No. 803,936. PATENTED NOV. 7, 1905.

J. C. STOKES.

ELECTRIC PUMP.

APPLICATION FILED FEB. 28, 1905.

2 SHEETS—SHEET 1.

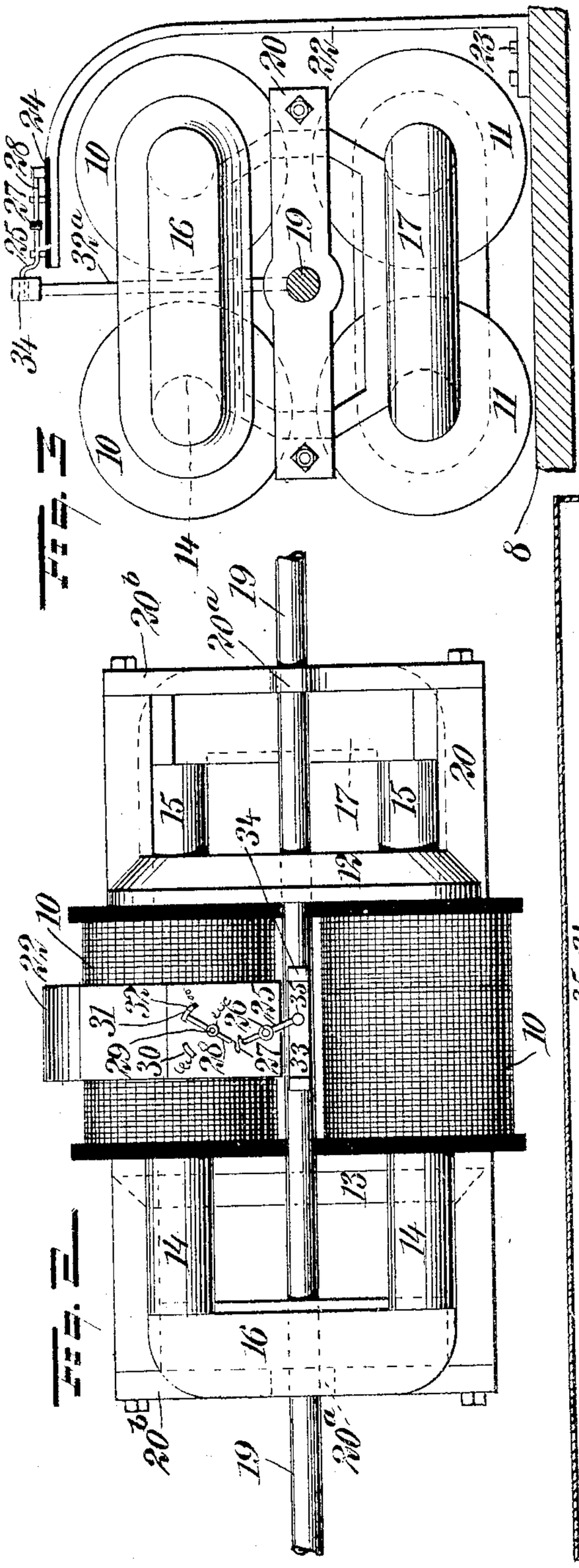

FIG. 2.

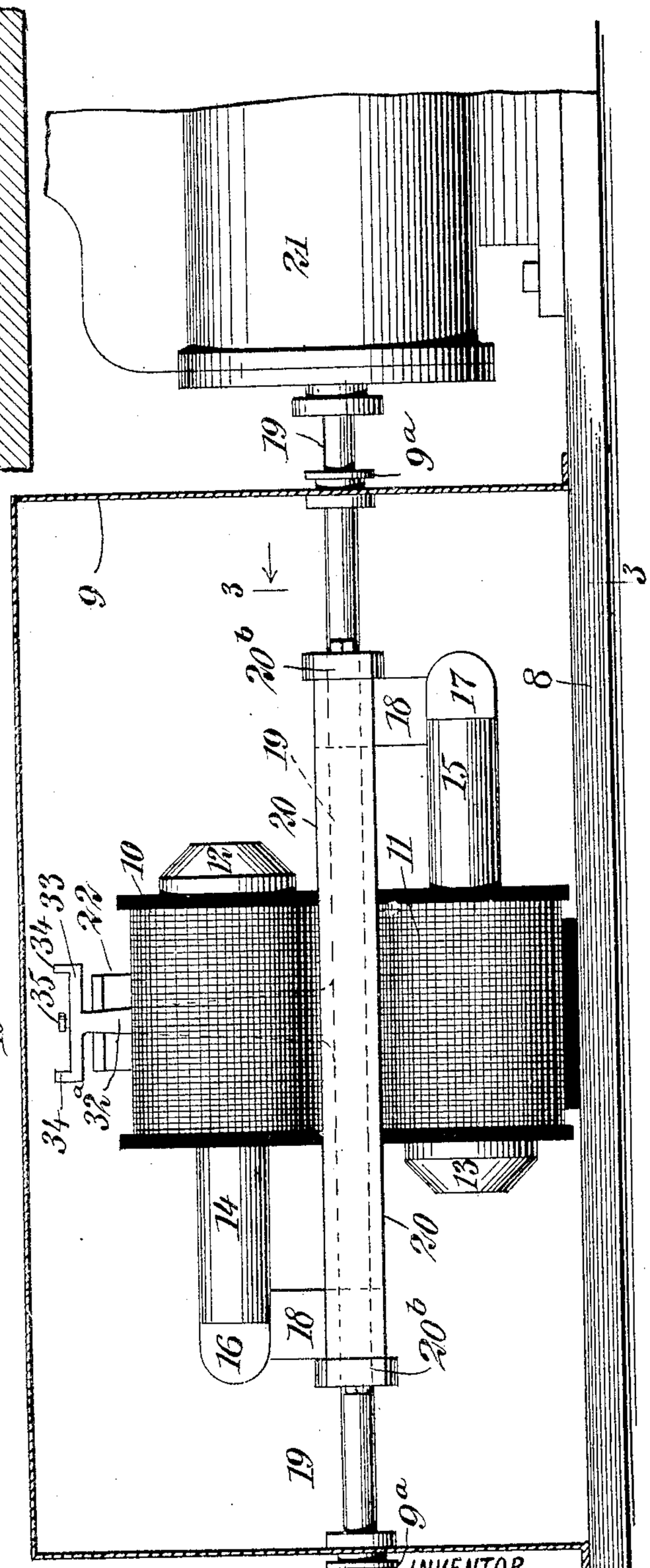

FIG. 1.

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2 SHEETS—SHEET 2.

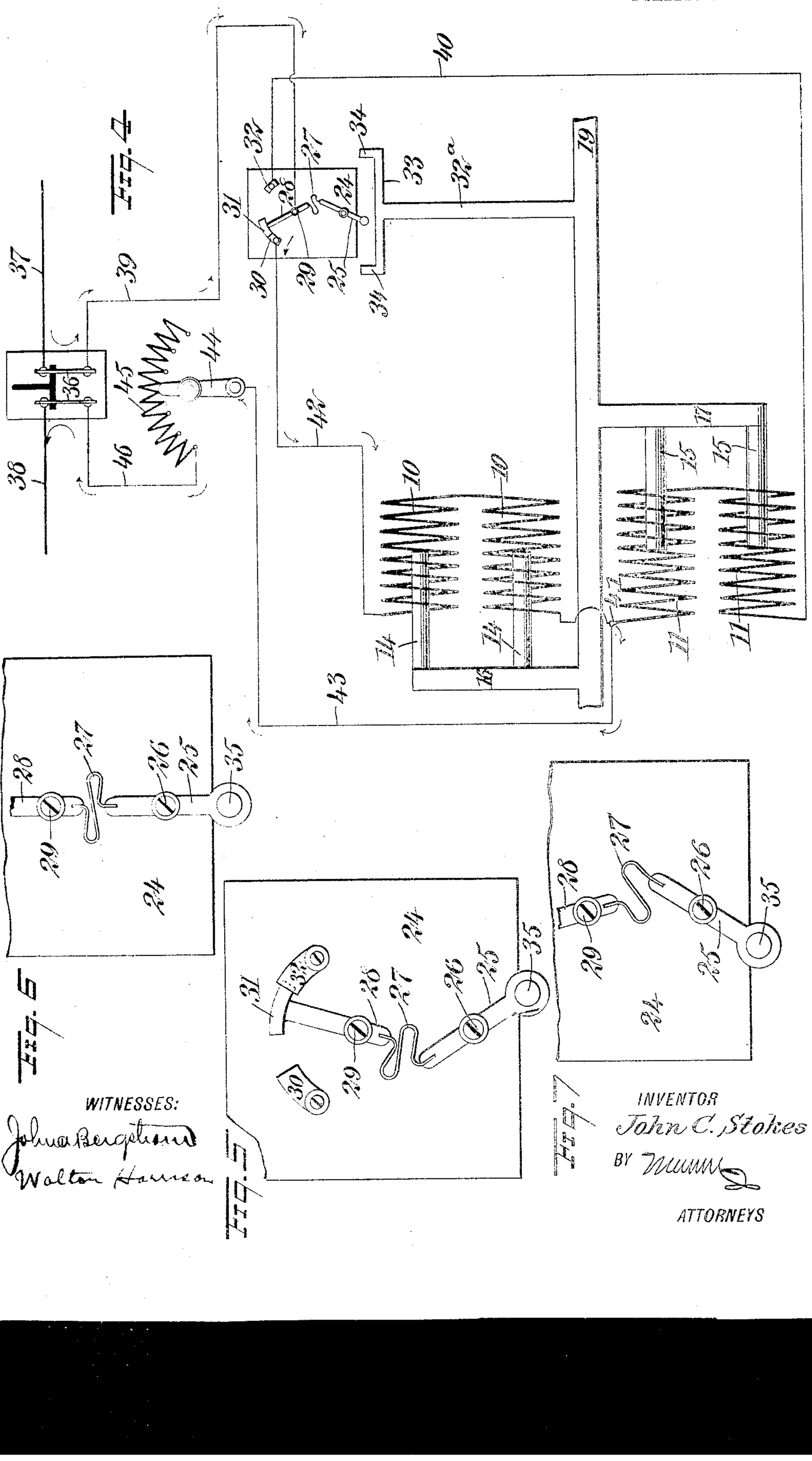

FIG. 4

FIG. 5

FIG. 6

FIG. 7

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UNITED STATES PATENT OFFICE.

JOHN CREIGHTON STOKES, OF MANSFIELD, LOUISIANA.

ELECTRIC PUMP.

No. 803,936. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed February 28, 1905. Serial No. 247,663.

To all whom it may concern:

Be it known that I, JOHN CREIGHTON STOKES, a citizen of the United States, and a resident of Mansfield, in the parish of De Soto and State of Louisiana, have invented a new and Improved Electric Pump, of which the following is a full, clear, and exact description.

My invention relates to pumps, and admits of general use, but is of peculiar application upon reciprocating pumps and pumps of other types in which it is desirable to have the current reversed by means of a quickly-operating switch.

My invention further relates to certain constructional details for the electric mechanism, as described below and pointed out in the accompanying claim.

Figure 1 is a side elevation of the solenoids and parts actuated thereby, the inclosing casing being shown in section. Fig. 2 is a plan view of the solenoids and their accompanying parts, the casing and base being removed. Fig. 3 is a vertical cross-section upon the line 3 3 of Fig. 1 looking in the direction of the arrow and showing an end elevation of the solenoids and their cores. Fig. 4 is a general diagram of the wiring. Fig. 5 is an enlarged plan view of the quick-moving switch. Fig. 6 is a somewhat similar view showing the switch with the parts in one position; and Fig. 7 is a view somewhat similar to Fig. 5, but showing the switch as occupying a different position.

Upon a base 8 is mounted a casing 9 for the purpose of sheltering the electric mechanism. Mounted within this casing are the upper solenoids 10, immediately over the lower solenoids 11, the upper solenoids being provided with a back plate 12 and the lower solenoids being provided with a back plate 13, these back plates being, in effect, stationary cores and serving to increase the magnetic flux of the respective solenoids. The solenoids 10 are provided with twin cores 14, movable relatively thereto, and the solenoids 11 are similarly provided with twin cores 15, also movable. Yokes 16 17 connect rigidly together the cores 14 and the cores 15. These yokes 16 17 are connected, by means of stems 18, rigidly with a frame 20, this frame being connected with a reciprocating stem 19 of the pump 21. The stem 19 is slidably supported within bearings 9^a, so that the frame 20, together with the cores 14 15, is as a whole movable back and forth in the general longitudinal direction of travel of the reciprocating rod 19. The frame 20 is provided with rails 20^b, bolted rigidly thereto and each provided with a swell 20^a, which is fastened rigidly upon the rod or stem 19 preferably by shrinking.

A standard 22 is mounted rigidly upon the base 8 by means of bolts 23 and is curved partially over the solenoids 10, as indicated in Fig. 3. Mounted upon the upper end of this standard 22 is a plate 24, of marble or other insulating material, and upon this plate is a tripping-lever 25, movable relatively to the plate by means of a pivot 26. This tripping-lever is connected by a substantially **S**-shaped spring 27 with a contact-lever 28, which is pivoted at 29. Contact-points 30 32 are disposed upon opposite sides of the contact-lever 28, and this contact-lever is provided with a contact-point 31, adapted to engage either of the contact-points 30 or 32, as will be understood from Figs. 5 and 7.

A standard 32^a is rigidly connected with the reciprocating rod 19 and extends vertically therefrom. This standard is provided with a head 33, which terminates in lugs 34, these lugs being disposed upon opposite sides of the head 35 of the tripping-lever 25.

A hand-switch 36 is connected with the mains 37 38. From the switch 36 a wire 39 leads to the contact-lever 28. From the contact-point 32 a wire 40 leads to the solenoids 11, which are in communication with the solenoids 10, as indicated in Fig. 4. From the solenoids 10 a wire 42 leads to the contact-point 30. From the juncture 41 a wire 43 leads to a rheostat-arm 44, which controls a resistance 45 in the usual manner. From the resistance 45 a wire 46 leads to the hand-switch 36.

The operation of my device is as follows: The pump 21 is actuated by the reciprocal movements of the rod 19, and the latter is actuated by successive movements given it in opposite directions by the solenoids 10 11. When the rod 19 moves in a direction to the right of any of the figures, the standard 32^a being carried by the rod 19 causes one of the lugs 34 to reverse the position of the tripping-lever 25, and this lever being connected by the **S**-shaped spring 27 with the contact-lever 28 causes the latter to quickly reverse its position. This is done so effectively that the contact-lever snaps instantly from the contact member 30 to the contact member 32.

With the parts in the position indicated in Fig. 4 the circuit is as follows: main 37, switch 36, wire 39, contact-lever 28, contact-points 31 30, wire 42, solenoids 10, junction 41, wire

43, rheostat-arm 44, resistance 45, wire 46, and switch 36 out by main 38. This energizes the solenoids 10, but has no effect upon the solenoids 11, for the reason that the circuit of the latter is open at the point 32. The stroke being completed to the right, according to the view shown in Fig. 4, the wind-up of the stroke quickly throws the tripping-lever and the contact-lever so that the member 31 engages the member 32, thereby breaking the circuit above described and establishing the following circuit: main 37, switch 36, wire 39, contact-lever 28, contact-point 32, wire 40, solenoid 11, wire 43, rheostat-arm 44, resistance 45, wire 46, switch 36, and main 38. This restores the cores 14 15 and the rod 19 to their positions at the extreme left. According to the view shown in this figure, the rod 19 is traveling toward the right and in a moment will engage the tripping-lever 34.

By means of the apparatus above described the pumping-station can be located at some distance from the operator's headquarters, so that he can attend to quite a number of pumps disposed at considerable distances from each other. In using a pump of this general type much drudgery appertaining to a steam-pump is avoided.

I do not limit myself to the particular structure shown nor to the special type of quick-acting switch illustrated in the drawings.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In an electric pump, the combination of a quick-acting switch, means controllable by an electric current for throwing said switch automatically so as to shift the path of said current, a rheostat for controlling said electric current, and electric mechanism controllable by said electric current for actuating said quick-acting switch.

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

JOHN CREIGHTON STOKES.

Witnesses:

J. A. DURHAM,

EDWARD THORP.