950,477.

L. COURTOIS.

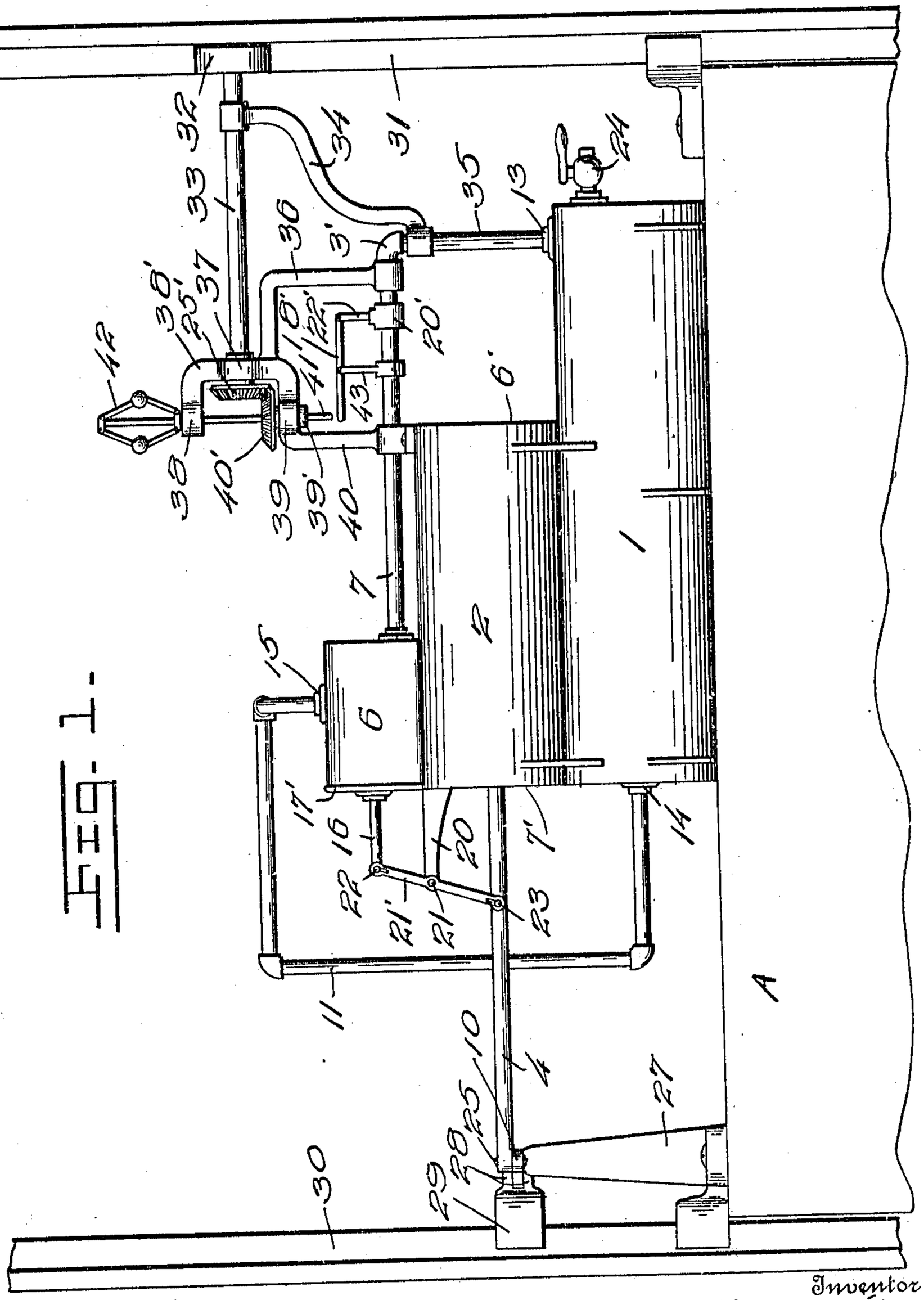
BRAKE OPERATING MECHANISM.

APPLICATION FILED OCT. 18, 1909.

Patented Mar. 1, 1910.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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3 SHEETS—SHEET 2.

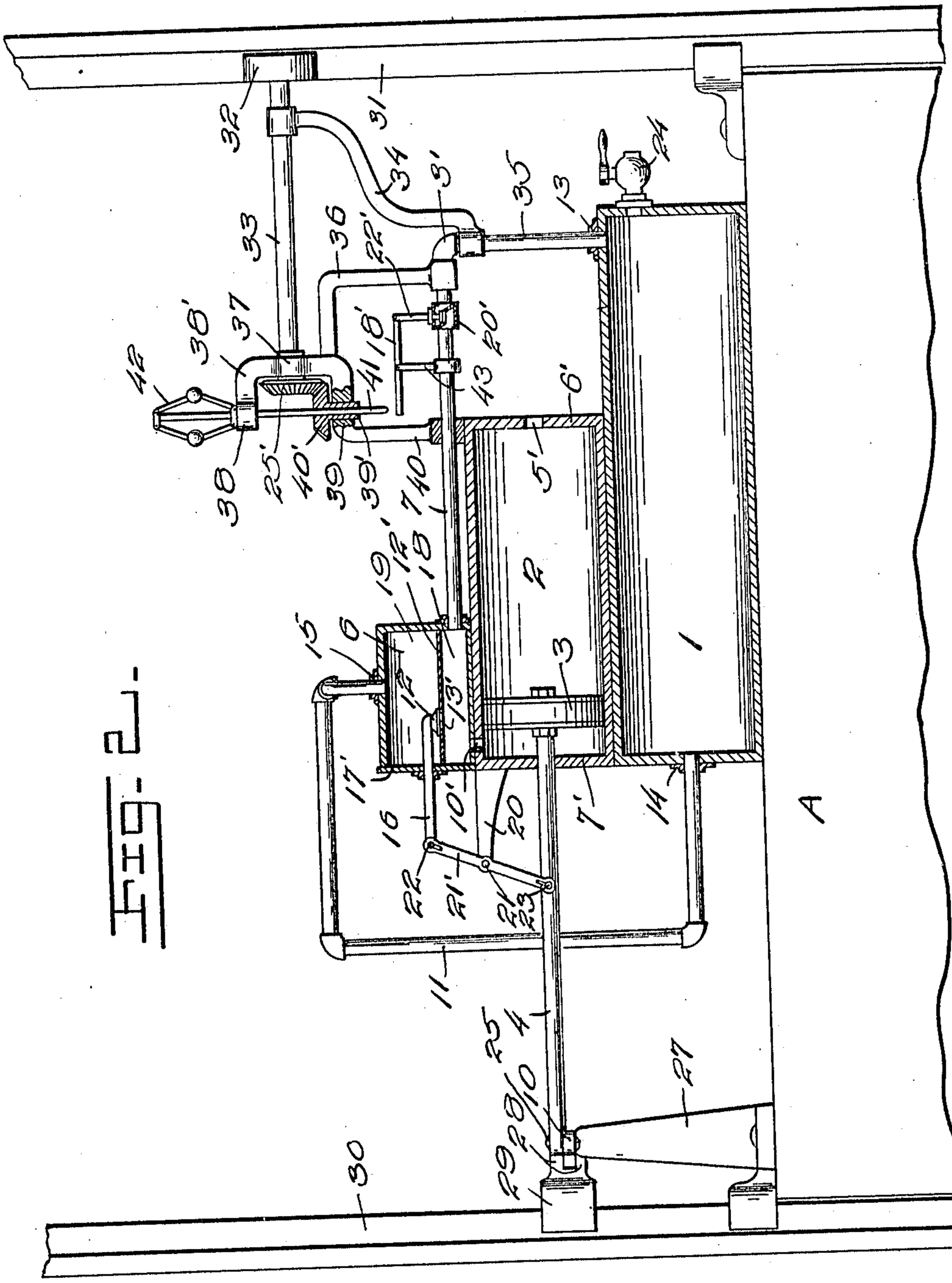

Fig. 2.

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3 SHEETS—SHEET 3.

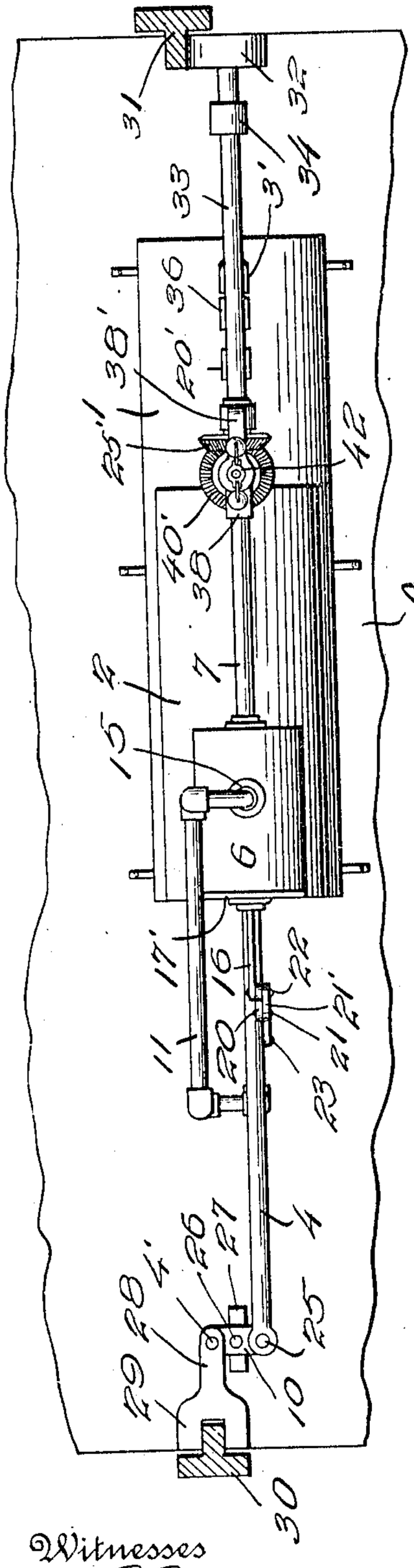

FIG. 4.

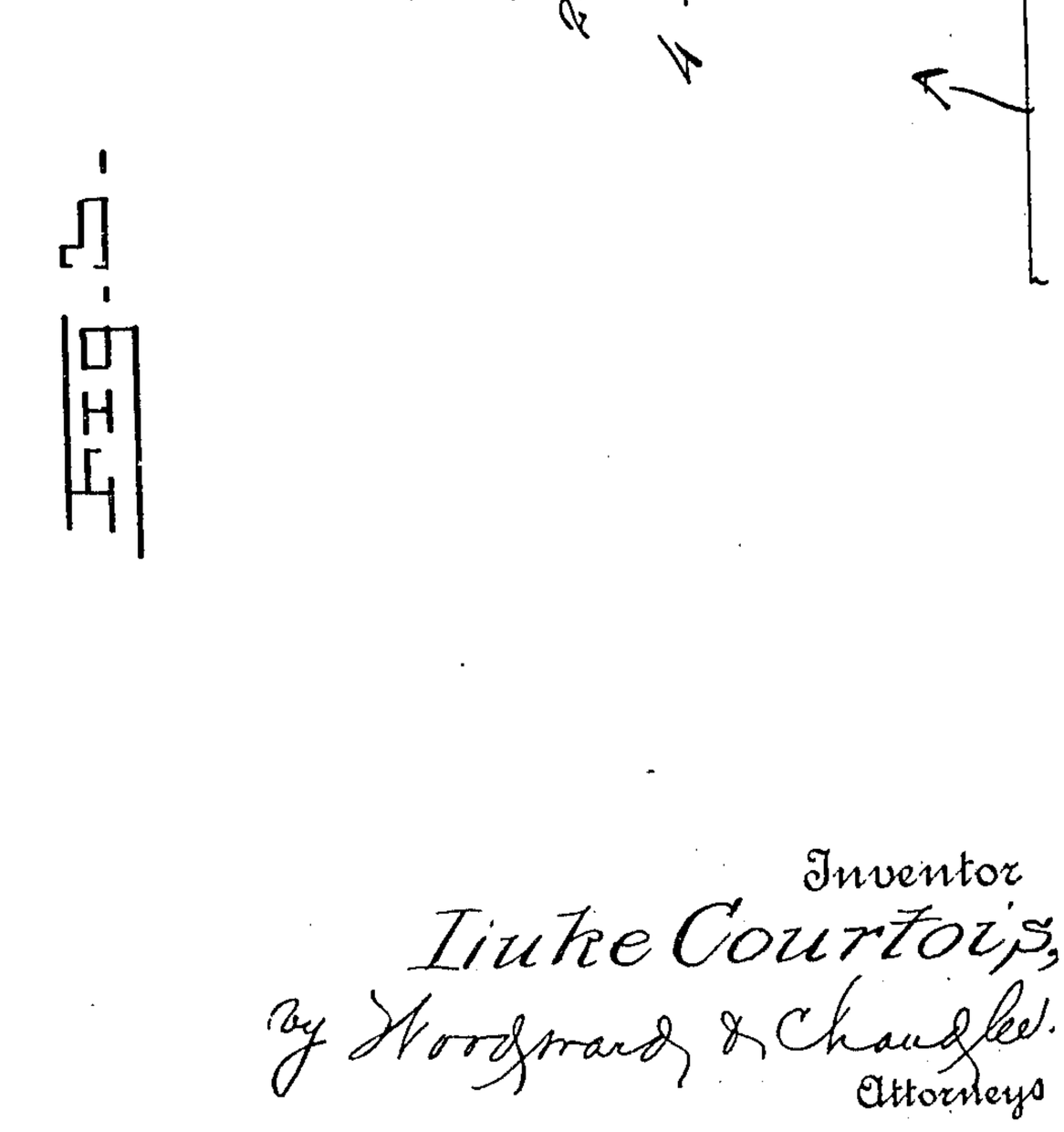

FIG. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

LUKE COURTOIS, OF APPLETON, WISCONSIN.

BRAKE-OPERATING MECHANISM.

950,477. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed October 18, 1909. Serial No. 523,202.

To all whom it may concern:

Be it known that I, LUKE COURTOIS, a citizen of the United States, residing at Appleton, in the county of Outagamie and State of Wisconsin, have invented certain new and useful Improvements in Brake-Operating Mechanism, of which the following is a specification.

This invention has relation to certain new and useful improvements in brake operating mechanisms.

The object of my invention is to provide an automatically actuated brake operating mechanism arranged to be secured to the lifts, cages or elevator cars used in mines and buildings, to check the speed and lock the car or cage if the car travels at a speed exceeding a predetermined rate, and stop the car in case the suspending cable breaks.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claim, it being understood that changes in the specific structure shown and described may be made within the scope of the claim without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like characters of reference indicate similar parts in the several views, Figure 1 shows an elevational view of the upper portion of an elevator car equipped with my improvement. Fig. 2 shows a sectional elevation of the brake operating mechanism. Fig. 3 shows a top view thereof. Fig. 4 shows a front view.

In the operation of elevator cars and cages, it is found necessary to provide the same with an automatically operated means arranged to check the speed or stop the cage in case of accident to the machinery.

In the accompanying drawings, the letter A designates a car which is held between the two guiding rails marked 30 and 31.

Secured to the top or deck of the car is an air tank 1 having the inlet cock 24 and the ports 13 and 14. Secured to this air tank 1 is the brake cylinder 2, within which is held the piston head 3 from which extends the operating piston rod 4. The rear cap 6′ of this cylinder is provided with a central opening 5′, while from the front cap 7′ extends the bracket 20.

The cylinder 2 near the forward end is provided with the intake valve 10′ communicating with the air chamber 18 formed within the lower part of the air casing 6, this casing being divided by means of the partition 12′ having the valve opening 13′. Held upon the partition 12′ within the upper part of this air casing which forms a valve chamber 19, is the slide valve 12 to which is secured the operating bar 16 which at its forward end carries the pin 22, this air casing being closed by means of the cap 17′. This air casing 6 is provided with the intake port 15 from which extends the main air pipe 11 which at its remaining end is secured to the intake port 14 of the air tank. Entering the air chamber 18 of this casing 6 is the pipe 7 which is connected to an elbow 3′ from which extends the pipe 35 screwed into the port 13 of the air tank as shown. Pivotally held to the pin 21 carried by the bracket 20 is the slotted lever 21′, at its upper end engaging the pin 22 while at its lower end this lever is in engagement with the pin 23 carried by the piston rod 4.

Positioned within the pipe 7 is the equilibrated valve 20′ having the operating stem 22′ to the upper end of which is secured the lever 18′, carried at the end of the stem 43 secured to the pipe 7 as clearly disclosed in Fig. 2.

Extending upward from the auxiliary pipe 35 is the bracket 34 having a bearing at its upper end to revolubly support the main driving shaft 33 which at one end carries the driving friction disk or wheel 32 arranged to contact with the rail 31. Secured to the remaining end of the shaft 33 is the beveled gear 25′, the shaft 33 at this end being held within the bearing 37 of the frame 36, the remaining member 40 of this frame being provided with the bearing 39 carrying a hollow shaft 39′ to which is secured the bevel gear 40′ meshing with the bevel gear 25′ as shown. Held within the hollow shaft 39′ is the stem or tappet 41 which tappet is actuated by a centrifugal speed governor 42 of any approved construction and carried within the end 38 of the bracket 38′ as disclosed. As shown, the lower end of the tappet is held above the free end of the lever 18′ secured to the equilibrated valve 20′.

Secured to the end of the piston rod 4 is the pin 25 which works within a slot within the upper end of the brake lever 10, carried pivotally upon the pin 26 supported

within the upper end of the stand 27. To the lower end of this brake lever 10, is secured a pin 4′ which is carried by the ears 28 of the brake shoe 29 engaging the guide rail 30 as clearly disclosed.

The operation of my device is very simple. The wheel or disk 32 being in contact with the rail 31 is revolved as the cage goes up and down. This rotary movement of the wheel is imparted to the governor, the tappet of which is so set that the same will contact and tilt the lever 18′ to open the equilibrated valve if the car travels faster than a predetermined speed. Should the tappet 41 actuate the valve stem 22′, there would be an outrush of air from the tank 1 into the air chamber 18 from which the air would escape through the port 10′ into the brake cylinder 2 forcing the piston 3 backward. This backward movement of the piston would result in the brake lever 10 being actuated to force the shoe 29 into engagement with the rail 30 to stop the car. The backward movement of the piston rod 4 would result in the slotted lever 21′ being tilted to open the slide valve 12 to permit an inrush of air through the main pipe 11 into the chamber 18 and from thence into the brake cylinder. The valve 20′ is the primary valve, while the slide valve serves as an auxiliary valve.

From the foregoing it will be seen that the main structural advantages of my invention reside in the novel arrangement of the air tank, cylinder, primary equilibrated valve connected with said cylinder and tank; the auxiliary slide valve communicating with said cylinder and tank and the brake lever and tappet operating mechanisms.

The device actuates automatically and positively to check the speed or stop the car.

What is claimed is:

In combination, an air tank, a brake cylinder, a supply pipe extending from said air tank, a casing communicating with said brake cylinder, said supply pipe entering said casing, a valve interposed within said supply pipe, a tappet to actuate said valve, a governor for actuating said tappet, a slide valve within said casing, a piston within said brake cylinder, a piston rod extending from said piston, a suitably held slotted lever connected to said piston rod and slide valve, and a brake lever actuated by said piston rod.

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

LUKE COURTOIS.

Witnesses:
LU PAULY,
JULIUS ZUEHLKE.