonite or other suitable material so that there would be no chance of the electricity generated being discharged or running to earth from the sides of the said box. Any suitable form or design of dynamo magneto or mechanical interrupter may be used.

The special receptacle into which according to this invention the lamp is fitted for lighting purposes is of suitable size and shape so as to entirely inclose the lamp and is attached to the top of the said box. The said receptacle is provided with a lid in such a way that when the lid is open the gear wheels which operate the dynamo are unable to move but when the said lid is closed down into position over or on to the said receptacle the said gear wheels are thereby released and are then capable of being operated by means of their handle.

When the lamp is in position in its receptacle electric connection is thereby made so that on operating the dynamo a series of sparks are produced which will light the lamp.

Referring now to the drawings hereunto annexed it will readily be understood how this invention may be carried into effect and the above-mentioned results achieved.

Figure 1 shows a side view of the apparatus with the gear wheels and the dynamo in position but the coil is not shown. Fig. 2 shows an end view looking in the direction of the arrow Fig. 1. Fig. 3 is a section of Fig. 2 along the line A—B. Fig. 4 shows the arrangement of the lid and locking device. Fig. 5 shows the complete apparatus contained in its case. Fig. 6 is a local vertical sectional view through the receptacle R.

Referring now to these figures in greater detail similar reference letters and numerals denoting similar or corresponding parts throughout:—In Fig. 1—D is the dynamo, S³ its axis, GW¹ and GW² being the gear wheels journaled on the spindles S¹ and S² respectively and geared together through the small wheel GW⁴ on the spindle S². GW³ is a gear wheel on the axis S³ gearing with the wheel GW¹. WB is a layer of insu-

lating material and FS is a frame-work in which the spindles S' and S² are journaled.

In Fig. 2, D is the dynamo, S³ its axis and FS its framework; the gear wheels GW' and GW² are seen end on and on one side of the wheel GW' are teeth F engaged by the ratchet R'. The spindle S' projects through the side of the case and has a pin P for affixing a handle for the purpose of operating the gear wheels.

In Fig. 3, SW is the secondary winding, PW the primary winding and IC the iron core of the induction coil, CD is the condenser and IP an insulating partition; PC is an adjustable plunger contact pillar, PS being its spring and EB is its ebonite base.

In Fig. 4 is shown the device whereby the gear wheels are prevented from being operated until the lid C of the receptacle R is shut down. R' is a ratchet which normally engages the teeth F of the gear wheel GW' but when the screw AS which is carried on the lever L pivoted at B is depressed the ratchet R' is thrown out of engagement with the teeth F. The lever L is connected to the lid C by means of the pivoted lever SR so that said lever L is raised or depressed (and the ratchet R' thrown into or out of contact with the teeth F) as the lid C is opened or shut. SC is a device for locking the lid C in its closed position, a groove G is provided around the top of the cup or receptacle R which groove contains a ring of rubber or other suitable material in order that an air-tight joint may be made between the lid C and the receptacle R. At the point X where the lever SR passes through the lid C' of the case MC there is a gas-tight gland.

In Fig. 5 H is the handle adapted to fit on to the end of the spindle S' X' being a gas-tight gland; C' is the top of the case MC.

In Fig. 6 BC is a circular metallic ring or dish resting on the insulator VB through which it is electrically connected with one of the poles of the coil. On this metallic ring BC the miner's lamp rests; CC is a spring contact and traversing the insulator VB and connected to the other pole of the coil through the contact pillar PC (Fig. 3). S is its spring and LN the adjoining screws or lock-nuts.

The action is as follows:—The miner's lamp is placed in the receptacle R on to the metallic ring BC and making contact with the spring terminal CC. The lid C is then shut and screwed down thereby causing the ratchet R' to disengage the teeth F on the gear wheel GW'. The handle H is then fitted on to the spindle S' (Fig. 5) and the dynamo operated until the lamp is lighted. The screw AS whereby contact is made between the lever L and the ratchet R' is adjustable so that if desired the apparatus may be made to be workable only when the lid C is tightly pressed down on to the receptacle R. The

tension of the current in the receptacle R may be varied by adjusting the internal spark gap.

The apparatus may (with obvious alterations) be constructed to light two or more lamps at once.

In some cases *e. g.* when a low tension spark only is required the induction coil or the interrupter may be dispensed with.

When the apparatus is to be used only in the lamp room of a mine the lid C and the locking gear SR LR may be omitted.

Any well-known device may be used to prevent the gear wheels from being operated in a reverse direction so as to prevent an accidental spark being produced in the apparatus.

What we claim is:—

1. In a device for lighting miners' safety lamps, the combination of an air-tight receptacle provided with a lid adapted to operate a pawl, and adapted to receive and entirely inclose a lamp; a case containing a magneto machine attached to said receptacle; a hand-operated means for operating said machine and gear wheels controlled by said pawl and connecting said means to the shaft of the magneto, whereby the said magneto cannot be operated until said lid is closed, substantially as described.

2. In a device for lighting miners' safety lamps, the combination of an air-tight receptacle provided with a lid adapted to operate a pawl, and adapted to receive and entirely inclose a lamp; a case containing a magneto machine attached to said receptacle; a hand-operated means for operating said machine; gear wheels controlled by said pawl and adapted to connect said means with the shaft of said machine; and an induction coil fed by said machine, substantially as described.

3. In a miner's safety lamp lighting device, the combination of an air-tight receptacle provided with a lid, and adapted to receive a lamp; a case attached to said receptacle and containing a magneto machine; a hand-operated means adapted to operate said machine; gear wheels provided with a ratchet connecting said means and the shaft of said machine; a pawl engaging said ratchet and controlling said gear wheels; a connection between said lid and said pawl for controlling the latter; an induction coil; and a condenser in operative relation with said machine and lamp, substantially as described.

4. In a miner's safety lamp lighting device, the combination of an air-tight receptacle provided with a lid, and adapted to receive a lamp; a case attached to said receptacle and containing a magneto machine; a hand-operated means adapted to operate said machine; gear wheels connecting said means and the shaft of said machine; a con-

nection between said lid and said gear wheels for controlling the latter; an induction coil; and a condenser in operative relation with said machine and lamp, substantially as described.

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5. In a miner's safety lamp lighting device, the combination of an air-tight receptacle provided with a lid, and adapted to receive a lamp; a case attached to said receptacle and containing a magneto machine; a hand-operating means readily attachable and detachable from said machine; gear wheels provided with a ratchet connecting said means and the shaft of the machine; a pawl engaging said ratchet and controlling the operation of said gear wheels; a plurality of pivoted and jointed rods connecting said lid and pawl for controlling said pawl, and

provided with an adjustable screw contacting with the latter; and an induction coil, and a condenser all in operative relation with said machine and lamp, substantially as described. 20

In witness whereof we have hereunto set our hands in presence of two witnesses.

JOHN CUNNINGHAM BOWIE.

JOHN HENRY PHELPS.

Witnesses to the signature of John Cunningham Bowie:

ILLTYD. D. ALLAN,
H. PERKINS.

Witnesses to the signature of John Henry Phelps:

JOHN FURNISS ATTKINSON,
HERBERT GRIFFIN.