

No. 756,445.

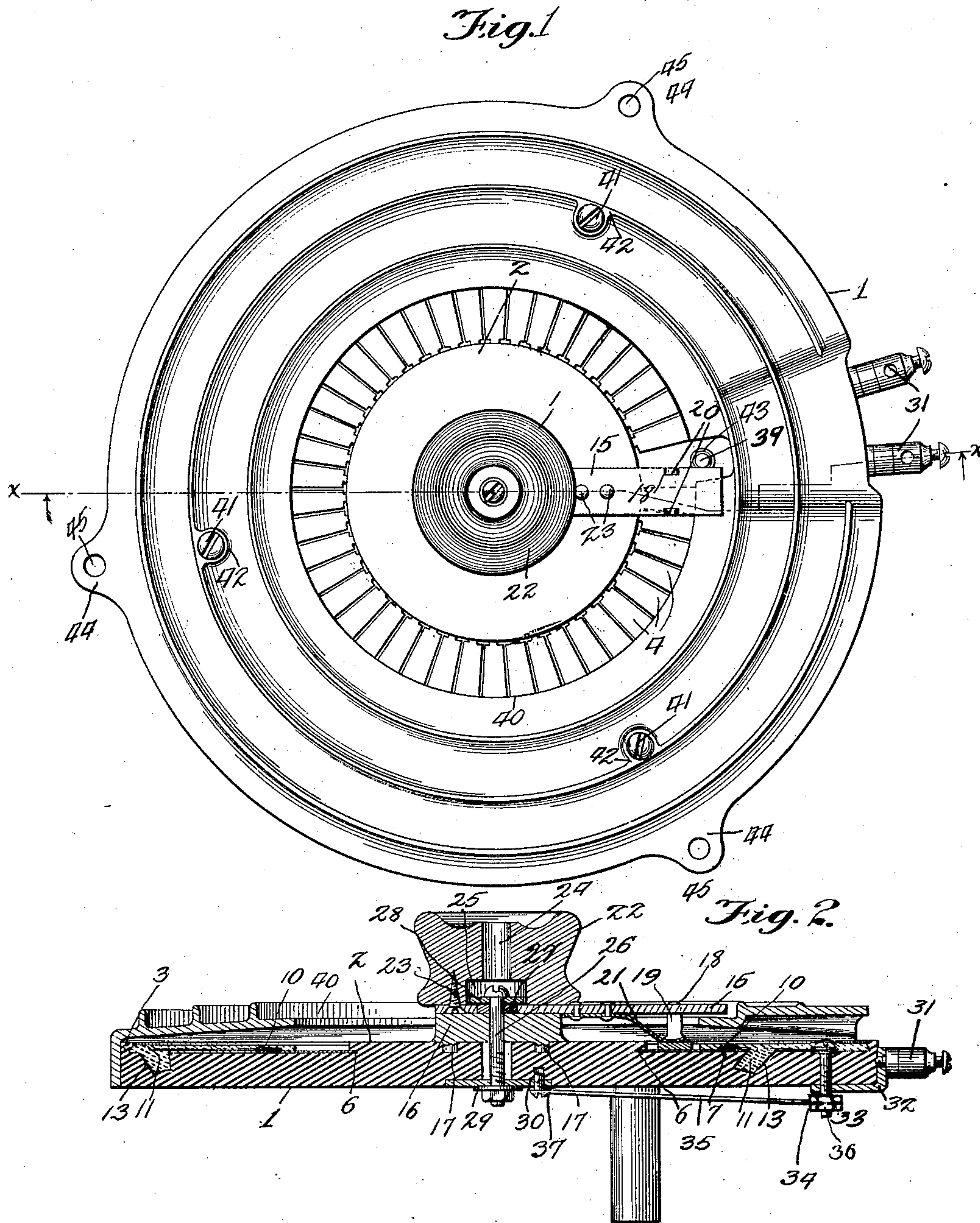
PATENTED APR. 5, 1904.

H. J. WIEGAND.
RHEOSTAT.

APPLICATION FILED JUNE 1, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

W. D. Perry
Edward W. C. Field

Inventor:

Henry J. Wiegand
by Jones & Huntington
attys

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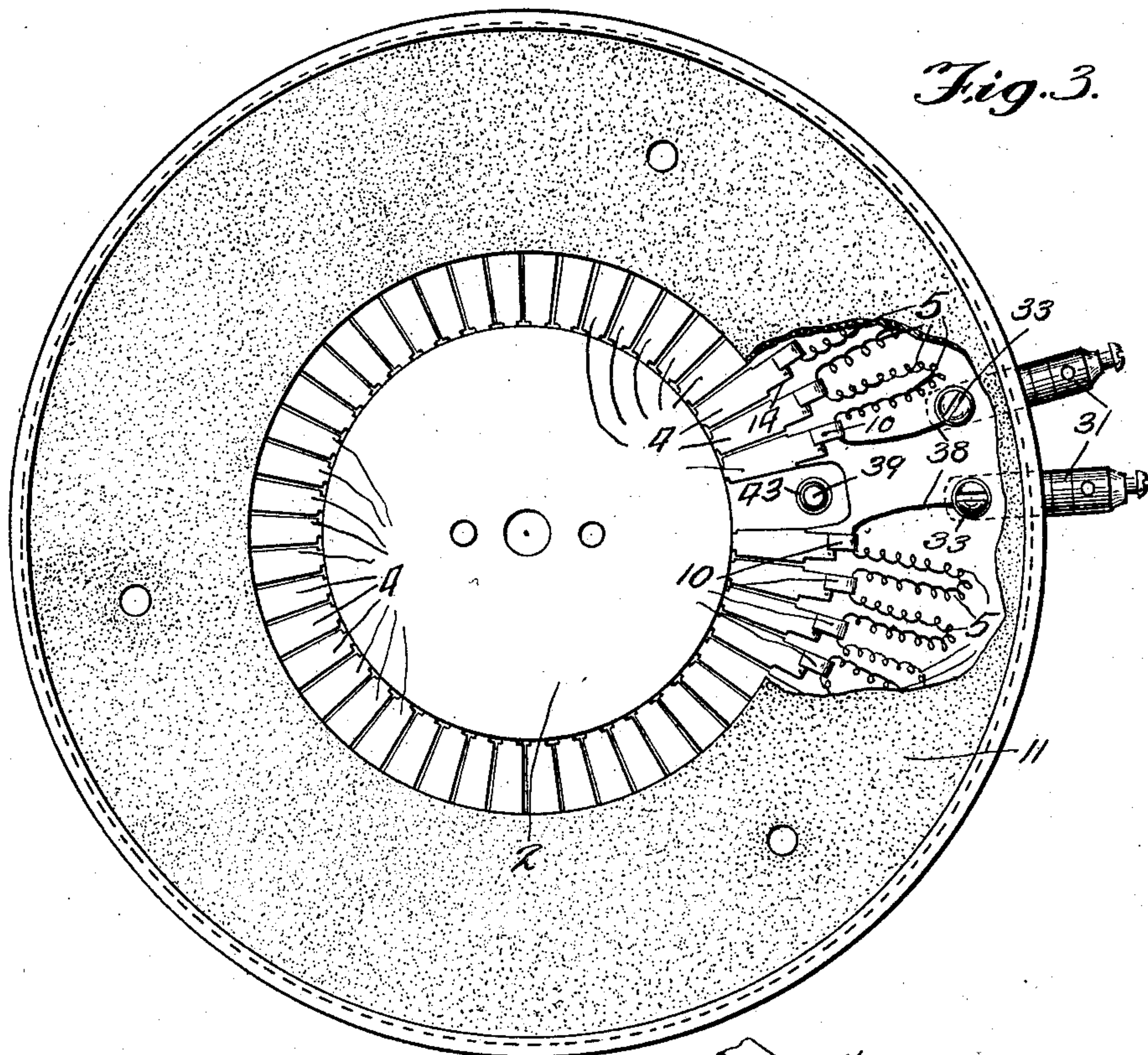


Fig. 3.

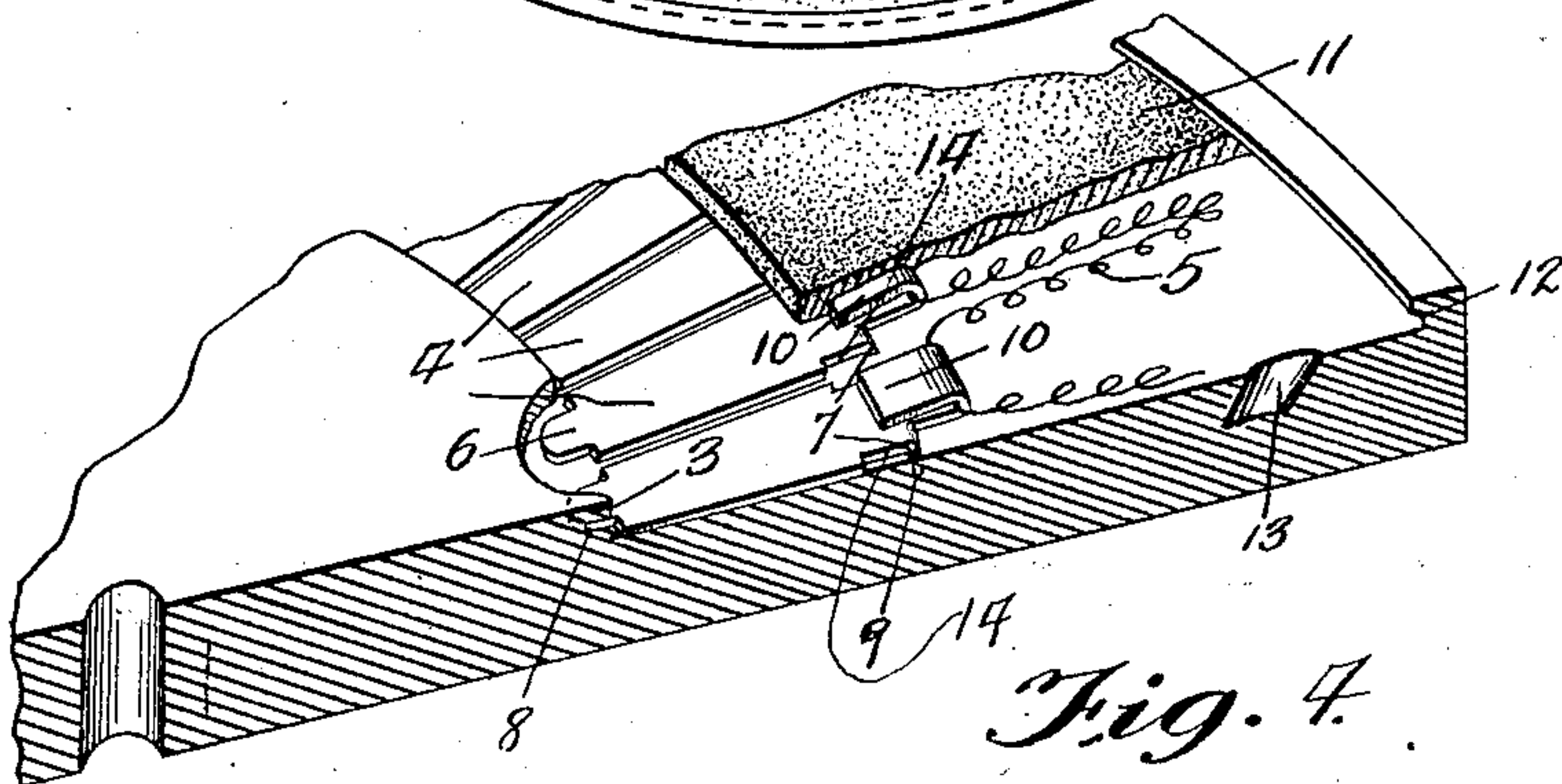


Fig. 4.

Witnesses:
Ira D. Perry
Edward A. Casfeldt

Inventor:
Henry J. Wiegand
by Jones & Huntington
Attys.

UNITED STATES PATENT OFFICE.

HENRY J. WIEGAND, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE
CUTLER - HAMMER MANUFACTURING COMPANY, OF MILWAUKEE,
WISCONSIN, A CORPORATION OF WISCONSIN.

RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 756,445, dated April 5, 1904.

Application filed June 1, 1903. Serial No. 159,605. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. WIEGAND, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Rheostats, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to improvements in rheostats, particularly of the type known as "field-regulators."

It has for its object to provide a structure in which the parts will be compactly assembled and which will be simple in construction, durable in use, and cheap to manufacture.

One form of my invention designed for practical purposes is shown in the accompanying drawings, in which the several views are as follows:

Figure 1 is a face view of my improved device. Fig. 2 is a section on the line *xx* of Fig. 1. Fig. 3 is a view similar to Fig. 1 with the casing or cover removed and parts broken away to show certain details of construction; and Fig. 4 is a perspective view of a portion of the base and contacts, which illustrates certain details of my construction.

Referring now to the drawings particularly by reference characters, therein is shown a preferably circular base 1 of insulating material, which is provided with a central projection 2 and a flange 3 at its edges. The central projection 2 and the flange 3 are preferably circular and arranged concentrically. In annular depression between the projection and flanges are arranged the contacts or terminal plates 4, between which are connected the sections 5 of the resistance. Each of the contact-plates is provided with an outwardly-extending lug or projection 6 at its inner end and a downwardly-projecting lug 7 at its outer end. The central projection on the base has its side walls provided with recesses 8 to receive the outwardly projections at the inner ends of the contact-plates. Suitable recesses 9 are formed in the depression in the base for

the reception of the downwardly-extending lugs of the contact-plates. The recesses in the base for the reception of the lugs of said contact-plates are so arranged that when the contact-plates are placed in position each plate will be separated from the other. The contact-plates preferably extend only to about the central portion of the depression in the base, and thereby a space is provided between the contact-plates and the flange upon the base in which the resistance-wires are contained. The resistance-wires are preferably of a sinuous form and are looped back and forth in the space provided therefor in the depression of the base. Each loop of the resistance-wire constitutes one section of the resistance and each has its ends connected with terminal plates, preferably by rebent portions of said contact-plates, which are hooked upon the resistance-wire. The resistance-wires are preferably covered by a filling of cement 11 or other suitable material placed within the depression in the face of the base. This filling preferably extends from the outer flange 3 of the base inwardly and over the outer ends of the contact-plates, and there it terminates, which leaves a portion of said plates exposed. The flange 3 is preferably undercut, as at 12, to retain the filling in position at the edges, and suitably-inclined anchor-holes 13 are provided in the base for further securing the filling in place by portions thereof which extend into said holes. This filling covers the resistance-wires and keeps them in position and also holds the downwardly-projecting lugs of the contact-plates in their respective holes in the base. The outer ends of the contact-plates are preferably cut away, as at 14, to expose a greater surface of the base between the contact-plates to which the cement may adhere.

A contact-arm 15 is pivoted upon a metallic block 16, arranged upon the base and retained in position by pins 17, formed thereon, which enter recesses in the base. This contact-arm has its edges near the outer end provided with notches or recesses 18, and a contact-shoe 19 rides upon the contact-plates and is moved by said arm. This shoe has upwardly-extending

lugs 20, which embrace the arm and which are guided vertically in the notches or recesses 18. Said shoe is normally pressed upon the contact-plates by a flat spring 21, which is riveted to the contact-arm and has its outer or free end bearing upon the upper surface of the shoe between the lugs. The contact-arm at its inner end is secured to a handle 22 of insulating material for turning the same.

10 This handle is secured to said arm by screws 23, and said handle is provided with a central hole 24, which is enlarged at its inner portion, as at 25. The contact-arm is provided with a suitable opening, through which passes a bolt

15 26, which has its head bearing upon a washer 27, arranged within the enlarged portion 25 of the hole 24 and resting at its edges upon the arm. A washer 28 is slipped upon the bolt and sets between said bolt and the contact-

20 arm and is interposed between the washer upon which the head of the bolt bears and the block 16, on which said arm is pivoted. This bolt passes through said block 16 and the base 1. The lower end of said bolt is provided

25 with a nut and washer 28 and 29, respectively, and said washer rests upon a plate 30, which is seated in a recess formed in the bottom of said base. At a suitable position upon the edge of said base are arranged binding-posts

30 31 for connecting the line-wires to the rheostat. Said binding-posts are supported by angular plates 32, which bear against the edges of the base and extend around beneath the bottom thereof. The portion of each plate

35 arranged beneath the base is provided with an aperture, into which is threaded a bolt 33, which passes through the base and has its head bearing upon the upper side thereof. One of said bolts is provided with a nut 34 for connecting therewith a conductor 35, and a lock-

40 nut 36 is provided for the nut 34. The conductor 35 is connected with the plate 30 by a binding-screw 37, threaded in said plate. Both of the bolts 33 are connected by conductors 38

45 with separate contact-plates, and said contact-plates are unconnected. The successive contact-plates following these unconnected contact-plates are each connected by a section of the resistance. Between the unconnected con-

50 tact-plates is a post 39 for limiting the movement of the contact-arm.

A suitable cover or casing is arranged over the face of the base and is provided with a central opening 40, which receives the contact

55 arm, handle, and shoe of the rheostat and exposes the portion of the contact or terminal plates with which the shoe of the contact-arm engages. The outer end of the contact-arm extends slightly beyond the edges of said open-

60 ing and is arranged upon the front of said casing. The said casing is held to the base by bolts 41 and has a flange 42, which embraces the edges of the base. The casing is suitably cut away, as at 43, to receive the post 39, and

65 the flange of said casing is cut away around

the binding-posts of the rheostat. This casing also has suitable posts 44, arranged at the edges thereof for supporting the rheostat, and said posts are provided with holes 45 for the passage of bolts to secure the rheostat in po-

70 sition.

When the rheostat is connected in circuit and the contact-arm is in the position shown in Fig. 1, the current passes from one binding-post over the conductor 35 to the plate

75 30, thence through the pivot-bolt 36 over the contact-arm, through the shoe to the contact or terminal plate with which said shoe engages, and thence through all the sections of the resistance-wires to the other binding-

80 post. As said contact-arm is moved over the successive contacts the sections of resistance between said contacts are cut out, and when said contact-arm has moved until it engages

85 post 39 on the opposite side the resistance is all cut out.

The structure which I have designed contains comparatively few parts, and when said parts are assembled in the manner which I have disclosed they are compactly arranged

90 and are securely held in position.

The cement filling which I have described for covering the sections of the resistance-wires and holding the outer ends of the terminal plates in position is preferably baked

95 after it has been placed in position to make it almost an integral part of the base.

It is manifest that other forms of my invention may be designed and the arrangement and combination of parts as herein described

100 for disclosing my invention may be changed, and therefore I reserve the right to make such modifications as fairly fall within the scope of my invention.

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

105

1. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-plates arranged in said depression and held in

110 position by lugs or projections formed on said plates and entering holes in said base.

2. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact

115 plates or terminals arranged within said depression, and a filling arranged within said depression and holding said contact-plates in position.

3. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-

120 plates arranged within said depression, and a filling holding said contact-plates in position, said base having the wall of said depression

125 undercut for retaining said filling in place.

4. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of contact-

130 plates arranged within said depression, and a

filling holding said contact-plates in position, said base being provided with anchor-holes into which said filling extends to retain the same in place, substantially as described.

5 5. In a device of the character described, the combination of a suitable base having a depression formed in the face thereof, of contact-plates arranged within said depression, and a filling holding said contact-plates in position,
10 said base having the wall of said depression undercut and the bottom of the depression provided with anchor-holes for retaining the filling in place.

6. In a device of the character described, the
15 combination with a suitable base provided with a suitable projection, of contact-plates having lugs which enter recesses in said projection for securing the inner ends in position, and a filling holding the outer ends of said contact-
20 plates in place.

7. In a device of the character described, the combination of a suitable base having a suitable projection, contact-plates having lugs which enter suitable recesses in said projection to retain their inner ends in position, and
25 lugs at their outer ends for immovably holding said plates in place.

8. In a device of the character described, the combination with a suitable base having a suitable projection, of contact-plates which have
30 suitable lugs which enter recesses in said projection to hold the inner ends of said plates in position, downwardly-extending lugs at their outer ends which enter recesses formed to receive the same in the base, and a filling retaining
35 said downwardly-extending lugs in their recesses.

9. In a device of the character described, the combination with a suitable base, of a plurality
40 of contact-plates controlling sections of resistance, lugs formed on the inner ends of said plates, which enter recesses in said base, downwardly-extending lugs formed on said plates, which also enter recesses in said base, and a
45 filling which covers the sections of said resistance and holds the downwardly-extending lugs in place.

10. In a device of the character described, the combination with a contact-arm having
50 notches or recesses at its outer end, of a plurality of contacts, a shoe which engages said contacts and is provided with lugs operating in said notches or recesses, and a flat spring fastened to said contact-arm having its free
55 end bearing upon said shoe for normally keeping said shoe in engagement with said contact-plates.

11. In a device of the character described, the combination with a suitable base, of a binding
60 post or screw arranged at the edge thereof, and comprising a plate extending beneath said base, and a bolt passing through said base and holding said plate in position.

12. In a device of the character described,

the combination with a suitable base, of a re- 65
sistance, a binding post or screw arranged at the edge of said base, and comprising a plate having a portion thereof extending beneath said base, a screw passing through said base and fastening said plate in position, and a con- 70
ductor connecting said screw with said resistance, said screw connecting said conductor with said binding-post.

13. In a device of the character described, the combination with a suitable base having 75
a depression formed in the face thereof, of terminal or contact plates arranged in said depression and each comprising a straight piece of material having its outer end turned back to form a loop. 80

14. In a device of the character described, the combination with a suitable base having a depression formed in the face thereof, of terminal or contact plates arranged in said depression and each comprising a straight piece 85
of material having its outer end turned back to form a loop, and having lugs formed thereon for holding the plate in position.

15. In a device of the character described, the combination with a suitable base having 90
a depression formed in the face thereof, of contact-plates arranged within said depression and each comprising a straight piece of material having its outer portion turned back to form a loop, resistance-coils arranged within 95
said depression and connected with said loops, and a filling arranged within said depression for holding said resistance-coils and contact-plates in position.

16. In a device of the character described, 100
the combination with a suitable base having a depression formed in the face thereof, of contact-plates arranged within said depression and a filling arranged within said depression, said contact-plates being cut away at 105
their outer ends to expose a greater portion of the face to the filling.

17. The combination with a suitable base, of radial contact-plates arranged thereon and having lugs at their inner and outer ends to 110
hold said plates in position.

18. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates and resistance-coils lying 115
upon the bottom of said recess and a filling covering said resistance-coils and the outer ends of said contact-plates.

19. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates and resistance-coils lying 120
upon the bottom of said recess, and a filling to hold said resistance-coils and said plates in position. 125

20. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of

radial contact-plates and resistance-coils lying upon the bottom of said recess, the outer ends of said plates being turned back to form loops which engage said resistance-coils.

5 21. The combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates and resistance-coils within said recess, said plates having lugs at their
10 inner ends which enter holes in said projection and lugs at their outer ends which enter holes in the bottom of said recess for holding said plates in position.

15 22. In a device of the character described, the combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates arranged in said recess and having lugs which enter recesses in said projection
20 for securing the inner ends of said plates in position and their outer ends turned back to form loops, resistances arranged in said annular recess and engaging said loops and a filler for holding said resistances and the outer ends
25 of said plates in position.

30 23. In a device of the character described, the combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates arranged in said recess and having lugs which enter suitable holes in said projec-

tion to retain their inner ends in position and lugs at their outer ends for immovably holding said plates in place, said plates having their outer ends turned back to form loops, resistance-coils arranged in said recess and engaging said loops and a suitable filling. 35

24. In a device of the character described, the combination with a suitable base provided with a central projection and a peripheral rim and having an annular recess, of radial contact-plates arranged in said recess and having lugs which enter suitable holes in said projection to retain their inner ends in position and lugs at their outer ends for immovably holding said plates in place, said plates having their outer ends turned back to form loops, resistance-coils arranged in said recess and engaging said loops, and a filling covering said resistance-coils and a portion of said plates, said
40 base having the inner side of the peripheral rim undercut and the bottom of the annular recess provided with anchor-holes for retaining the filler in place. 45

In witness whereof I have hereunto subscribed my name in the presence of two witnesses. 55

HENRY J. WIEGAND.

Witnesses:

J. W. WAMKEN,

H. GEORG HOYT.