

No. 848,006.

PATENTED MAR. 26, 1907.

R. W. BROWN.  
ELECTRIC CONTROLLER.  
APPLICATION FILED APR. 19, 1906.

3 SHEETS—SHEET 1.

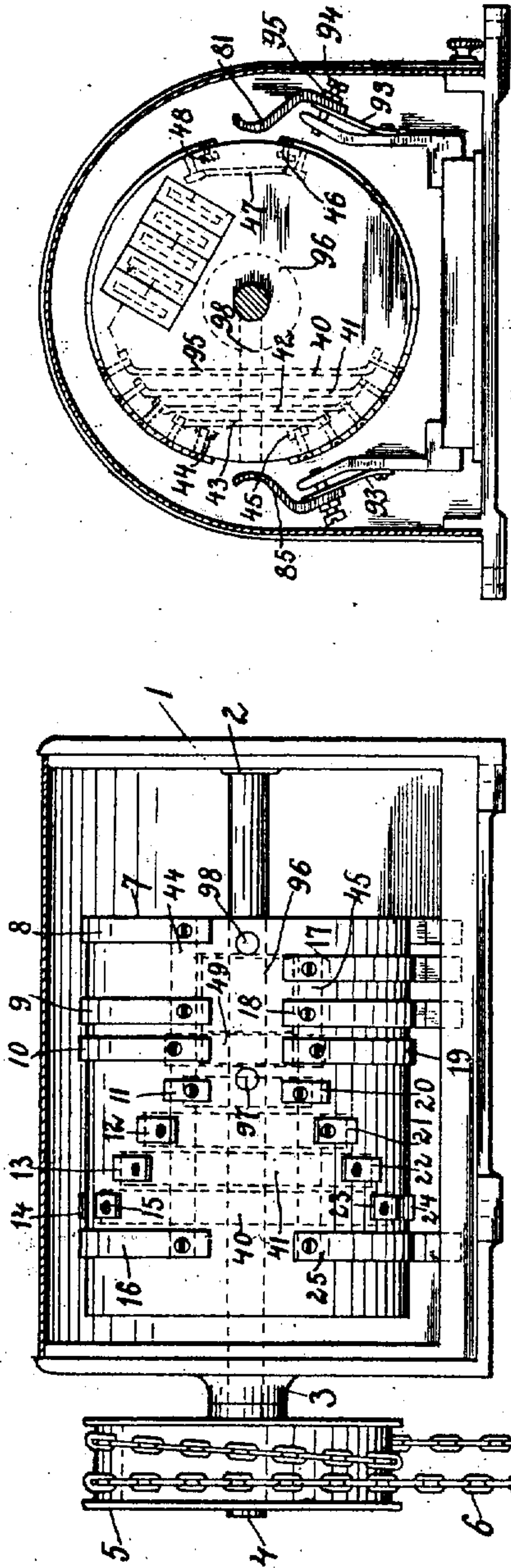


Fig. 1

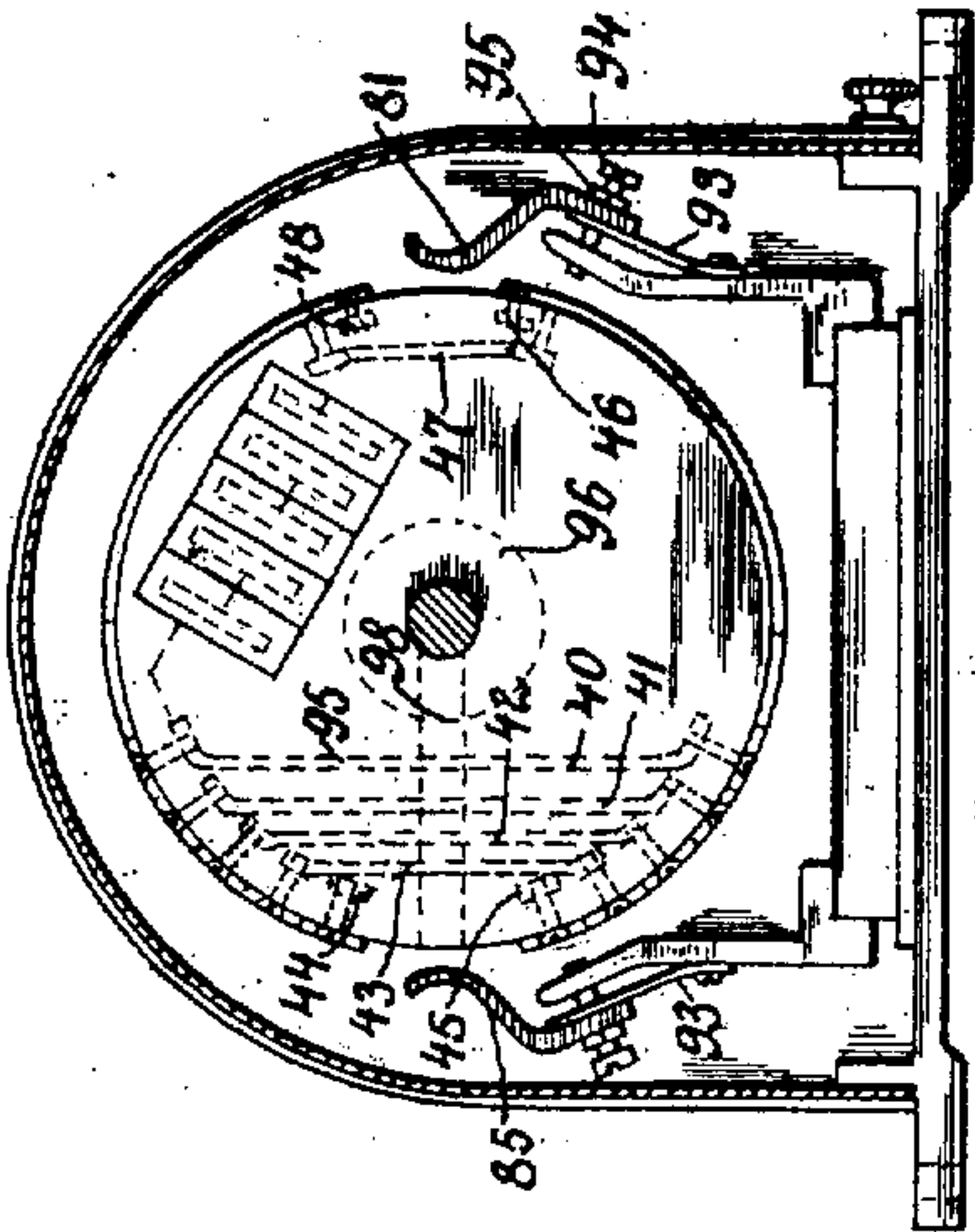


Fig. 2

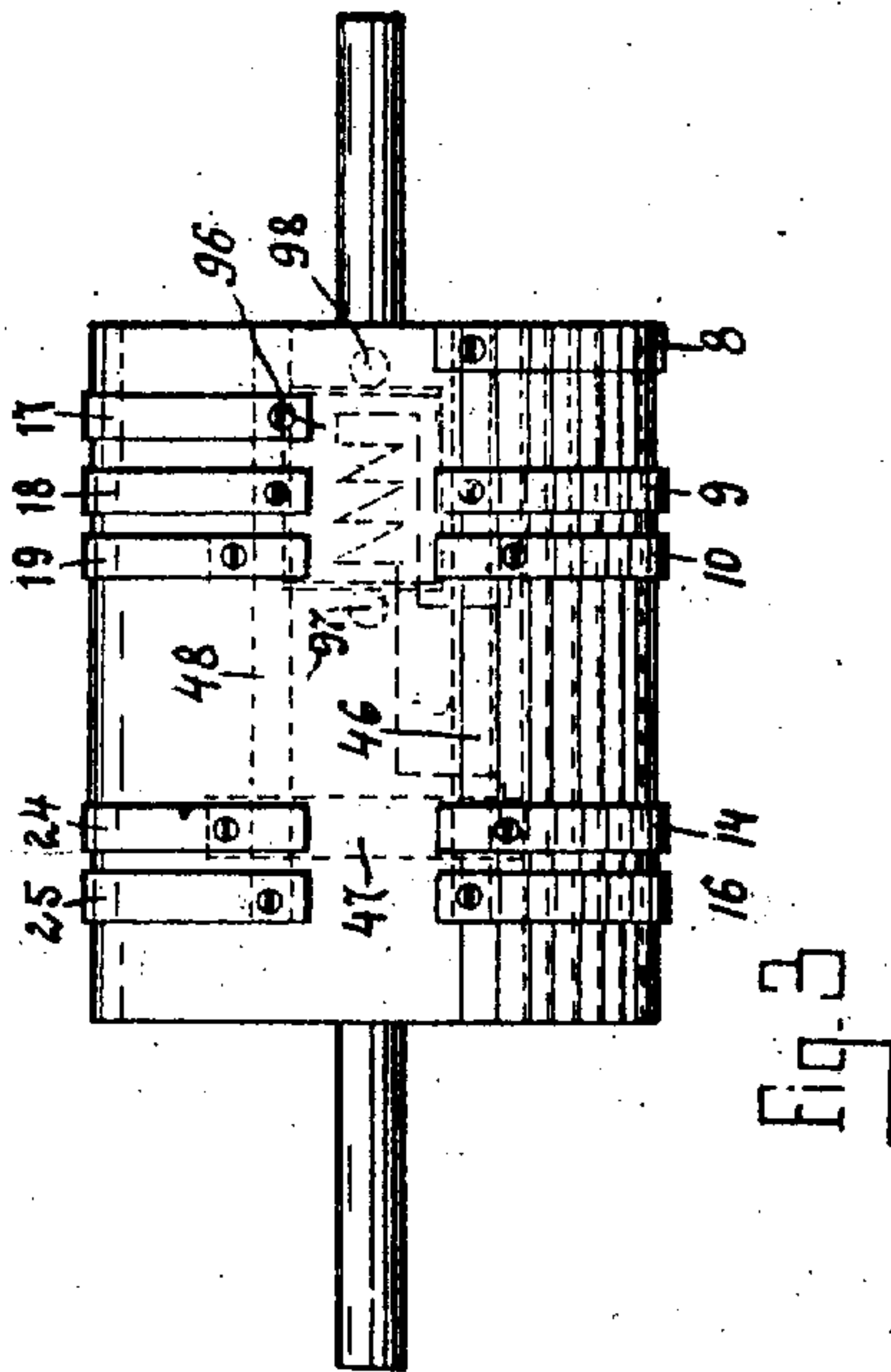


Fig. 3

Witnesses  
S. Herzog  
J. R. Hopping

Roy W. Brown Inventor  
By Attorney *[Signature]*

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3 SHEETS—SHEET 2.

Fig. 4

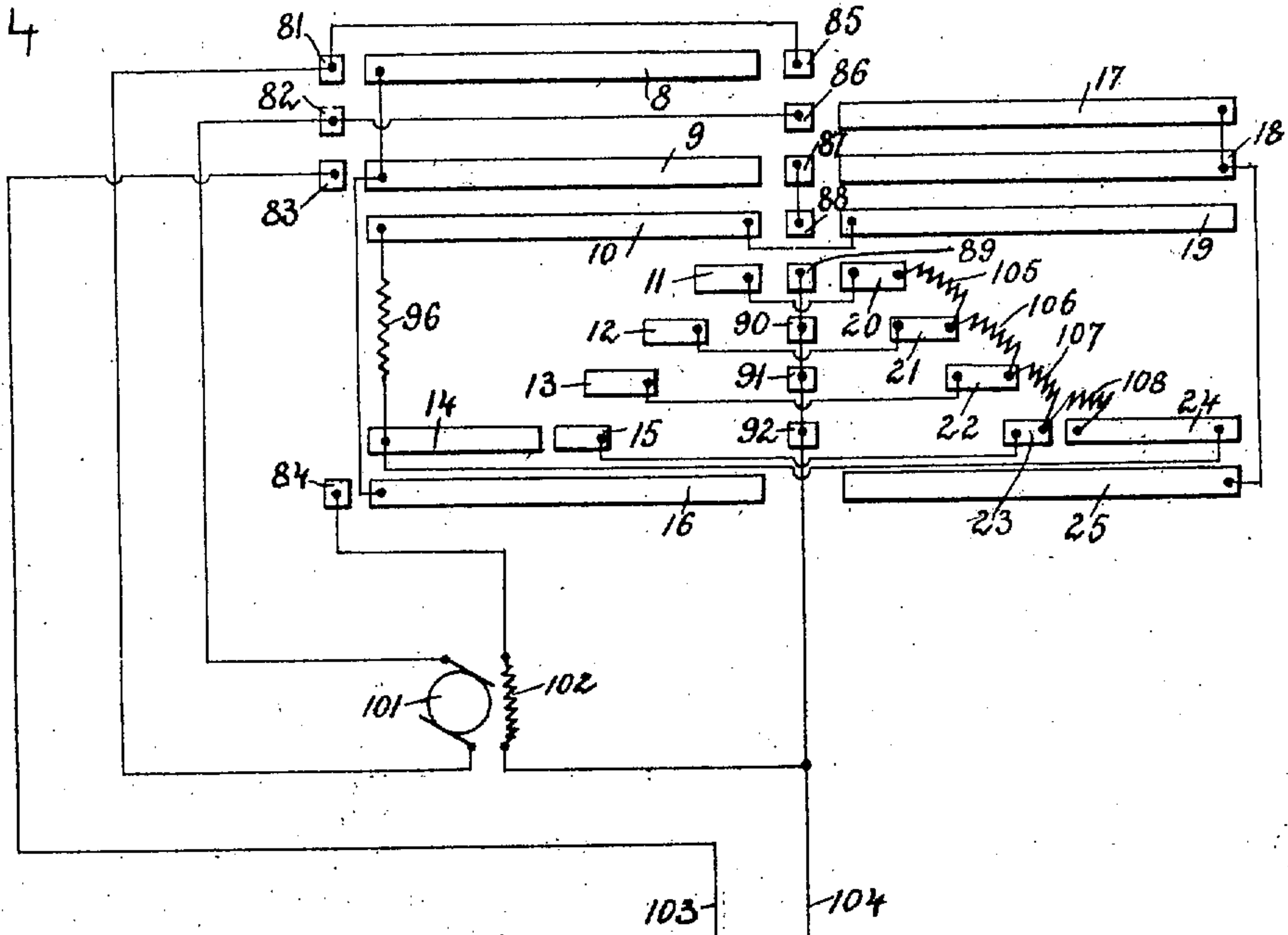
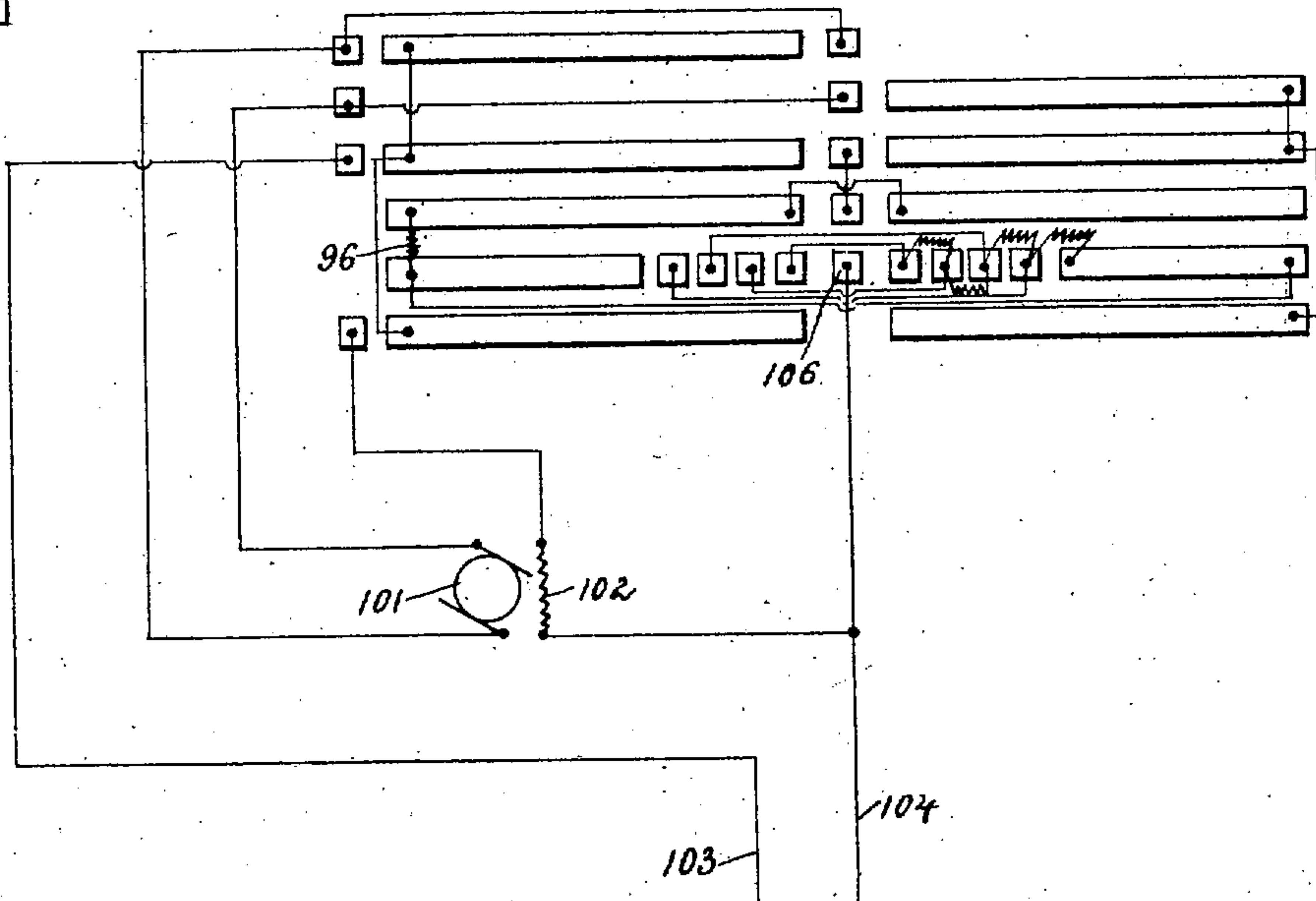


Fig. 5



Witnesses  
S. Hargoy  
O. H. Hopfinger

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3 SHEETS—SHEET 3.

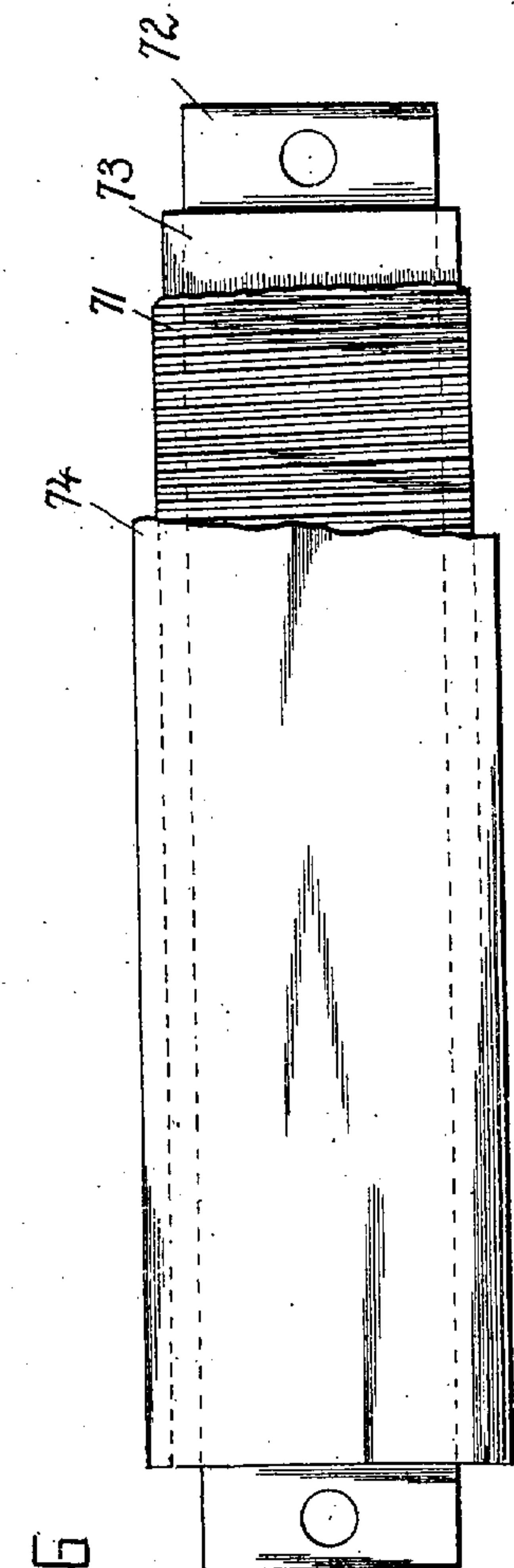
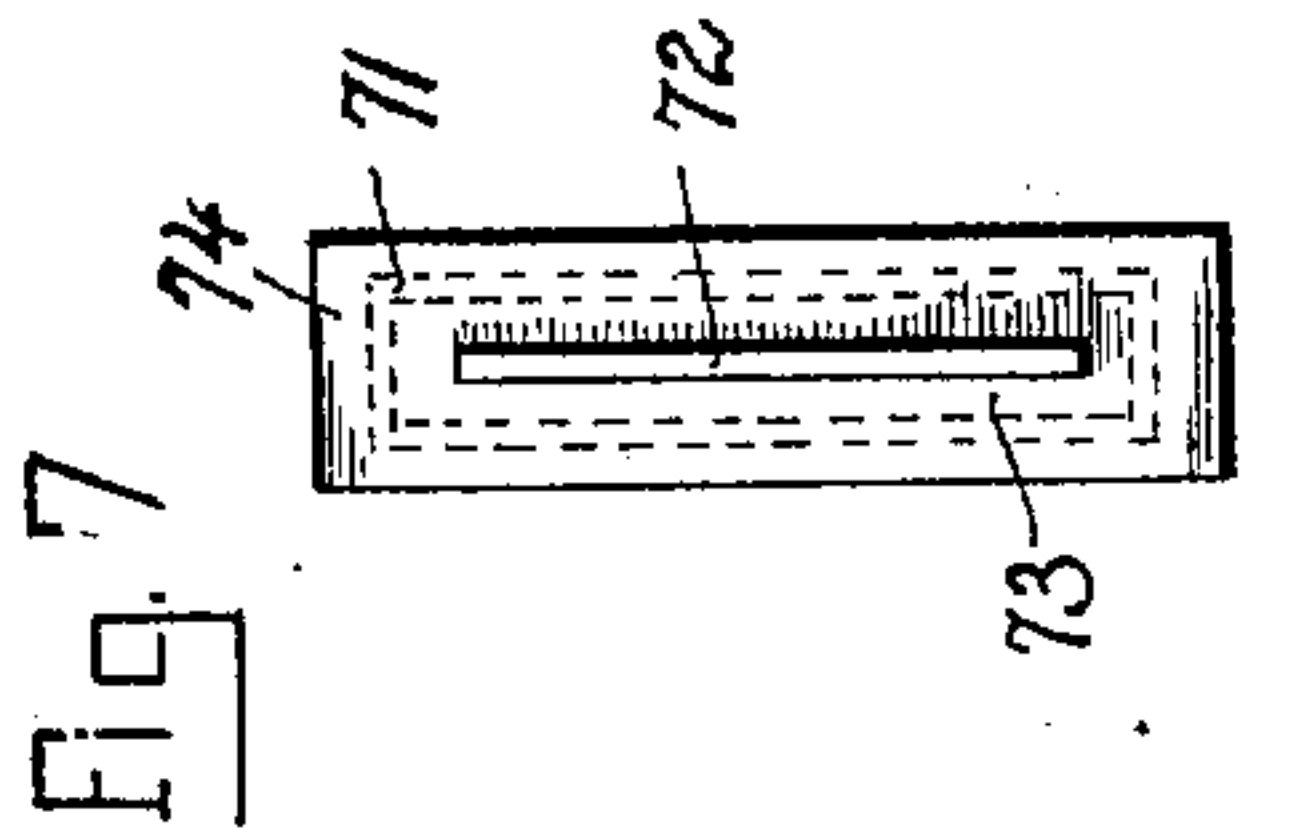


Fig. 6

Witnesses  
S. Herzog  
V. H. Hopewell

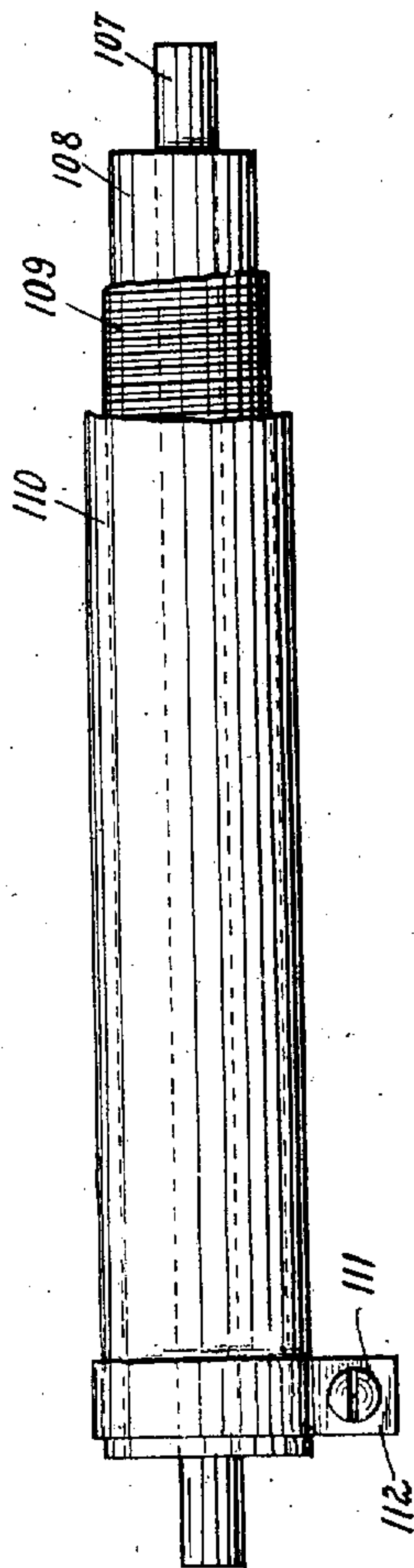
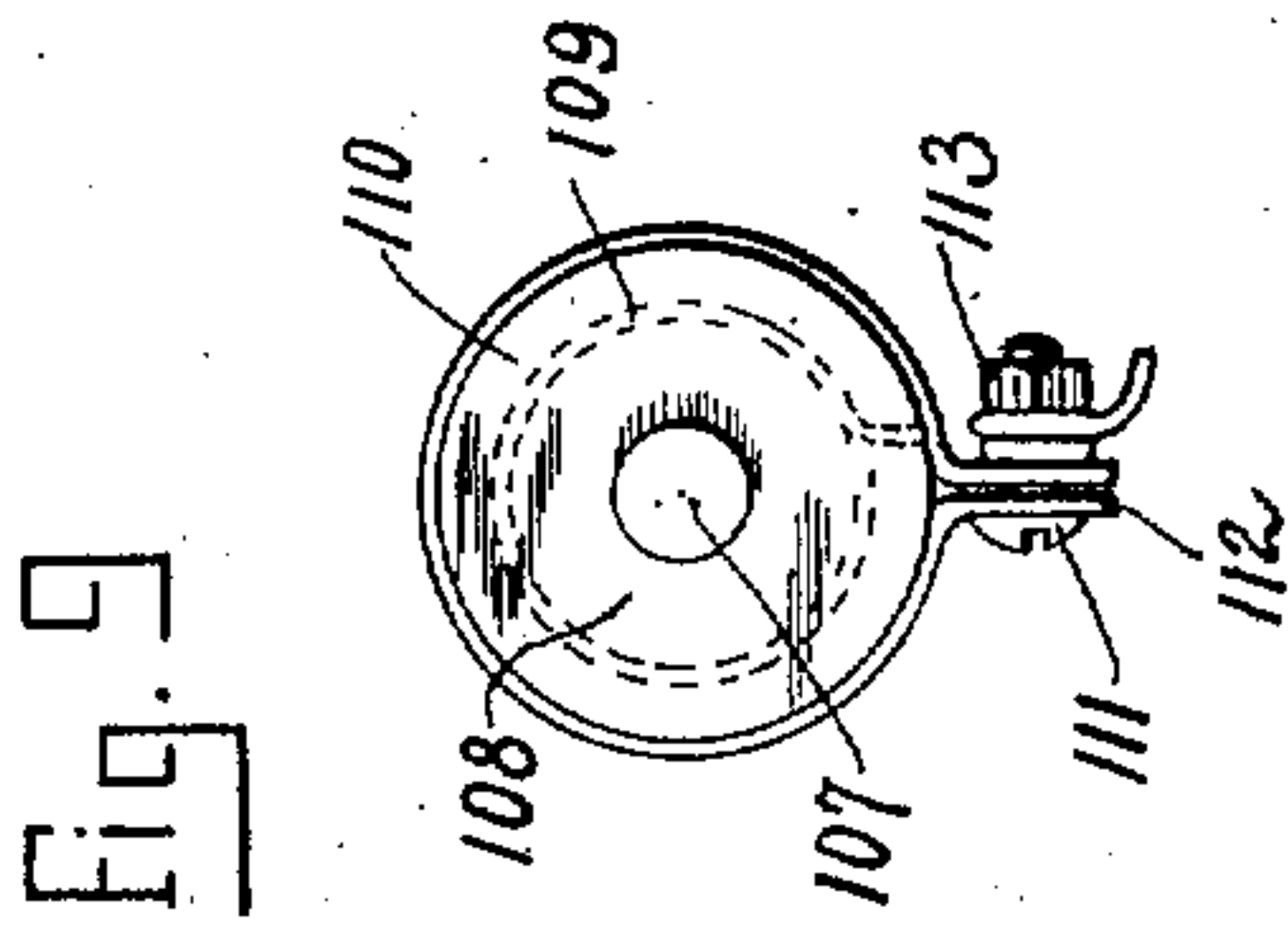


Fig. 8

R. W. Brown Inventor  
By Attorney J. H. Ransom



# UNITED STATES PATENT OFFICE.

ROY W. BROWN, OF AMSTERDAM, NEW YORK.

## ELECTRIC CONTROLLER.

No. 848,066.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed April 19, 1906. Serial No. 312,615.

*To all whom it may concern:*

Be it known that I, ROY W. BROWN, a citizen of the United States, and a resident of Amsterdam, county of Montgomery, State of New York, have invented a new and useful Improvement in Electric Controllers, of which the following is a specification.

My invention relates to electric controllers; and it has for its object to provide a controller having resistances mounted in the body thereof.

The invention consists in providing a drum having electric contacts mounted thereon and resistances located therein.

The invention also consists in providing an article of manufacture having a resistance-body mounted in Portland cement.

The invention also consists in surrounding a resistance-body by a moisture-proof composition and one which prevents electrolytic action and inclosing the resistance thus surrounded in Portland cement.

The invention also consists in a system of wiring to be used in connection with a drum electric controller having the resistance mounted therein and which enables the same to reverse the direction of motion of a motor.

My invention consists in other features disclosed in the following description, illustrated in the drawings, and claimed in the claims.

Referring to the drawings, Figure 1 is a front view of the drum electric controller. Fig. 2 is an end view, and Fig. 3 is a side view, of the drum opposite to that illustrated in Fig. 1. Fig. 4 is the electric system of wiring used in connection with my invention. Fig. 5 is a modification of the system of wiring shown in Fig. 4. Fig. 6 is an illustration of the resistance body or unit used in the system illustrated in Fig. 4. Fig. 7 is an end view of the device shown in Fig. 6. Fig. 8 is an illustration of the modified form of the resistance unit. Fig. 9 illustrates an end view of the device shown in Fig. 8.

Referring to Fig. 1, 1 indicates the controller-box, having the bearings 2 3, in which is supported the shaft 4. To the shaft 4 is attached a wheel 5, which is operated by a chain or cord 6. It may also be operated by a crank. On the shaft 4 is mounted a drum 7, made of Portland cement. The wheel 5 is adapted to turn the cylinder 7 when the rope 6 is operated.

The cylinder 7 is provided with a plurality of contacts (numbered 8 to 25, inclusive)

which are mounted on the surface thereof and which are connected, by means of screws, to anchors (numbered 40 to 49, inclusive) which are adapted to anchor the contacts and connect certain of the contacts together.

The resistance-bodies are located in the body of the cylinder 7 and run the length thereof. Each resistance-body consists of a wire or other metallic body 71, which is completely inclosed in cement. A metallic core 72 is completely embedded in a block of cement 73. This is painted with a paint which prevents the wire from absorbing any moisture or allowing any air to reach the resistance-body 71 and also prevents any electrolytic action between the metallic bodies and the cement. The wire or resistance-body 71 is then wound around or placed upon the block of cement 73 and is painted with the non-absorbent and anti-electrolytic paint and is inclosed in an outer coating or covering of cement 74, which completes the block. The paint consists of silicate of soda and a ground calcined lava called "lavite." A number of the resistance-bodies are connected to the contacts Nos. 11, 12, 13, 14, 15, 20, 21, 22, 23, and 24. They are set in the cylinder and securely fastened by filling all spaces around them with Portland cement.

Electric connections are made between the resistances of the controller and the system to be controlled through a plurality of brushes Nos. 81 to 92, inclusive, which are located on opposite sides of the cylinder 7 and are adapted to make contact with the contacts 8 to 25, inclusive, as the cylinder 7 is turned. The contacts are in each case controlled by the springs 93, which are regulated by the screws 94 and the nuts 95. The contacts are supported upon the base of the controller-box 1.

An electromagnet-spool 96 is located within the cement cylinder 7 and surrounds the shaft 4 of the cylinder 7. Poles 97 and 98 are located at the end of the spool 96, which extend outward to the outside of the cylinder 7 and in the vicinity of the contacts 11 and 7. The magnet 96 operates as a blow-out magnet and reduces the arcing of the current between the contacts and the brushes when they separate from each other.

In the system illustrated in Fig. 4, 101 indicates the armature of a motor. 102 indicates the field of the motor which is controlled by the electric controller illustrated in Fig. 1. 103 and 104 are main-line connections which lead to the rheostat and electric



controller or motor. The main line 103 is connected with the brush 83 of the electric controller, and main line 104 is connected with brushes 89 to 92, inclusive, and with the field 102 of the motor. The field 102 is connected with the brush 84. The armature 101 is connected with the brushes 81 and 85 on one side and 82 and 86 on the other. Brushes 87 and 88 are connected together. Contacts 8, 9, and 16, likewise contacts 17, 18, and 25, are connected together. Also contacts 10, 14, 19, and 24 are connected together. Contacts 11 and 20 are connected together and to the resistance-body 105. Contacts 12 and 21 are connected together and to the resistance-bodies 105 and 106. Contacts 13 and 22 are connected together and to the resistance-bodies 106 and 107. Contacts 15 and 23 are connected together and to the resistance-bodies 107 and 108. Resistance 108 is connected to contact 24.

When the cylinder is turned in one direction, brushes 81, 83, and 84 come in contact with contacts 8, 9, and 16, and brushes 86 to 89, inclusive, come in contact with contacts 17, 18, 19, and 20. The circuit is then closed from the main line 103 to the contacts 8, 9, and 16, which closes a connection with the field of the motor 102 and the armature 101. The circuit is completed through the connections 86 17 18 87 88 19 24, resistances 108, 107, 106, 105, 20, 89, and 104. As the cylinder continues to turn brushes 90, 91, and 92 come in contact with contacts 20, 21, 22, 23, and 24 in succession and the resistance 105, 106, 107, and 108 are successively cut out. This directly connects the motor with the main lines 103 and 104 and causes the motor to move in full speed in one direction. When the direction of the cylinder is reversed, the resistances 105 to 108, inclusive, are successively included in the circuit, and when the cylinder is brought to its first position the circuit is broken. As the cylinder is turned to this final position the poles of the blow-out magnet are brought into the vicinity of the brushes and the field of the magnet disrupts any arcing that may occur. If the cylinder is moved still farther in this reversed direction, the brushes 82, 83, and 84 come in contact with contacts 17, 18, and 25, and brushes 85, 87, 88, and 89 come in contact with contacts 8, 9, 10, and 11. The circuit connection is now made from the main line 104 to the field 102, contact 25, 18, and 83 to the main line 103. Connection is also made from the main line 104 through 89, 11, 20, 105, 106, 107, 108, 24, 19, 10, 88, 87, 9, 8, 85, 81, 101, 82, 17, 18, 83 to the main line 103. This causes the current to flow through the motor in the opposite direction and causes it to move in the opposite direction.

In the modification illustrated in Fig. 5 brushes 89, 90, 91, 92, which are connected together in the system illustrated in Fig. 4,

are combined and the one brush 106 performs the function of the four brushes. Otherwise the connections are the same and the operation is the same. The contacts 11, 12, 13, 15, and 14 and the corresponding contacts 20, 21, 22, 23, and 24 are arranged so that the brush 106 will make contact with the said contacts successively as the cylinder is turned.

In Fig. 8 is illustrated a modification of the device illustrated in Fig. 6. The device shown in Fig. 8 may be made in the form of a cylinder, as shown in Fig. 9, having a central core 107 surrounded by a cylindrical block of cement 108, on which is mounted the resistance-body 109, the same being covered with the non-absorbent and the anti-electrolytic paint, after which it is completely inclosed in the covering of Portland cement 110.

In order to make a perfect electrical connection with the resistance-body 109 and the exterior connections of the system, a ring-clamp may be used. The resistance-body is soldered or otherwise connected to the ring, and the ring is tightly secured to the unit by means of the screw 111 and the lug 112. A connecting-wire may be secured to the clamp by means of the nut 113.

The invention may be modified by those skilled in the art without departing from the spirit thereof.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In an electric controller the combination of a cylinder composed of Portland cement having contacts and resistance-bodies embedded therein and connected together by means of strips adapted to anchor the said contacts in the said cylinder.

2. In an electric controller the combination of a cylinder having contacts and a plurality of resistance-bodies embedded therein and strips adapted to anchor the said contacts in the said cylinder and to connect certain of the said contacts with each other and with the said resistance-bodies.

3. In an electric controller the combination of a cylinder composed of Portland cement and having a resistance-body covered with a non-absorbent paint embedded therein.

4. In an electric controller the combination of a resistance-body covered with soda silicate and lavite and embedded in Portland cement.

5. In an electric controller the combination of a movable body having a plurality of contacts and a resistance-body and a blow-out magnet located therein.

6. In an electric controller the combination of a cylinder having a plurality of contacts, a plurality of resistances and an electromagnet located in the said cylinder the said magnet having poles located in the vicinity of certain of the said contacts.

7. In an electric controller the combina-



tion of a movable body having a plurality of contacts, a plurality of resistances connected to the said contacts and a blow-out magnet located thereon, a plurality of fixed contacts  
5 adapted to make contact with the first-named contacts.

8. In an electric controller the combination of a cylinder having a plurality of contacts embedded therein, anchors for securing  
10 the said contacts, a plurality of resistances located in the said cylinder, a plurality of fixed contacts adapted to make contact with the first-named contacts and a blow-out magnet located in the said cylinder and  
15 adapted to prevent arcing between certain of the said contacts.

9. In an electric system the combination of a source of electric current, a controlled means, a cylinder having a plurality of con-

tacts and a plurality of resistances mounted 20 therein, brushes adapted to make contact with the said contacts and so arranged with respect to the said contacts as to cause a current to flow in varying quantities in one direction when the cylinder is moved in one 25 direction and to flow in various quantities in the opposite direction when the cylinder is moved in the opposite direction.

10. In an electric controller a resistance-body embedded in cement covered by a 30 moisture-proof heat-resisting paint.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROY W. BROWN.

Witnesses:

FRED G. MORSE,  
J. H. DEALY.