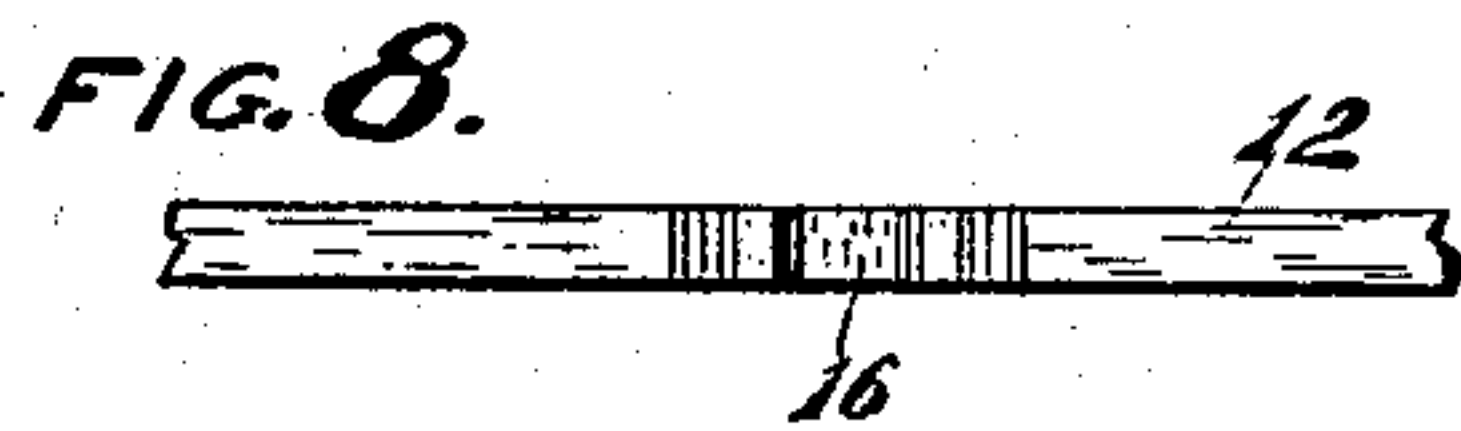
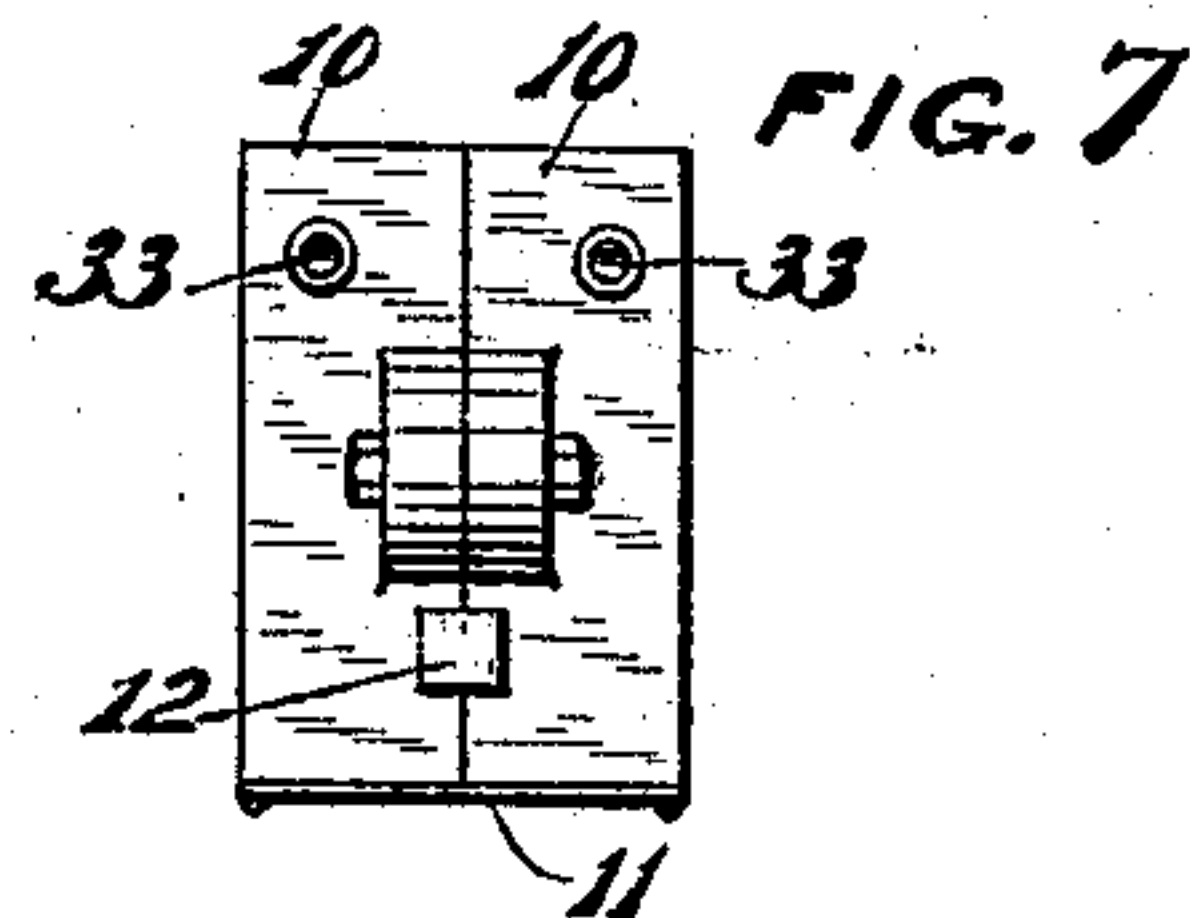
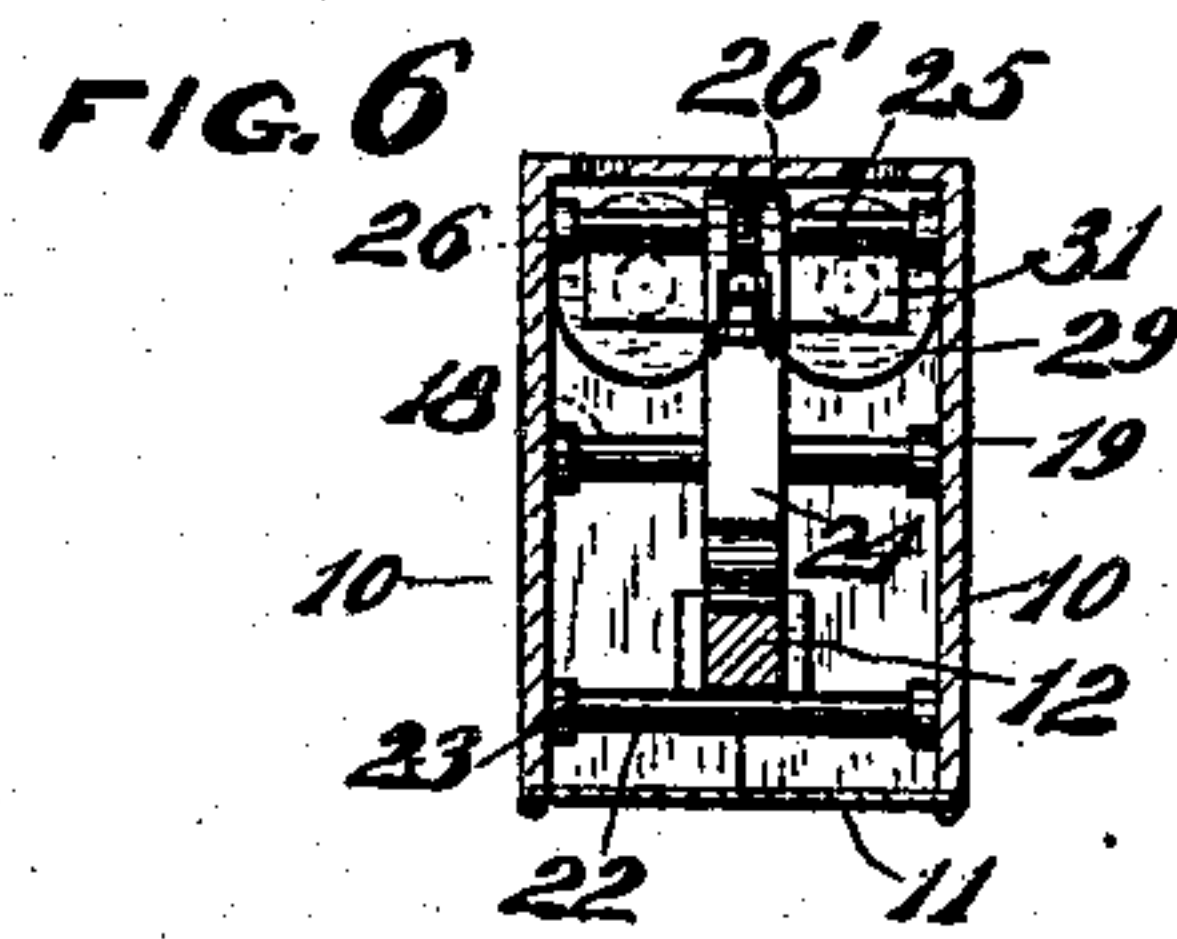
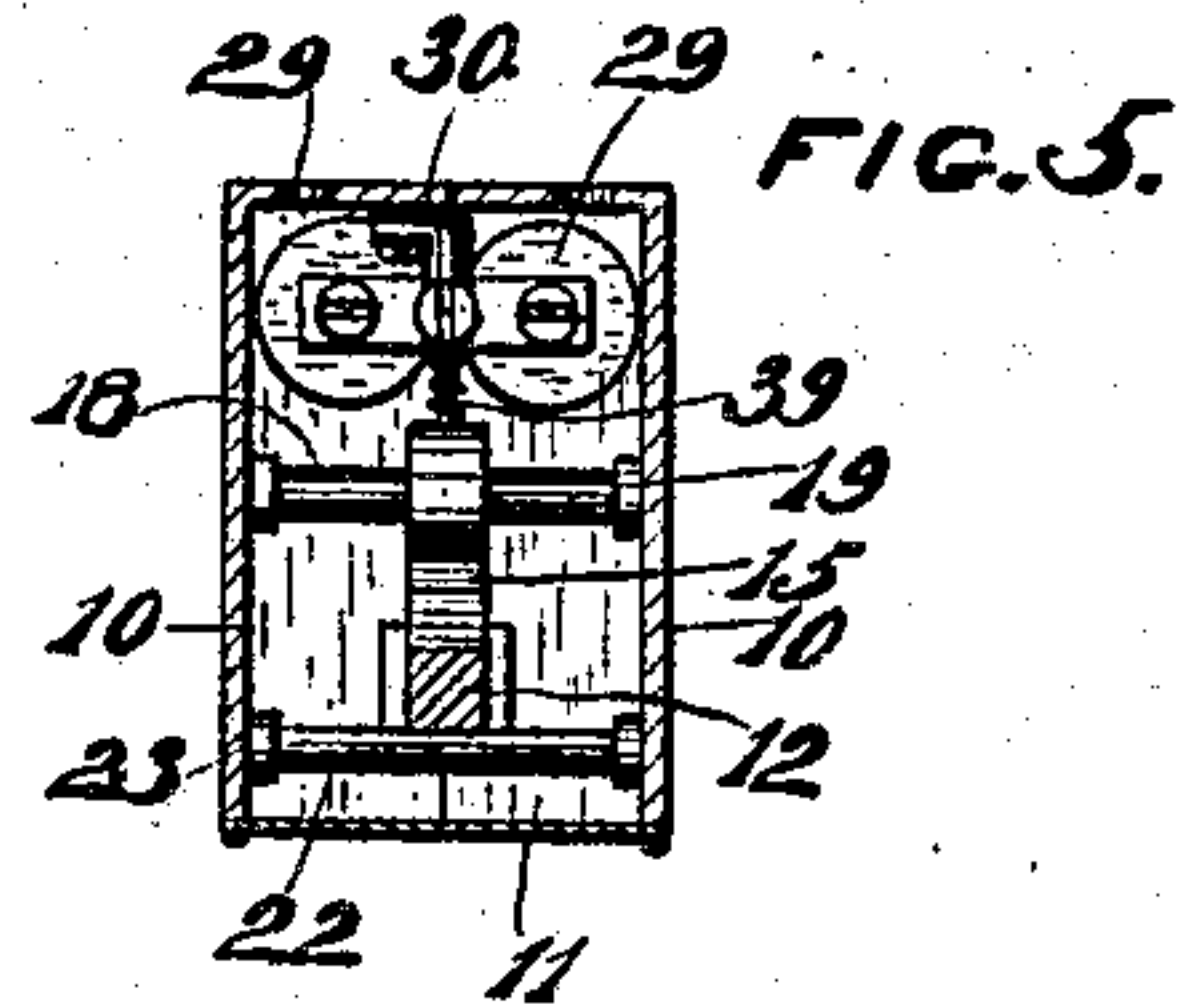
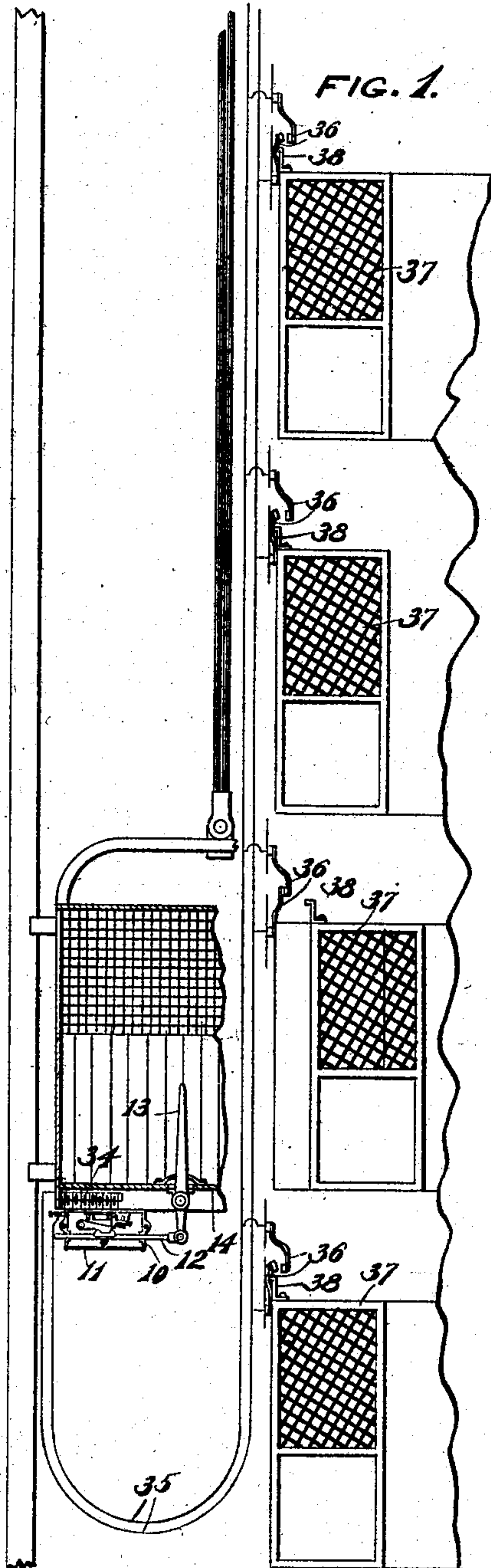


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ELEVATOR LOCKING DEVICE.  
APPLICATION FILED FEB. 24, 1908.

911,765.

Patented Feb. 9, 1909.  
2 SHEETS—SHEET 1.



WITNESSES.

*J. J. Thuermer*

*Anna S. Schmidtbauer*

INVENTOR.

*Alexander G. Rose, Jr.*

*By Benedict, Morsell & Caldwell*

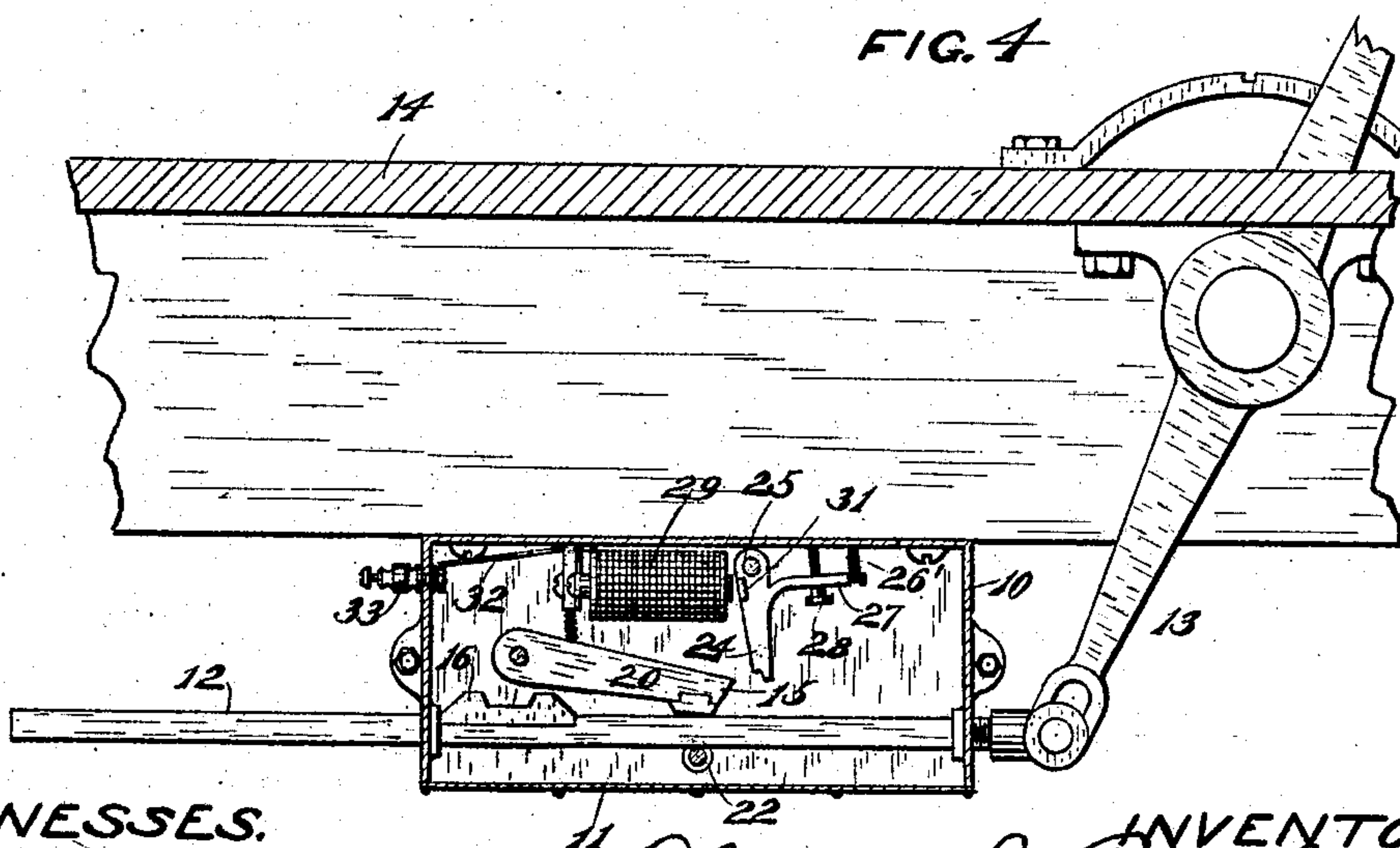
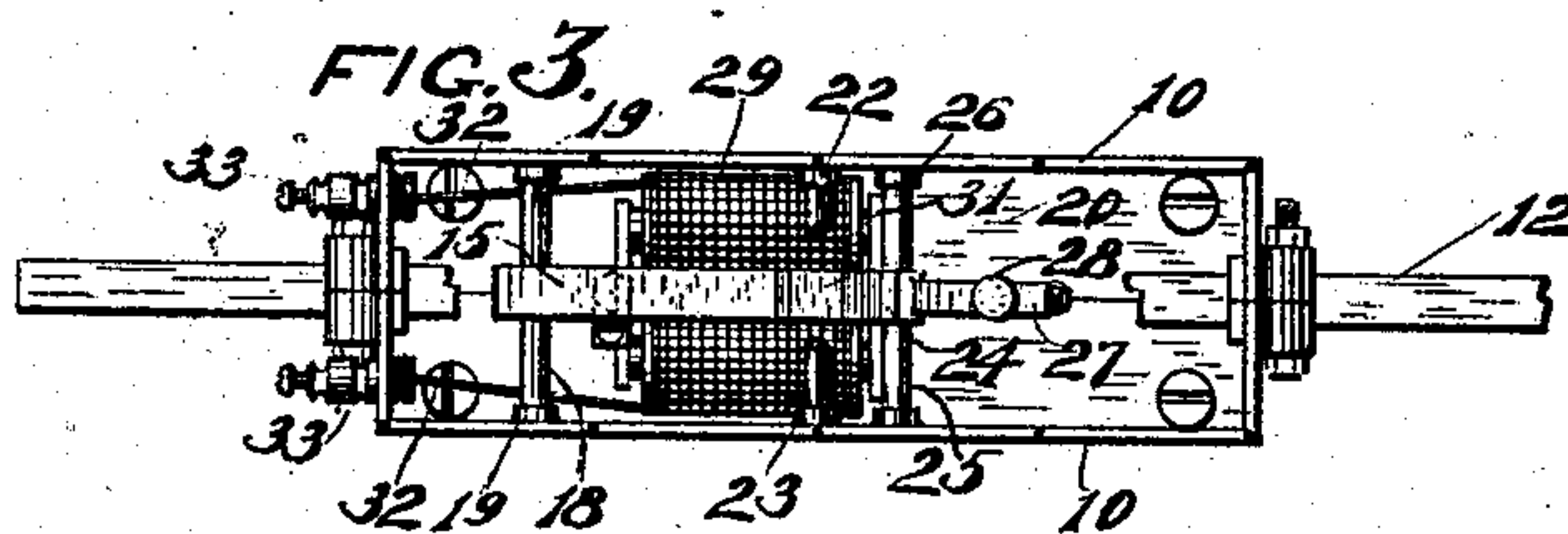
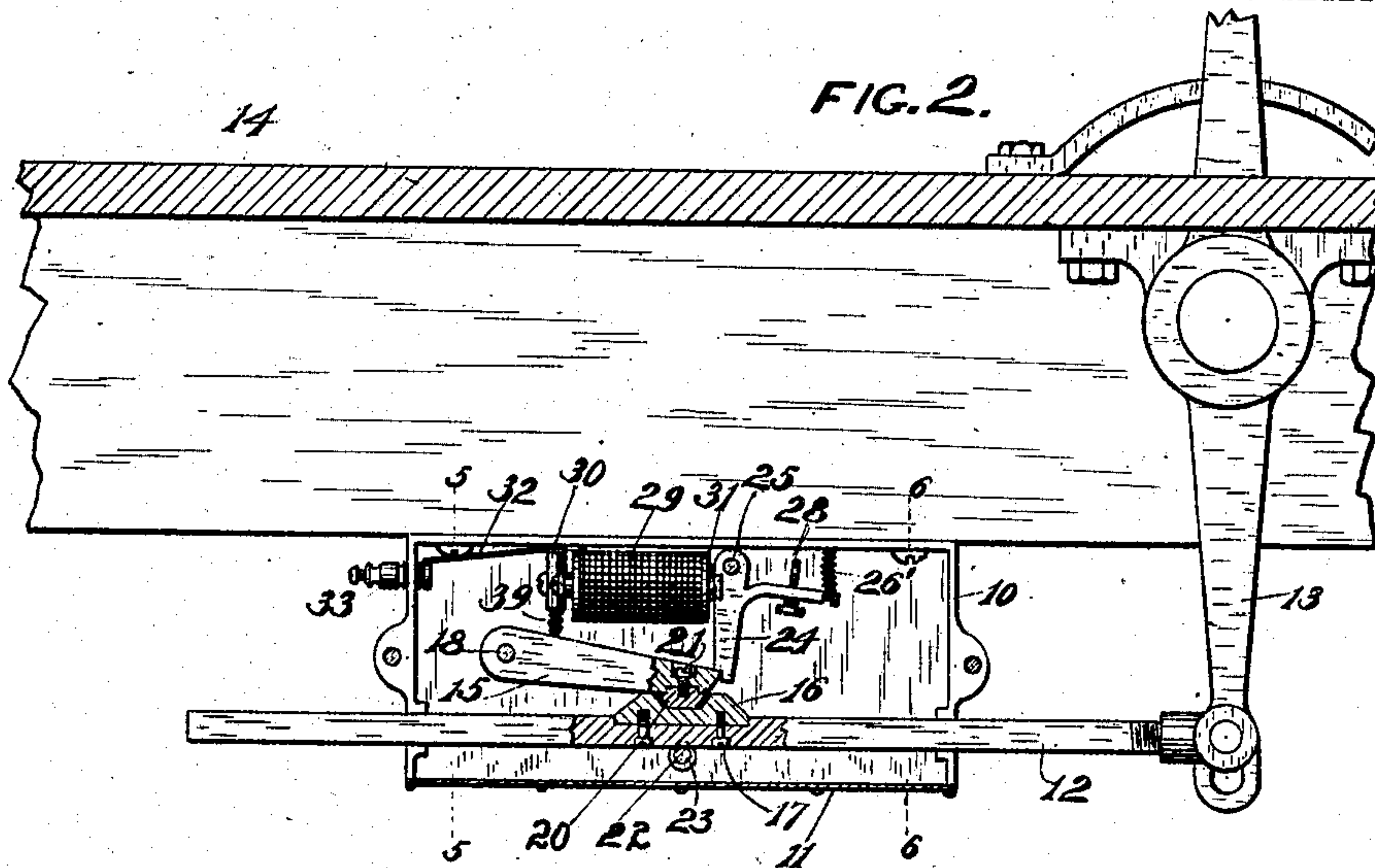
ATTORNEYS.

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*Anna F. Schmidtbauer*

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By *Benedict, Morrell & Caldwell*  
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# UNITED STATES PATENT OFFICE.

ALEXANDER G. ROSE, JR., OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO THOMAS E. DEVER, OF MILWAUKEE, WISCONSIN.

## ELEVATOR-LOCKING DEVICE.

No. 911,765.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed February 24, 1908. Serial No. 417,266.

*To all whom it may concern:*

Be it known that I, ALEXANDER G. ROSE, Jr., residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Elevator-Locking Devices, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide means for mechanically locking the controlling lever of an elevator or the like against movement which would start the car in motion, whenever one of the elevator doors is open or partially open, and thereby prevent accidents which occur by starting the car while a passenger is getting on or off thereof.

With this object in view the present invention comprises a locking bar securely connected to the operating lever, whatever form of driving mechanism such lever may control, and a locking pawl adapted to engage shoulders on the locking lever and be held against disengagement by a magnetically controlled dog, the electric circuit for energizing the magnet and locking the pawl being established by a switch at any elevator door which is open, one of such switches being provided at each elevator door and being normally held open by the door in its closed position.

With the above and other objects in view the invention consists in the locking device for elevators herein claimed, its parts and combinations of parts and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the several views; Figure 1 is a diagram showing a locking device constructed in accordance with this invention applied to an elevator; Fig. 2 is an enlarged view of the locking device in its locked condition, with one section of the casing removed and parts sectioned; Fig. 3 is a bottom view thereof with the cover plate removed and parts broken away; Fig. 4 is a view similar to Fig. 2 with the parts in the unlocked condition; Fig. 5 is a transverse sectional view of the locking device on the plane of line 5—5 of Fig. 2; Fig. 6 is a similar view on the plane of line 6—6 of Fig. 2; Fig. 7 is an end elevation of the locking device; and, Fig. 8 is a plan view of the engaging shoulders on the locking bar.

In these drawings 10 indicates a casing which is preferably of cast metal construction formed in half sections secured together by bolts passing through ears in their ends, there being a sheet metal cover plate 11 closing the bottom opening of the casing and held in place as desired. The half sections of the casing form guide bearings between them for a locking bar 12 which is preferably rectangular in cross section and has a pin and slot connection with the operating lever 13 of the elevator car 14. The casing is preferably secured beneath the floor of the car as shown, though it may be located wherever it is suitable for direct connection with the controlling lever, according to the nature of the latter.

The locking bar 12 is provided with engaging shoulders to be engaged by a locking pawl 15, as here shown the shoulders being formed on a hardened metal block 16 let into a recess on the locking bar and securely held in place therein by screws 17. The locking pawl is mounted on trunnions 18 which are loosely mounted in sockets or hollow bosses 19 in the side walls of the casing sections and is provided with a hardened tooth 20 removably but securely held in a recess at the end of the pawl by a screw 21, said tooth 20 and the shoulders of the block 16 having inclined edges to permit of the unrestricted movement of the locking bar 12 so long as the locking pawl is free to swing upwardly as the result of the cam action of these inclined surfaces. Directly beneath the engaging tooth 20 of the locking pawl and below the locking bar 12 is a cross brace 22 which is mounted in sockets or bosses 23 on the side walls of the casing sections and this brace prevents the yielding or bending of the locking bar when the locking pawl is held in its lower position by means to be described at the time an attempt is made to move the controlling lever 13.

A dog 24 is pivotally mounted in the casing by having trunnions 25 loosely fitting in sockets or hollow bosses 26 on the side walls of the casing sections and at its lower end it is notched to engage the pointed end of the locking pawl 15 when the latter is engaged between the shoulders of the locking bar during the normal or stopping position of the controlling lever 13. The dog 24 is normally held away from the locking pawl in the position shown in Fig. 4 by means of a coil



spring 26' connecting its outwardly extending arm 27 with the top of the casing, there being a set screw 28 threaded through the arm 27 to engage the casing and limit the normal position of the dog. An electro-magnet 29 is mounted on a supporting post 30 secured to one of the casing sections and is adapted to attract its armature 31 which is carried by the dog 24 and cause the said dog to swing to its locking position, as shown in Fig. 2, when the electrical circuit through said magnets is closed. The terminals 32 of the magnet winding connect with insulated binding posts 33 at the ends of the casing, which are connected by suitable wiring with an electric battery 34, preferably carried on the elevator car, there being a cable loop 35 leading from the car to a suitable point on the elevator shaft where connection is made with spring switches 36 at each elevator door which are connected in multiple and within the electrical circuit including the battery and the magnet 29. The switches 36 may be of any desirable construction which will be held open by the elevator door 37 when in its closed position but which will spring closed as soon as the elevator door begins to open and will remain closed until the elevator door is again closed, the essential parts of such a switch being shown in Fig. 1, where two spring contacts normally have the tendency to engage each other, but are held disengaged by an arm 38 on the elevator door when the door is closed.

While the weight of the locking pawl may be sufficient to cause it to perform its desired functions, it is preferred to add a coil spring 39 which may conveniently surround a pin on the top of the locking pawl and fit within a recess on the end of the supporting post 30.

In operation the controlling lever 13 is free to be moved as desired as long as all of the elevator doors 37 remain closed, but when the car stops at any landing to receive passengers or to let passengers off, the switch 36 for that landing is closed as soon as the elevator door begins to open and thereby closes the circuit through the magnet 29 and said magnet becomes energized and attracts its armature 31 and swings the dog 24 to the position shown in Fig. 2, where it will engage the pointed end of the locking pawl 15 and prevent said locking pawl being forced out of engagement with the shoulders on the locking bar 12, so that if the operator should attempt to move the controlling lever in either direction to start the car he would find it impossible to do so, it being thus securely locked in its central or stopping position.

This locking effect continues until the door is closed, when the switch 36 is again opened, breaking the circuit through the magnet so that the magnet becomes deenergized and permits the spring 26' to withdraw the dog 24 and enable the locking pawl 15 to freely

ride over the shoulders of the locking bar when the latter is moved in either direction by the controlling lever.

With this invention the controller is positively locked against movement for starting the car unless all doors of the elevator shaft are closed, and consequently there is no danger of accident from starting while a passenger is getting on or off the car.

The engaging parts of the locking device are made of hard metal to stand the wear to which they are subjected and they are made removable so as to be readily renewed when desired. The brace 22 prevents the buckling of the locking bar in event of an attempt being made to move the controlling lever when the device is locked. The parts may be readily assembled by fitting the trunnions and the brace in the sockets or hollow bosses provided therefor on the side walls of the casing and the parts are readily accessible for examination by removing the sheet metal cover plate 11.

What I claim as my invention and desire to secure by Letters Patent is:

1. An elevator locking device, comprising a locking bar adapted to be connected with an elevator controller, a casing in which the locking bar is mounted to slide, there being shoulders on the locking bar, a locking pawl for engaging the shoulders, a dog adapted to move into engagement with the locking pawl to hold it in its engagement with the shoulders of the locking bar, a magnet for moving the dog, and switches depending upon the position of the elevator doors for controlling the circuit through the magnet to cause the locking of the elevator controller whenever one of the elevator doors is open.

2. An elevator locking device, comprising a locking bar for connection with the controller of the elevator, a casing in which the locking bar is slidably mounted, a block removably secured to the locking bar and provided with engaging shoulders, a locking pawl pivotally mounted in the casing, a removable engaging tooth on the locking pawl adapted to ride on the locking bar and engage said shoulders, a dog pivotally mounted in the casing and adapted to swing into engagement with the locking pawl to hold the locking pawl in its engagement with the locking bar, an electro-magnet for swinging the dog, and switches dependent upon the position of the elevator doors for controlling the circuit of the magnet to lock the elevator controller when one of the elevator doors is open.

3. An elevator locking device, comprising a locking bar for connection with an elevator controller, a sectional casing forming guide bearings between its sections through which the locking bar passes, there being engaging shoulders on the locking bar within the cas-



ing and also hollow bosses on the side walls of the casing sections forming sockets, a locking pawl adapted to engage the shoulders of the locking bar and having trunnions  
5 fitting in some of the said sockets, a brace mounted in other sockets and bearing against the locking bar opposite the locking pawl, a dog mounted on trunnions in other sockets and adapted to engage the locking  
10 pawl and hold it in its engagement with the shoulders of the locking bar, a magnet in the casing for moving the dog, and switches dependent upon the position of the elevator doors for controlling the circuit through the  
15 magnet to lock the elevator controller when one of the elevator doors is open.

4. An elevator locking device, comprising a locking bar for connection with an elevator controller, a sectional casing forming guide  
20 bearings between its sections through which the locking bar passes, there being engaging shoulders on the locking bar within the casing there being hollow bosses on the side walls of the casing sections forming sockets,  
25 a locking pawl adapted to engage the shoulders

of the locking bar and having trunnions fitting in some of the said sockets, a brace mounted in other sockets and bearing against the locking bar opposite the locking  
pawl, a dog mounted on trunnions in other 30 sockets and adapted to engage the locking pawl and hold it in its engagement with the shoulders of the locking bar, there being an arm on the dog, a spring between the arm and the casing, a set screw in the arm for en- 35 gaging the casing and limiting the position of the dog, a supporting post secured to the casing, a magnet mounted thereon for operating the dog, a spring between the supporting post and the locking pawl, and switches 40 dependent upon the position of the elevator doors for closing the circuit through the magnet when one of the elevator doors is open.

In testimony whereof, I affix my signature, 45 in presence of two witnesses.

ALEXANDER G. ROSE, JR.

Witnesses:

R. S. C. CALDWELL,

ANNA F. SCHMIDTBAUER.