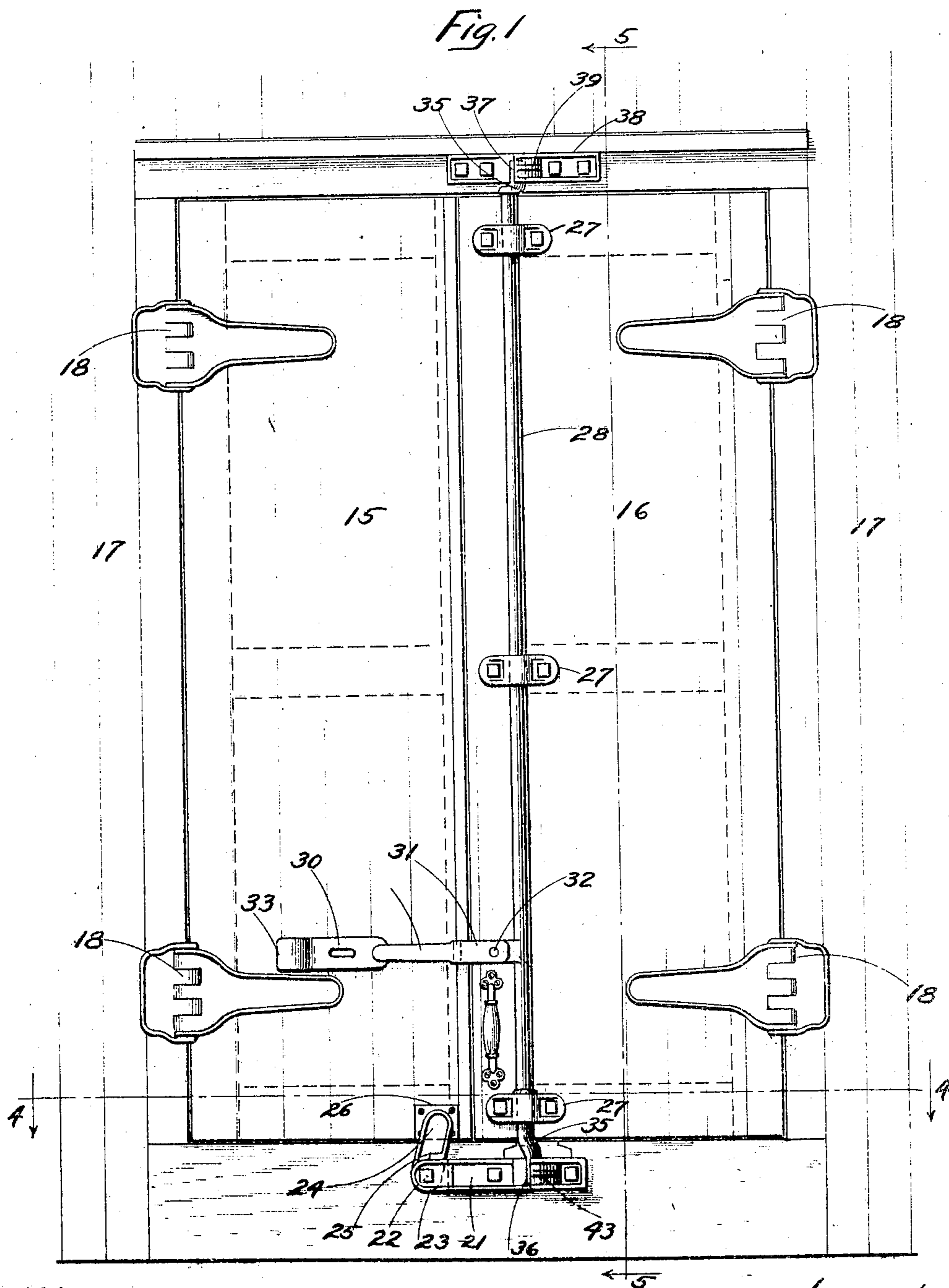


E. POSSON.  
DOOR OPERATING DEVICE.  
APPLICATION FILED NOV. 24, 1908.

934,933.

Patented Sept. 21, 1909.  
3 SHEETS—SHEET 1.



Witnesses:

*W. C. Durnan*  
Lillian A. Libby

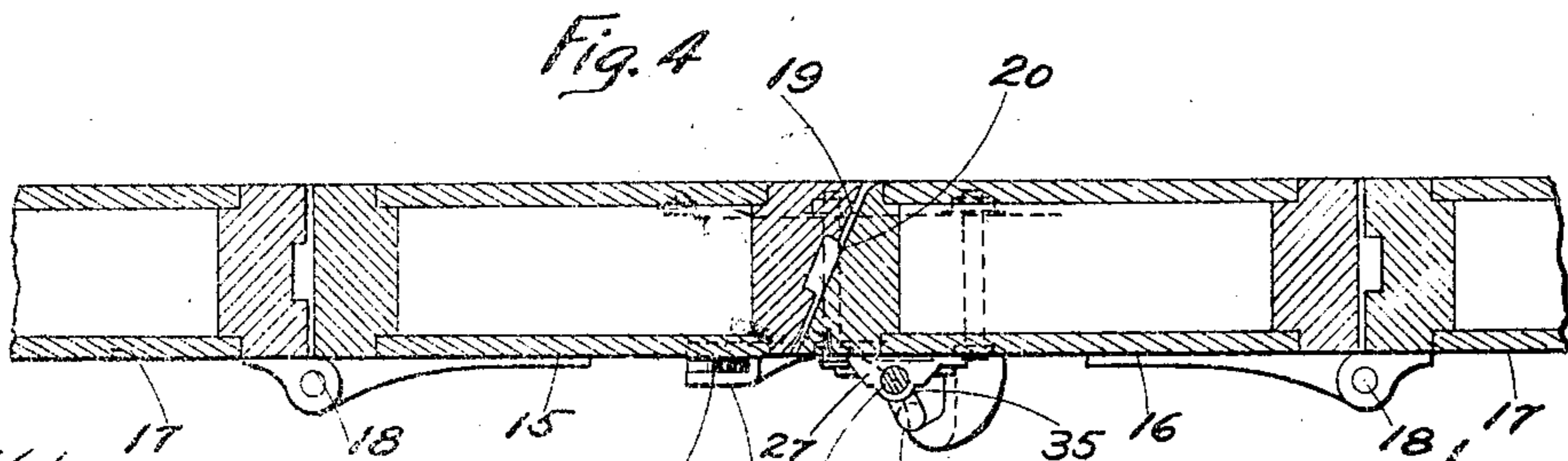
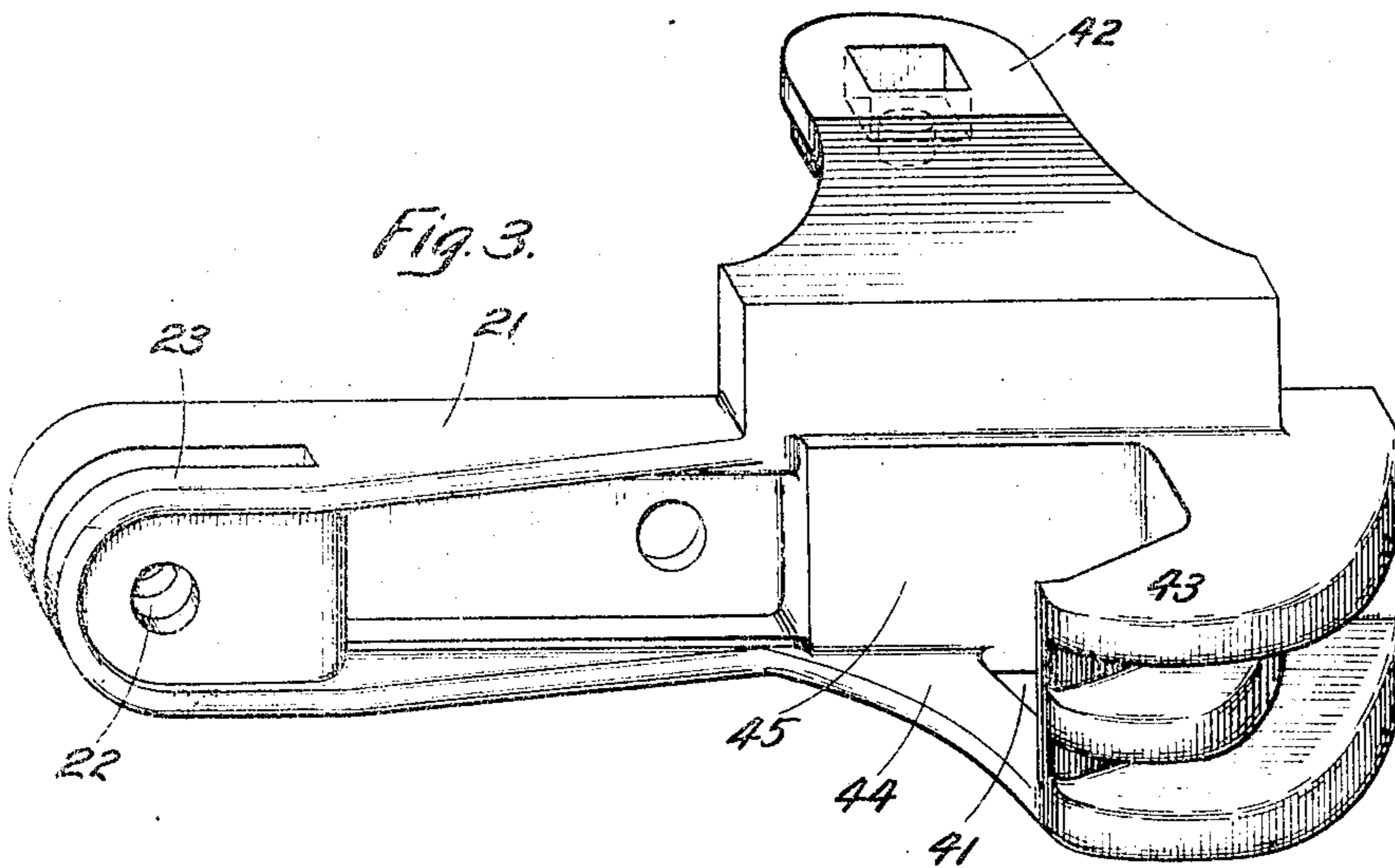
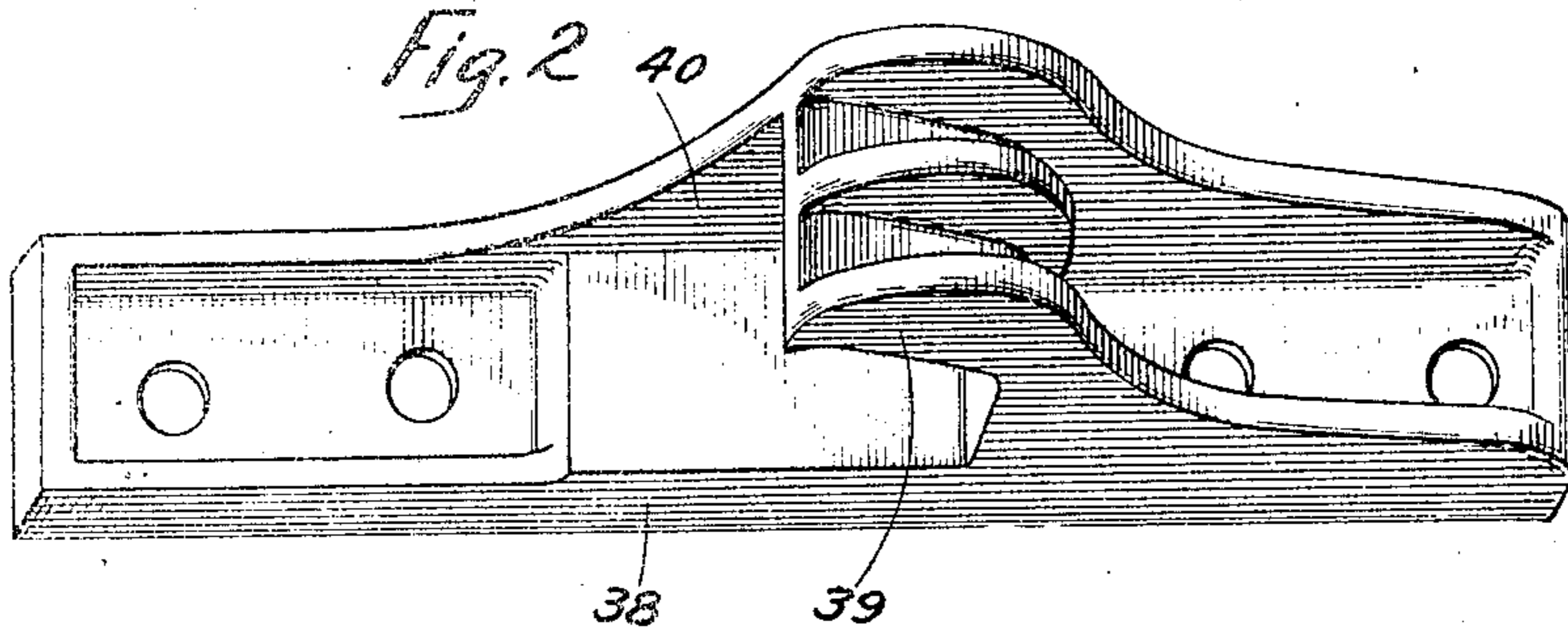
Inventor:

*Edwan Posson*  
By *Menda H. Wilkinson*  
Att'y

E. POSSON.  
DOOR OPERATING DEVICE.  
APPLICATION FILED NOV. 24, 1908.

934,933.

Patented Sept. 21, 1909.  
3 SHEETS—SHEET 2.



Witnesses:

*W. D. Durrant*  
*Lillian A. Durrant*

24

23

28

36

35

16

Inventor,

*Edward Posson*

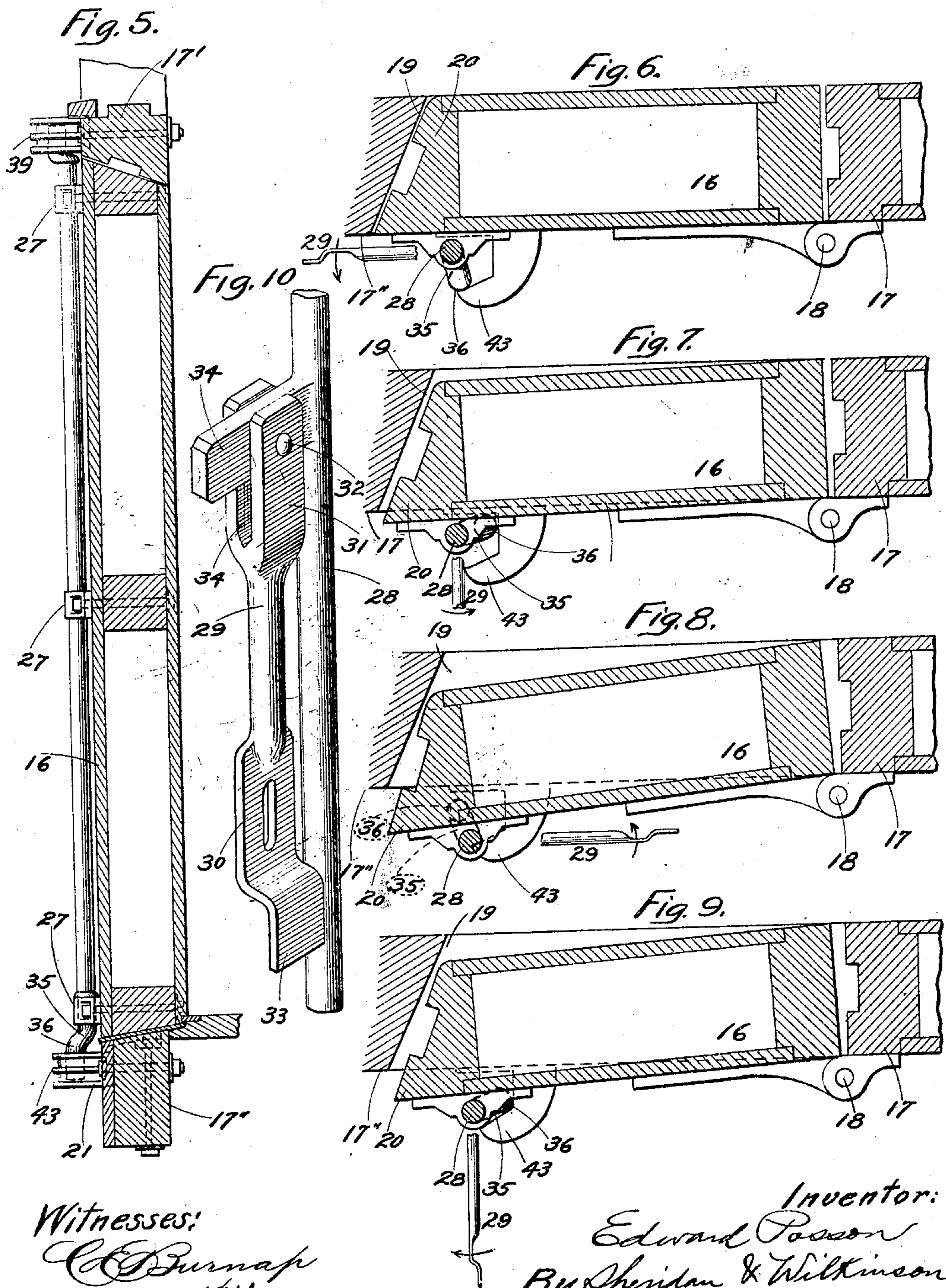
*By Sheridan & Wilkinson*

*Attys*

E. POSSON.  
DOOR OPERATING DEVICE.  
APPLICATION FILED NOV. 24, 1908.

Patented Sept. 21, 1909.  
3 SHEETS—SHEET 3.

934,933.



Witnesses:  
C. D. Burnap  
Lillian A. Kibby

Inventor:  
Edward Posson  
By Sheridan & Wilkinson  
Attys

# UNITED STATES PATENT OFFICE.

EDWARD POSSON, OF CHICAGO, ILLINOIS.

## DOOR-OPERATING DEVICE.

934,933.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed November 24, 1908. Serial No. 464,236.

To all whom it may concern:

Be it known that I, EDWARD POSSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Operating Devices, of which the following is a specification.

The principal object of my invention is to provide an improved device for opening and closing doors.

A further object is to provide a device for opening and closing hinged doors which fit tightly when closed so that considerable force may be necessary to move them.

My invention is applicable to refrigerator car doors which are hinged at the sides and made of considerable thickness so as to afford insulation against transmission of heat and which fit tightly in the door frames.

The foregoing objects, as stated, and various other objects will be made apparent in the following specification and claims when taken in connection with the accompanying drawings in which—

Figure 1 is a front elevation of a pair of doors showing my invention applied thereto. Figs. 2 and 3 are perspective views of details. Fig. 4 is a horizontal section on the line 4 in Fig. 1, looking in the direction of the arrow. Fig. 5 is a vertical section on the line 5 in Fig. 1, looking in the direction of the arrow. Figs. 6, 7, 8 and 9 are diagrammatic horizontal sections showing the mechanism of my invention in various operative positions, and Fig. 10 is a detail perspective view.

My invention is capable of embodiment in a wide variety of forms and it may be applied under widely varying circumstances. In the drawings I have illustrated its application to double hinged doors such as are employed on refrigerator cars, and have shown a form of my invention which is at present preferred by me. I will now proceed to describe this specific embodiment of my invention.

The side wall of the refrigerator car is represented by the reference numeral 17, the top sill of the door opening being 17' and the bottom sill thereof being 17''. The door 15 is mounted on the hinges 18 at the sides and its inner edge 19 is beveled as shown in Fig. 4. The other door 16 is mounted on hinges 18 at the opposite side of the door

opening and its inner edge 20 is oppositely beveled as shown in Fig. 4. It will be seen that the door 15 must be closed first and that the door 16 closes upon it. Also the door 16 must be opened first to release the door 15. Attached to the door sill 17' is a bracket 21 which has a jaw 23 at its end. A tongue 24 is pivoted in the jaw 23 by means of the bolt 22, a shoulder 25 being provided so as to prevent the tongue 24 from falling to the right when it is in the position shown in Fig. 1. A plate 26 is attached to the lower corner of the door 15 and the tongue 24 engages this plate and holds the door 15 in closed position. When it is desired to open the door 15 the tongue 24 can be thrown over to the left.

A vertical shaft 28 is rotatably mounted near the meeting edge of the door 16 on the outside thereof, being supported by a plurality of journal brackets 27. A short arm 34 projects at a right angle from the shaft 28 and is engaged between the jaws 31 on the end of the hand lever 29, the arm 34 and the jaws being connected together by the pivot pin 32. The lever 29 has a handle 33 at its extremity and is flattened at an intermediate portion 30 and there provided with a slot to engage a staple in the door 15.

At its top and bottom ends the vertical shaft 28 is bent aside to form short cranks 35, the bottom crank 35 terminating in a short wrist pin 36 and the top crank 35 terminating in a similar wrist pin 37. The shaft 28 and the two cranks or offsets 35 are all in one plane. The extreme ends of the shaft 28 which I call wrist pins may otherwise be denominated as eccentrics, their central axes being parallel to the shaft 28, but at one side thereof. Attached to the top sill of the door opening is a bracket 38 having a jaw 39 strengthened by the top web 40. (See Figs. 1 and 2). The bracket 21 which is attached to the bottom door sill 17'' has a jaw 43 strengthened by a web 44 behind which is an opening 41 so that dirt may not accumulate within the jaw 43. A tongue 42 extends back from the bracket 21 and is bolted to the door sill 17''.

The face of the bracket which is opposite the jaw 43 is designated by the reference numeral 45.

Assuming that the doors are in closed position, it will be seen that they are prevented from opening because any movement toward

opening the inner door 15 is resisted by the overlapping door 16 as well as by the tongue 24, and moreover any tendency of the door 16 to open is resisted by the eccentrics 36 and 37 striking against the respective jaws 43 and 39. The eccentrics are held against displacement by means of the arm 29, which is sealed to the staple on the door 15 at 30, and thus prevents rotation of the shaft 28. The parts concerned are shown diagrammatically for the closed position in Fig. 6. Inasmuch as the action between the offset 37 and the jaw 39 is exactly the same as between the offset 36 and the jaw 43, the following description of the mode of operation of the device will be restricted to the latter elements. Assuming now that it is desired to open the doors, the seal at 30 will be broken and the lever 29 swung around in the direction of the arrows shown in Figs. 6 and 7. This will withdraw the eccentric 36 from the jaw 43 and cause it to push against the face 45 of the bracket 21 and thus the door will be pried open as shown in Fig. 7. A further rotation of the lever 29, as shown in Fig. 8, will swing the eccentric offset 36 around far enough so that as the door 16 opens the said offset 36 will clear the point of the jaw 43. In closing the door, the lever 29 should have the position shown in Fig. 8 so as to permit the offset 36 to again clear the point of the jaw 43. Thereafter the lever 29 should be rotated in the opposite direction, as shown in Fig. 9, thus pushing the offset 36 against the jaw 43 and forcing the door into its place. At any time after pulling the lever 29 away from the staple on the door 15, the lever can be rotated downward about its pivot pin 32 so as to clear any obstacles, and it will naturally hang in this position when released. After the door 16 has been opened it is an easy matter to open the door 15 because its inner edge can be seized readily and moreover its inner edge is not then subject to any frictional restraint. The lever 29 laps across the meeting edges of the doors and the proportions are such that a very great force tending to open the doors would exert only a moderate pull on the staple at 30. Thus it appears that the construction is strong and secure.

A particular advantage of my device is that it affords means for both opening and closing the door, permitting a powerful leverage to be applied for either purpose. The structure is simple and convenient, and there is nothing to obstruct the door opening when the doors are thrown back.

Referring to Fig. 6 it will be apparent that when the door has been forced home to closed position the line of eccentricity of the eccentric parts of the shaft 28 lies substantially perpendicular to the inner face of the jaws 43 and 39, and that said line of eccentricity also lies substantially tangent to the

arc of movement of the door upon its hinge center 18. By reason of this relation of the parts any force tending to move the door to open position has practically no component acting in a direction to rotate the shaft 28 to release position. On the contrary with relation to such a force, shaft 28 and its eccentric parts 35 are on a dead center by reason of the fact that the line of eccentricity lies substantially tangent to the path of the movement of the door on its hinge axis 18. Furthermore by reason of the fact that the line of eccentricity is substantially perpendicular to the inner face of the jaws 43 and 39 there is no tendency for the eccentric parts to slip on said jaws. A further advantage of this arrangement arises from the fact that during the last part of the closing movement of the door, that is when the greatest resistance is met, the force applied to the shaft 28 is acting with its greatest advantage or leverage by reason of the fact that as the line of eccentricity approaches the perpendicular to the inner face of the jaws 43 and 39 the offsets of the shaft 28 move in lines almost parallel to the inner faces of said jaws, thus imparting the minimum of movement to the door but with the maximum of force applied thereto.

It will readily be observed that this device can be applied to a single door as well as to double doors. For this purpose the door 15 may be regarded as a solid wall against which the door 16 closes. Further it will be observed that the mechanism attached to the door might be interchanged with that attached to the car wall. That is, the shaft 28 might be journaled on the wall adjacent to the door and one or both of the brackets 21 and 38 might be attached to the door in a position to be engaged by the respective offsets 36 and 37. I consider that such an interchange in the location of the parts would be comprehended under the following claims as an equivalent construction. These variations in the structure are mentioned merely by way of example, for it is obvious that a great variety of other changes might be made within the scope of one or more of the appended claims.

I claim:

1. In a car a hinged door, a shaft rotatably mounted on said door adjacent its free edge, the ends of said shaft being eccentric and projecting beyond the edges of the door, outer and inner bearing jaws fixed to the car side and co-acting with said eccentric ends, the eccentricity of said ends being so related to the position of and distance between said inner and outer jaws that when said shaft is rotated to cause said eccentric ends to project outwardly from the car side into contact with said outer jaws, said door is thereby forced inwardly to closed position, and when said shaft is

rotated to cause said eccentric ends to project inwardly toward the car side into contact with said inner jaws said door is thereby forced outwardly.

5 2. In a car a hinged door, a shaft rotatably mounted on said door adjacent its free edge, the ends of said shaft being eccentric and projecting beyond the edges of the door, outer and inner bearing jaws fixed to  
10 the car side and co-acting with said eccentric ends, the eccentricity of said ends being so related to the position of and distance between said inner and outer jaws that when said shaft is rotated to cause said eccentric  
15 ends to project outwardly from the car side into contact with said outer jaws, said door is thereby forced inwardly to closed position, the line of eccentricity of said ends being substantially perpendicular to the co-  
20 acting surfaces of said outer jaws and lying substantially tangent to the path of movement of said door when said door comes to rest in closed position, and when said shaft is rotated to cause said eccentric ends to  
25 project inwardly toward the car side into contact with said inner jaws said door is thereby forced outwardly.

3. In a device of the class described, an integral bracket comprising a base plate  
30 adapted to be secured to a door frame, one part of said base plate constituting an inner jaw adapted to lie substantially parallel to the plane of the door opening, an outer jaw spaced from said inner jaw, a web connect-  
35 ing the lower part of the free end of said

outer jaw with said inner jaw and leaving an opening between said jaw and web.

4. In a device of the class described, an integral bracket comprising a base plate adapted to be secured to the outer side of a door sill, an inward projection adapted to overlie and be secured to the upper face of the sill, one part of said base plate constituting an inner jaw adapted to lie substantially parallel to the plane of the door  
45 opening, an outer jaw spaced from said inner jaw, a web connecting the lower part of the free end of said jaw with said inner jaw and leaving an opening between said jaw and web.

5. In a device of the class described, an integral bracket comprising a base plate adapted to be secured to the outer side of a door sill, an inward projection adapted to overlie and be secured to the upper face of  
55 the sill, one part of said base plate constituting an inner jaw adapted to lie substantially parallel to the plane of the door opening, an outer jaw spaced from said inner jaw, a web connecting the lower part of the  
60 free end of said jaw with said inner jaw and leaving an opening between said jaw and web and a tongue pivoted to said base plate at the end thereof opposite said jaw.

In testimony whereof, I have subscribed  
65 my name.

EDWARD POSSON.

Witnesses:

EDYTHE M. ANDERSON,  
LILLIAN A. KIBBY.