

No. 670,272.

Patented Mar. 19, 1901.

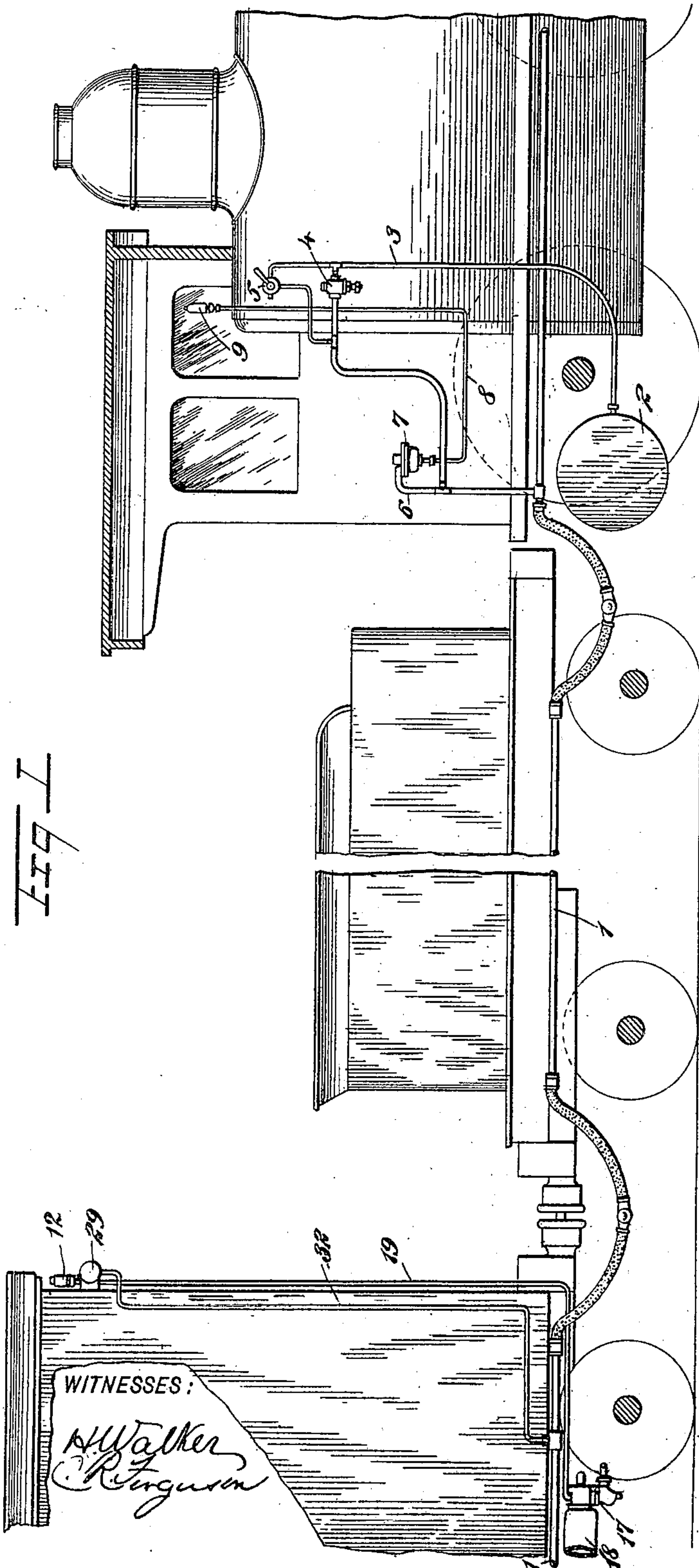
E. J. EMMONS.

ACTUATING MECHANISM FOR RETAINING VALVES IN AIR BRAKE SYSTEMS.

(Application filed Aug. 1, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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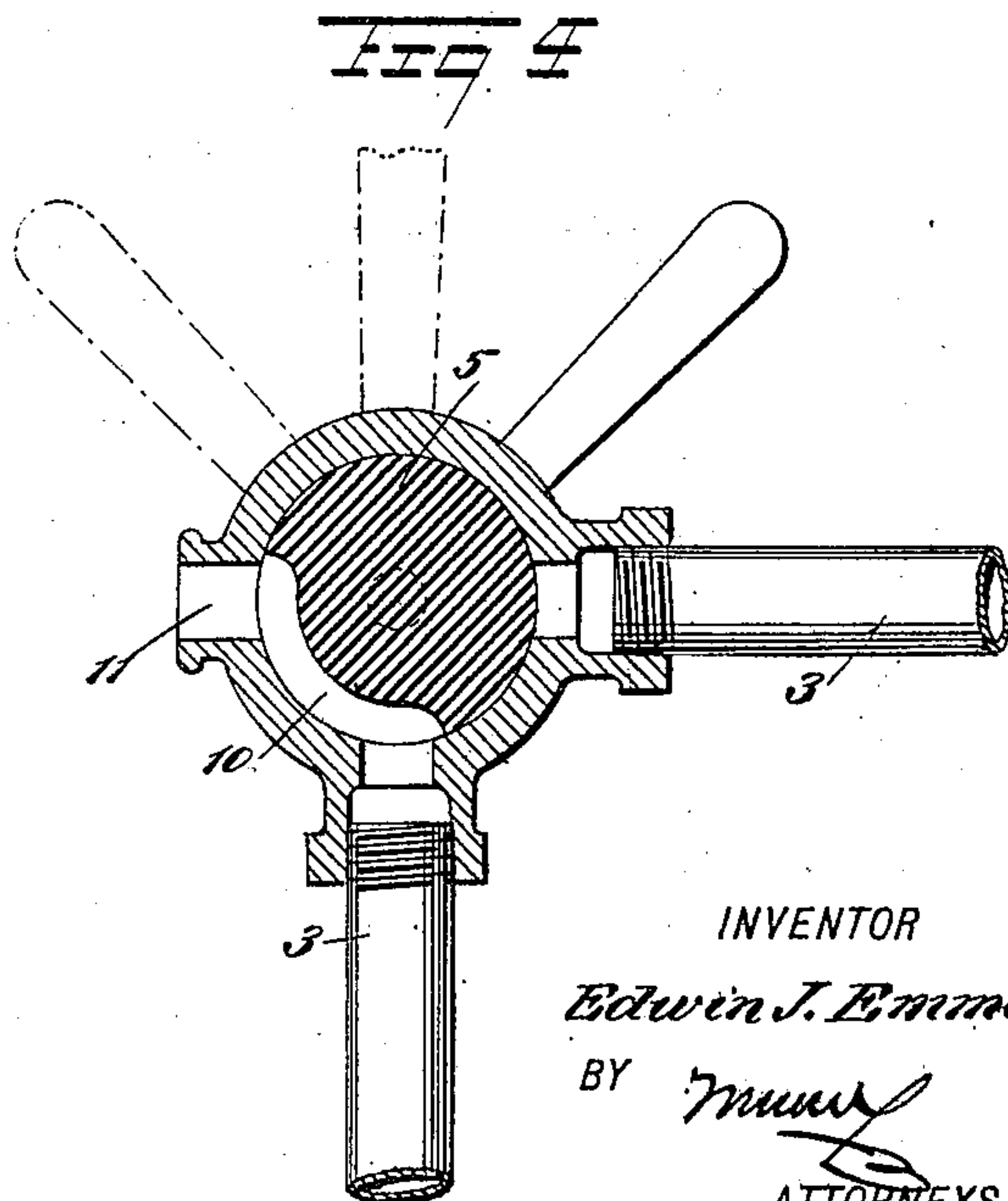
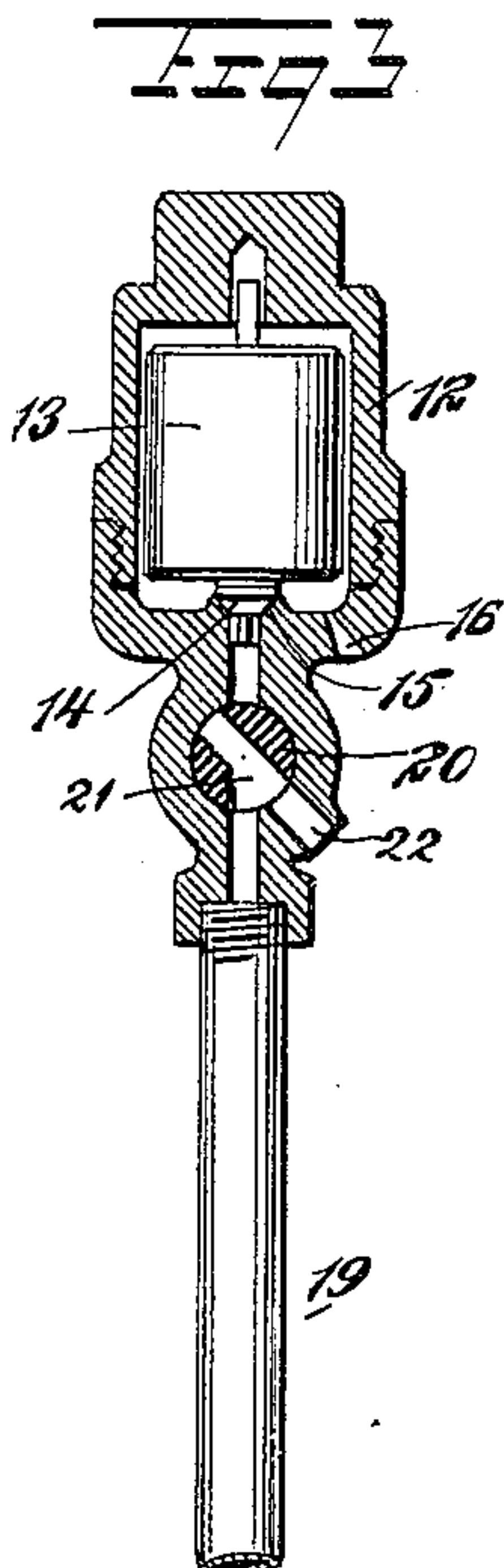
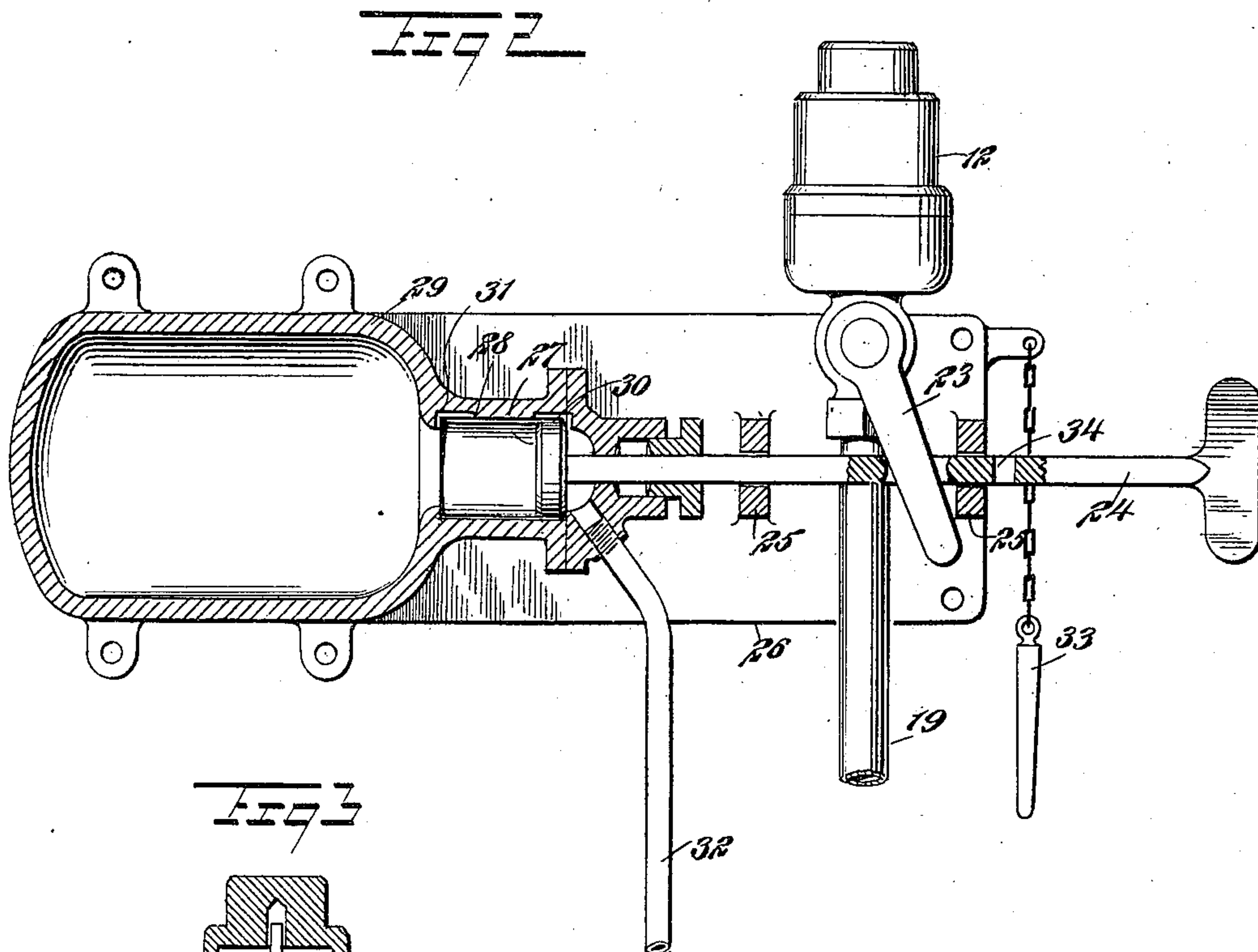
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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ACTUATING MECHANISM FOR RETAINING-VALVES IN AIR-BRAKE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 670,272, dated March 19, 1901.

Application filed August 1, 1900. Serial No. 25,528. (No model.)

To all whom it may concern:

Be it known that I, EDWIN JOHN EMMONS, a citizen of the Dominion of Canada, and a resident of Brandon, in the Province of Manitoba and Dominion of Canada, have invented a new and Improved Actuating Mechanism for Retaining-Valves in Air-Brake Systems, of which the following is a full, clear, and exact description.

This invention relates to improvements in devices for automatically operating retaining-valves in railway air-brake systems. As ordinarily arranged in air-brake systems there is a retaining-valve on each car, and when running down any grades the brakemen must turn the handle of each valve to close the exhaust from the brake-cylinder to keep the brakes on while the engineer is recharging the auxiliary cylinders, and when reaching the bottom of the grade the valves must be simultaneously turned off. This requires considerable time, with some degree of danger.

The object of my invention, therefore, is to provide a means by which all the valves are under the control of and may be simultaneously operated by the engineer and in such means utilize the ordinary air signal-pipe of the train.

I will describe an actuating mechanism for retaining-valves in air-brake systems embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a portion of a car and locomotive, showing my invention as applied thereto. Fig. 2 is a sectional view of a motor for actuating the valve. Fig. 3 is a sectional view of a retaining-valve, and Fig. 4 is a section showing a controlling-valve employed.

Referring to the drawings, 1 designates the ordinary air signal-pipe, extended along the cars and into the cab of the locomotive. This signal-pipe is connected to the main reservoir 2 by means of a pipe 3, in which a reducing-valve 4 is located, and also in this pipe 3 is a controlling-valve 5. A pipe 6 continues from the pipe 1 and connects with an air signal-

valve 7, of the ordinary construction, from which a pipe 8 leads to the signal 9. The valve 5 is of the ordinary plug form and has a circumferentially-disposed slot 10, adapted to place the two sections of the pipe 3 in communication and also for placing the section of the pipe 3 connecting directly with the pipe 1 in communication with a port 11, leading from the valve-casing and discharging into the atmosphere.

A retaining-valve is attached to each car. As here shown the retaining-valve consists of a casing 12, in which a weight or cylinder 13 is movable, the said weight or cylinder having a valve 14 on its lower end for engaging in a valve-seat 15 in the lower portion of the casing, and at one side of this valve-seat an exhaust-port 16 is formed in the casing, this exhaust-port being very small, so that the air will exhaust slowly in the usual manner. The valve-casing is placed in communication with the triple valve 17, connected to the auxiliary reservoir 18, by means of a pipe 19, and the passage of air from the pipe 19 into the valve-casing is controlled by a plug-valve 20, the said plug-valve having a port extended through it to place the pipe 19 and casing in communication, as indicated in Fig. 3, and this port at one side, as shown at 21, is enlarged, so as to place the pipe 19 in communication with an exhaust-port 22, leading to the atmosphere.

On the stem of the valve 20 is a lever 23, which extends through a slot or opening in the piston-stem 24, movable in guides 25 on a plate 26, attached to the car. A piston 27 on the stem 24 is movable in a working cylinder 28, attached to and communicating with an air-pressure cylinder 29, also attached to the plate 26. At the ends of the working cylinder escape-ports 30 and 31 are formed in its wall, these escape-ports being somewhat longer than the width of the piston 27, so that when said piston is moved to either one of its positions provision is made for the passage of air beyond the same.

From the signal-pipe 1 a pipe or tube 32 extends upward and communicates with the interior of the working cylinder at the side of the piston 27 nearest the retaining-valve. It will be seen that the lever 23 has a slight

lost motion in the opening through the piston-stem, so that a certain pressure and movement may be imparted on the piston 27 before it operates to open or close the valve 20, and for the purpose of holding the piston-stem outward, and thus hold the valve 20 in its normal position, as indicated in Fig. 2, I employ a suitable locking device, here shown as a pin 33, adapted to pass through a hole 34 in said stem 24 and engage against the outer side of a guide or bearing 25. This locking device, however, is only to be used for locking the retaining-valve when not wanted for a considerable length of time.

In operation when it is desired to keep the brakes set the engineer will turn the valve 5, putting the two sections of the pipe 3 in communication. Then the air passing through the signal-pipe will pass out through the pipe 32 against the piston 27, thus forcing the piston along the working cylinder and by turning the valve 20 place the pipe 19 in communication with the retaining-valve 12, consequently cutting off the exhaust-port. Then upon reaching the end of the grade by throwing the valve 5 into the position indicated in Fig. 4 the piston 27 will be moved outward, moving the valve 20 to its normal position, the piston 27 being moved outward by the air-pressure in the cylinder 29.

It is obvious that a motor embodying my invention may be readily applied to any of the retaining valves ordinarily connected to cars, and as the air signal-pipes are to be employed it is obvious that the expense of attaching my device will be comparatively small, especially taking into consideration the great amount of time and labor required in operating the retaining-valves at present used.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. In an actuating mechanism for a retaining-valve in an air-brake system, an air-motor having connection with the stem of the valve, an air signal-pipe having communication with the motor, a main reservoir with which the signal-pipe connects, a reducing-valve for the pipe, a controlling-valve for the pipe, and a signal-valve having connection with the pipe.

2. An actuating mechanism for retaining-valves in air-brake systems, comprising a working cylinder, an air-cylinder with which the working cylinder communicates, escape-ports in the wall of said working cylinder, a piston operating in the working cylinder, a stem extended from the piston, a lever attached to the retaining-valve plug and having a lost-motion connection with the said stem, a signal air-tube, and a pipe connection between the signal air-tube and said working cylinder, substantially as specified.

3. An actuating mechanism for retaining-valves in air-brake systems, comprising working cylinders, air-cylinders with which the working cylinders communicate, pistons movable in the working cylinders, levers extended from the plugs of the retaining-valves and having connection with the piston-stems, means for locking the pistons in one position, and means for supplying air from the air signal-pipe of a train to said working cylinders, substantially as specified.

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

EDWIN JOHN EMMONS.

Witnesses:

JAMES S. HANNAY,
EDWARD CHALMERS.