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W. J. BELL.
MULTIPLE SWITCH OPERATING MECHANISM.
APPLICATION FILED MAY 27, 1903.

NO MODEL.

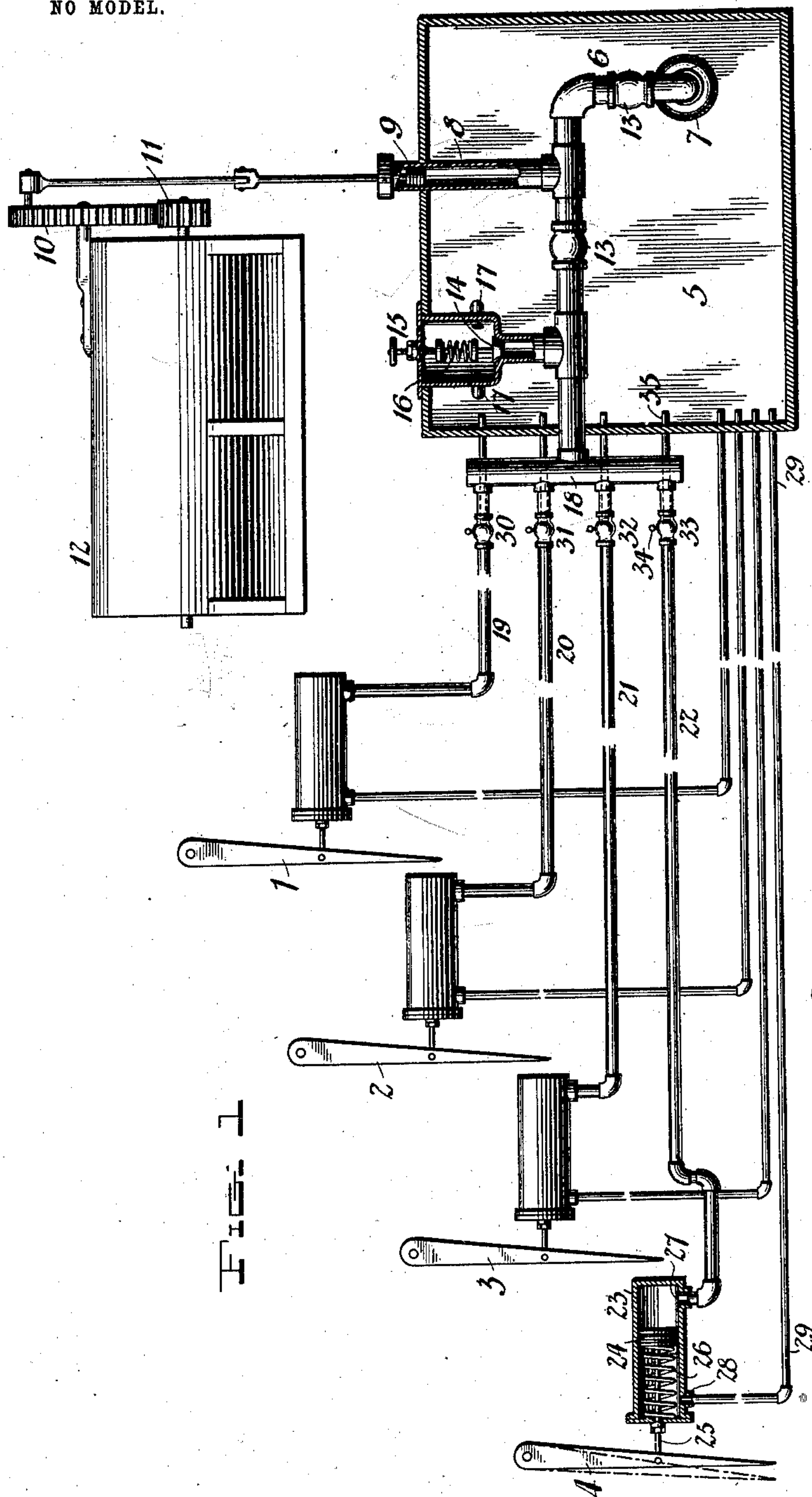


Fig. 1

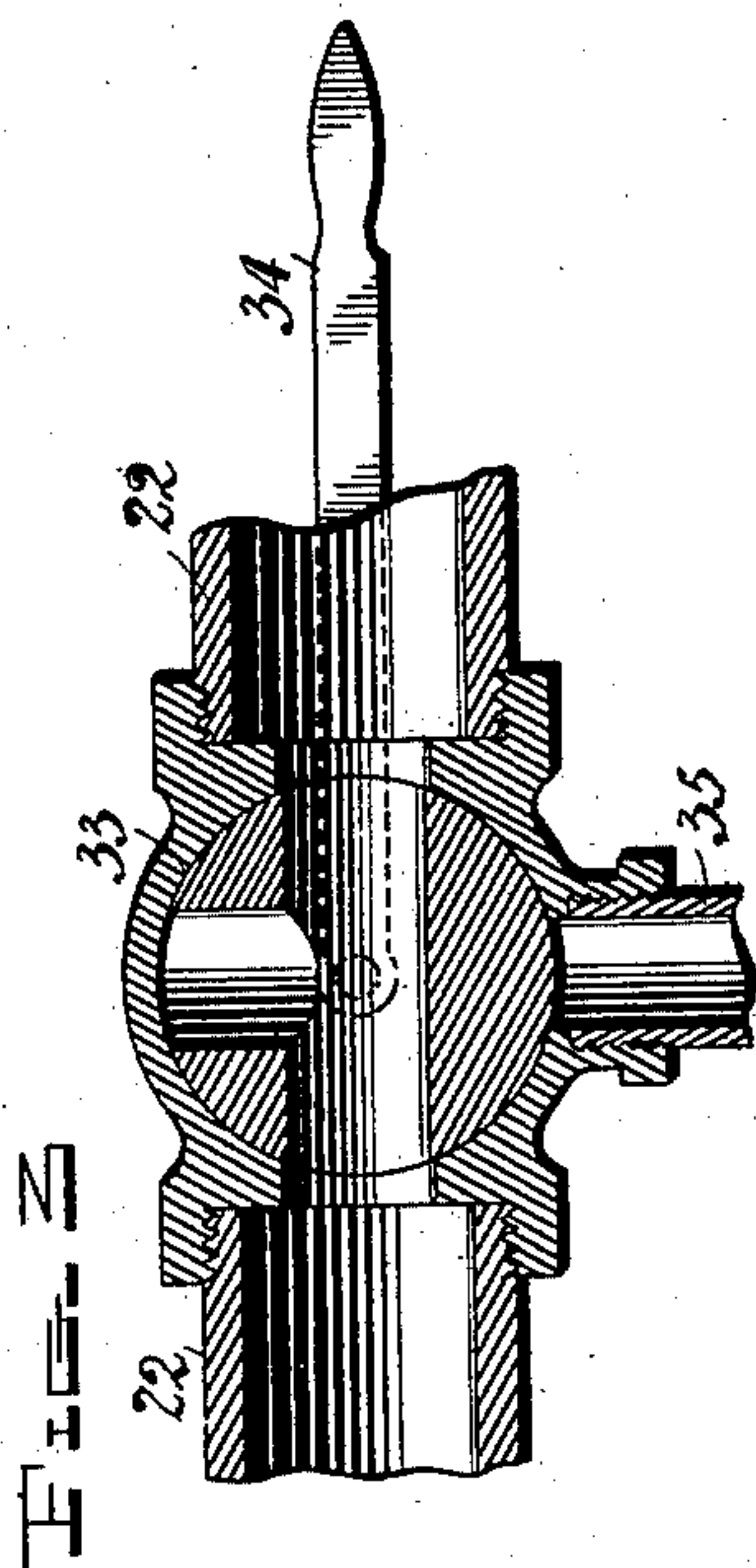


Fig. 2

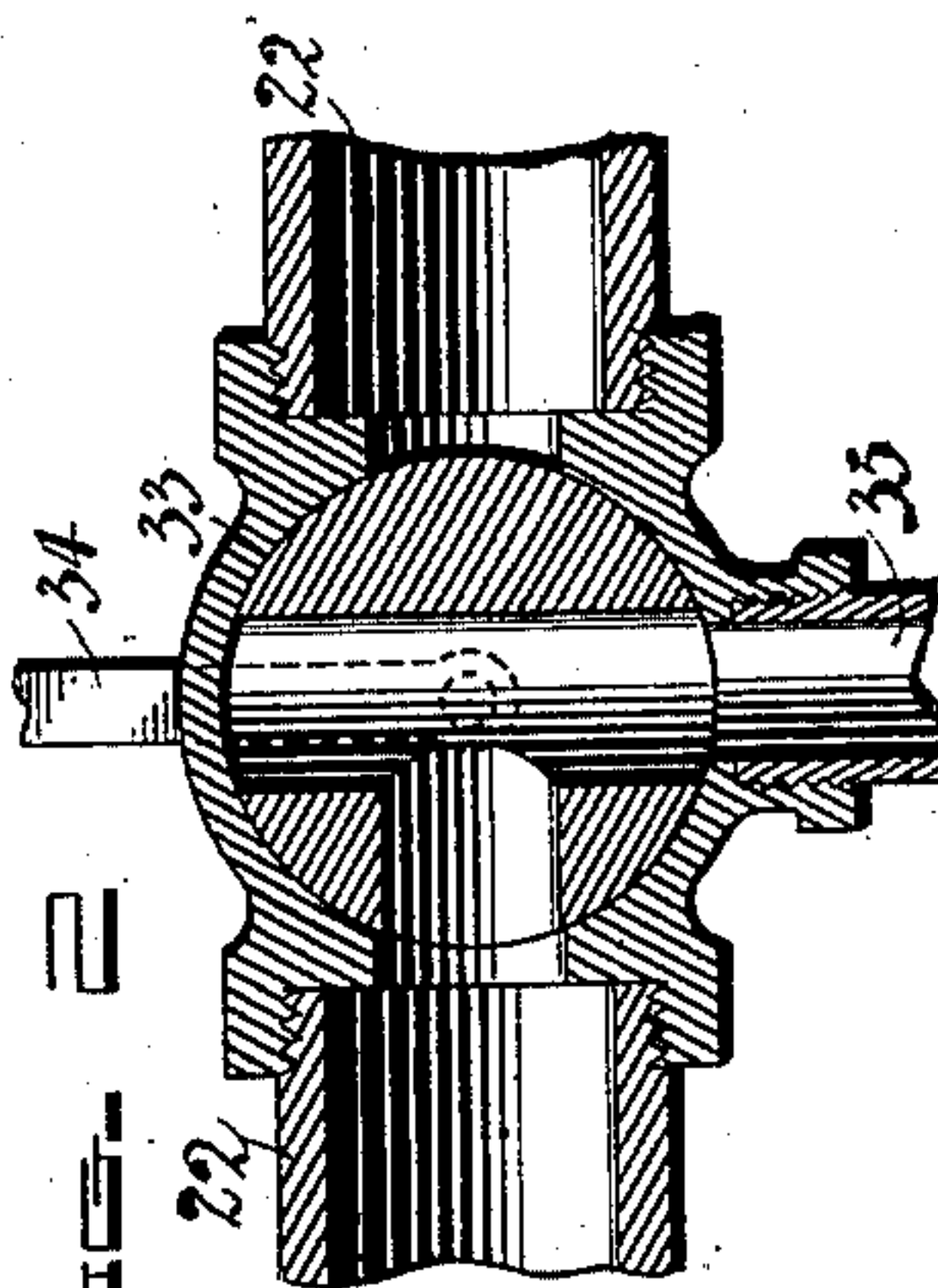


Fig. 3

Witnesses

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WALTER J. BELL, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO LEON F. MOSS, OF LOS ANGELES, CALIFORNIA.

MULTIPLE-SWITCH-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 752,642, dated February 23, 1904.

Application filed May 27, 1903. Serial No. 158,953. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. BELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Multiple-Switch-Operating Mechanism; 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 present invention relates to an improved fluid-operated railway-switch, which while possessing capabilities rendering it applicable for employment in connection with railways generally is more particularly designed for use in street-railway service.

Broadly considered, my invention consists in providing a motor-operated compressor for maintaining a constant fluid-pressure and hand-controlled means for utilizing the fluid-pressure to move a switch-tongue, which means are preferably manipulated by an operator stationed at the switch.

A purpose of my invention is the provision of means at railway-crossings employing a number of transferring-switches for effecting the throw of the switch-tongues through the agency of the watchman or flagman usually employed to direct the order of movement of the cars and by which means the switches are operated from a single point regardless of the number and location of the switch-tongues.

The details of construction will now be set forth, and in connection with such specific description attention is called to the following drawings, illustrating the invention in its preferred form, it being understood that various modifications may be made therein without exceeding the scope of the invention defined by the concluding claims.

In the drawings, Figure 1 is a plan view, partly in section, of a switching mechanism embodying my invention. Figs. 2 and 3 are enlarged views of one of the three-way valves and connections forming a part of the mechanism.

Referring to the drawings by numerals, 1,

2, 3, and 4 respectively denote switch-tongues, which may be of the usual pivoted type. Said tongues are preferably normally positioned to open, for example, the straight track and close a track leading from the latter, the normal positioning of each tongue being accomplished by the action of a retractive spring. The mechanism employed for throwing the switch against said spring action includes compressed fluid, which may be oil, the oil being contained in a reservoir or tank 5 at the railway-crossing.

6 is an oil-conducting pipe leading from the tank and provided at its inlet with a wire-gauze cap 7 to screen the oil. A pump 8 is connected with the pipe 6, the pump being preferably of the reciprocating-piston type, and its piston 9 has crank-rod connection with a crank gear-wheel 10, meshing with a reducing gear-wheel 11 on the shaft of an actuator, preferably an electric motor 12. In the pipe 6 at each side of the connection with the pump is a check-valve 13, which may be of usual type.

14 is a pop-valve, regulated through the medium of a screw 15 and a coiled spring 16. The pop-valve casing communicates with the pipe 6, and said casing is provided with outlets 17 17. The pipe 6 connects with a manifold 18, from which lead pipes corresponding in number to the number of switches. As I have shown for example four switches, a like number of supply-pipes 19, 20, 21, and 22 are employed to conduct the oil to the tongues 1, 2, 3, and 4, respectively; and as the connections between the manifold and tongues are similar a description of one of them will suffice.

23 is a casing containing a reciprocating piston 24, connected by a rod 25 with a switch-tongue, a coiled spring 26 being employed to retract the tongue and piston after movement. In the cylinder to the rear of the piston is an opening 27, to which one of the supply-pipes is connected. In the forward end of the piston is an opening 28, connected by a return-pipe 29 with the oil-tank, whereby to vent the forward cylinder end of air or any oil which may leak past the piston. In the sup-

ply-pipes are three-way valves respectively numbered 30, 31, 32, and 33. Attached to each valve is a lever 34 to rotate it, the normal position of the valve and lever being shown in Fig. 2, in which position communication between the pipe 6 and cylinder is cut off.

The motor is in constant operation to pump the oil from the tank into the pipe 6, and the valves 30, 31, 32, and 33 being closed the pop-valve is raised by the pressure of the oil to allow the oil to return by the outlets 17 to the tank. To throw a switch-tongue, the operator by moving the lever 34 of the proper valve rotates the valve to the position shown in Fig. 3, allowing the oil to pass by the supply-pipe to the cylinder 23, whereupon the piston 24 is moved against spring action, carrying with it the switch-tongue. After the car has traversed the switch the three-way valve is returned by hand to normal position, which cuts off the oil-supply and opens a return-passage for the oil through the supply-pipe and three-way valve and a pipe 35, leading from the supply-pipe at said valve to the tank. The piston 24 being relieved from oil-pressure is acted upon by the spring, and the piston and switch-tongue are returned to normal position. The pop-valve is seated coincidentally with the opening of one of the three-way valves, as will be understood.

It will be noted that while the fluid-pressure-generating means is common to the switch-tongue-throwing mechanisms regardless of the number of the latter the movement of each tongue is separately controlled, and, as above stated, the control of the several switches is effected from a single point regardless of the number of the switches.

I claim as my invention—

1. A switch-operating mechanism, comprised of a fluid compressor or pump, an actuator for constantly operating said compressor or pump, fluid-pressure-operated means for moving a switching element, and fluid-pres-

sure-relieving means operating alternately with the fluid-pressure-operating means.

2. A multiple-switch-operating mechanism, comprised of a fluid compressor or pump, an actuator for constantly operating said compressor or pump, a hand-controlled fluid-pressure-operated means for moving each switching element, and fluid-pressure-relieving means operating automatically alternately with the fluid-pressure-operating means.

3. A multiple-switch-operating mechanism, comprised of a fluid compressor or pump, an actuator for constantly operating said compressor or pump, fluid-pressure-operated means including hand-controlled three-way valves for moving the switching elements, and fluid-pressure-relieving means operating alternately with the fluid-pressure-operating means.

4. A multiple-switch-operating mechanism, comprised of a fluid compressor or pump, an actuator for constantly operating said compressor or pump, fluid-pressure-operated means including pistons and hand-controlled three-way valves for moving the switching elements, and a fluid-pressure-relieving pop-valve operating alternately with the fluid-pressure-operating means.

5. A multiple-switch-operating mechanism, comprised of a liquid pump, a motor for operating said pump, a liquid-reservoir, liquid-operated means including a piston and hand-operated three-way valves for moving the switching elements, liquid-pressure-relieving pop-valve operating alternately with the switch-element-moving means, and liquid-return pipes at the three-way valves and pop-valve.

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

WALTER J. BELL.

Witnesses:

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