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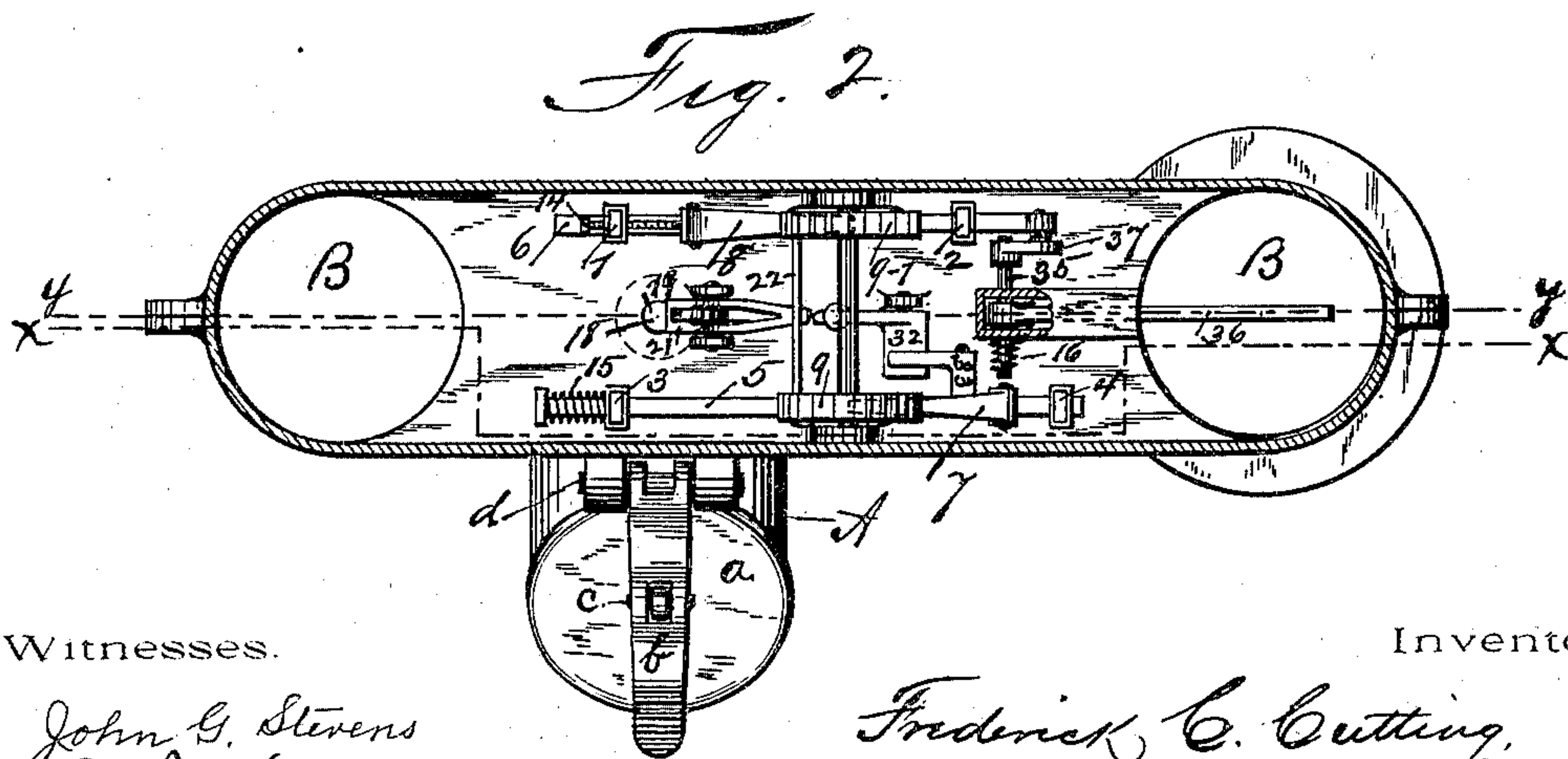
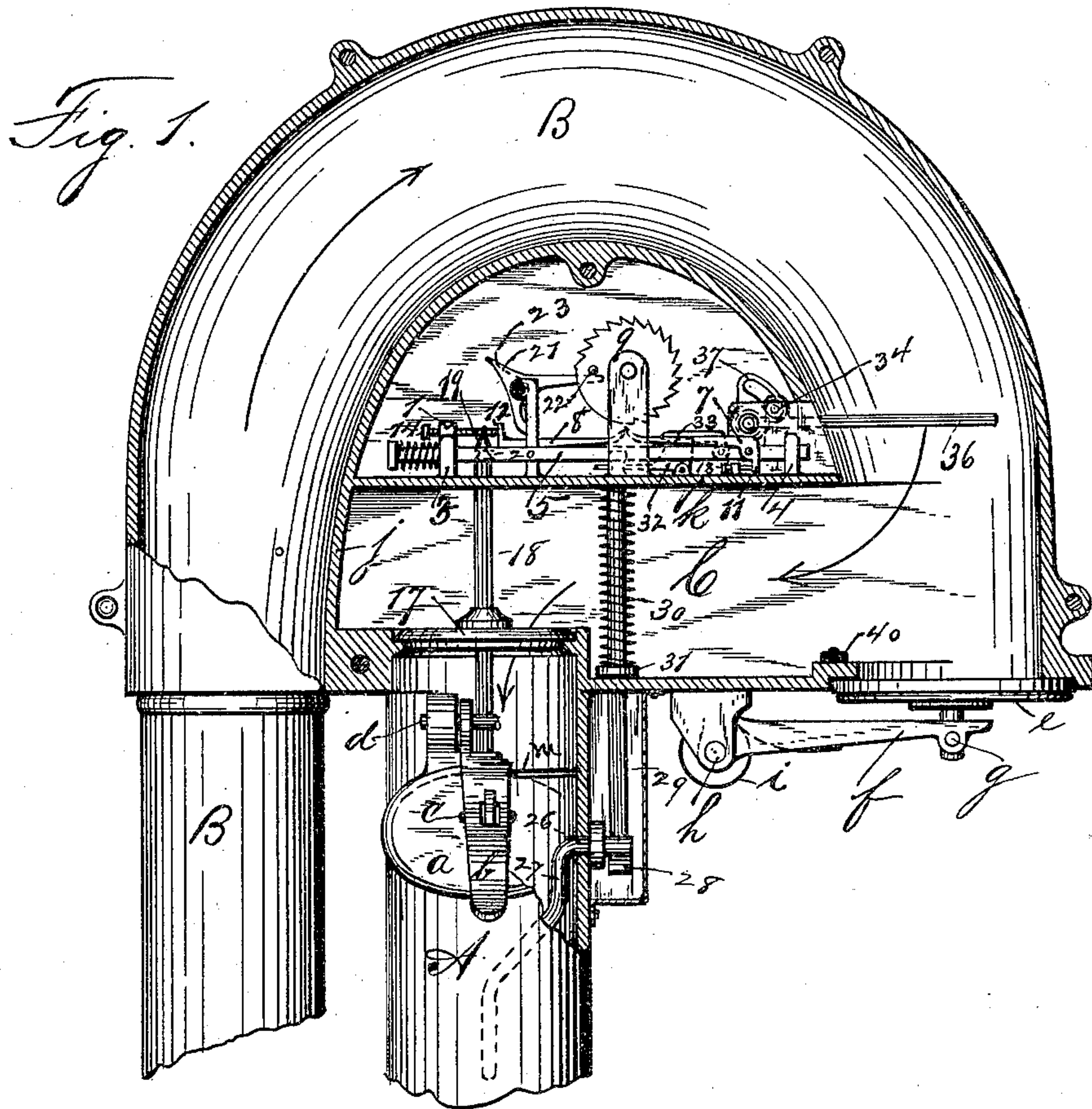
Patented Nov. 27, 1900.

F. C. CUTTING.
PNEUMATIC CASH CARRIER TERMINAL.

(Application filed Mar. 30, 1900.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses.

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C. Tucker

Inventor.

Frederick C. Cutting.

By Frank J. Hunt

his Attorney

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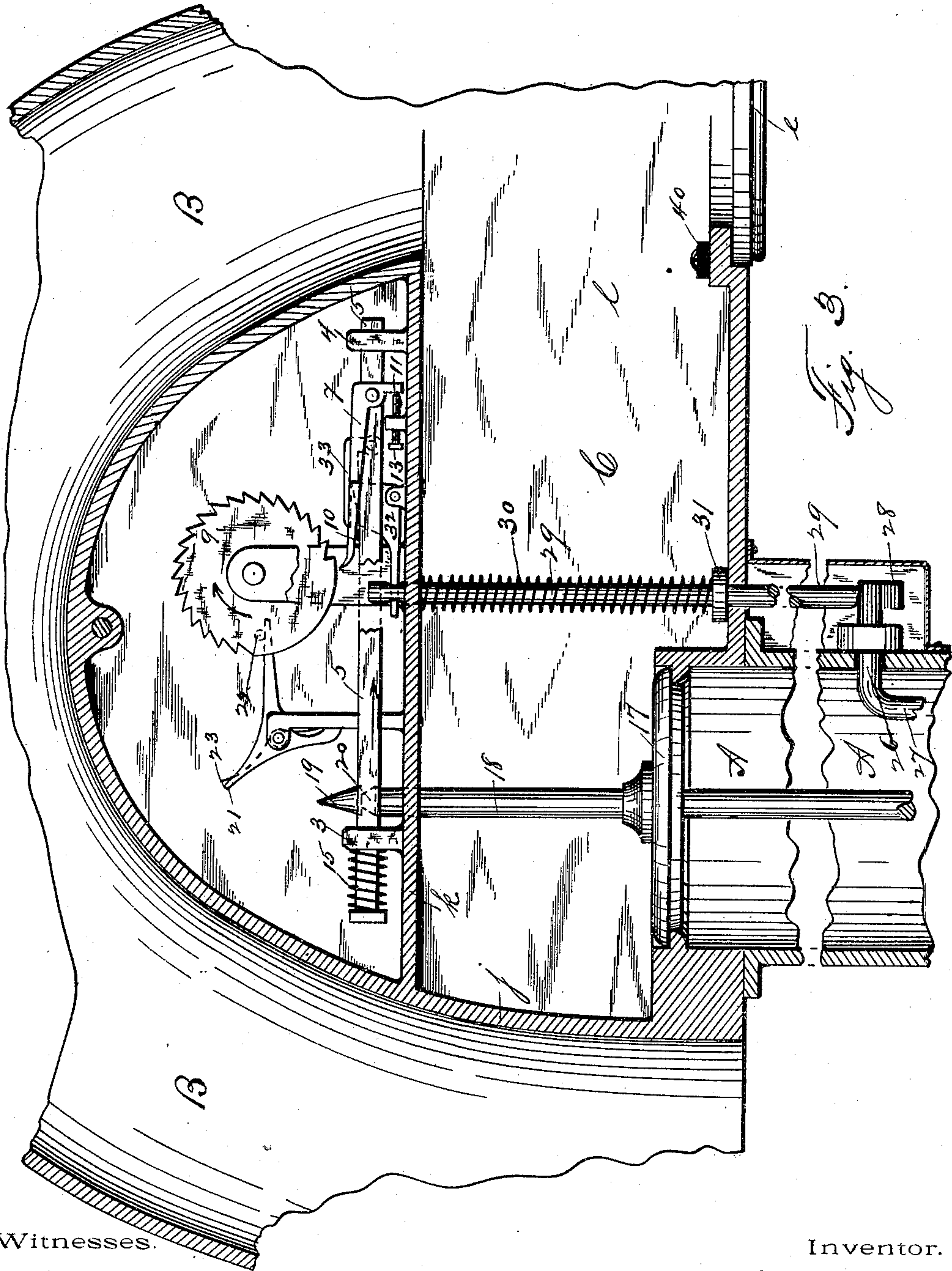
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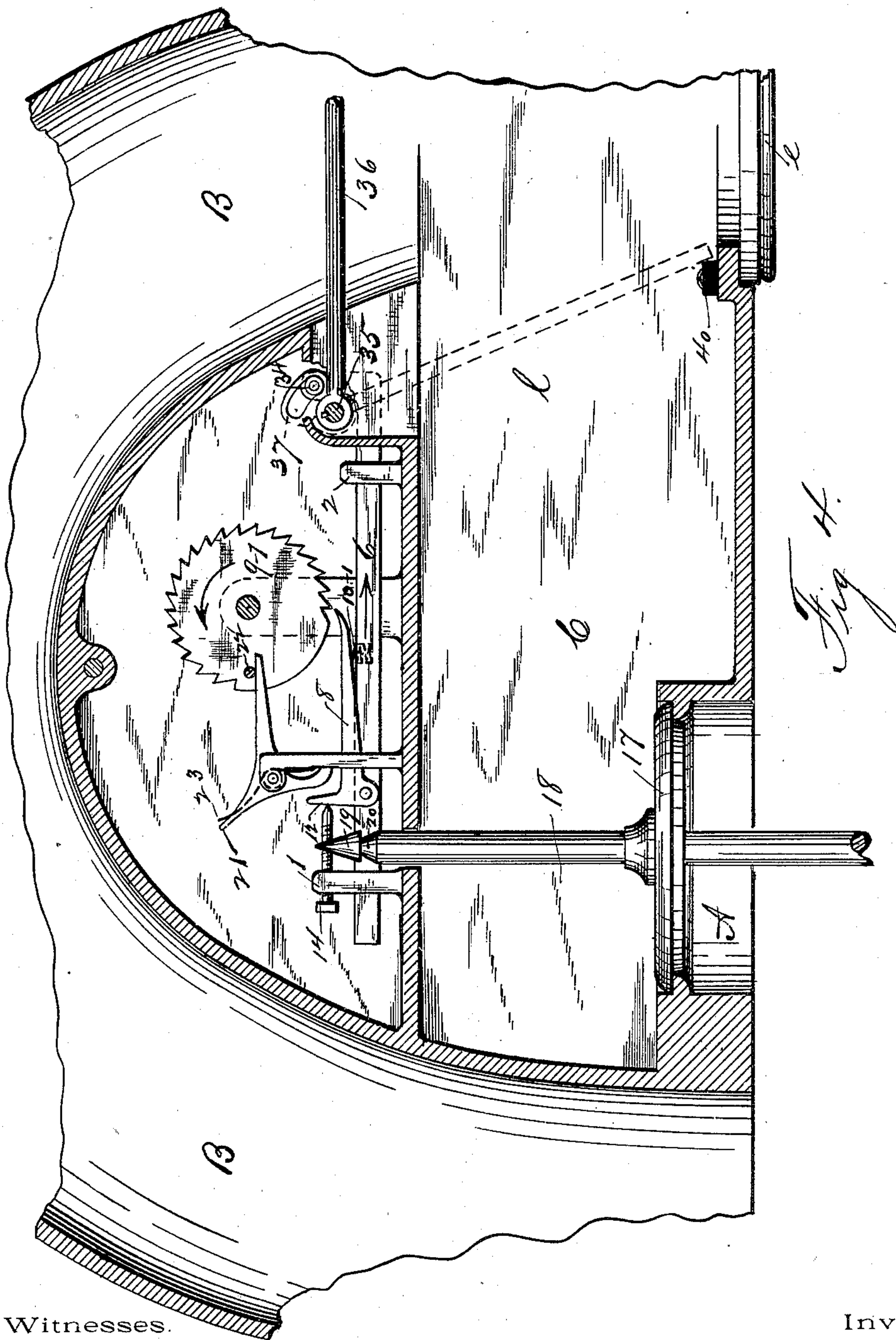
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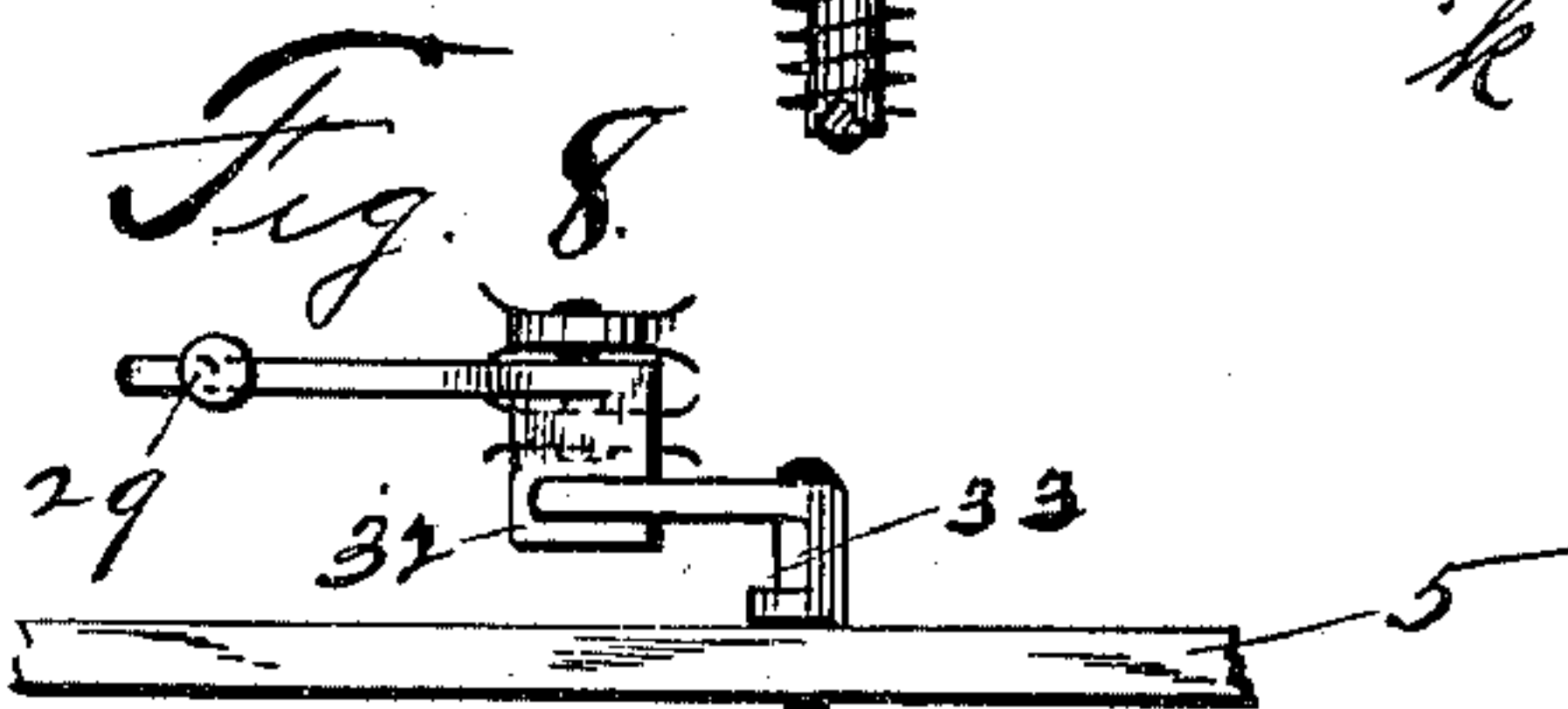
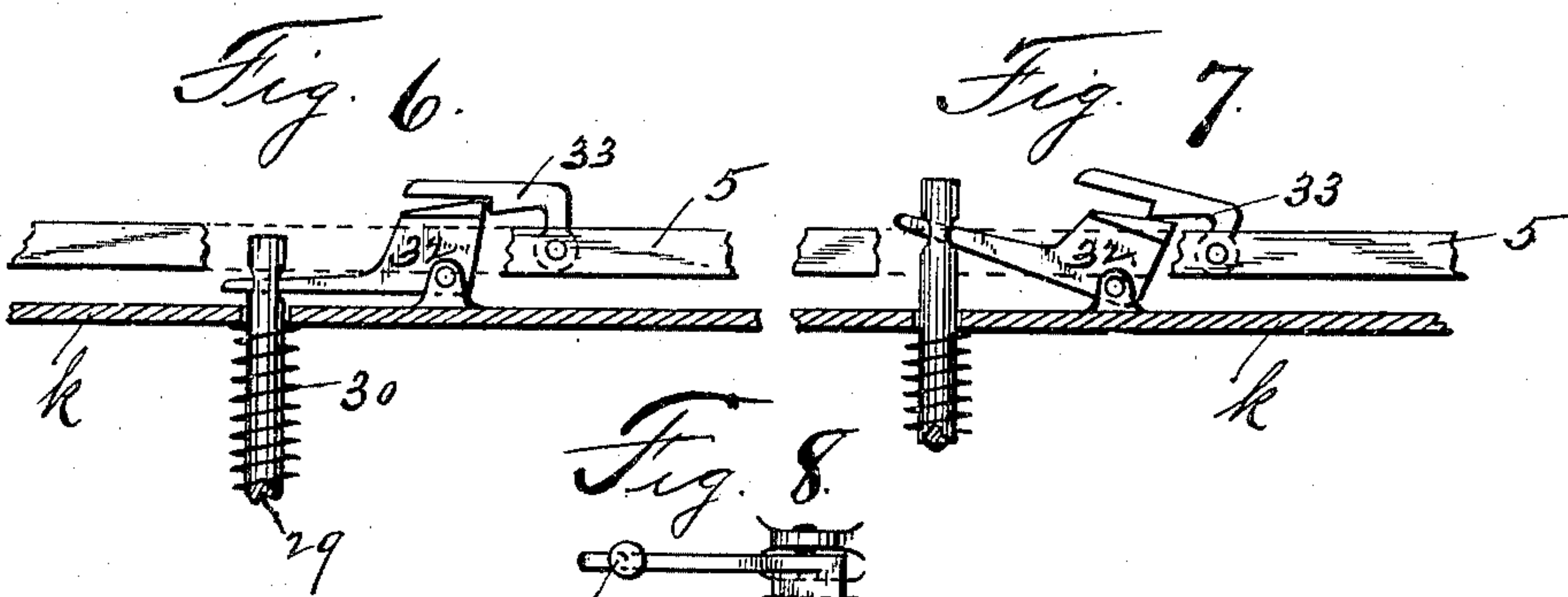
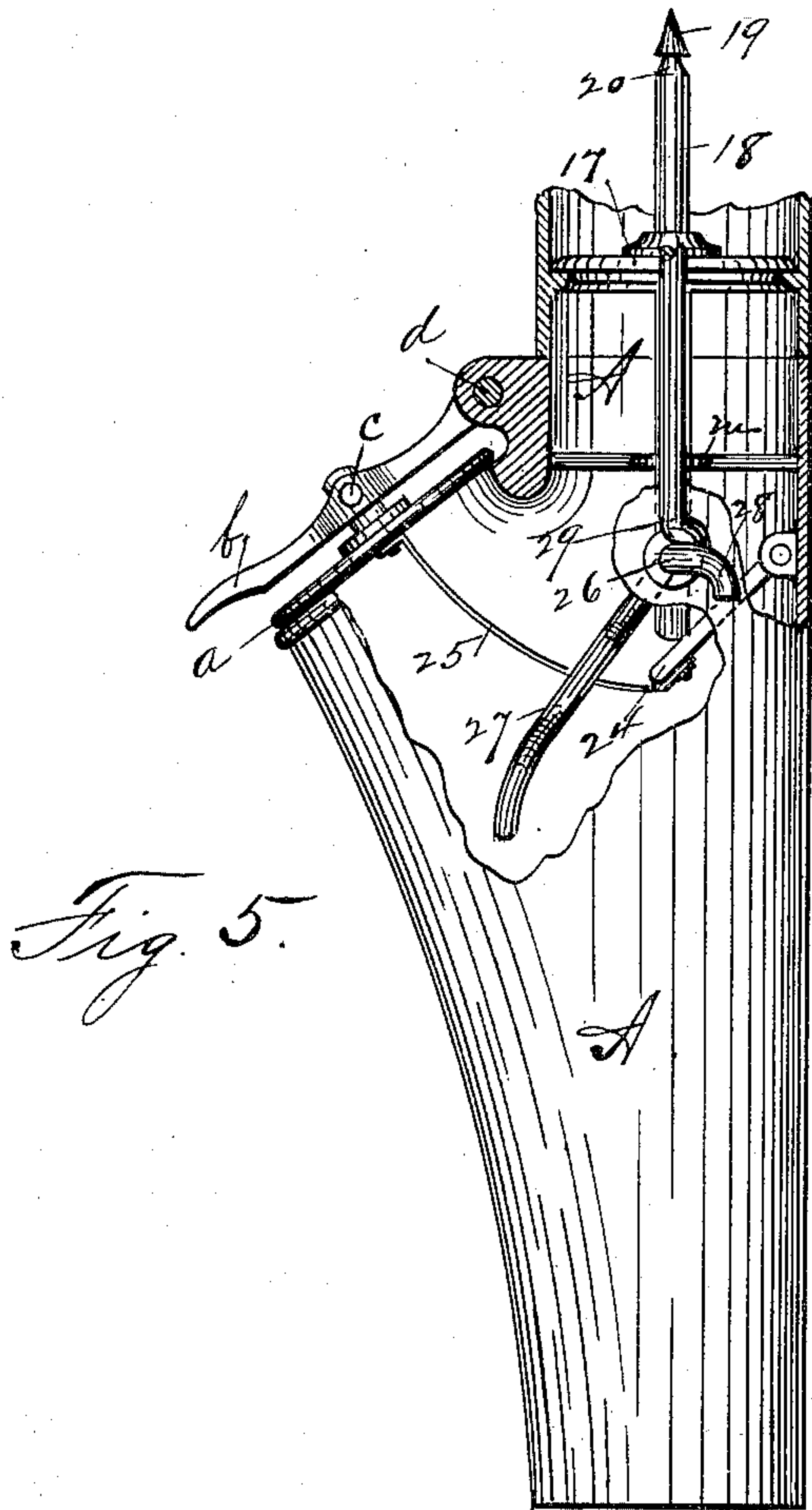
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Witnesses.

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UNITED STATES PATENT OFFICE.

FREDERICK C. CUTTING, OF ROCHESTER, NEW YORK.

PNEUMATIC-CASH-CARRIER TERMINAL.

SPECIFICATION forming part of Letters Patent No. 662,771, dated November 27, 1900.

Application filed March 30, 1900. Serial No. 10,774. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK C. CUTTING, a citizen of the United States, residing at the city of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Pneumatic-Cash-Carrier Terminals, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in pneumatic-cash-carrier terminals in which the passage of air through the air-tubes is automatically controlled by the device or mechanism placed within the terminal and which device is put in operation to control the passage of air by the introduction of the cash box or cartridge into the air-tube at the salesman's station and its return through the return-tube to the same station or terminal; and the objects of my invention are, first, to control the passage of air through the tubes, so that when a cash-box is not being forwarded from and returned to the sales-station the passage of air will be stopped; second, to automatically control the passage of air through the air-tubes by the operation of the means hereinafter fully described, which are put in operation by the introduction of a cash-box into the receiving-tube at the salesman's station to the end that the passage of air may be continuous until the cash-box or cash-boxes sent from such sales-station have been returned thereto, and, third, to reduce the amount of power required to operate a series of stations or terminals joined in one system.

I accomplish the above-mentioned objects by the mechanism herein described, and illustrated in the accompanying drawings, in which—

Figure 1 is an elevation or side view of my complete invention. Portions of the air-tubes, (which are of the ordinary construction and form,) however, are cut away to more clearly show the invention which I claim as mine. Fig. 2 is a plan view of my invention. Fig. 3 is a sectional and side view of that portion of my invention which controls the opening of the valve and allows the passage of air through the tubes and is taken on line *x x* of Fig. 2. Fig. 4 is a vertical sectional and side view of that portion of my invention which

controls the closing of the valve that stops the passage of air through the tubes. Fig. 5 is a side view of the receiving-tube for the cash-box, (portions of the case being cut away,) showing the lever device for raising the air-valve and the cam and lever for putting in operation the means employed to turn the ratchet-wheels, hereinafter described, to the end that the air shall have free passage through the air-tubes until all the cash-boxes sent from the sales-station have been returned thereto. Fig. 6 is a detailed view of the cam and latch engaged that control the movement of the sliding bar 5 in the direction of the arrow shown on the bar in Fig. 3. Fig. 7 is a detail view of the cam and latch shown in Fig. 6, with the latch released from its engagement with the cam; and Fig. 8 is a plan view of the said cam and latch, showing their relative positions to each other.

Similar letters and figures refer to similar parts throughout the several views.

A represents the air-tube, in which is deposited the cash-box to be forwarded to the cash-desk and is approximately of Y shape, one branch of the same being closed by the lid *a*, which is pivotally connected to the handle *b* by pin *c*, and the handle *b* is pivotally connected to the tube by pin *d*.

B represents the air-tube for the return of the cash-box to the sales-station and is closed by the lid *e*, which is pivotally connected to the arm *f* by the pin *g*, and the arm *f* connected to the head of the terminal by the pin *h*, and the lid held in position against the end of said tube by spring *i*.

C is an air-passage between the tubes A and B, its bottom being formed to receive one branch of air-tube A, one end being closed by partition *j* and its top being closed by diaphragm or partition *k*, leaving the end at *l* open into the air-tube B. The air in its passage through the above-described tubes travels in the direction indicated by the arrows shown in Fig. 1.

It will be observed that I erect posts 1 2 3 4 on the upper surface of the diaphragm *k* and provide them with passage-ways for the sliding bars 5 6, which are passed through the said openings and move freely therein. Above these bars and lying in the same direction are the pawls 7 8, respectively pivoted

to the said bars and thrown in contact with the ratchet-wheels 9 9' by means of springs 10 10', placed beneath them and resting in holes in the top of said bars. The ratchet-wheels 9 9' are secured to the same axle, and the teeth are cut to turn the wheels in opposite directions when acted upon by the different pawls 7 and 8, and in order to allow such opposite movement it is to be observed that the said pawls must not come in contact with the ratchet-wheels when the wheels are not being turned, and hence I provide shoulders 11 12 upon the pawls, which come in contact with set-screws 13 14, which throw the pawls down from the ratchet-wheels when the bars 5 6 are forced back by the springs 15 16. The ratchet-wheels are prevented from turning when the pawls are both thrown down by the friction of the axle-bearings or by a brake upon the wheels.

I place a valve 17 within the air-passage C over the end of the air-tube A and secure it to a rod 18, passed vertically through the center, and support said rod in position by bearings in the diaphragm *k* and the bar *m*, passed across said tube A. I terminate said rod at its top in a cone 19, and immediately below this I cut an annular groove 20. When the rod 18 is raised to the highest point, said groove assumes a position opposite the latch 21; but the latch is held back by a rod 22, passed between the ratchet-wheels, until a cash-box is placed in transit in the air-tube A, whereby the mechanism put in operation turns the ratchet-wheels and releases said latch, which is then forced forward by the spring 23 and catches in the annular groove 20.

To lugs in the back of the air-tube A, I secure lever 24, to the end of which is attached a strap 25, which is fastened near the center of lid *a* and made of suitable length to allow said lid to be raised and admit the introduction of a cash-box into the air-tube A and also to lift the rod 18 to a position in which the annular groove 20 is opposite latch 21.

Through the side of the air-tube A, supported in suitable bearings, I pass an axle 26 and project an arm 27 therefrom downwardly within the said tube until its end passes approximately half-way across the diameter of the space traveled by the cash-box. To the end of the said axle immediately outside the said tube I attach a cam 28. Upon this cam rests the foot of rod 29, which I pass vertically through the air-chamber C and up into the space above the diaphragm *k*. It is to be observed that said rod passes through a coil-spring 30 within the air-chamber C, which rests down upon collar 31, secured to said rod, and acts to force the foot of said rod upon the cam 28 and to keep the end of the arm 27 projected into the passage-way traveled by the cash-box within the air tube A when not forced back by the passage of a cash-box.

In the upper end of rod 29 I provide a slot for the reception of the arm projected from cam 32 and pass said arm through said slot.

The cam 32 is pivotally connected in suitable bearings to the diaphragm *k*. Riding upon cam 32 is a latch 33, which turns upon an axle secured to sliding bar 5, whose office I will explain more fully hereinafter.

The bars 5 and 6 are preferably made square or flattened, so that they will always retain edgewise a vertical position. Bar 6 is turned up at one end, and to the side of such upturned end a small wheel 34 is attached and revolves upon an axle secured to said bar. I provide the axle 35, which is journaled in the sides of a hood projected inwardly from the wall of the tube B and the diaphragm *k*. To the axle 35, between the sides of said hood, I secure the arm 36 and project it across the center of the tube B into the space traveled by the cash-box. To axle 35 I also secure cam 37 within the space above the diaphragm *k* in a position so that the wheel 34 will travel in the slot in said cam and operate to throw the bar 6 in the direction indicated by the arrow thereon shown in Fig. 4, when the axle is turned by a downward movement of arm 36, and return said bar to its normal position again by the action of the spring 16, which operates to revolve said axle in one direction.

Having now fully described and pointed out the various parts of my invention and shown their relative position and arrangement, their operation in combination is as follows, viz: When the lid *a* is raised to introduce a cash-box into the air-tube A, the valve 17, by the action of the lever 24, is raised, the air-passage through the air-tubes opened, and the annular groove 20 brought to a position opposite latch 21; but said latch does not engage itself in said groove by the raising of said lid *a* and does not retain the valve 17 in a position elevated from its seat on the end of the air-tube A, but leaves said valve free to drop down to its seat on said air-tube when the valve *a* is closed, unless a cash-box is introduced into the said air-tube and placed in transit. After the valve *a* has been raised, as described above, the introduction of a cash-box into the air-tube A forces the arm 27 back out of the path-way traveled by said cash-box, which in turn operates cam 28, which moves rod 29 upward until the latch 33, actuated by cam 32, has moved the sliding bar 5 in the direction indicated by the arrow on said bar (shown in Fig. 3) to a position in which pawl 7, thrown up by spring 10, engages with a tooth on the ratchet-wheel 9, whereupon latch 33 releases its engagement with cam 32 and permits the spring 15 to throw sliding bar 5 back to its normal position, causing the pawl 7 to revolve the ratchet-wheels in the direction indicated by the arrow shown thereon in Fig. 3 the distance measured by the distance between the points of any two consecutive teeth, thereby releasing latch 21 and allowing spring 23 to throw said latch 21 forward and engage itself in said groove 20 and support the valve 17 in a position elevated from its seat on the end

of the air-tube A until the cash-box or cash-boxes placed in transit in air-tube A have been returned to the same sales-station from which they were sent. The effect of the introduction of a series of cash-boxes into the air-tube A would be that the introduction of each and every one would produce a similar action to that above described, each box causing the ratchet-wheels to turn in the direction indicated by the arrow thereon (shown in Fig. 3) the distance measured by the distance between the points of any two consecutive teeth. It is to be observed, however, that the introduction of any cash-box after the first of a series placed in transit in the air-tube A has no effect whatever upon latch 21, but from the time of the introduction of the first cash-box into air-tube A latch 21 keeps its engagement in groove 20 and holds the valve 17 elevated from its seat on air-tube A until all of the cash-boxes of such series have been returned to such transmitting-station.

Upon return of a cash-box to the salesman's station when but a single box has been placed in transit the operation of the mechanism hereinbefore described for controlling the closing of the air-passage is as follows, viz: A cash-box passes on its return through air-tube B in the direction indicated by the arrow shown in Fig. 1 and in its transit comes in contact with arm 36, presses it downward, and turns axle 35, which operates cam 37, which is secured thereto, which cam in turn acts upon wheel 34 and moves sliding bar 6 in the direction indicated by the arrow shown thereon in Fig. 4. The pawl 8 is thrown by spring 10' into engagement with a tooth of the ratchet-wheel 9' and turns it in the direction indicated by the arrow shown thereon in Fig. 4 the distance measured by the distance between the points of any two consecutive teeth, thereby bringing bar 22 in contact with the arm on latch 21, forcing said arm down and causing latch 21 to disengage itself from groove 20 and allow valve 17 to immediately close and stop the passage of air through the air-tubes, the cash-box opening the exit trap or lid *e* by action of gravitation after the said valve 17 is closed.

It is to be observed that by the return of a number of cash-boxes of a series through the return-tube B it is the return of the last one only of said series that causes latch 21 to release its engagement with groove 20 and allow valve 17 to drop down and close the passage of air through the air-tubes. It is also to be observed that I prevent the possibility of a cash-box entering the air-passage C by making the arm 36 just long enough to swing across the end of said passage-way, as shown by dotted lines in Fig. 4, at its intersection with air-tube B and provide a cushion 40 for said arm to strike against.

Having now fully described my invention and shown its operation, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a pneumatic-cash-carrier terminal comprising an air-tube for transmitting a cash-box from, and an air-tube for returning a cash-box to the sales-station, closed respectively by an inlet and an exit lid or valve and being connected with each other by a suitable air-passage formed on its bottom to receive and receiving one branch of the transmitting air-tube, a valve adapted to control the passage of air through the air-tubes, mounted upon a spindle having a notch or annular groove suitably located to be engaged by a latch and to support said valve when elevated from its seat, substantially as specified.

2. In a pneumatic-cash-carrier terminal comprising an air-tube for transmitting a cash-box from, and an air-tube for returning a cash-box to the sales-station, closed respectively by an inlet and exit lid or valve and being connected with each other by a suitable air-passage formed on its bottom to receive and receiving one branch of the transmitting-tube, in combination with a valve adapted to control the passage of air through said air-tubes, and the elemental means or mechanism hereinbefore specified for automatically opening, holding open and closing said valve over the end of the transmitting air-tube at its entrance to the said air-passage, substantially as described.

3. In a pneumatic-cash-carrier terminal of the class described, the combination of a valve adapted to control the passage of air through the air-tubes, a spindle passed perpendicularly through said valve at its center, suitable bearings in said terminal to support said spindle in a vertical position and allow it to be moved freely up and down therein, an annular groove in said spindle adapted to be engaged by a latch to support the said valve when elevated from its seat, and a lever properly pivoted or fulcrumed at one end and connected at its other end to the inlet-valve and actuated by the opening of the inlet-valve to move said spindle up through its bearings, all constructed and combined in and with said terminal substantially as specified and for the purposes described.

4. In a pneumatic-cash-carrier terminal of the class described, the combination of a valve secured to a spindle having an annular groove suitably located to engage with a latch whereby said valve may be supported in a position elevated from its seat to control the passage of air through the air-tubes, said spindle being journaled in suitable bearings to be moved freely therein and adapted to be automatically raised when the inlet-valve is opened, through the medium of a lever suitably located within the transmitting-tube, properly fulcrumed and secured at one end to the inlet-valve, with an axle journaled in the side of the transmitting air-tube, having an arm secured thereto and projected downward into the passage-way in said tube traveled by the cash-box, and normally kept in such passage-way by the action of a spring resting down

upon a collar secured to a rod the foot of which stands upon the cam secured to said axle, a cam secured to said axle adapted to raise the rod resting thereon, a rod having its lower end resting upon the last-described cam and passed vertically through the air-chamber connecting the air-tubes and supported in suitable bearings to be moved easily up and down therein, and provided with a slot in its upper end through which is passed the arm projected from the cam adapted to move a sliding bar, a spring adapted to return said rod last mentioned to its lowest position, a cam provided with an arm adapted to be passed through the slot in the rod last above described and secured to said terminal in suitable bearings so that it will be rocked through the agency of its projected arm when the said rod is raised and lowered, releasing its engagement with the latch riding upon it when raised and again engaging itself with said latch when lowered, a latch riding upon the last above-described cam, adapted to be engaged with and released from said cam and secured on an axle to a sliding bar, the sliding bar last above mentioned suitably mounted to be moved freely longitudinally in one direction by the rocking of the last-described cam while engaged with said latch and in the opposite direction by a spring suitably secured thereto, a spring returning said sliding bar to its normal position when the latch secured to said bar releases its engagement with the cam upon which it rides, a pawl pivotally secured to said sliding bar adapted to engage with the teeth of a ratchet-wheel, a spring for forcing said pawl up into engagement with the teeth of said ratchet-wheel when the said sliding bar starts upon its return to its normal position by the action of the spring upon it, a ratchet-wheel mounted upon an axle supported in suitable bearings and adapted to be turned one tooth by the said pawl when said sliding bar is returned to its normal position by the agency of said spring, means for throwing said pawl out of engagement with said ratchet-wheel when said sliding bar is in its normal position, a rod secured to said ratchet-wheel adapted to engage with the arm of the latch for supporting the valve controlling the passage of air through the air-tubes and to hold said latch out of engagement with the annular groove on the spindle of said valve until said ratchet-wheel is turned one tooth, a latch mounted in suitable bearings adapted to support said valve and provided with an arm for holding it out of engagement with said annular groove until said ratchet-wheel is turned one tooth, and a spring for throwing said latch into engagement with said annular groove when said ratchet-wheel is turned one tooth, all com-

bined, arranged and adjusted relatively to one another substantially as specified and for the purposes described.

5. In a pneumatic-cash-carrier terminal of the class described, the combination of a valve secured to a spindle having an annular groove suitably located to engage with a latch, said valve being adapted to control the passage of air through the air-tubes, a latch for supporting said valve in a position elevated from its seat and adapted to be relieved of said support when a cash-box placed in transit at the salesman's station or the last of a series of cash-boxes so placed in transit is returned to the same station, and means for automatically relieving the said latch of the support of said valve when a cash-box placed in transit at the sales-station or the last of a series of cash-boxes so placed in transit is returned to the same station, comprising the following elements: arm 36 secured to axle 35 and normally extending across the path traveled by the cash-boxes on their return to the sales-station, axle 35 suitably journaled and adapted to be turned in one direction by arm 36 and in the opposite direction by spring 16 and to actuate cam 37 which is secured to said axle, spring 16 adapted to return axle 35 to its normal position when it has been revolved by arm 36 by the passage of a cash-box through the tube B, cam 37 secured to said axle and adapted to move sliding bar 6 in its bearings back and forth longitudinally, wheel 34 secured to said sliding bar, sliding bar 6 carrying pawl 8 which is pivotally connected thereto, pawl 8 provided with shoulder 12, set-screw 14, spring 10', ratchet-wheel 9' mounted upon an axle and suitably journaled and carrying rod 22, rod 22 and suitable supports for said sliding bar, all combined, constructed and adjusted relatively to one another substantially as specified and for the purposes described.

6. In a pneumatic-cash-carrier terminal of the class described a twin ratchet-wheel comprising two independent ratchet-wheels united with each other or made integral upon an axle, each formed with teeth adapted to be engaged by a pawl and cut to revolve the wheels in opposite directions when alternately acted upon by its pawl, and having a rod projected from the adjoining planes of said wheels near their periphery, constructed and adjusted substantially as shown and for the purposes specified.

In witness whereof I have hereunto set my hand, at the city of Syracuse, New York, this 3d day of March, 1900.

FREDERICK C. CUTTING.

Witnesses:

JOHN G. STEVENS,
C. TUCKER.