

(No Model.)

BEST AVAILABLE COPY. 2 Sheets—Sheet 1.
G. VALLEY.
ELECTRIC CONTROLLER.

No. 536,794.

Patented Apr. 2, 1895.

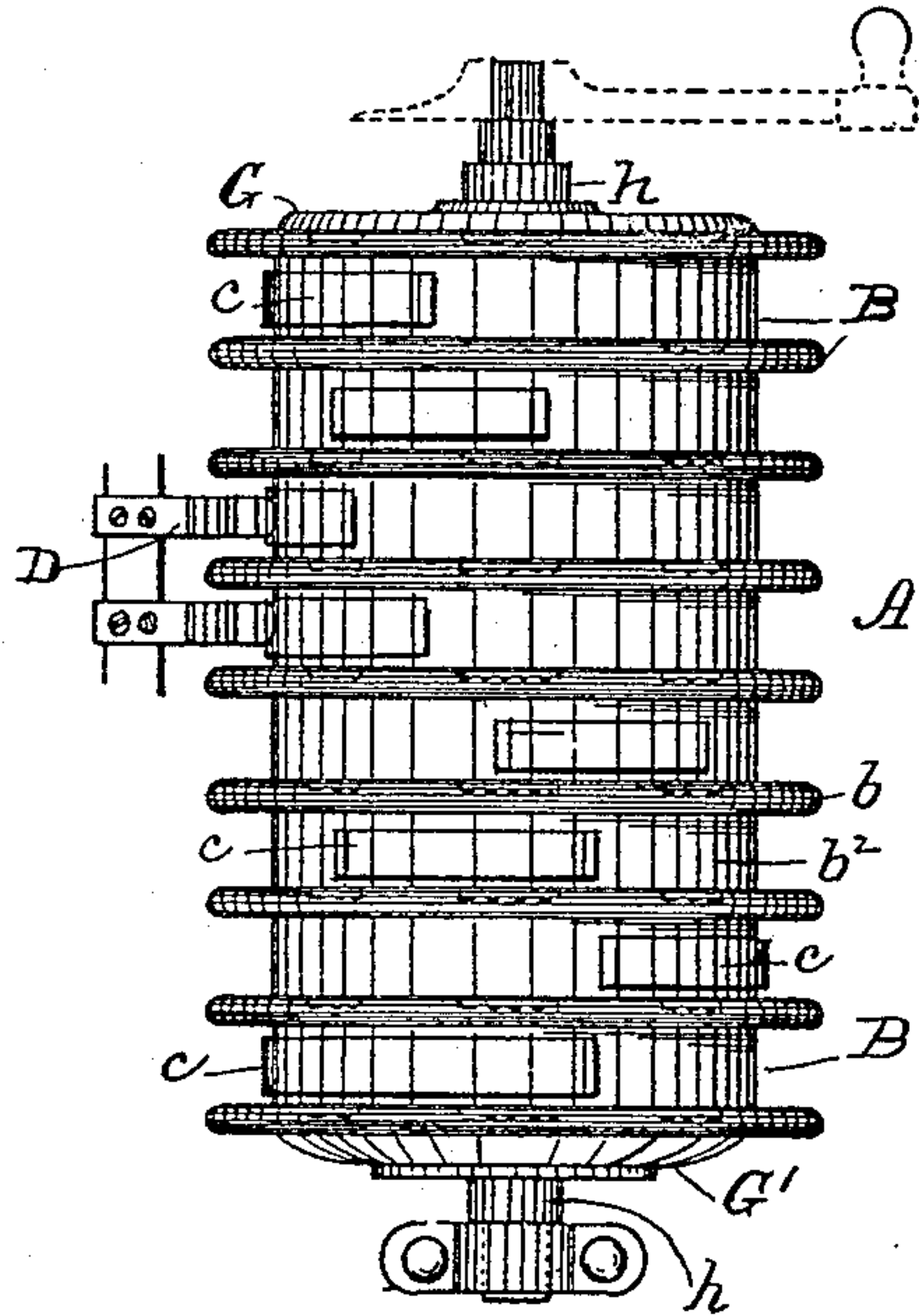


Fig. 1

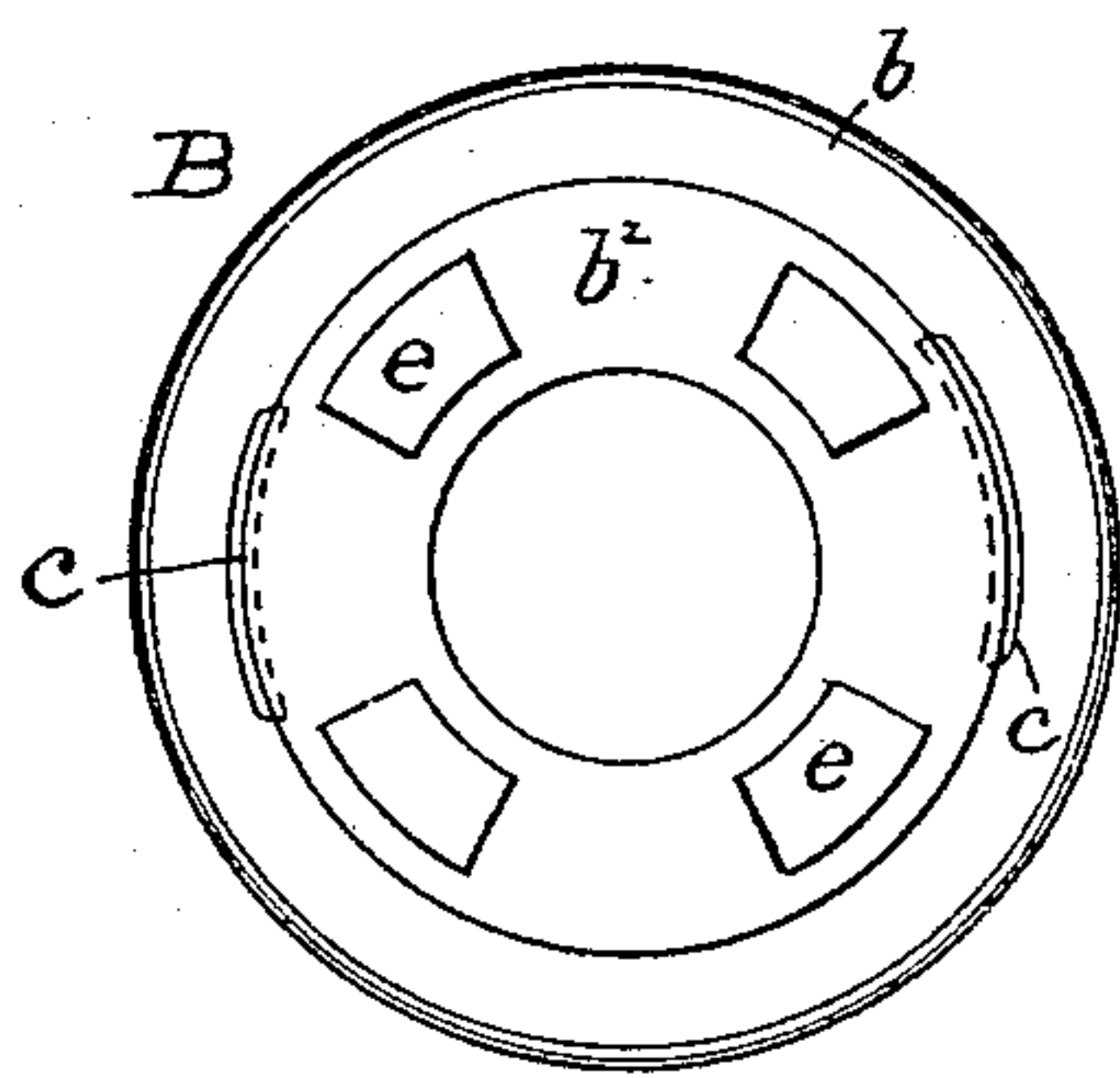


Fig. 2

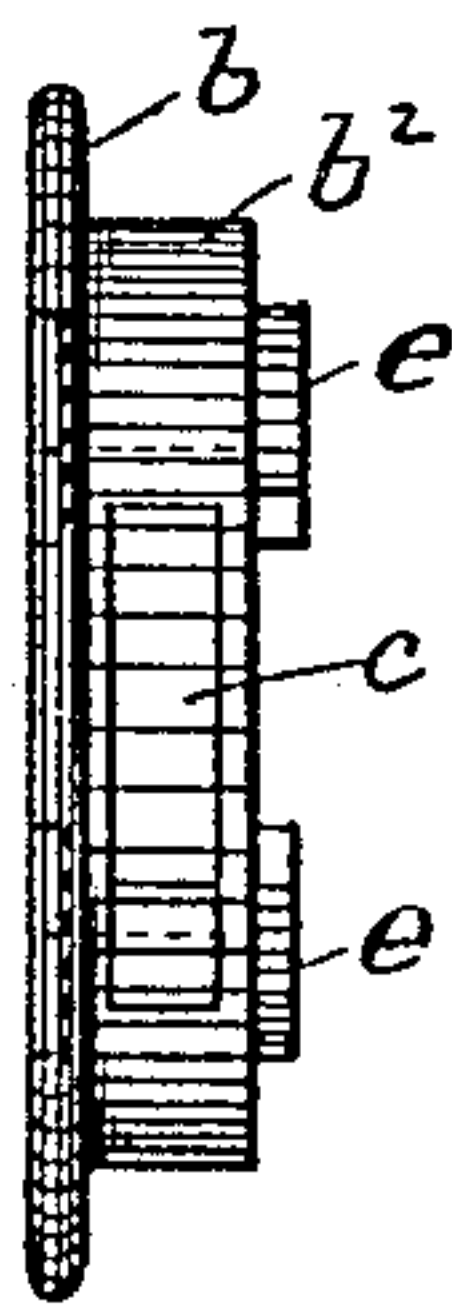


Fig. 3

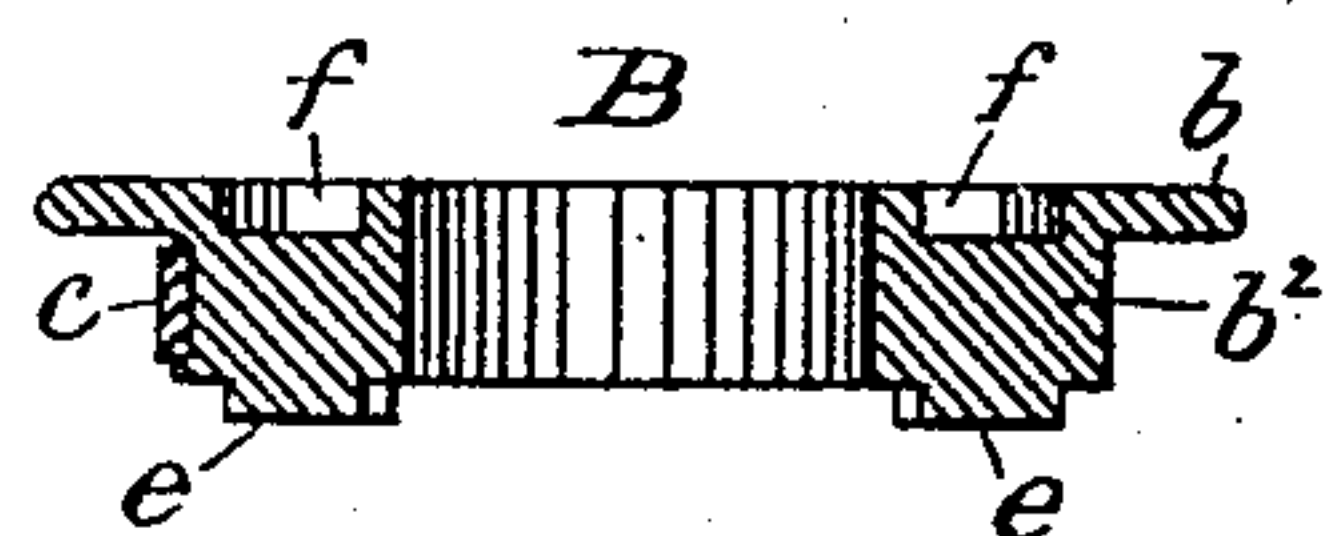


Fig. 4

WITNESSES

Roland Rider
Sonn Painter

INVENTOR

Gustaf Valley
by *E. M. Wore*
Attorney.

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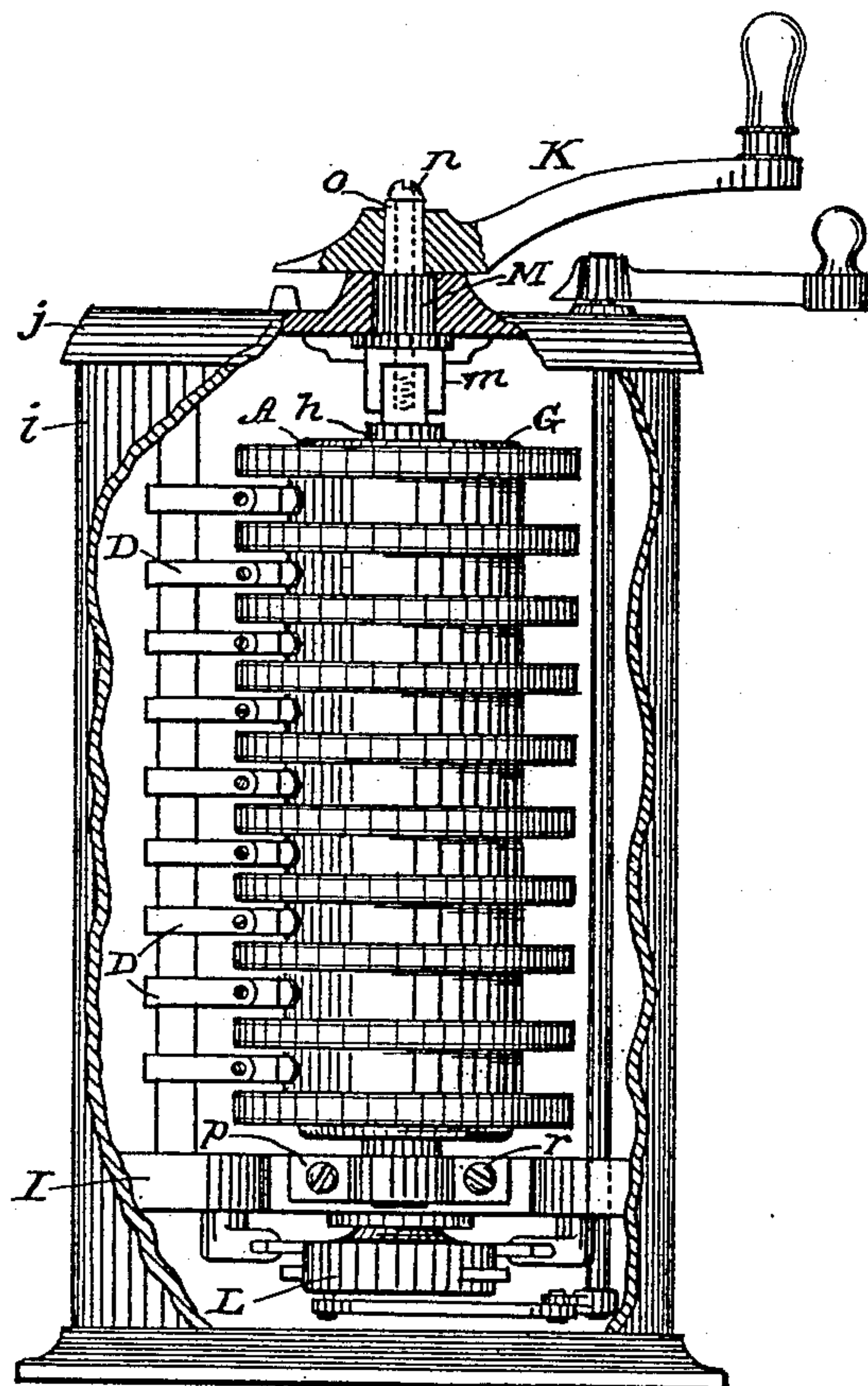


Fig. 5

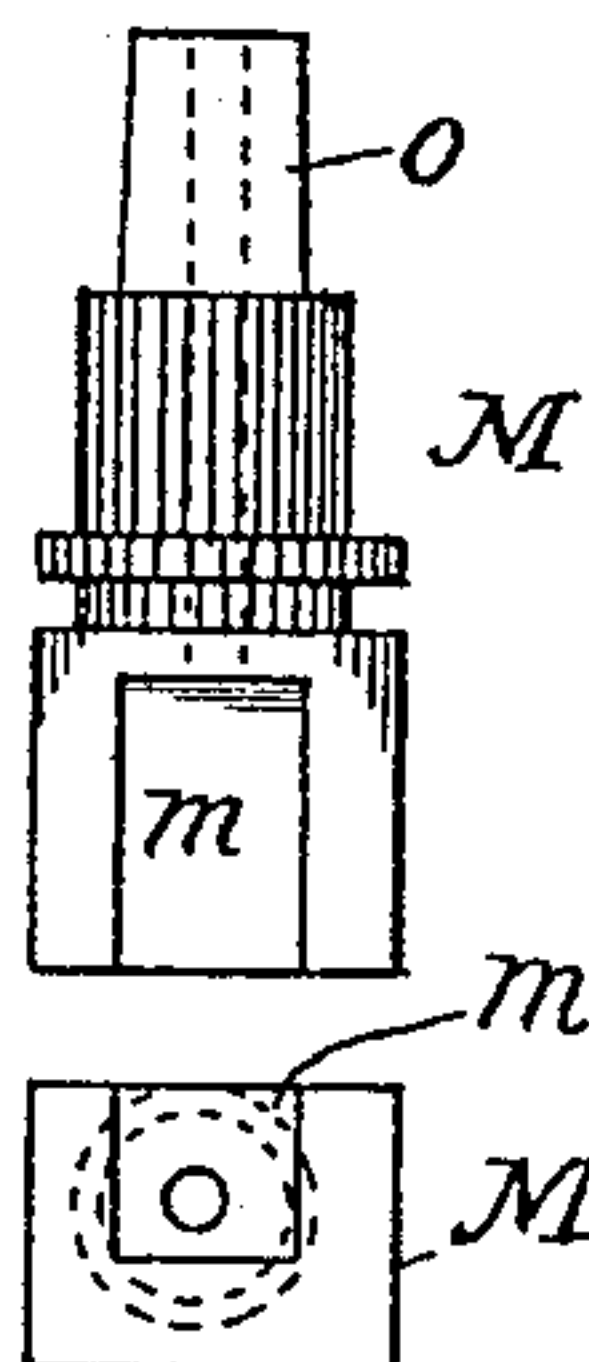


Fig. 6

WITNESSES

Roland Rider
Loren P. Smith

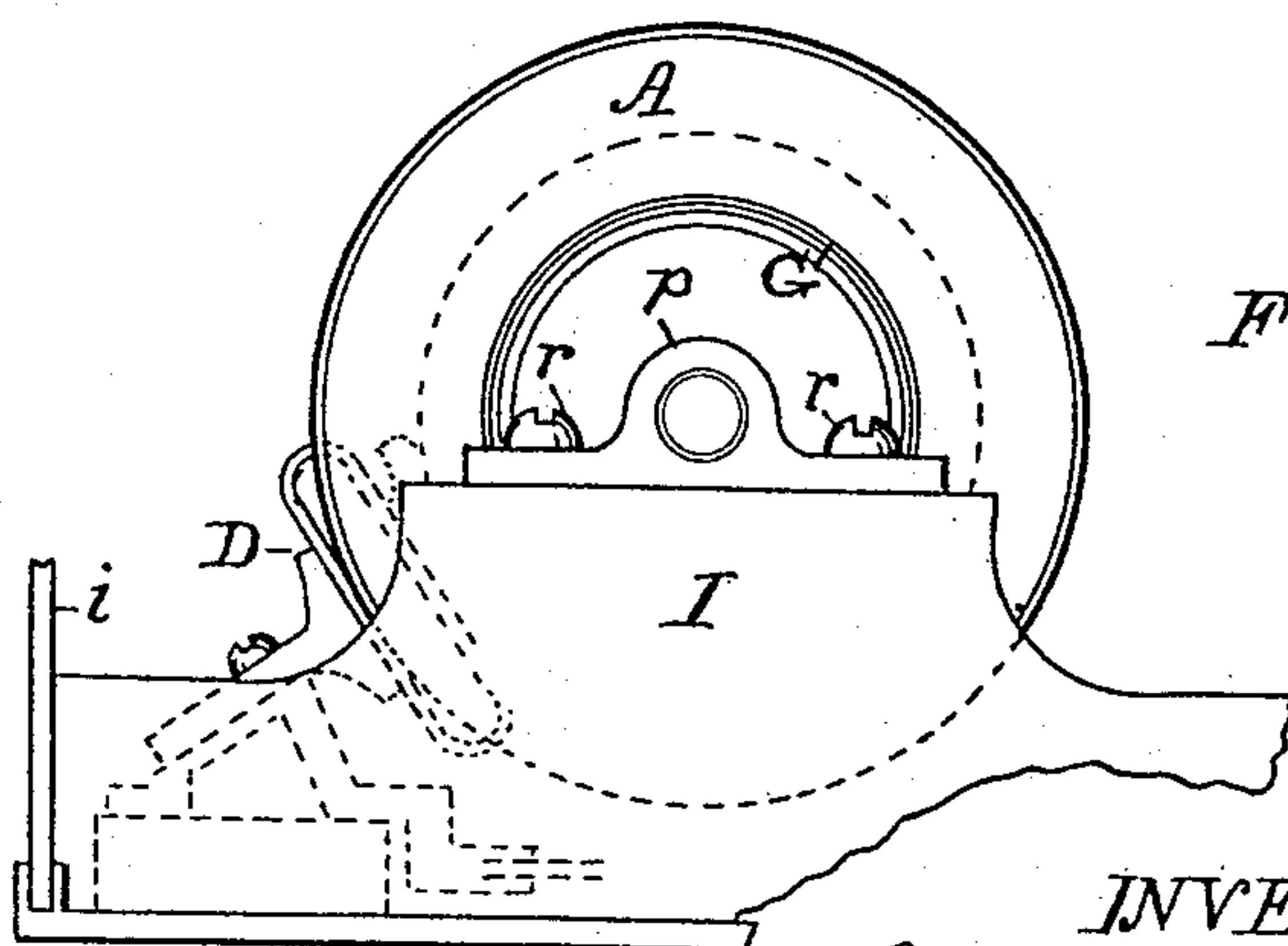


Fig. 7

INVENTOR

Gustaf Valley
by *O. M. Morse*
Attorney.

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UNITED STATES PATENT OFFICE.

GUSTAF VALLEY, OF CLEVELAND, OHIO, ASSIGNOR TO THE STEEL MOTOR
COMPANY, OF SAME PLACE.

ELECTRIC CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 536,794, dated April 2, 1895.

Application filed December 3, 1894. Serial No. 530,653. (No model.)

To all whom it may concern:

Be it known that I, GUSTAF VALLEY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric Controllers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in electric controllers. Its object is to improve the construction and increase the efficiency and adaptability of the apparatus, and the invention consists in the novel construction, combination and arrangement of the parts to accomplish said object, as hereinafter fully described and particularly pointed out in the claims.

In the drawings Figure 1 represents in elevation the circuit controlling roller or drum of a street car controller, which roller is constructed according to my invention. Fig. 2 is a plan view of one of the sections of which the drum is composed. Fig. 3 is a side view hereof; and Fig. 4 is a central section of one of the sections of the drum. Fig. 5 is a view in elevation of a drum embodying a modification of structure and arrangement. Fig. 6 is a detached view of the socket and pivot carrying the upper end of the drum shaft. Fig. 7 is a detached view of a removable bearing for the foot of the drum.

A represents the drum or roller complete, it being built up, as shown, of separate similar sections B of insulating material of any desired number, each of which sections is composed of a rim *b* and a disk *b*² of smaller diameter on which the contact strips *c* are borne, by means of which the electric current is completed through the fingers D, so as to send current through the motor or motors. Each of the sections B is provided on one side with lugs or projection *e e* and on the other with corresponding cavities *f f* into which the lugs *e* of the adjoining section fit, so that when the drum is built up by a number of such sections fitted together and clamped by the end plates G G, which are secured to the shaft *h*, and engage the end sections B in the same manner, the whole forms a rigid drum, equivalent in all respects to the solid roller in com-

mon use, in which the body of the roller is built up solid on the insulated center shaft.

The advantage of my improved construction above described is that in case of injury to any part of the roller, caused by wear, by burning, or other cause, the drum can easily and quickly be taken apart and the damaged sections replaced by new ones, when the drum will be as good as new, the sections B being alike and interchangeable, whereas the ordinary solid roller can only with difficulty be repaired, and at a cost nearly equaling that of a new roller.

Another important advantage of my improved construction of the drum is that the sections being annular, a clear air space is left between the sections and the central shaft, whereby the latter is air insulated, the injury to the drum by the heating due to the numerous contacts is practically avoided, and the drum cooled more quickly than in the case of a solid drum; further, there is no possibility of burning out the insulation of the drum or shaft, which might cause serious accident to the operator.

The frame I and casing *i* of the controller, the index handle K for operating the drum, the switch L for the motor circuit, the contact fingers D, and the electrical connections, need not differ from those in ordinary use.

In order to facilitate the removal of the drum for repairs or other purposes whenever found necessary, I prefer to construct the shaft of the drum in the manner shown in Fig. 5, wherein the shaft *h* of the drum, instead of extending up through the top of the casing in the usual way, is received in an angular socket *m* formed in the lower end of a pivot piece M which is secured to the top of the case *i*, and is provided at its upper end with the usual shoulder and angular pin or key *o* upon which the handle K fits so as to rotate the drum. The upper end of the shaft *h* is secured to the socket *m* by any suitable means such as a pin, bolt, or screw, as *n* shown in Fig. 5, so that when the shaft is thus secured in the socket *m* the shaft *h* and pivot M form a practically solid and continuous shaft, which is operated by the handle K in the usual manner. The shaft *h* is stepped at its lower end into a removable bearing *p* which is secured by screws *r r* to a rigid part of the frame I which

supports the circuit wires, contact fingers, switch, and other parts of the device.

Heretofore it has usually been necessary, in order to remove the connecting roller for repairs or other purposes, not only to remove the case but also to remove the top of the case from the frame before the roller could be removed. By the above described improvement the roller can be removed from the case and frame without moving or disturbing any other part, as it is only necessary to open or remove the case B and take out the screws *n* and *r r*, when the roller A can be lifted out, leaving all other parts undisturbed.

As the removal of the roller to make repairs, and to correct the effects of wear, is frequently necessary, the saving of time in the removal and replacing thereof is an item of importance in the operation of electric street cars, for which use the improved drum above described is especially applicable.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An electric controller drum composed of similar sections each provided with the necessary contact strips and having on their sides lugs and cavities by which the sections engage each other, and a central shaft carrying top and bottom clamping plates between which the sections are secured together and form a rigid drum, substantially as described.

2. An electric controller-drum composed of annular sections each provided with the necessary contact strips and having on their sides lugs and cavities by which the sections interlock, and a central shaft carrying top and bottom clamping plates between which the sections are secured together and form a rigid drum, substantially as described.

3. In a built up drum for electric controllers the separable and removable sections, each in the form of a flat ring, having on its periphery the contact strips, and on its flat sides projecting lugs and corresponding cavities, whereby the sections are adapted to interlock, substantially as described.

4. The annular sections B for building up an electric controller drum, said sections having the separating rim *b*, the contact bearing shoulder *b*², the lugs *e* and cavities *f*, whereby the sections are adapted to interlock when in place in the drum, substantially as described.

5. The combination with the frame and elec-

trical connections of an electric controller, of a roller composed of a number of sections provided with the proper contact pieces and adapted to interlock laterally with each other, a central shaft carrying top and bottom clamping plates between which the sections are secured together to form a rigid drum, a pivot-piece secured in the top of the case and engaging the operating handle and having a socket to receive the top of the shaft, and a detachable bearing for the lower end of the shaft, substantially as described.

6. The combination with the frame and electrical connections of an electric controller, of a roller composed of a number of sections provided with the proper contact pieces and adapted to interlock laterally with each other, a central shaft carrying top and bottom clamping plates which interlock with the end sections of the drum, a pivot-piece secured in the top of the case and engaging the operating handle and having a socket to receive the top of the shaft, and a detachable bearing for the lower end of the shaft, substantially as described.

7. The combination with the frame and electrical connections of an electric controller, of a roller composed of a number of annular sections provided with the proper contact pieces and adapted to interlock laterally with each other, a central shaft carrying top and bottom clamping plates, which interlock with the end sections of the drum, substantially as described.

8. The combination with the frame and electrical connections of an electric controller, of a roller composed of a number of annular sections provided with the proper contact pieces and adapted to interlock laterally with each other, and a central shaft carrying top and bottom clamping plates which interlock with the end sections of the drum, a pivot-piece secured in the top of the case and engaging the operating handle and having a socket to receive the top of the shaft, and a detachable bearing for the lower end of the shaft, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

GUSTAF VALLEY.

Witnesses:

P. PRENTISS,
ROLAND RIDER.