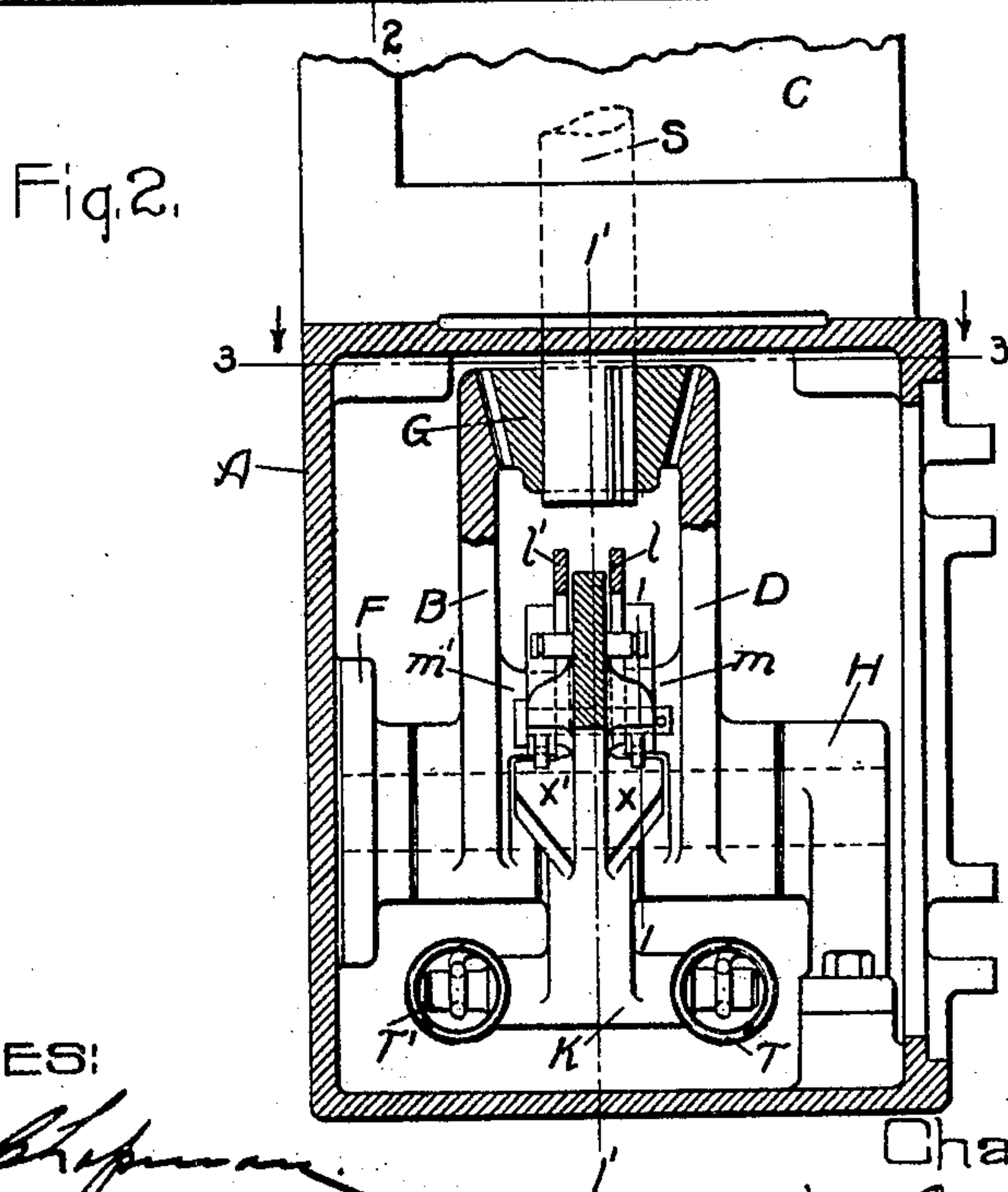
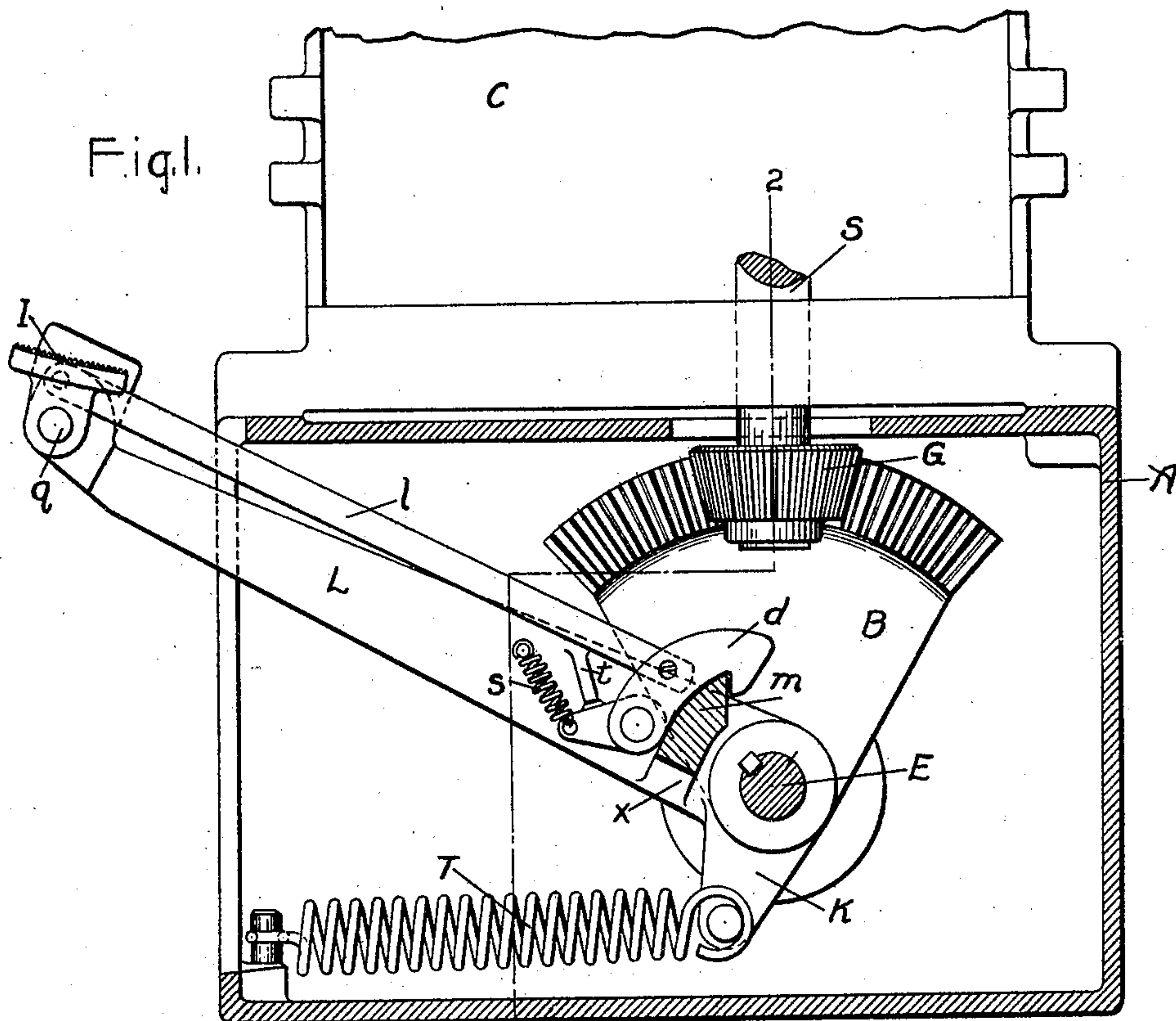


C. L. PERRY.  
MEANS FOR ACTUATING SHAFTS.

APPLICATION FILED SEPT. 25, 1903.

2 SHEETS—SHEET 1.



WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 3.

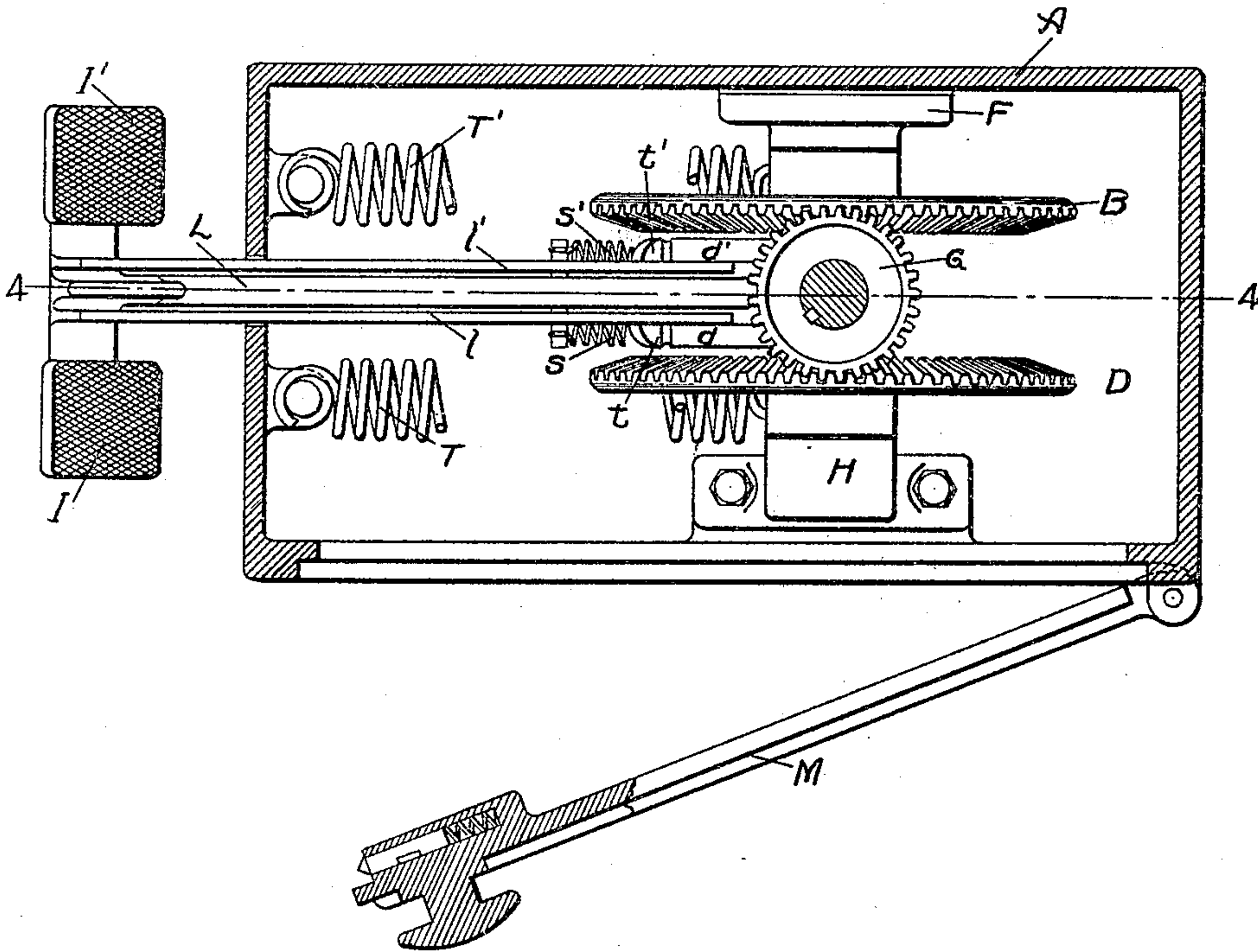
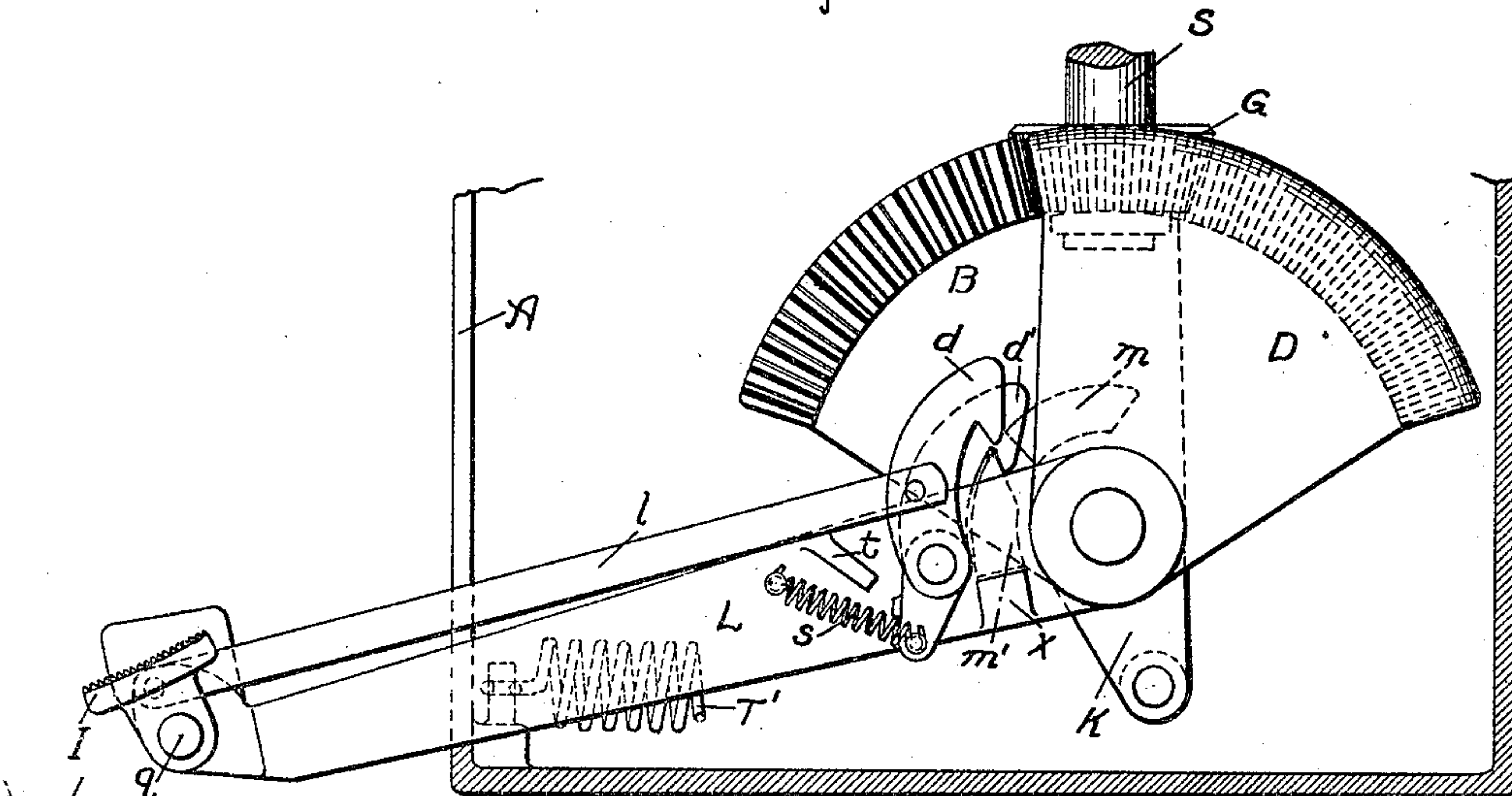


Fig. 4.



WITNESSES:

INVENTOR:

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*Arthur Wood*

Charles L. Perry,  
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Att'y.



# UNITED STATES PATENT OFFICE.

CHARLES LANGDON PERRY, OF SCHENECTADY, NEW YORK, ASSIGNOR  
TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## MEANS FOR ACTUATING SHAFTS.

No. 806,708.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed September 25, 1903. Serial No. 174,543.

*To all whom it may concern:*

Be it known that I, CHARLES LANGDON PERRY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Means for Actuating Shafts, of which the following is a specification.

My invention relates to means for actuating shafts, and has for its object the provision of apparatus whereby a shaft may be rotated in either direction from a central position by a single movement on the part of the operator. This I accomplish by providing devices for actuating the shaft in either direction, a common operating means for said devices, and selective means whereby the connection of the proper device to said operating means is secured, said selective means being so associated with said operating means that both may be manipulated by the application of the operating power.

My invention permits of a compact construction and is of great value in connection with the operation of electric controllers or other shafts where the application of power is controlled by the foot of the operator. In such applications, however, it is ordinarily impracticable to manipulate the operating means in other than a downward direction by pressure of the foot, and it is therefore a further object of my invention to provide apparatus such that the operating means is always moved in the same direction.

My invention also comprises certain novel features of construction and arrangement, as will be hereinafter described, and pointed out in the claims.

I will now describe my invention in connection with the accompanying drawings, in which it is illustrated as applied to an electric controller.

Referring to the drawings, Figure 1 is a front elevation in which the apparatus is partially sectioned on the line 1 1 of Fig. 2 and the right-hand portion of the apparatus removed, the gear-casing being sectioned along the line 1' 1' of Fig. 2 and the right-hand portion removed. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a section looking in the direction of the arrows on line 3 3 of Fig. 2. In Figs. 1, 2, and 3 the operating mechanism is shown in its "off" position.

Fig. 4 is a front elevation, the gear casing or base being sectioned along the line 4 4 of Fig. 3 and the front portion removed. In Fig. 4 the operating means is shown in its extreme operative position.

Referring to the drawings, C is the bottom portion of an electric-controller casing, which controller may be of any suitable or usual type, and therefore needs no further illustration or description. The casing C is mounted upon a box-like gear casing or base A, within which is mounted the actuating means for the controller-shaft. A door M (see Fig. 3) in the front of this casing affords access to the interior. It is partly sectioned to show the latch.

Extending through the bottom of the casing C and the top of the casing A is the controller-shaft S, which has the bevel-gear G fixed to its lower end. A suitable bearing is provided in the base of controller C for shaft S. Engaging with opposite sides of gear G are the segmental actuating-gears B and D, which are loosely sleeved upon the shaft E and constitute devices by which shaft S may be rotated. Shaft E is supported at one end by bracket-bearing F, which is secured to the side of casing A, and at the other end by a removable bearing H, which is secured to the bottom of the casing. Bearing H being removable, the parts may be removed and replaced with ease through the door M.

Keyed or otherwise fixed upon the shaft E and located between the gears B and D is the lever L, which is the common operating means for gear-segments B and D. Associated with the lever L is selective means for securing its connection with either of the segmental gears, whereby the connection of the operating means with the proper device for securing the desired direction of rotation of the shaft is secured. Such means consist in this case of two pivoted dogs  $d$  and  $d'$ , located on opposite sides of lever L; connecting-links  $l$  and  $l'$ , which are pivotally secured to dogs  $d$  and  $d'$  at one end and at their other ends are pivotally secured to pedals or foot-pieces I and I', which in turn are pivotally mounted upon the outer end of lever L, and the springs  $s$  and  $s'$ , which tend to hold the dogs against the stops  $t$  and  $t'$  upon the lever and also in engagement with lugs  $m$  and  $m'$ , which are fixed upon the inside faces of the gears D and B, respectively.



Secured to an extension K of the lever L are the springs T and T', which are attached at their other ends to studs fixed to the casing A. Springs T and T' tend to maintain the lever L in its uppermost or inoperative position, and by means of the stops  $x$  and  $x'$  upon the lever L, which engage with the lugs  $m$  and  $m'$ , the gears B and D are moved to a position such that the controller-shaft is in the off or central position when the lever L is at its uppermost point. When the parts are in the position just mentioned, both the dogs  $d$  and  $d'$  will be in engagement with their corresponding lugs  $m$  and  $m'$ , thereby locking the shaft in its central position. This lock is maintained until the selective means has been operated, and therefore prevents the unintentional moving of the shaft from its off position by directing the attention of the operator to the selective means when he is about to operate the controller and reduces the chances of his inadvertently operating the controller in the wrong direction. If now it be desired to operate the controller in a given direction, the shaft S will be actuated accordingly. This shaft can be moved in one direction or the other by a down pressure upon either of the pedals I or I' upon the outer extremity of the lever L, and the direction in which it is moved depends upon which of the segments B and D is connected to said lever, since the connection of one of said segments will give one direction of rotation of shaft S, while the connection of the other segment will give the opposite direction of rotation of said shaft. Let it be supposed that the actuation of segment B would give the desired rotation of the shaft S. Accordingly the foot would be placed upon the pedal I. The natural placing of the foot upon this pedal operates to rotate said pedal about the pivot  $q$ , thereby actuating the link  $l$  to lift the dog  $d$  out of engagement with the lug  $m$  against the tension of spring  $s$ . The dog  $d'$ , however, is held in engagement with the lug  $m'$  upon the segment B. The application of pressure to pedal I will result in a downward movement of the lever L, which is now connected to the segment B only, and the rotation of that segment is thereby caused. Such rotation of the segment causes a corresponding rotation of the shaft S, which continues until lever L has reached its lower limit of travel, which position is shown in Fig. 4. During this operation of segment B the segment D is loose upon the shaft E and is moved by the bevel-gear G in the opposite direction from the movement of segment B. At the end of their travel the segments will occupy relative positions, as shown in Fig. 4. If, now, pressure be removed from the pedal I, the lever L will immediately return to its uppermost and inoperative position under the influence of springs T and T' and by the engagement of the stop  $x'$  with the lug  $m'$  the segment B will be turned to its off position.

The segment B through bevel-gear G will bring the shaft S, and consequently the controller C, to their off positions and the engagement of the gear G with the segment D will operate to cause that segment to occupy a similar position. The operation of the shaft S in the opposite direction could have been secured by manipulating the operating-lever L by exerting pressure upon the pedal I' instead of upon I, and thereby causing the segment D instead of B to be actuated. Thus it will be seen that the operating and selective means are actuated by the application of the operating power and that by like manipulation of the operating-lever L (in this case in a downward direction) the shaft S can be given a rotation in either direction desired by selecting the pedal which will insure the connection of the proper gear-segment with said operating-lever. The shafts of electric controllers are usually vertical, and therefore in order that the operating-lever may be manipulated by downward pressure it is necessary that it should be movable parallel to the controller-shaft. It will be noted that my apparatus, as shown, provides for such arrangement of the operating means.

In accordance with the patent statutes I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown in the drawings is only illustrative and that the invention may be carried out by other means than the specific embodiment which I have shown.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a shaft, devices connected to said shaft so as to produce movement thereof in either direction, a common operating means for said devices, and a selective means for securing the connection of the proper one of said devices to said operating means, said operating and selective means being so associated that both may be manipulated by the application of the operating power.

2. The combination of a shaft, devices connected to said shaft so as to produce movement thereof in either direction, a common operating means for said devices which is manipulated in the same direction for either direction of movement of said shaft, and a selective means for securing the connection of the proper one of said devices to said operating means, said operating and selective means being so associated that both may be manipulated by the application of the operating power.

3. The combination of a shaft, a gear fixed thereon, actuating-gears engaging with opposite sides of the aforesaid gear, a common means for operating either of said actuating-



gears, and selective means for securing the connection of the proper one of said actuating-gears to said operating means.

4. The combination of a shaft, a gear fixed thereon, actuating-gears engaging with opposite sides of the aforesaid gear, a common means for operating either of said actuating-gears, and selective means for securing the connection of the proper one of said actuating-gears to said operating means, said operating and selective means being so associated that both may be manipulated by the application of the operating power.

5. The combination of a shaft, a gear fixed thereon, actuating-gears engaging with opposite sides of the aforesaid gear, a common means for operating either of said actuating-gears by like manipulation of said means, and selective means for securing the connection of the proper one of said actuating-gears to said operating means, said operating and selective means being so associated that both may be manipulated by the application of the operating power.

6. The combination of a shaft, a gear fixed thereon, actuating-gears engaging with opposite sides of the aforesaid gear, an operating-lever, lugs upon said actuating-gears, dogs mounted upon said lever which are normally held in engagement with said lugs, and pedals also mounted upon said lever and operatively connected to said dogs whereby said dogs may be moved out of engagement with said lugs.

7. The combination of a shaft, devices connected to said shaft whereby movement of said shaft in either direction may be produced, a common operating means for said devices, and a selective means for securing the connection of the proper one of said devices to said operating means, the whole being so constructed and arranged that the shaft cannot be moved from its central position before the selective means has been operated.

8. The combination of a base, a shaft extending into said base, a gear mounted upon said shaft within said base, actuating-gears

mounted within said base and engaging with opposite sides of the aforesaid gear, a common operating-lever for said actuating-gears, which lever extends to the outside of said base, means for connecting said lever to said actuating-gears, pedals mounted upon said lever outside of said gear-casing whereby the connection of said lever to the actuating-gears is controlled, and means for returning the various parts to their normal positions.

9. The combination of a base, a shaft extending into said base, a gear mounted upon said shaft within said base, actuating-gears mounted within said base and engaging with opposite sides of the aforesaid gear, a common operating-lever for said actuating-gears, which lever extends to the outside of said base, means for connecting said lever to said actuating-gears, and pedals mounted upon said lever outside of said gear-casing whereby the connection of said lever to the actuating-gears is controlled.

10. The combination of a shaft, actuating devices operatively connected to said shaft so as to produce rotation in either direction, a common operating-lever for said devices movable in a plane parallel to said shaft, means whereby the connection of said lever to either of said devices may be secured, and means for returning the various parts to their normal positions.

11. The combination of a shaft, a bevel-gear mounted thereon, actuating bevel-gears engaging with opposite sides of the aforesaid gear, a common operating-lever for said actuating-gears movable in a plane parallel to said shaft, means whereby the connection of said lever to either of the said actuating-gears may be secured, and means for returning the various parts to their normal positions.

In witness whereof I have hereunto set my hand this 23d day of September, 1903.

CHARLES LANGDON PERRY.

Witnesses:

HELEN ORFORD,

G. C. HOLLISTER.