

No. 659,988.

Patented Oct. 16, 1900.

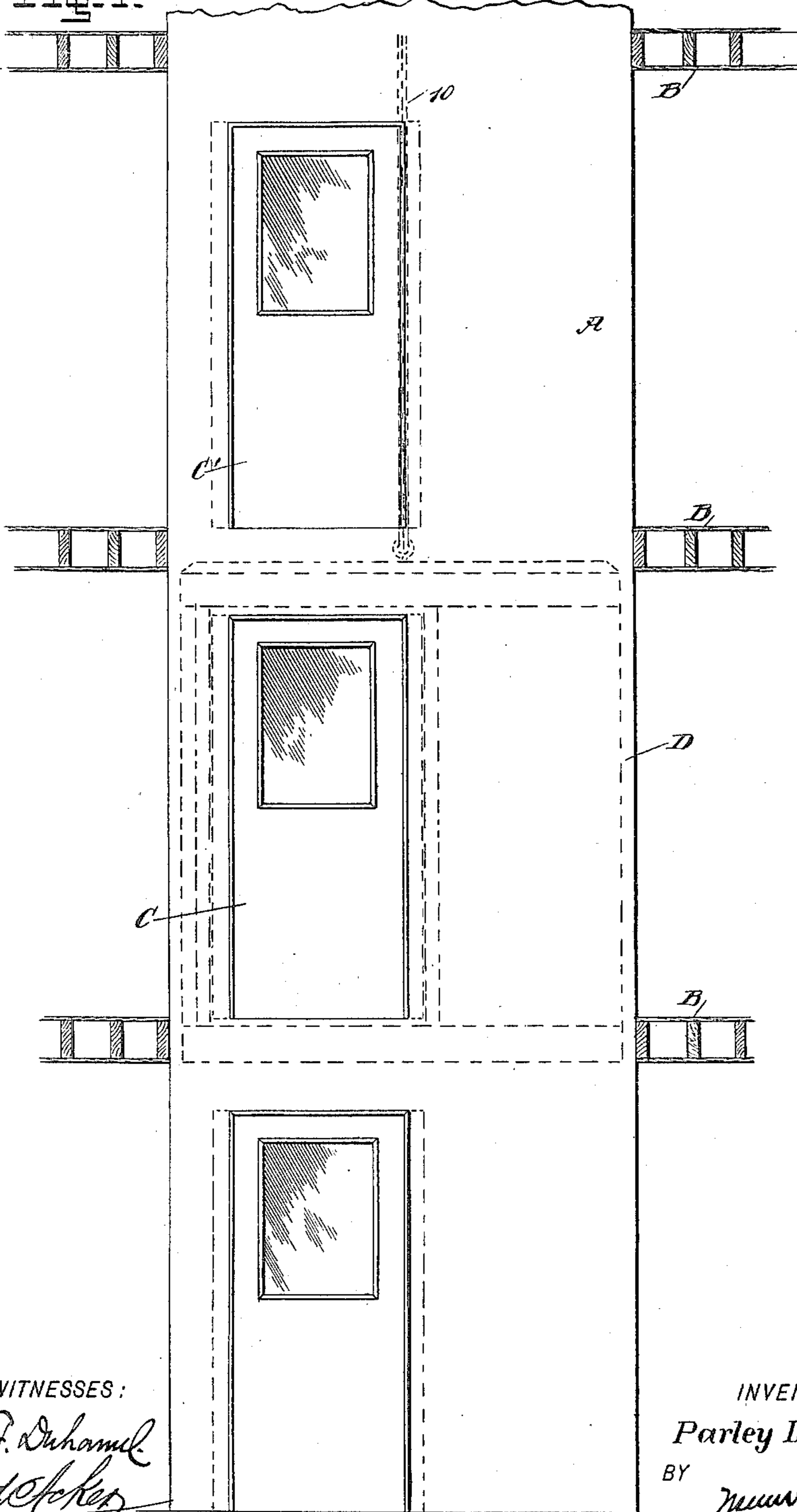
P. D. ROOT.  
ELEVATOR.

(Application filed Apr. 26, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

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2 Sheets—Sheet 2.

Fig. 2.

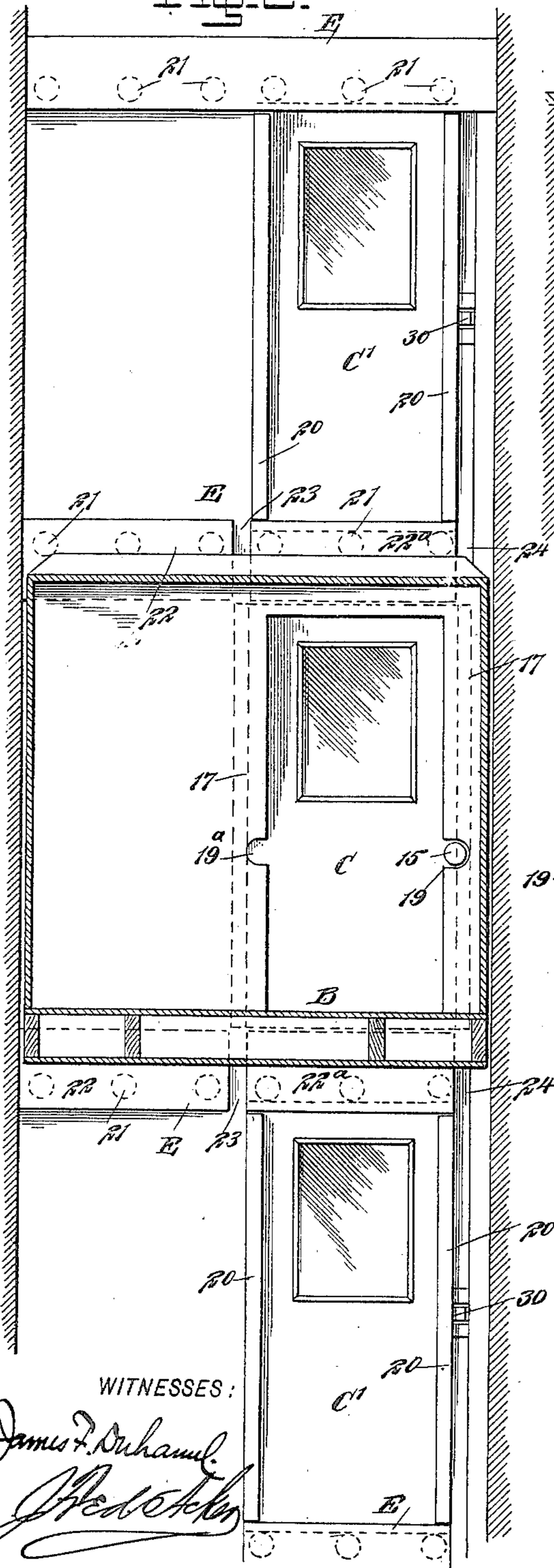


Fig. 3.

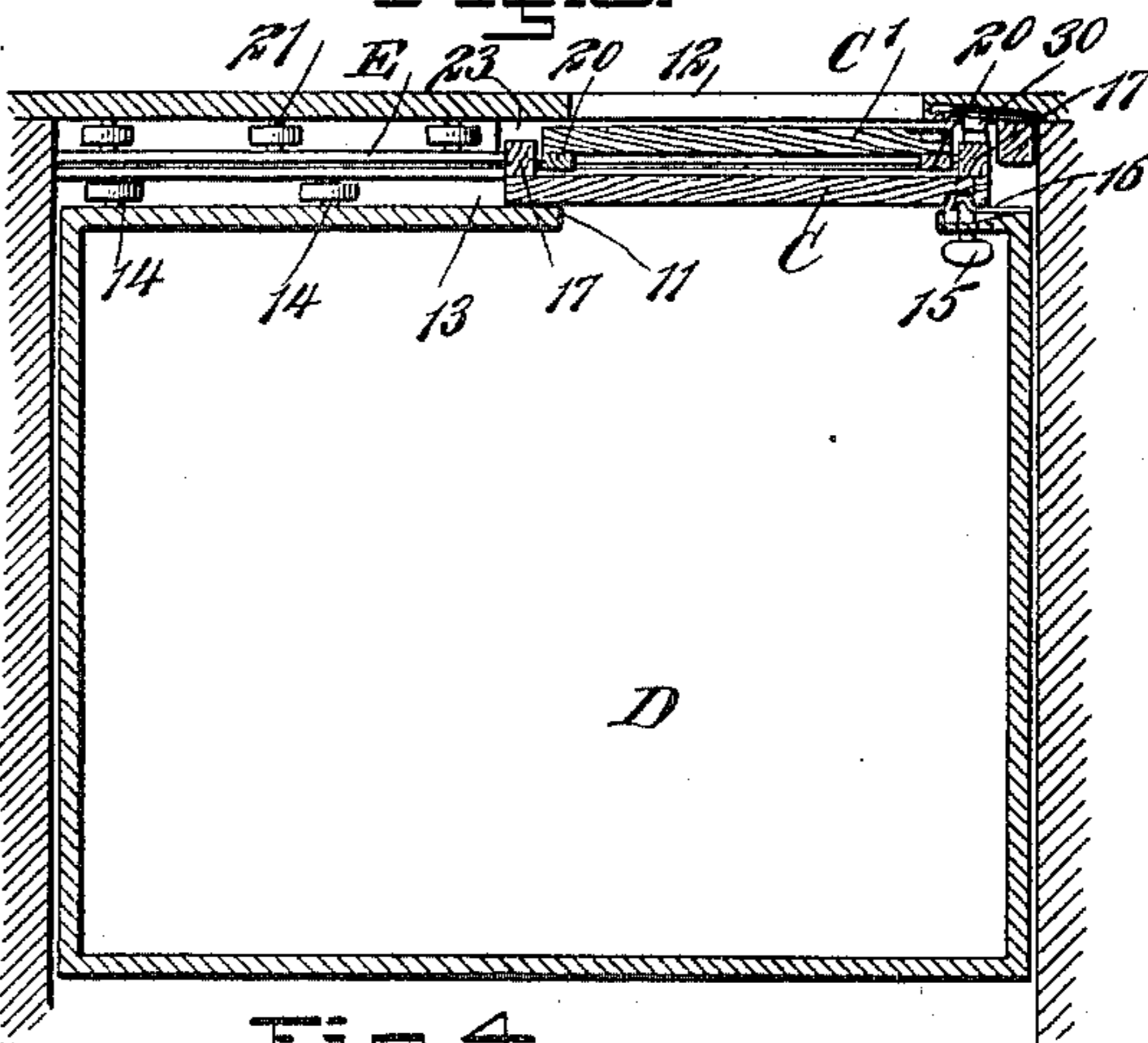


Fig. 4.

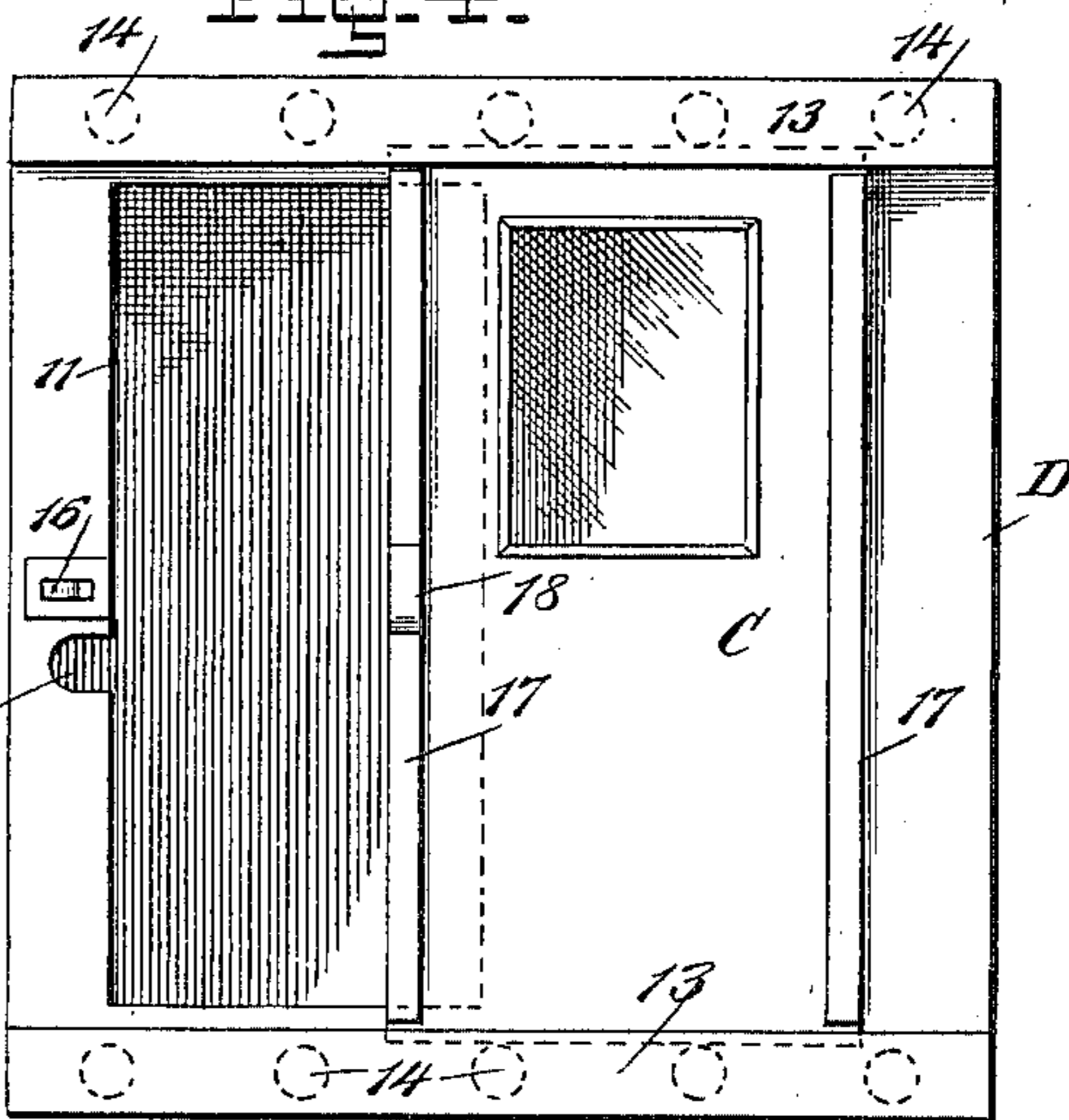


Fig. 5.

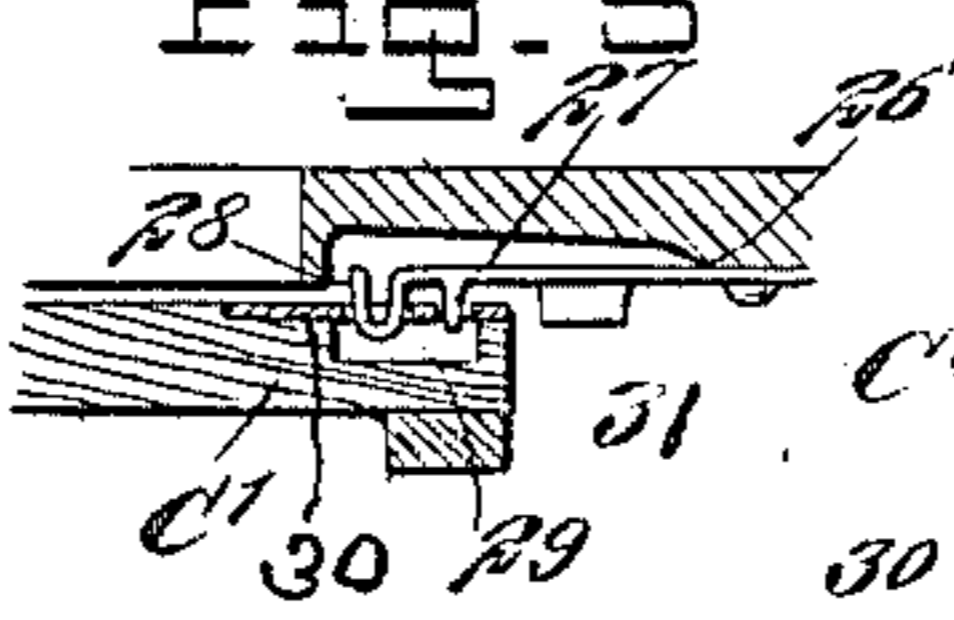
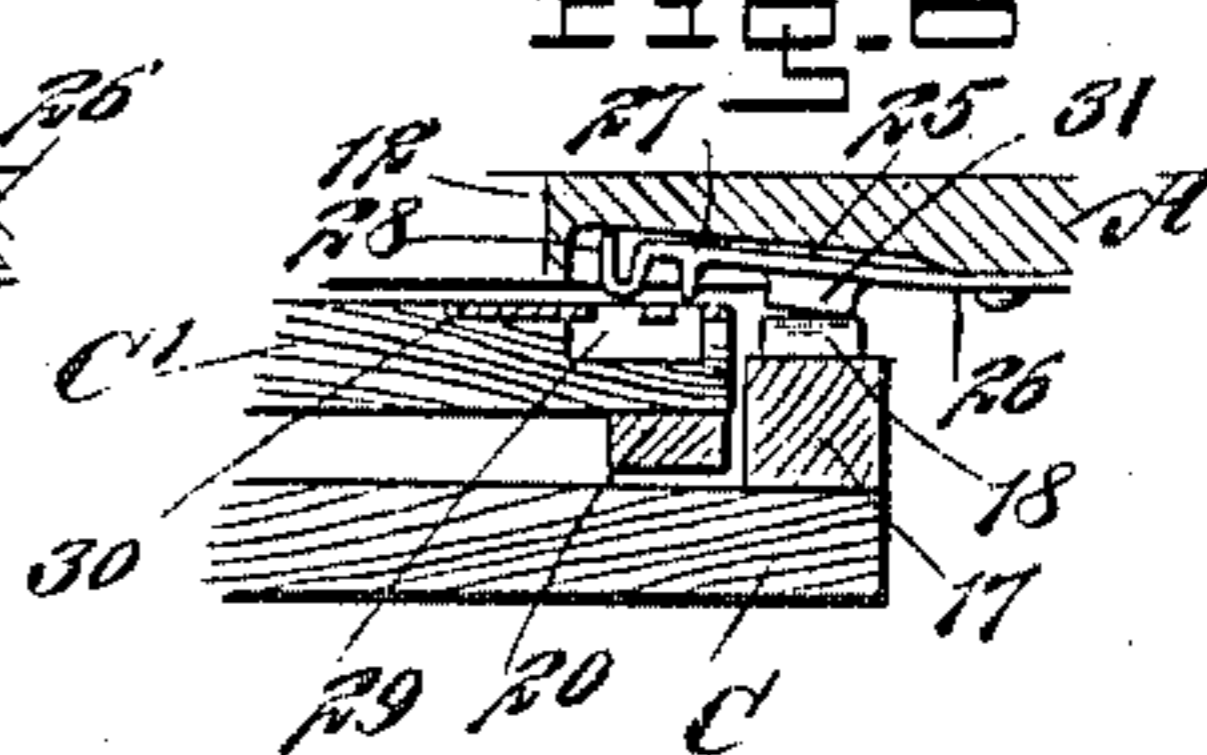


Fig. 6.



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# UNITED STATES PATENT OFFICE.

PARLEY D. ROOT, OF WAKEFIELD, RHODE ISLAND.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 659,988, dated October 16, 1900.

Application filed April 26, 1900. Serial No. 14,440. (No model.)

*To all whom it may concern:*

Be it known that I, PARLEY D. ROOT, a citizen of the United States, and a resident of Wakefield, in the county of Washington and State of Rhode Island, have invented a new and useful Improvement in Elevators, of which the following is a full, clear, and exact description.

One purpose of the invention is to provide safety-doors for elevator and other shafts, and a car which travels in the shaft, the doors at the floors of the shaft and the door in the elevator being independently mounted and yet so arranged that while the shaft and elevator-car doors are closed the car may freely pass up and down the shaft, but when the car is stopped at a floor and its door is opened the door in the shaft at that floor will be simultaneously opened, as the two doors will at that time be brought into interlocking engagement and one will operate the other.

Another purpose of the invention is to provide a construction whereby the doors in the shaft cannot be opened from a landing or room, and the movement of the door of the car in one or the other direction will automatically open or close and unlock and lock the shaft-door at any one floor.

A further purpose of the invention is to provide a construction which will positively prevent the movement of a car up or down during the time the door is open or even partially open.

Another purpose of the invention is to provide a construction whereby the door of the car cannot be opened until the car is brought to a full stop and at a floor, and the door at such floor is opened simultaneously with the door of the car, as the door of the car and the door in the shaft will at that time be brought into interlocking engagement and the two doors will slide together on suitable rails, while projections from the doors will at such time prevent the car from moving up or down.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the 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 front elevation of a portion of an elevator-shaft, various floors being shown in section. Fig. 2 is a vertical section through a portion of an elevator-shaft having the improvements applied and a section through the car, which is shown at rest at one of the floors, the car-door being closed. Fig. 3 is a horizontal section taken through the elevator-shaft and through the car, the section being taken about midway between floors. Fig. 4 is a front elevation of the car. Fig. 5 is a horizontal section through a portion of the elevator-shaft and a door provided for the shaft, illustrating the latch for the said door, the latch being in locking engagement with the door; and Fig. 6 is a view similar to Fig. 5, showing also a partial horizontal section through the door of the car and illustrating the manner in which the latch for a shaft-door is automatically carried out of engagement with said door through the medium of the car.

A represents an elevator-shaft; B, floors through which the shaft passes, and C represents the door of the car D, traveling in the shaft, which car is supported by the usual rope or cable 10. The door C is adapted to close the passage-way 11 leading into the car, and the shaft is provided with openings 12, which openings are normally closed by doors C', which doors can be opened only through the medium of the car-door. The car-door C is held to travel in tracks 13, located at the top and bottom of the front portion of the car, the tracks being substantially U-shaped in cross-section, and the tracks are provided with suitable friction-rollers 14, so that the door may move with the least possible resistance. A knob 15 or a handle of any kind is secured to the inner face of the car-door at or near the edge, which is adjacent to the closing-jamb of the entrance-opening 11.

Any suitable latch may be provided for the car-door, but usually a simple spring 16, of slight resistance, is attached to the closing-jamb of the car and enters a recess in the inner face of the car-door, as illustrated in Fig. 3. The spring 16 thus forms a friction-latch, which locks and releases as the door is closed or opened. The outer face of the car-door is provided at each longitudinal edge with a rib 17, and these ribs extend from

one track 13 to the other. The rib which is adjacent to the closing-jamb of the entrance-opening 11 is provided with an offset 18, adapted to release the latches for the doors C' of the elevator-shaft, as will be hereinafter described. Openings 19 and 19<sup>a</sup> are made in opposite side walls of the passage-opening 11 of the car, which recesses are adapted to receive the knob or handle 15 of the door, and thus permit the door of the car to fully uncover or to completely close the opening 11.

Each shaft-door C' is located at the inner face of the front wall of the shaft A, and each door C' is made of such size that it will fit in the space between the ribs 17 of the car-door C, as shown in Fig. 3. Each shaft-door C' is provided with a longitudinal rib 20 upon its inner face at or near its vertical edges, and these ribs are adapted to engage with or to lie between the ribs 17 on the car-door.

The shaft-doors C' travel in tracks E, located at the top and bottom portion of a floor at the inner front face of the shaft A. These tracks are preferably U-shaped in cross-section and are provided with friction-rollers 21. The tracks E are made in two sections 22 and 22<sup>a</sup>, as illustrated in Fig. 2. A space 23 is provided between the inner ends of the sections 22 and 22<sup>a</sup> of the track, and another space 24 is provided between the outer end of each track-section 22<sup>a</sup> and what may be termed the "closing-jambs" of the openings 12 in the shaft A. These openings 23 and 24 are so placed that when the car-door C is closed the ribs 17 of this door will enter the openings 23 and 24, thus permitting the car D to travel freely up or down the shaft while the doors are closed; but when a car-door is opened at a floor, as stated, it is in locking engagement with the shaft-door C' at that floor, and upon opening a car-door C the shaft-door C' is opened also, and the ends of the ribs of the doors at such time will be brought in engagement with the opposing horizontal edges of the upper and lower tracks at the floor, and the car will consequently be held against movement either upward or downward.

The shaft-doors C' are normally closed by latches 26, preferably of a spring character, which latches are located in recesses 25, produced in the inner faces of the closing-jambs of the door-openings 12 in the shaft, as shown in Figs. 5 and 6, in which the latch is shown at its free end as provided with two projections 27 and 28, and these projections normally enter openings 29, produced in a keeper-plate 30, which keeper-plates are attached to the outer faces of the shaft-doors C' and are concealed by the jamb of the opening 12 when the door is closed. The latches 26 are automatically released from engagement with the shaft-doors when the car reaches a position between the upper and lower walls of the floor, and this release is effected by the offset 18 on one of the ribs of the car-

door C meeting an offset 31 on a latch 26 and forcing the latch outward, as shown in Fig. 6.

The doors of the shaft and the car cannot be opened unless they are moved simultaneously, as one operates the other, and such operation takes place only when the car is in position for ingress or egress between floors.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an elevator, a shaft provided with horizontal tracks, a door for the shaft, slidable in said tracks, a car, and a slidable door for the car, said car-door having an interlocking engagement with the shaft-door when brought opposite the said door and adapted to slide therewith between and into engagement with the tracks of the shaft-door, substantially as and for the purposes set forth.

2. In an elevator, a shaft provided with horizontal tracks, a door for the shaft, slidable in said tracks, a car, and a door for the car, the said doors each being provided with longitudinal ribs of less length than the doors and adapted to interlock when the doors are brought opposite each other, to permit the doors to slide together with the ribs of the car-door between the said tracks, whereby the car will be locked against movement, as set forth.

3. In an elevator, the combination of a shaft having horizontal tracks, a door for the shaft slidable in said tracks, a spring-latch for the door, a car, a door for the car, said door having an interlocking engagement with the door of the shaft when brought opposite it and adapted to slide therewith between and into engagement with the said tracks, and a projection on the car-door for engaging the latch of the shaft-door to release the latch, substantially as described.

4. In elevators, a shaft, a slidable door for the shaft, having ribs formed upon its inner face, the tracks for the door having spaces between them and between their ends and the jamb of the door-opening, a car provided with a slidable door, having ribs upon its outer face, which ribs are adapted to extend at each side of the outer surfaces of the ribs on the shaft-door, the ribs on the car-door being so placed that when the car-door is closed the said ribs will be in vertical alinement with the said spaces, and when the car-door is opened the ribs will engage with the said tracks, as described.

5. In elevators, a shaft, a slidable door for the said shaft, having ribs formed upon its inner face, the tracks for the door having spaces between them and between their ends and the jamb of the door-opening, a car provided with a slidable door, having ribs upon its outer face, which ribs are adapted to extend at each side of the outer surface of the ribs on the shaft-door, the ribs on the car-door being so placed that when the car-door is closed the ribs will be in vertical alinement with the said spaces, and when the car-door is

opened the ribs will engage with the said tracks, a concealed latch for the shaft-door, and a trip carried by the elevator-car and adapted for engagement with the said latch, 5 as and for the purpose set forth.

6. In an elevator, the combination with a shaft-door, and a car-door, said doors having interlocking ribs to permit them to move together, of a spring-latch for locking the shaft- 10 door, and a projection on a rib of the car-door for engaging the latch to release it, substantially as described.

7. In an elevator, the combination with a shaft having horizontal tracks, a door for the 15 shaft adapted to slide in the tracks and having longitudinal ribs, and a spring-latch for

the said door provided with a projection, of a car, and a door for the car, provided with longitudinal ribs adapted to interlock with the ribs of the shaft-door when brought oppo- 20 site said door, one of the ribs of the car-door being provided with a projection adapted to engage the projection of the spring-latch, substantially as and for the purpose set forth.

In testimony whereof I have signed my 25 name to this specification in the presence of two subscribing witnesses.

PARLEY D. ROOT.

Witnesses:

ELMER E. BOOTH,  
FREDK. C. OLNEY.