

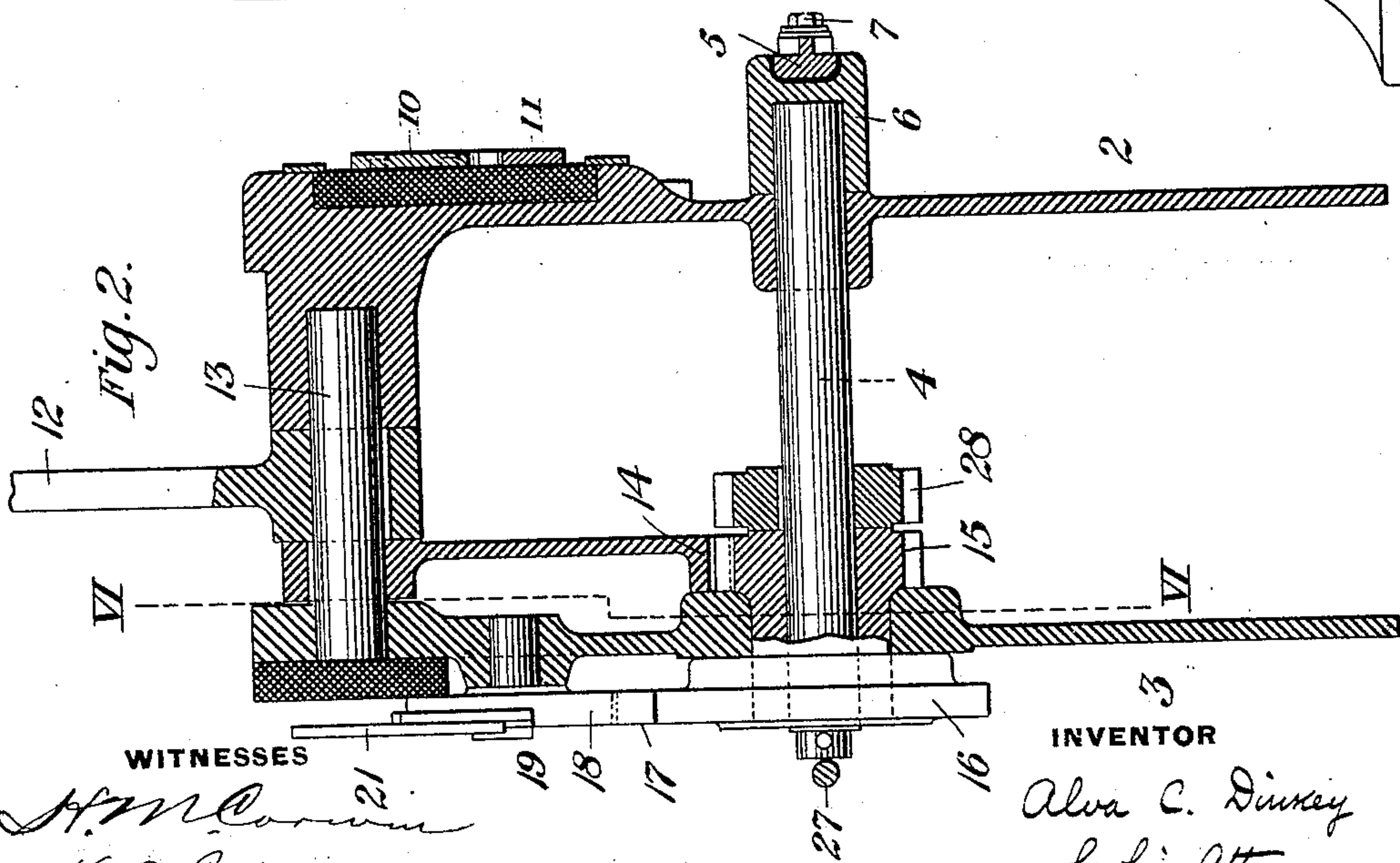
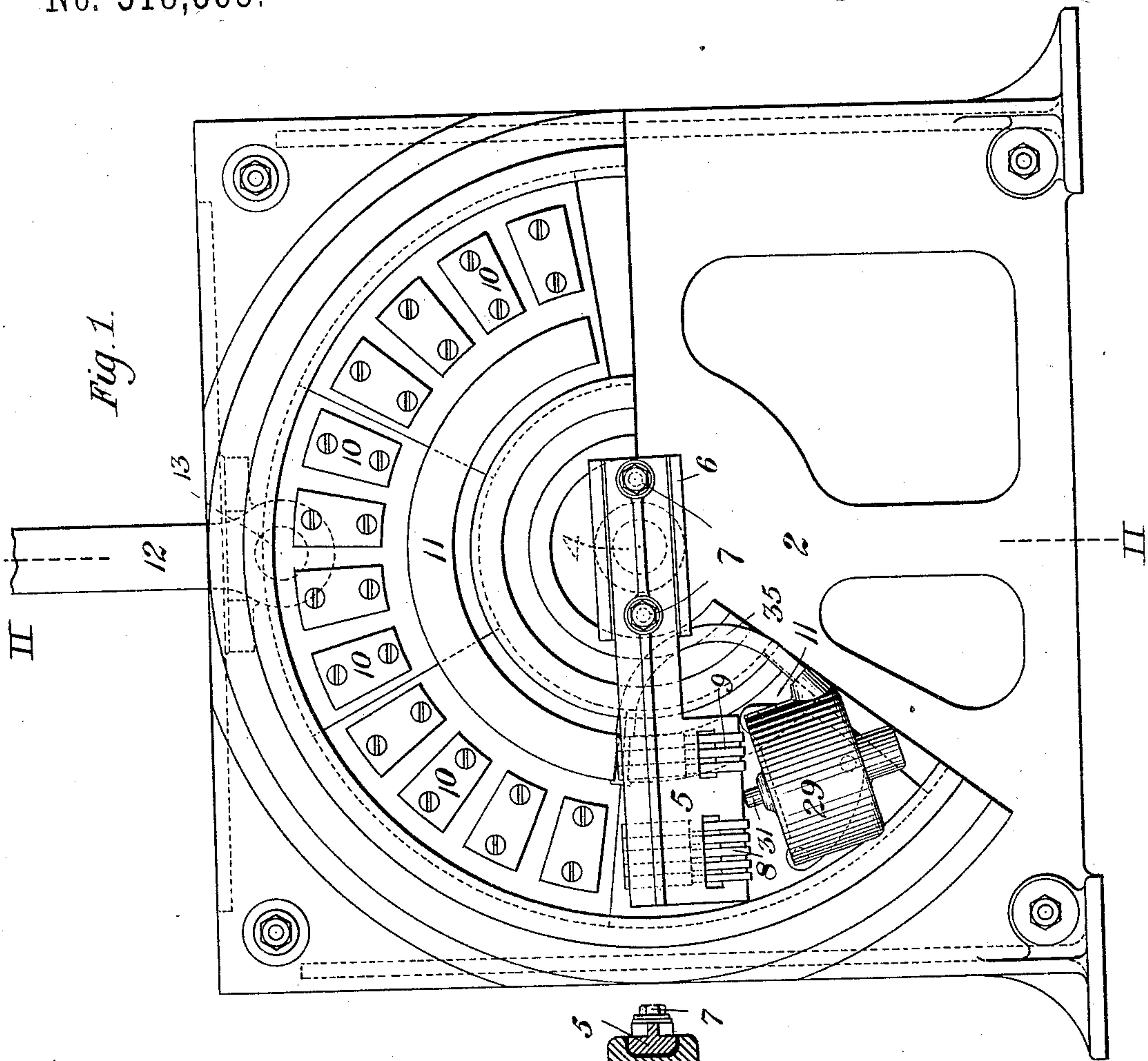
(No Model.)

3 Sheets—Sheet 1.

A. C. DINKEY.  
RHEOSTAT.

No. 518,365.

Patented Apr. 17, 1894.



WITNESSES

*H. M. Corwin*  
*H. L. Gill*

INVENTOR

*Alva C. Dinkey*  
*by his Attorneys*  
*W. B. Kendall & Sons.*

(No Model.)

3 Sheets—Sheet 2.

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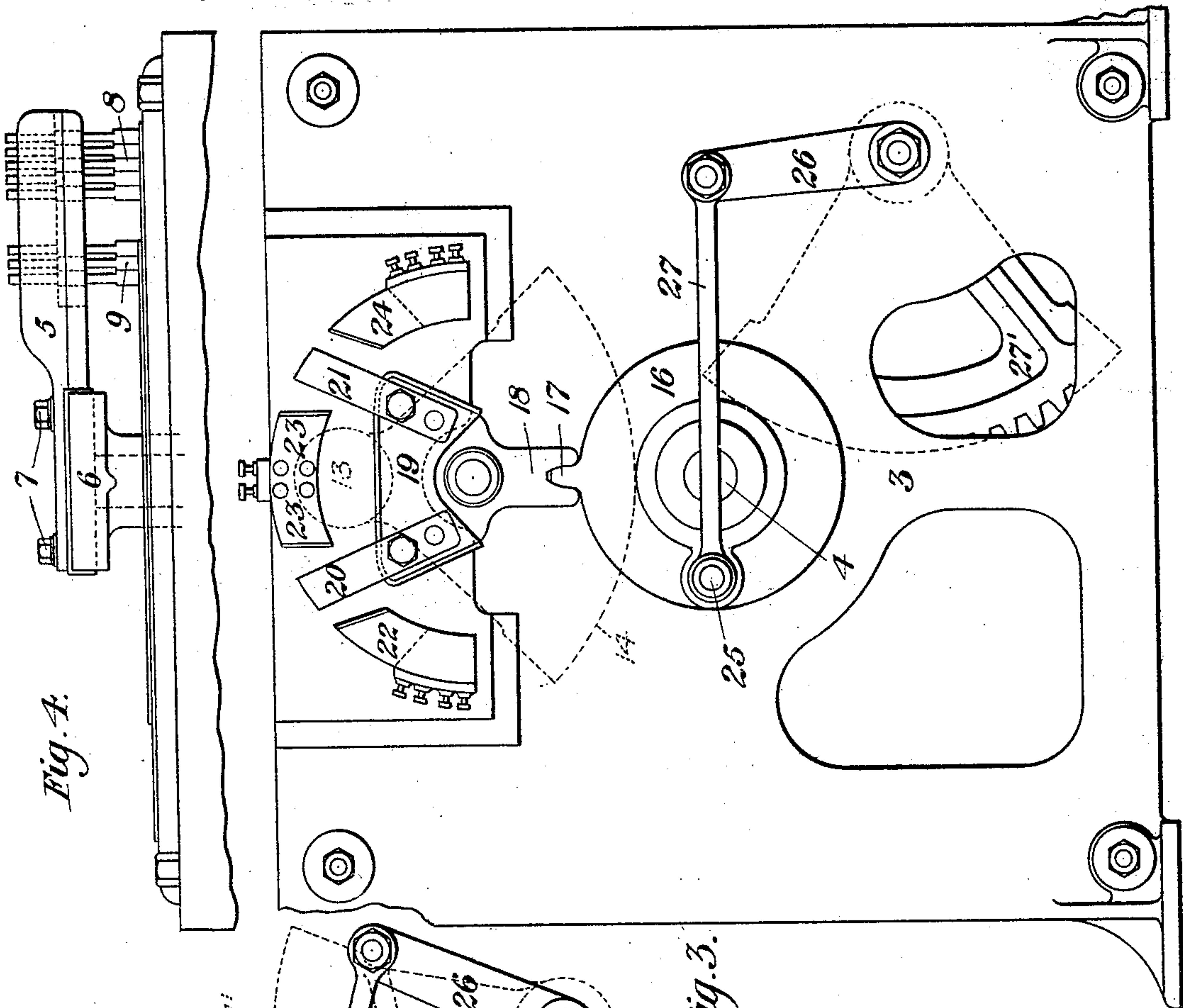


Fig. 4.

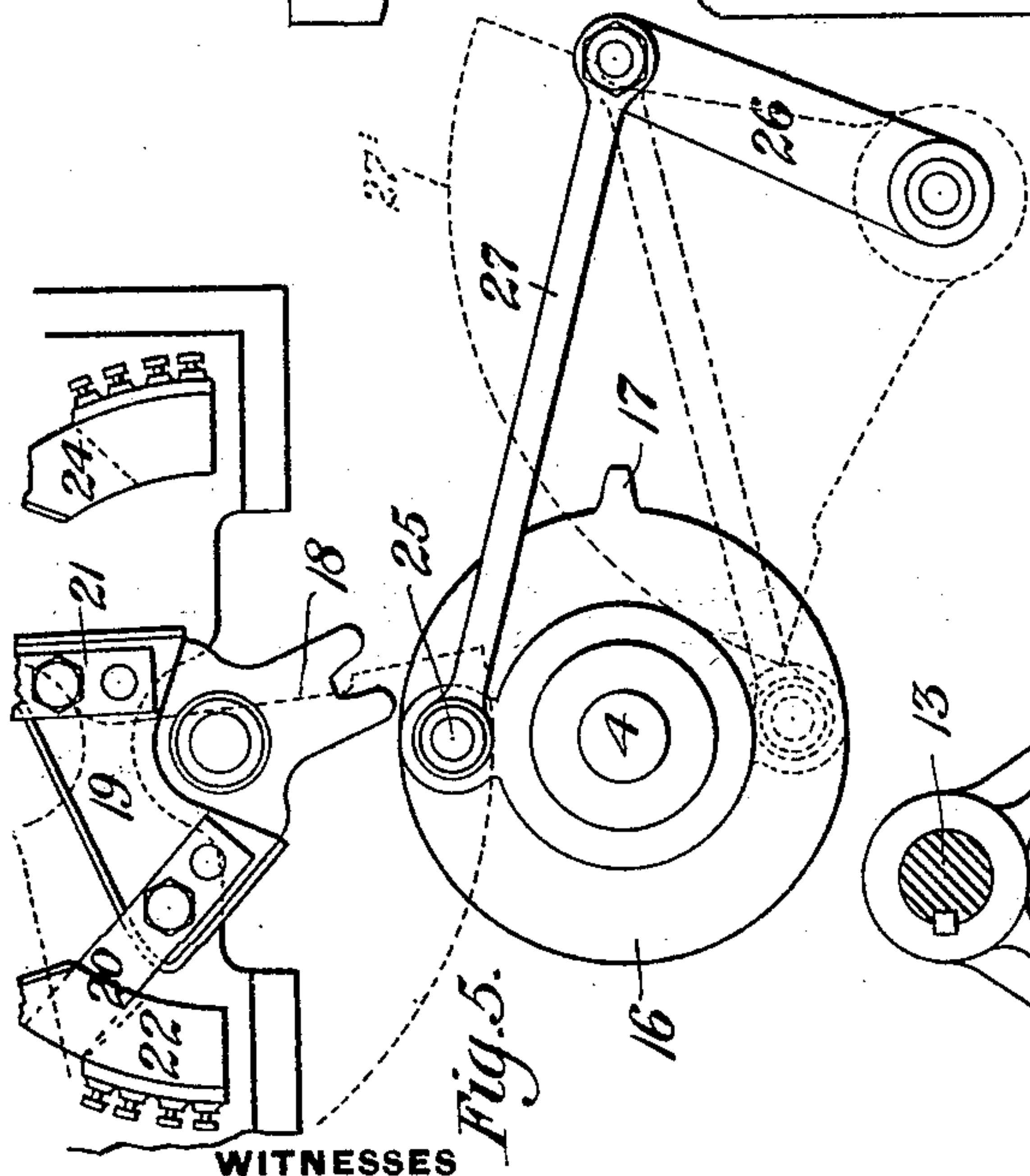


Fig. 5.

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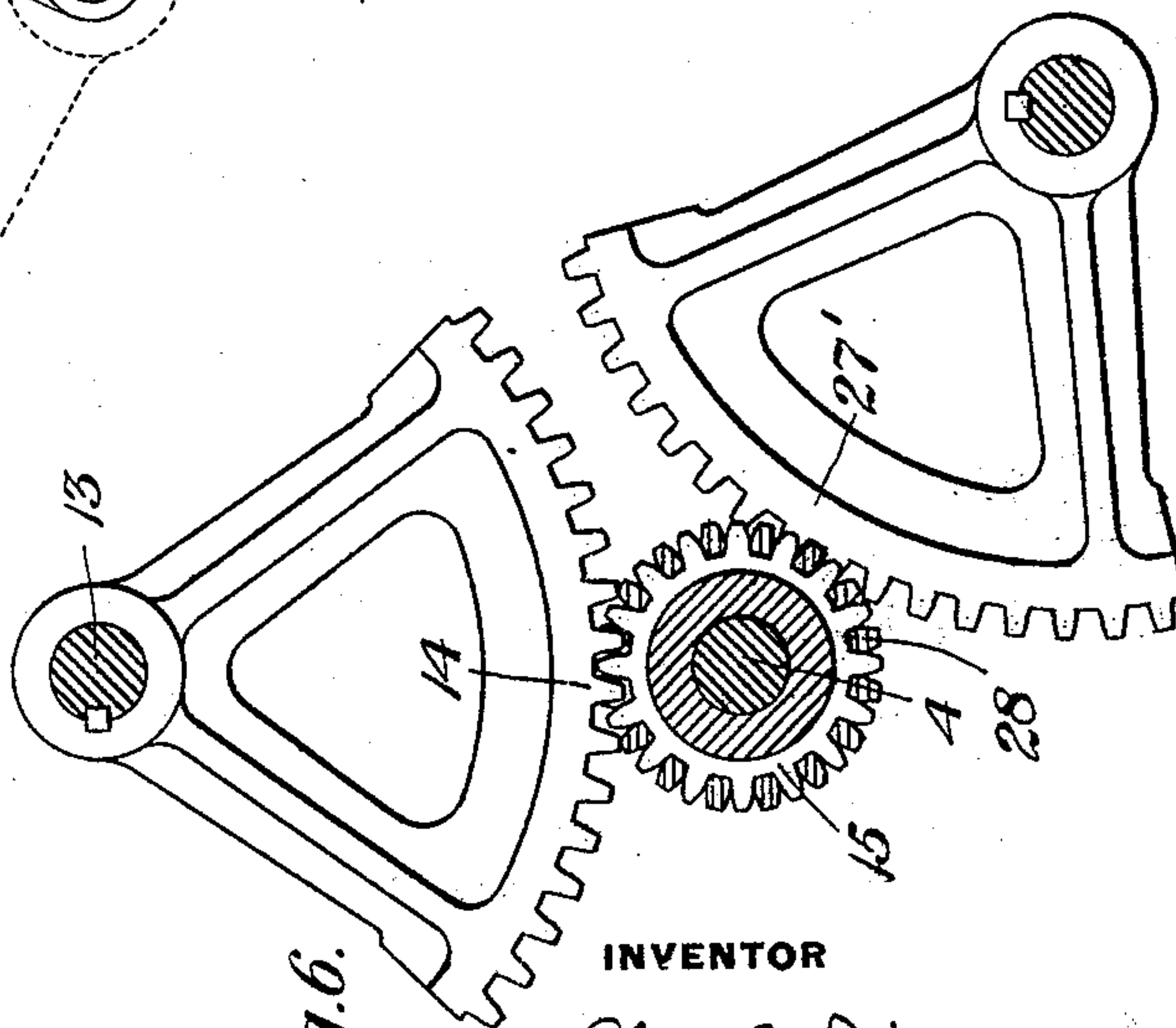


Fig. 6.

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(No Model.)

3 Sheets—Sheet 3.

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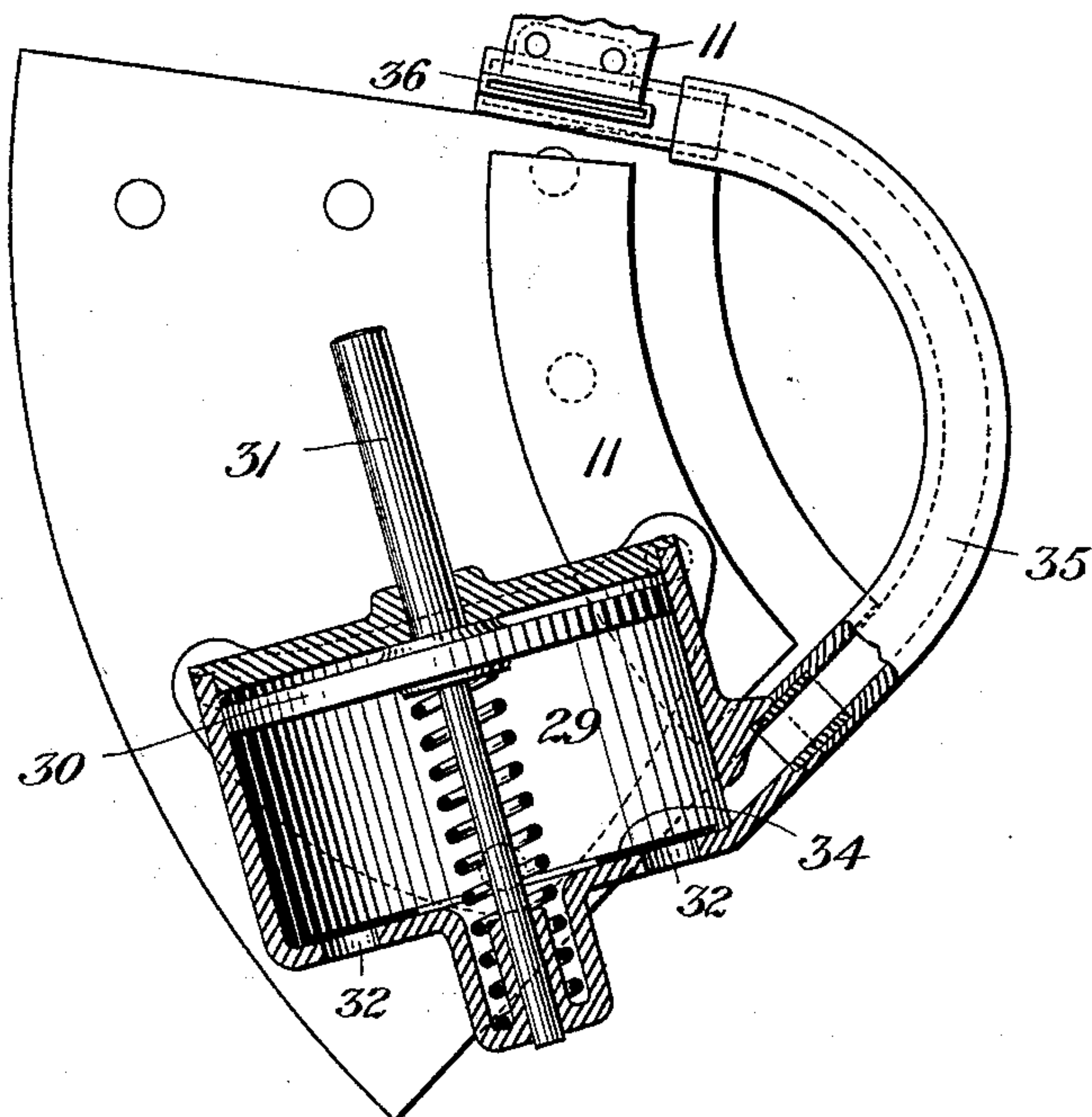


Fig. 7.

Fig. 9.

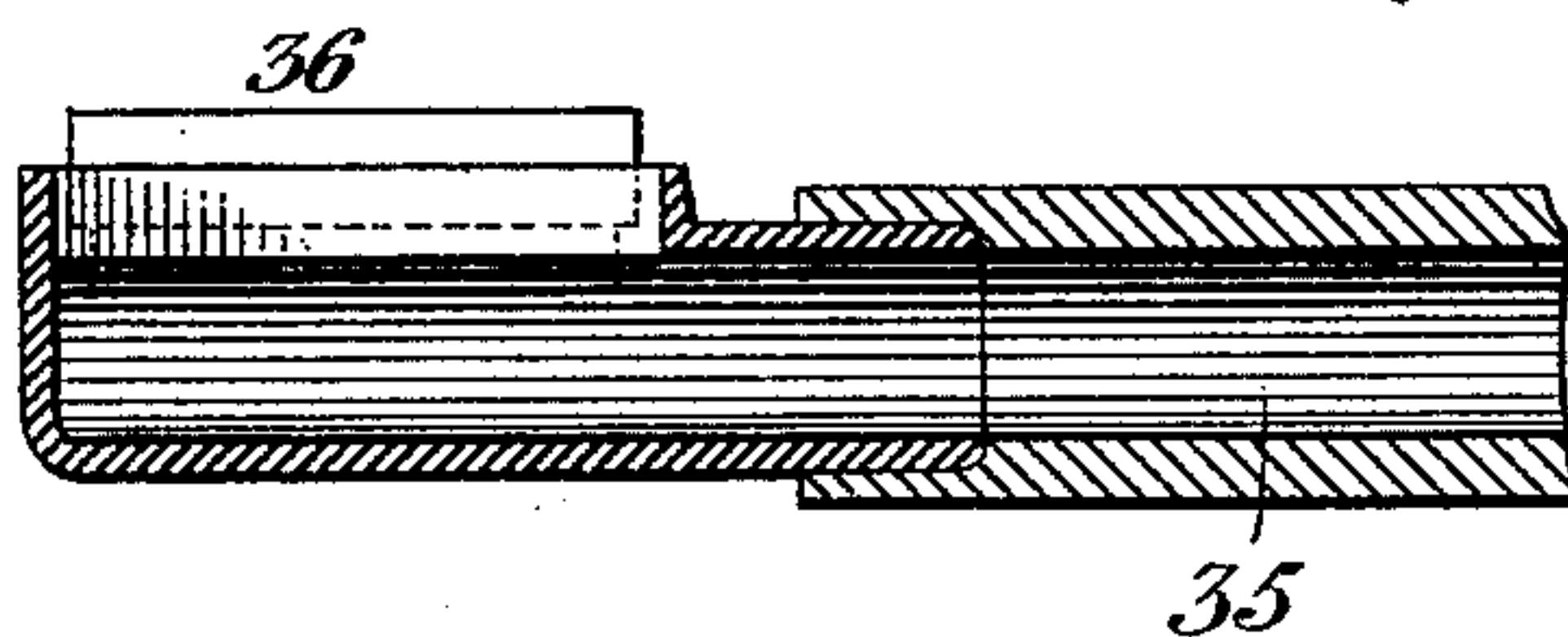


Fig. 10.

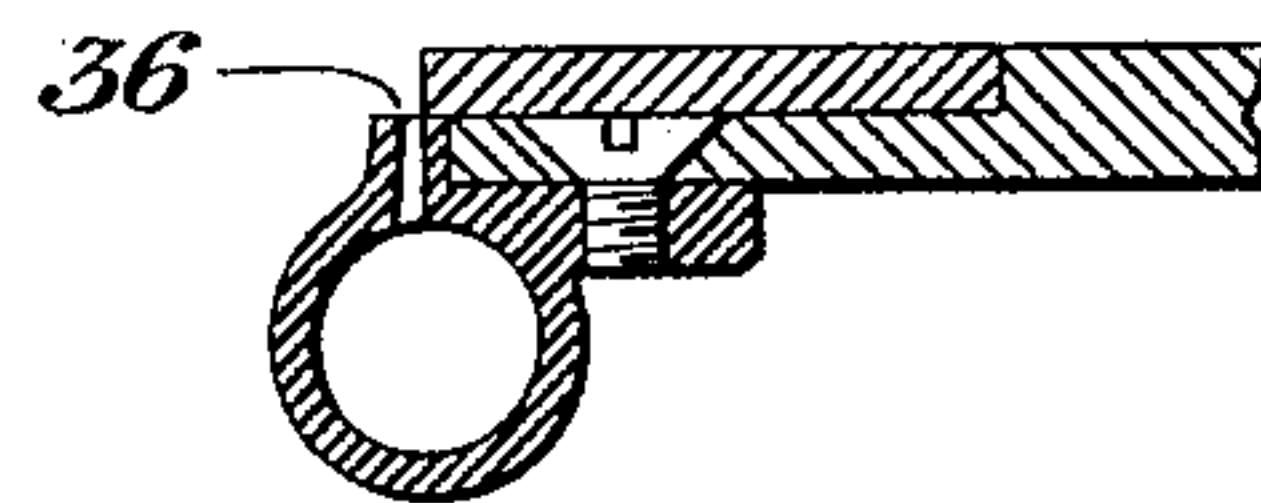


Fig. 11.

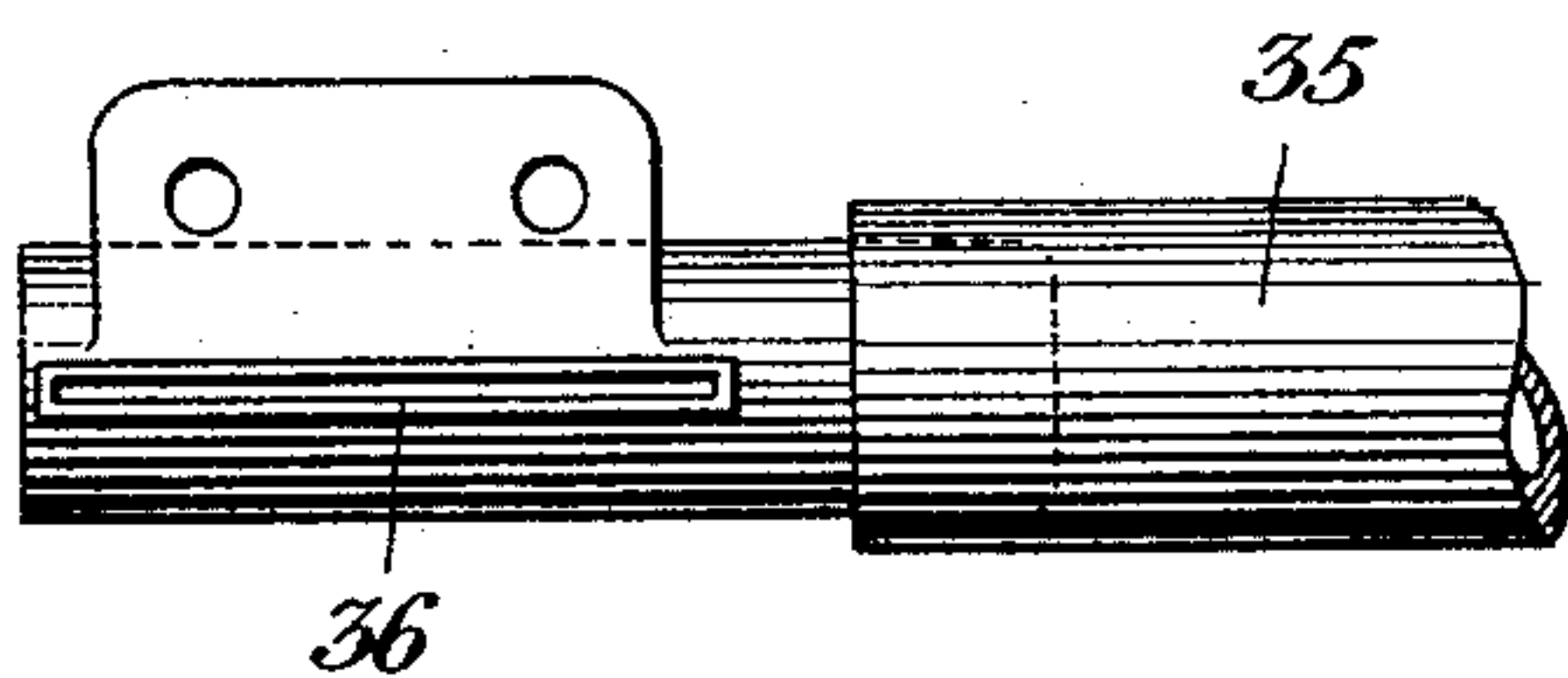
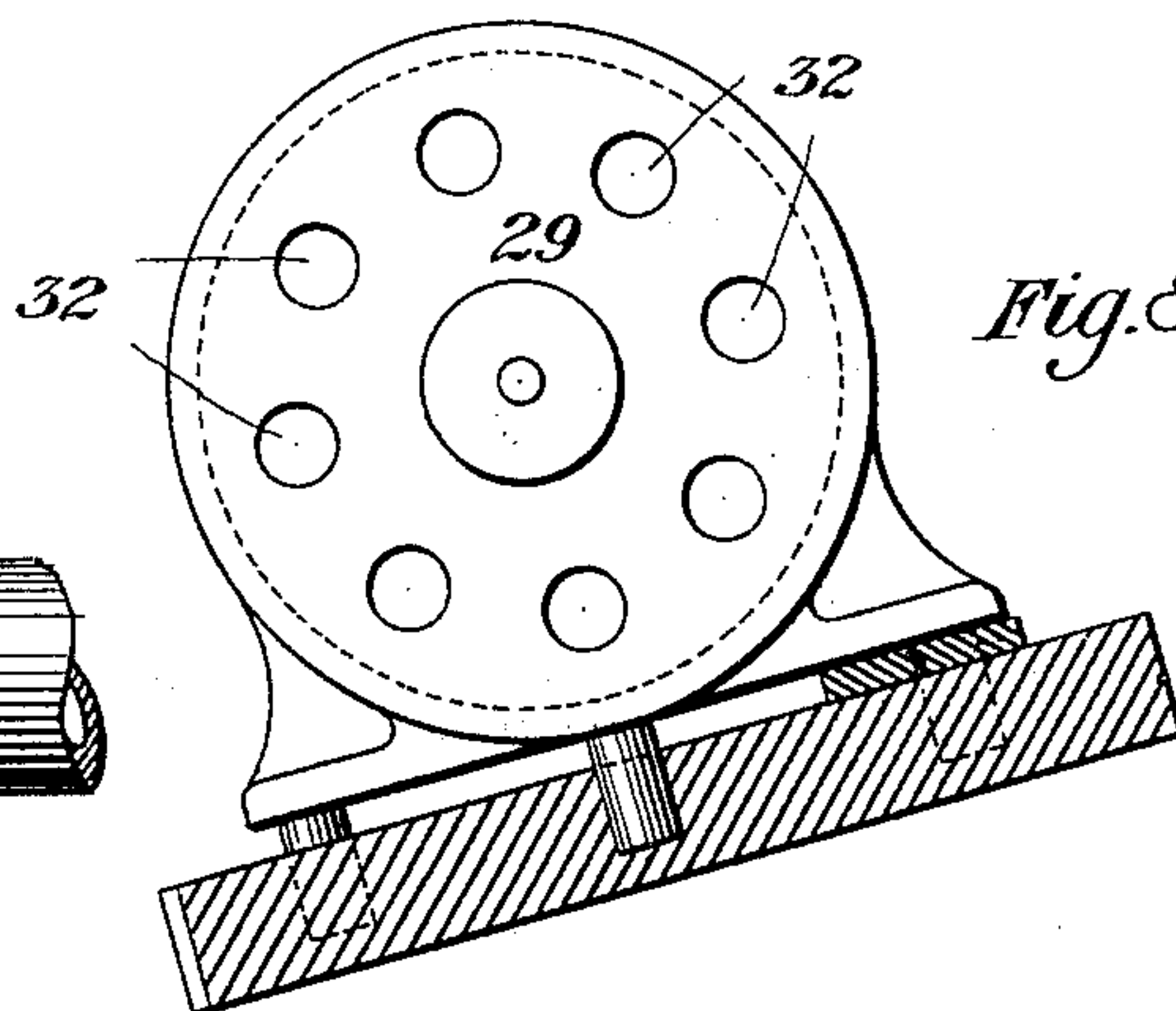


Fig. 8.



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# UNITED STATES PATENT OFFICE.

ALVA C. DINKEY, OF ALLEGHENY COUNTY, PENNSYLVANIA.

## RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 518,365, dated April 17, 1894.

Application filed December 1, 1893. Serial No. 492,413. (No model.)

*To all whom it may concern:*

Be it known that I, ALVA C. DINKEY, residing in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rheostats, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a front elevation of my improved rheostat. Fig. 2 is a cross section on the line II—II of Fig. 1. Fig. 3 is a rear elevation showing the reversing switch and connections. Fig. 4 is a detail view of the brushes. Fig. 5 is a partial rear elevation showing the parts in operative position. Fig. 15 6 is a detail view of the segmental racks and their pinions. Fig. 7 is an enlarged plan view partly in section, of the arc extinguisher; and 20 Figs. 8 to 11 inclusive are detail views of the parts of the extinguisher.

My invention relates to the class of rheostats, and is designed to simplify and lighten their construction, to render them easier of 25 operation, to do away with the necessity of two sets of contacts for each resistance box, and to prevent sparking.

In the drawings, 2 and 3 represent the front and rear faces respectively of the rheostat 30 box or frame. Passing through these faces is a central shaft 4 to whose front end is attached the traveling contact arm 5, it being fitted in a suitable trough-shaped depression in the plate 6 secured to the shaft, a suitable 35 layer of insulating material being employed in the trough or groove, as well as beneath the nuts 7 which secure the arm. To this arm are secured the two sets of contact brushes 8 and 9, one set 8 passing over the contact pieces 40 10 connected to the resistance boxes, while the other passes over the arc-shaped continuous contact-piece 11. The vertical operating lever 12 is keyed to the shaft 13, which carries a segmental rack 14 intermeshing with a 45 pinion 15, which is loose upon the shaft 4, but is integral with a collar carrying at its outer end beyond the rear face of the box the disk 16. This disk carries a single tooth 17, which engages the similarly toothed lever-arm 18 of the reversing switch 19. This 50 switch is provided with two arms 20 and 21, which carry the positive and negative wires

respectively, and pass beneath the raised contact pieces 22, 23 and 24. The contact pieces 22 and 24 are connected together, and it is 55 evident that the current may be reversed by reversing the direction of rotation of the switch, one arm contacting with the piece 23 whenever the other moves beneath the piece 22 or 24. The disk carries a crank-pin 25, 60 which is connected with a lever 26 by the rod or link 27. This crank-pin is so located relatively to the end of the lever-arm, that the three centers, *i. e.*, the center of the disk and the two pivots of the link, shall be in a straight 65 line (the reversing switch standing open) whenever the actuating lever is in normal position.

When the lever is moved in either direction, it actuates the disk, moving the reversing 70 switch and at the same time moves the lever 26 in the direction shown in Fig. 5, the link pushing upon the lever whether its crank-pin moves in one direction or the other. Upon the shaft of the lever 26 is carried a 75 second segmental rack 27', which engages a pinion 28 (Fig. 2) keyed to the shaft 4. Thus the traveling contact arm is always moved in the same direction by any motion of the lever 80 from its normal position, while the direction of movement of the switch depends directly upon that of the lever.

To prevent the sparking and formation of an arc as the arm leaves the first contact piece 11, I provide on the front face the stationary 85 cylinder 29, having the spring-pressed piston 30 provided with a protruding piston-rod 31, and having its opposite outer head provided with a series of inlet ports 32, having inwardly-opening valves formed by an annular thin 90 diaphragm 34. From the rear end of the cylinder, leads a bent or curved pipe 35, which terminates in a vertical long thin mouth or outlet port 36 situate at the end of the contact piece 11. Whenever the traveling con- 95 tact arm returns to its normal position, it presses upon the piston-rod 31, and forces a quick puff of clean pure air through the aperture 36, which blows out any spark or arc which may have formed, and drives away the 100 metallic gases or vapors which enable it to form.

The advantages of the device will be apparent to those skilled in the art, since only one



set of contact plates is needed for the coils, the arm always moving in the same direction, while the current is reversed by reversing the movement of the lever. The reversing switch  
5 moves only a small distance, as the tooth then leaves the lever 18, which is then guided upon the edge of the disk, and locked by said edge and contacts 22, 23, and 24, as shown in Fig. 5, so that the tooth will again engage upon its  
10 return. This does away with a large amount of labor in moving the switch and greatly simplifies the device. The blower is entirely automatic and performs its work effectively, and the entire device is compact and not lia-  
15 ble to get out of order.

Variations in the form, arrangement and construction of the parts may be made by the skilled mechanic within the scope of the claims, since

20 What I claim, and desire to secure by Letters Patent, is—

1. In a rheostat, a reversing switch having a projecting arm, a plate or disk having a tooth to engage the arm, and means for actu-  
25 ating the disk; substantially as described.

2. In a rheostat, a shaft having a lever, a connection between said shaft and a collar upon a second shaft, a crank-pin carried by

the collar, a link pivoted to the crank-pin and to a lever arm, and an actuating connection 30 between the lever arm and the traveling contact arm of the rheostat; substantially as described.

3. In a rheostat, a shaft having a lever, a connection between said shaft and a collar 35 upon a second shaft, a crank pin carried by the collar, a link pivoted to the crank-pin and to a lever-arm, and a connection between the lever-arm and the second shaft; substantially as described.

4. A rheostat having a cylinder provided with a projecting piston rod, and a pipe lead-  
40 ing from the cylinder, substantially as described.

5. A rheostat having a stationary cylinder 45 at one end of the contact pieces, a projecting piston rod, valve-controlled air inlet ports, a pipe leading from the cylinder, and a contact arm arranged to actuate the piston-rod; substantially as described.

In testimony whereof I have hereunto set  
50 my hand.

ALVA C. DINKEY.

Witnesses:

F. E. GAITHER,  
H. M. CORWIN.