

T. F. MULLIGAN.  
AUTOMATIC ELECTRIC PUMP CONTROL.  
APPLICATION FILED APR. 27, 1910.

978,923.

Patented Dec. 20, 1910.

2 SHEETS—SHEET 1.

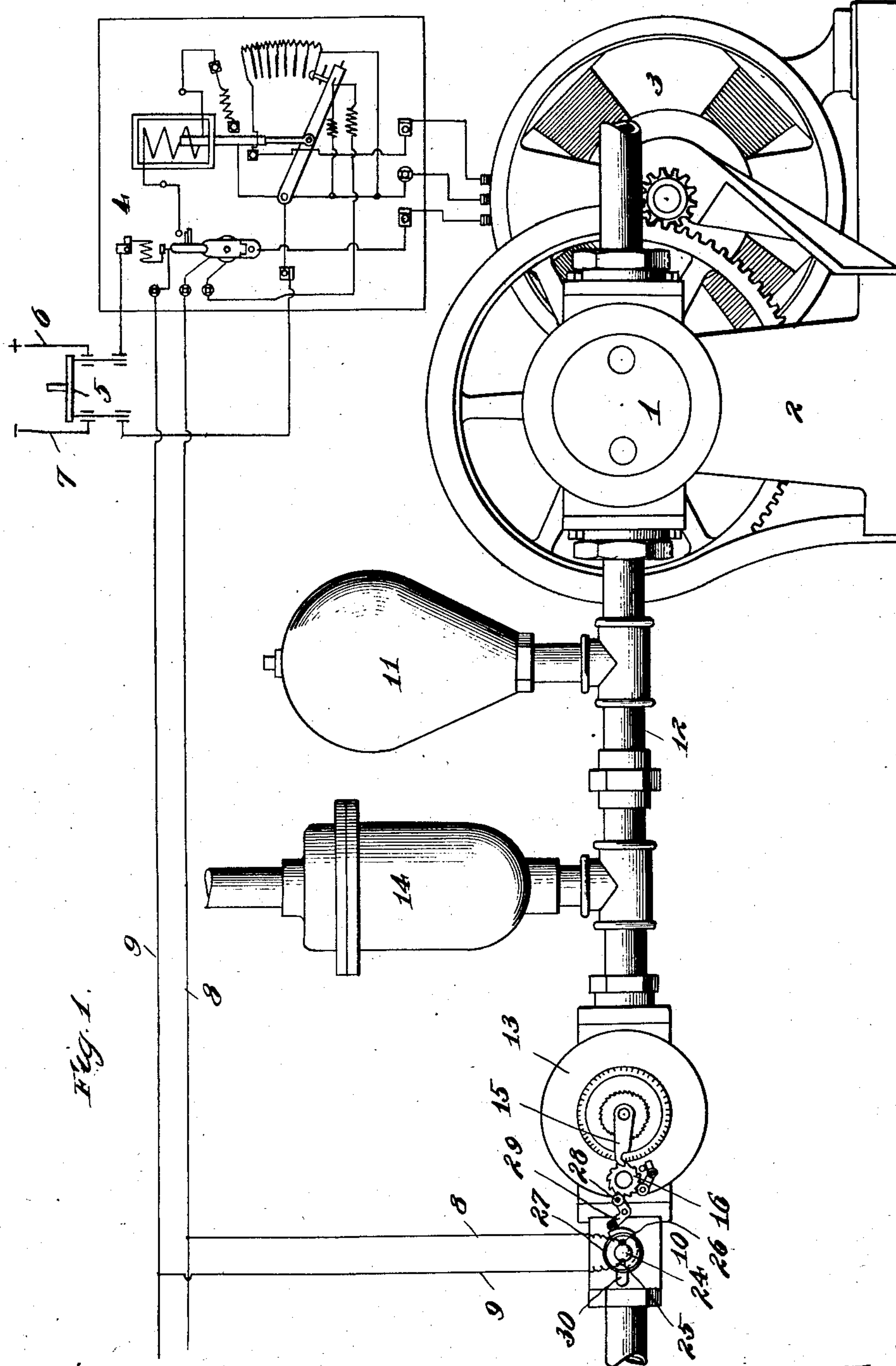


Fig. 1.

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Inventor:

*Thomas F. Mulligan,*  
*Brown Hopkins*

By

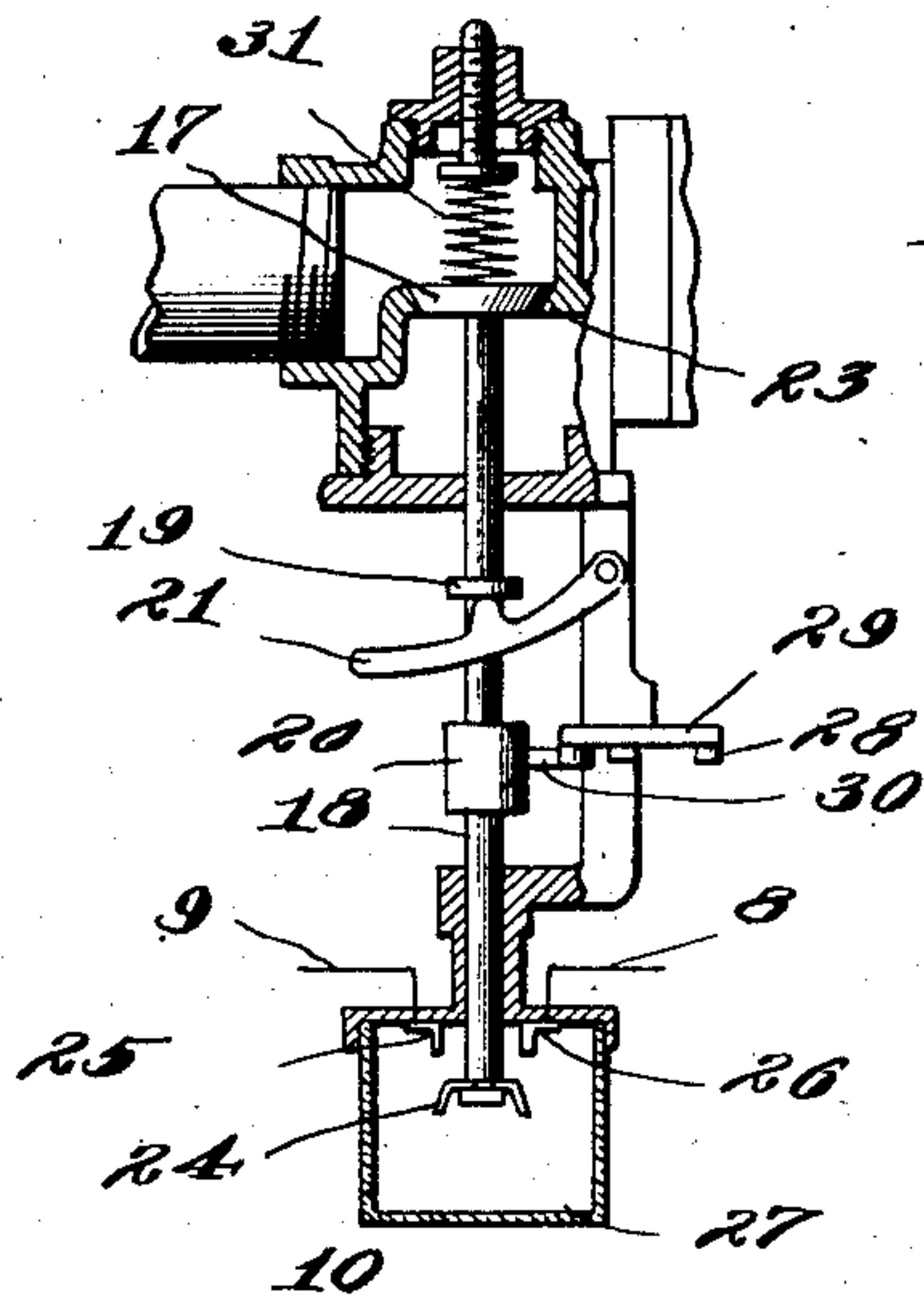
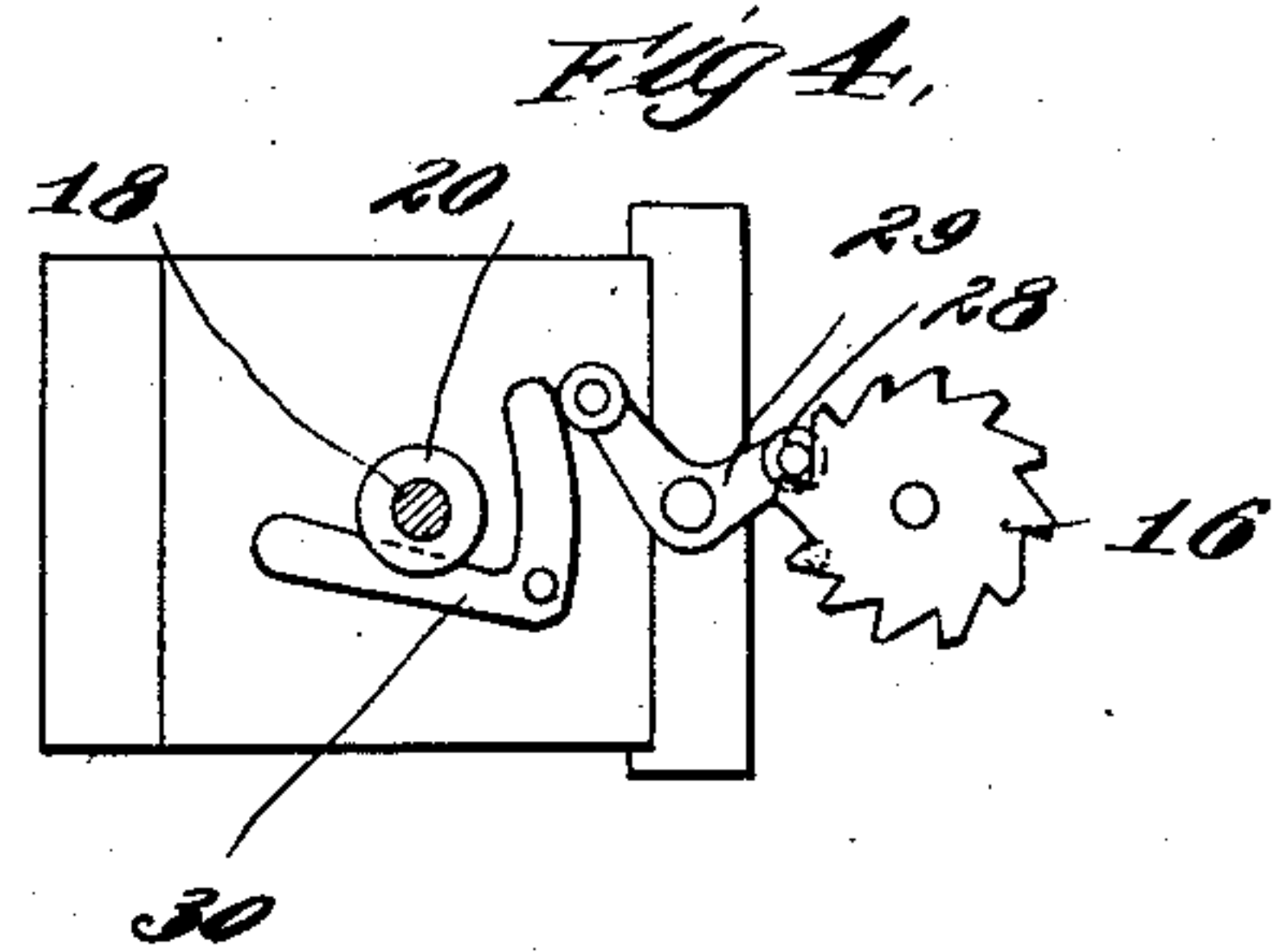
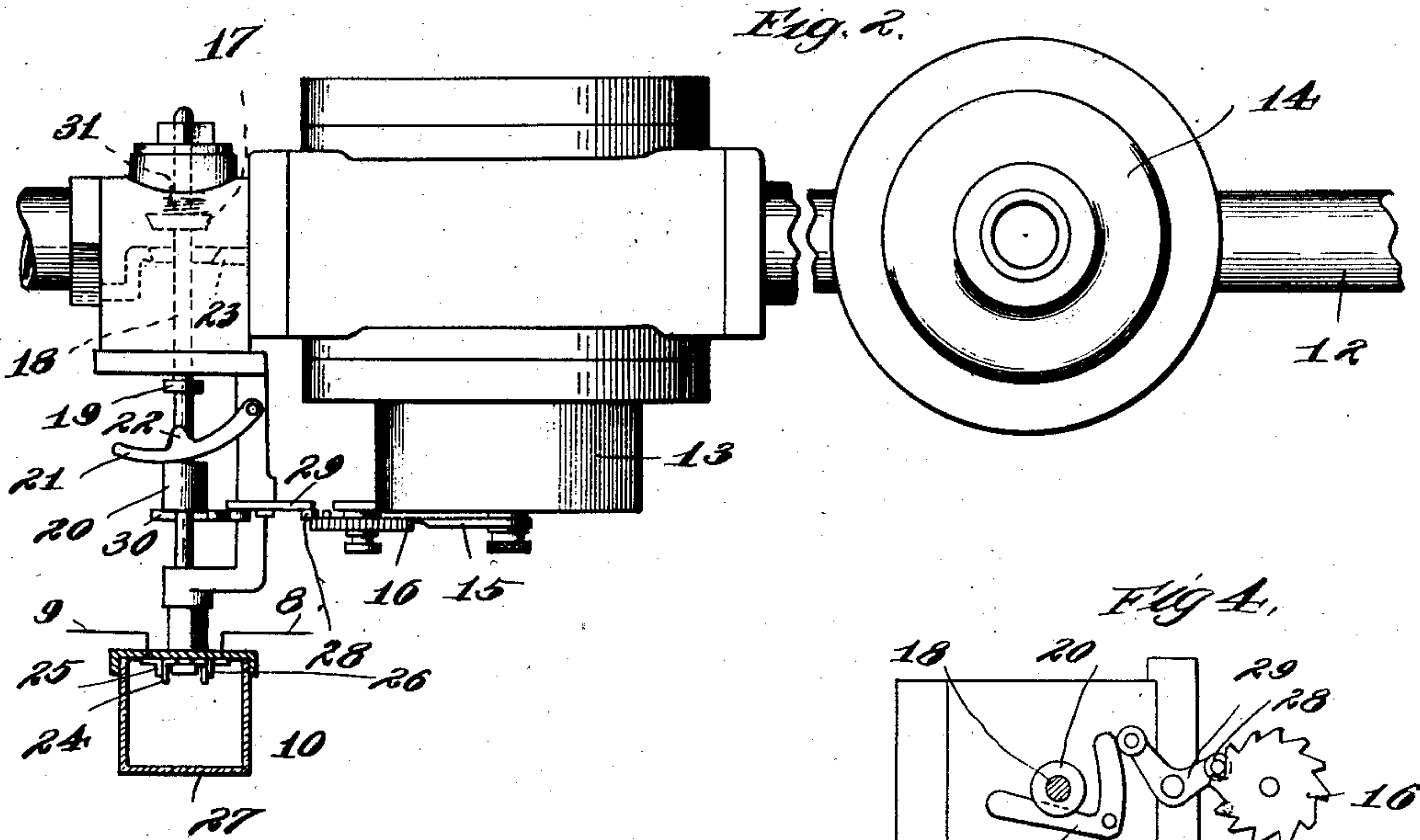
*Atty.*

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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

THOMAS F. MULLIGAN, OF FORT WAYNE, INDIANA, ASSIGNOR TO S. F. BOWSER & COMPANY, INCORPORATED, OF FORT WAYNE, INDIANA, A CORPORATION OF INDIANA.

## AUTOMATIC ELECTRIC-PUMP CONTROL.

978,923.

Specification of Letters Patent.

Patented Dec. 20, 1910.

Application filed April 27, 1910. Serial No. 558,056.

*To all whom it may concern:*

Be it known that I, THOMAS F. MULLIGAN, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Automatic Electric-Pump Control, of which the following is a specification.

This invention relates to means for controlling a pump-operating motor and has for its primary object to provide an improved combination and arrangement of parts in a device of this nature.

More specifically, the primary object of the present invention is to provide improved means for controlling the motor which drives the pump, by a valve which cuts off the flow of fluid in the discharge of said pump after a predetermined quantity has passed said valve.

Another object is to provide improved electrically operated control in a device of this nature.

Other and further objects will appear in the specification and be more specifically pointed out in the claims, reference being had to the accompanying drawings, showing an exemplification of the invention.

In the drawings—Figure 1 is a diagrammatic elevation of a pumping plant having an automatic registering measure and provided with my improvements. Fig. 2 is a top plan view of a portion of the plant shown in Fig. 1, showing the valve for controlling the discharge from the pump in open position, and the motor circuit closed. Fig. 3 is a detail elevation partly in section, of the valve mechanism with the motor circuit open. Fig. 4 is a detail plan view of the valve tripping and releasing device.

Referring more particularly to the drawings, and to the embodiment shown therein, a pump 1 mounted upon a pedestal 2 is connected up in any suitable manner to be driven by a motor 3, the detail construction of said pump and motor being not specifically concerned in the present invention. Preferably, however, the pump 1 is a rotary pump. The motor 3 is operated by an electric circuit which is controlled through a controller board 4 in any suitable manner, said controller board being a standard type of well known construction. A switch 5 serves to conduct the line current to and from said controller board through the feed

wires 6 and 7. Leading from the controller board 4 is a controlling circuit comprising line wires 8 and 9 leading to a circuit-closing device 10 to be presently referred to.

The pump 1 is provided with an air cushion chamber 11 which acts in the usual manner. Said cushion chamber is arranged above and connected with a fluid discharge pipe 12 leading to a combined valve and meter 13 of a structure similar to that shown in application of Allen A. Bowser, filed June 19, 1908, Serial No. 439,397. Interposed between the cushion chamber 11 and the valve and meter 13 is an automatic air escape or trap 14 similar to that shown in another application of the present applicant, filed December 20, 1909, Serial No. 534,010. In this device the air which is carried as globules in heavy or viscous oils, is permitted to escape through the automatic air trap, but the construction of the air trap device acts automatically to prevent the passage of fluid. In this way means are provided as described in said application to prevent an incorrect registration of the amount of fluid delivered to a consumer, since the air will not be forced through the meter to cause a false registration of the amount of fluid delivered.

Referring to all the figures of the drawings, an arm 15 coöperatively related to an indicating mechanism 16 is operated by the fluid passing through the meter 13 in the manner described in the said application of Allen A. Bowser, Serial No. 439,397. The valve mechanism shown in Fig. 2 of the drawings is of similar construction to that shown in said specification, and comprises a valve 17 mounted on a valve stem 18 which passes through the valve housing and is provided with a collar 19 and a cylindrical boss 20 between which is oscillatably mounted a lever 21 provided with a protuberance 22 by means of which said lever is adapted to force the valve 17 from a valve seat 23. As shown best in Fig. 3, the outer end of the valve stem 18 is provided with a conductor or movable contact 24 which is moved into and out of circuit closing relation with respect to a pair of contacts 25 and 26, said valve stem for this purpose being extended through the wall of a housing 27 for said contacts. The contacts 25 and 26 are connected respectively with the line wires 8 and 9, and serve when the conductor 24 reaches



the gap therebetween to close the circuit through the motor to operate the pump. As shown and described in the before mentioned application Serial No. 439,397, the indicator device 16 comprises a ratchet wheel, and has a projecting pin 28, said pin being adapted to engage one end of a bell crank lever 29. The bell crank lever engages at its other end with the bent lever 30, which is pressed resiliently against the cylindrical wall of the boss 20 by a spring not shown in the drawings. When the lever 21 is forced against the collar 19 to remove the valve 17 from its seat 23, as shown in Fig. 2, the bent lever 30 is permitted to snap under the boss 20, and to hold the valve 17 from its seat until such time as the pin 28 on said ratchet wheel oscillates the bell crank 29 to remove the bent lever 30 out of engagement with the boss 20 in the manner pointed out in the before mentioned application. This movement takes place after a predetermined quantity of fluid has passed through the meter to the valve 17, so that said valve 17, being permitted to return to its seat under the action of the spring or other resilient member 31, closes the valve and simultaneously therewith breaks the circuit through the contacts 25 and 26, thereby rendering the motor inoperative and stopping the pump.

What I claim is:

1. In a device for the purpose described, the combination with a pump provided with electric operating means and an automatic measuring valve, of electric circuit make and break means electrically connected with said operating means, said make and break being operated by said measuring valve.

2. In a device for the purpose described, the combination with a pump, of a motor for said pump, an automatic valve for measuring the discharge from said pump, and means operated by said valve for controlling said motor.

3. In a device for the purpose described, the combination with a pump, of an electric motor for driving said pump, circuit-controlling means for said motor, an automatic valve for measuring the discharge from said pump, and means operatively connected to said valve for operating said circuit-controlling means.

4. In a device for the purpose described, the combination of a pump, an electric mo-

tor for driving said pump, a pair of contacts through which said motor is controlled, a device for measuring the fluid discharged by said pump, said device being provided with an automatic valve for shutting off the flow after a predetermined quantity has been discharged, and a member operated by said valve for making and breaking the circuit through said contacts.

5. In a device for the purpose described, the combination of a pump provided with a discharge pipe, an electric motor for driving said pump, a pair of contacts through which said motor is controlled, a valve in said discharge pipe, means operated by the flow in said pipe for closing said valve after a predetermined quantity has passed said valve, and a conductor carried by said valve into and out of contact with said pair of contacts.

6. In a device for the purpose described, the combination with a pump and a motor for driving said pump, of an electric circuit for said motor, an automatic indicator for shutting off the flow of oil after a predetermined quantity has been supplied, and a make and break operated by said indicator.

7. In a device for the purpose described, the combination of a pump provided with a discharge, an electric motor for driving said pump, an open electric circuit for said motor, a valve for closing the discharge of said pump, and a conductor mounted on said valve and adapted by the movement of said valve to close the open circuit for starting the motor when the valve is open.

8. In a device for the purpose described, the combination with a pump provided with fluid-actuated operating means and an automatic measuring valve, of a device for making and breaking the supply connection of said operating fluid, said device being connected with said operating means, and said make and break devices being operated by said measuring valve.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 23d day of April A. D. 1910.

THOMAS F. MULLIGAN.

Witnesses:

RALPH G. SHUZE,  
FREDERICK G. WEIR.