

No. 610,901.

Patented Sept. 20, 1898.

H. J. HERREN.

ELEVATOR.

(Application filed Sept. 2, 1897.)

(No Model.)

2 Sheets—Sheet 1.

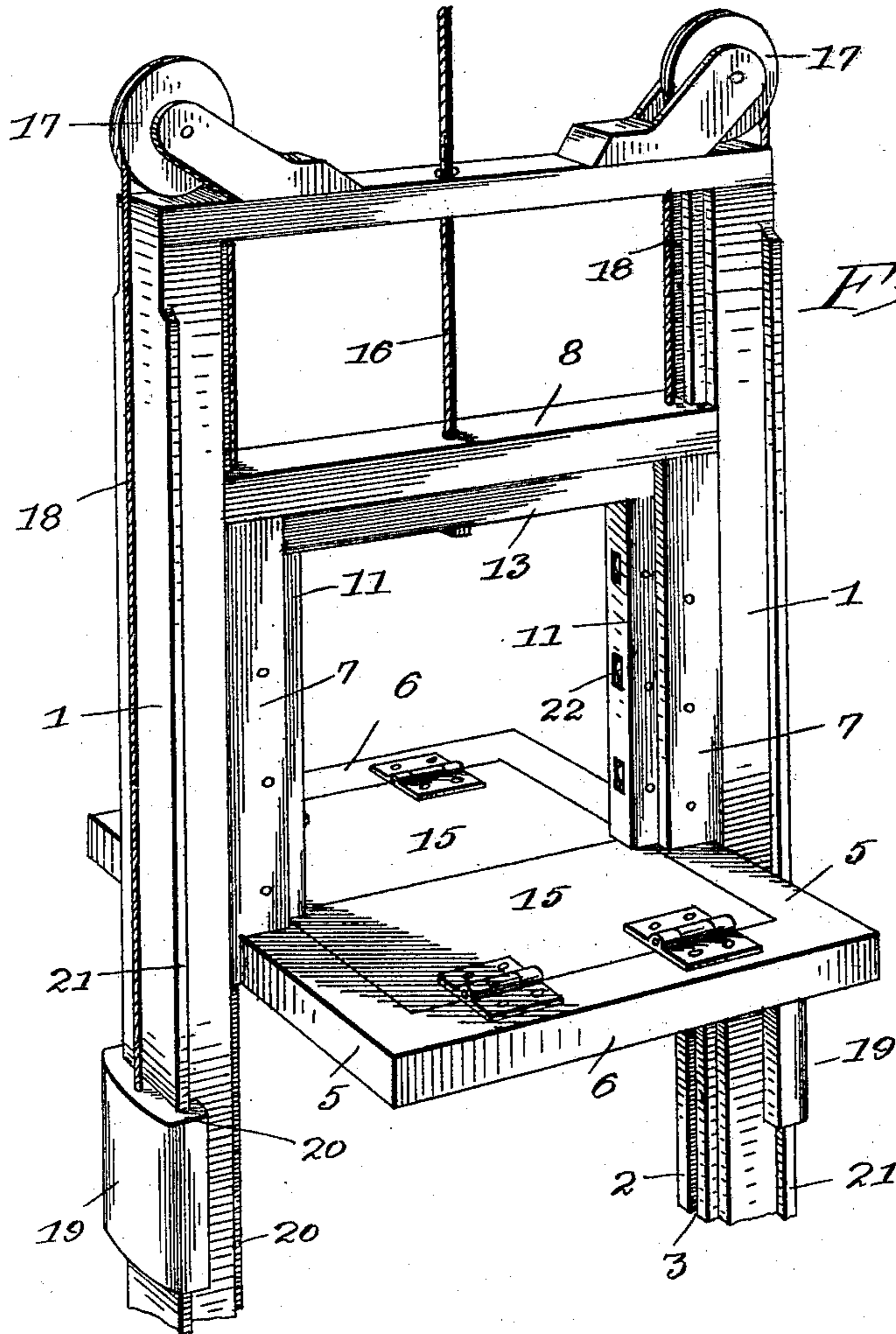


Fig. 1.

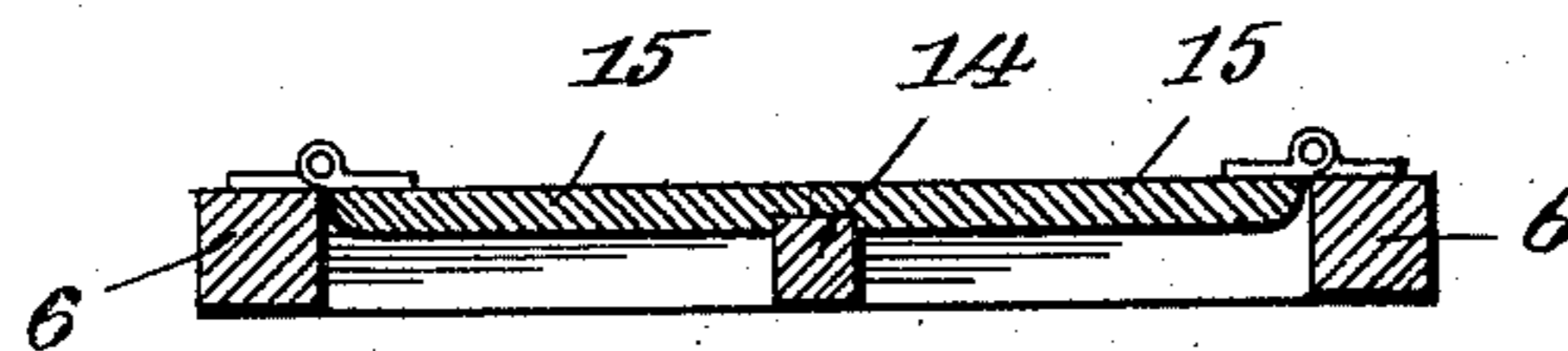


Fig. 4.

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2 Sheets—Sheet 2.

Fig. 2.

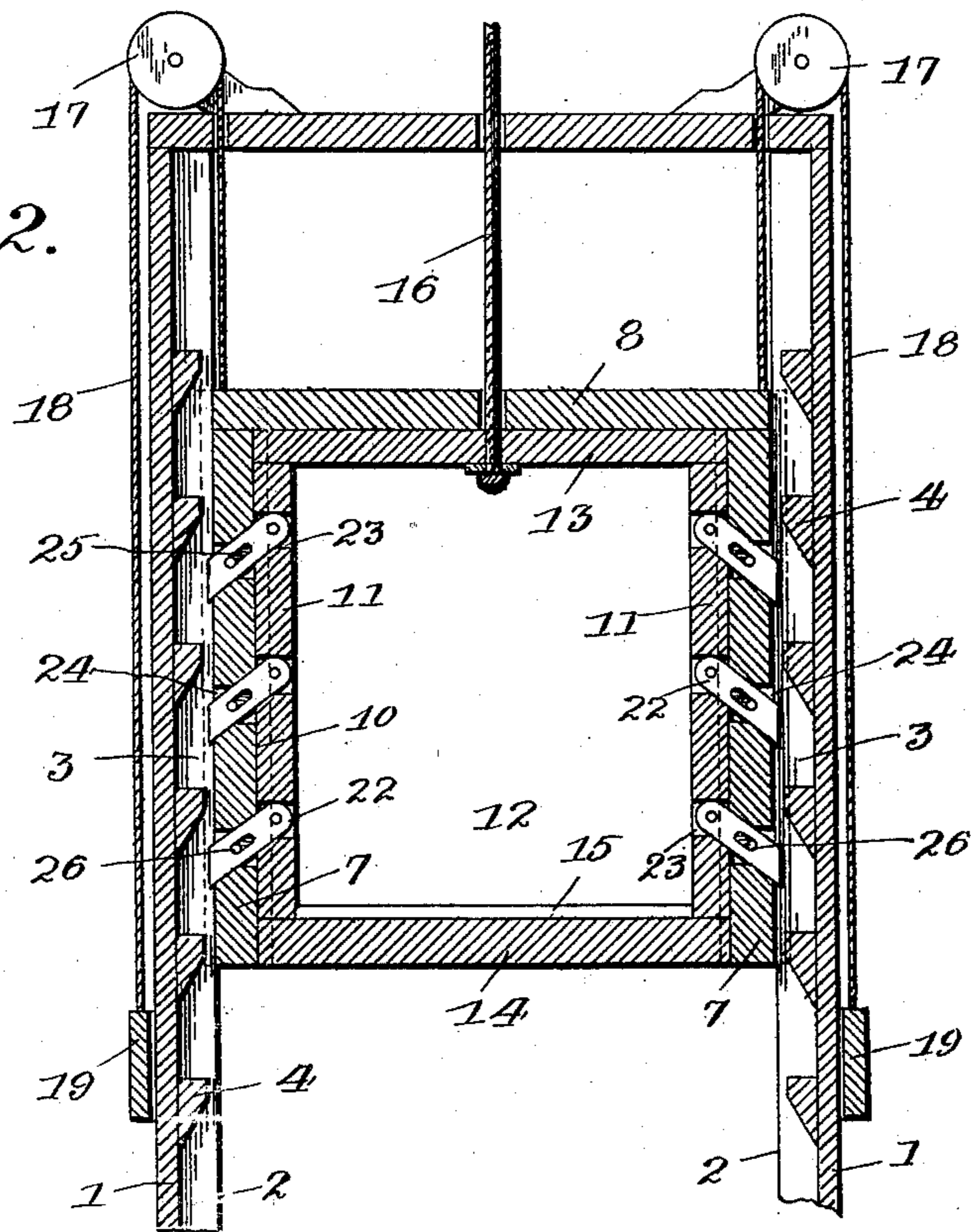


Fig. 5.

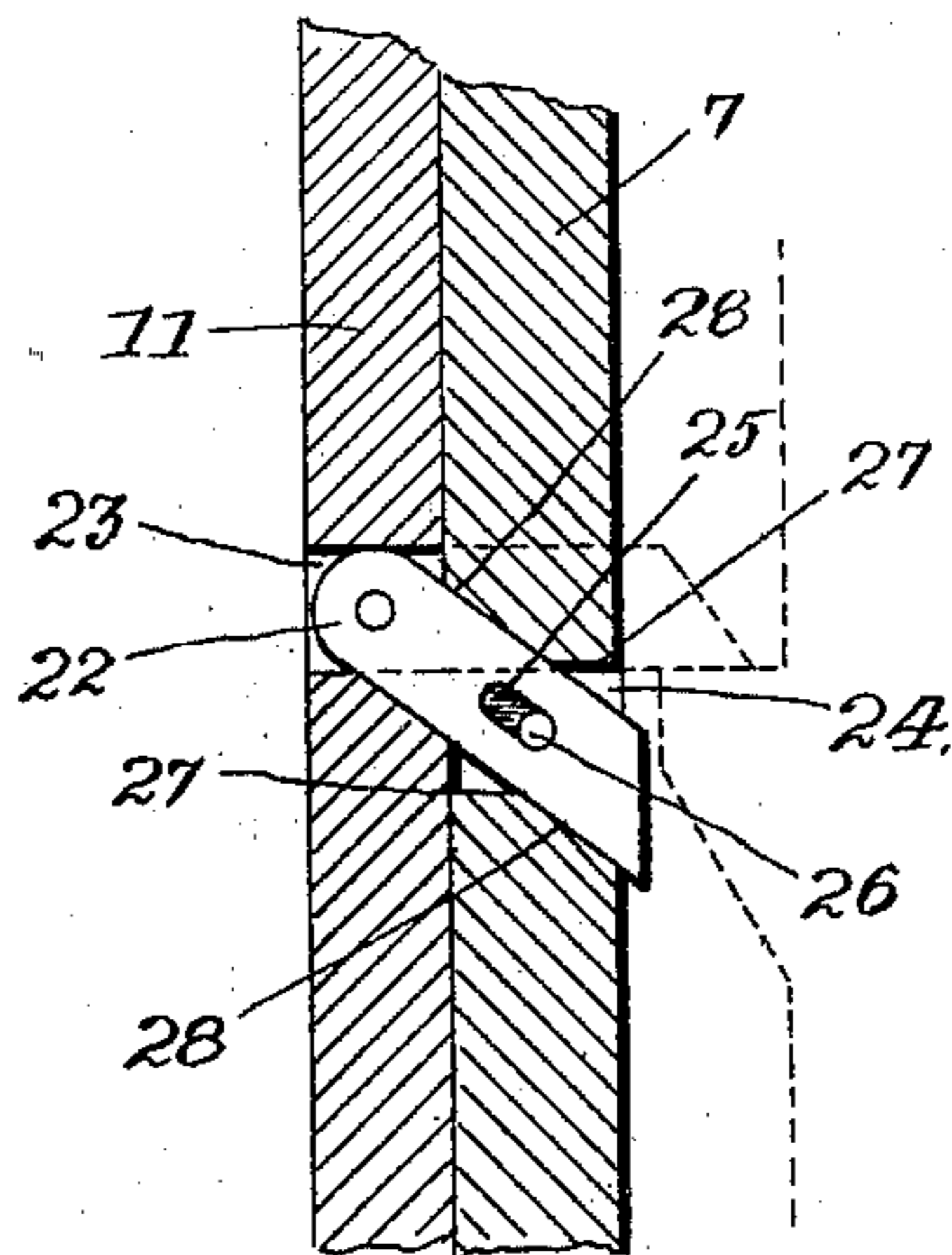
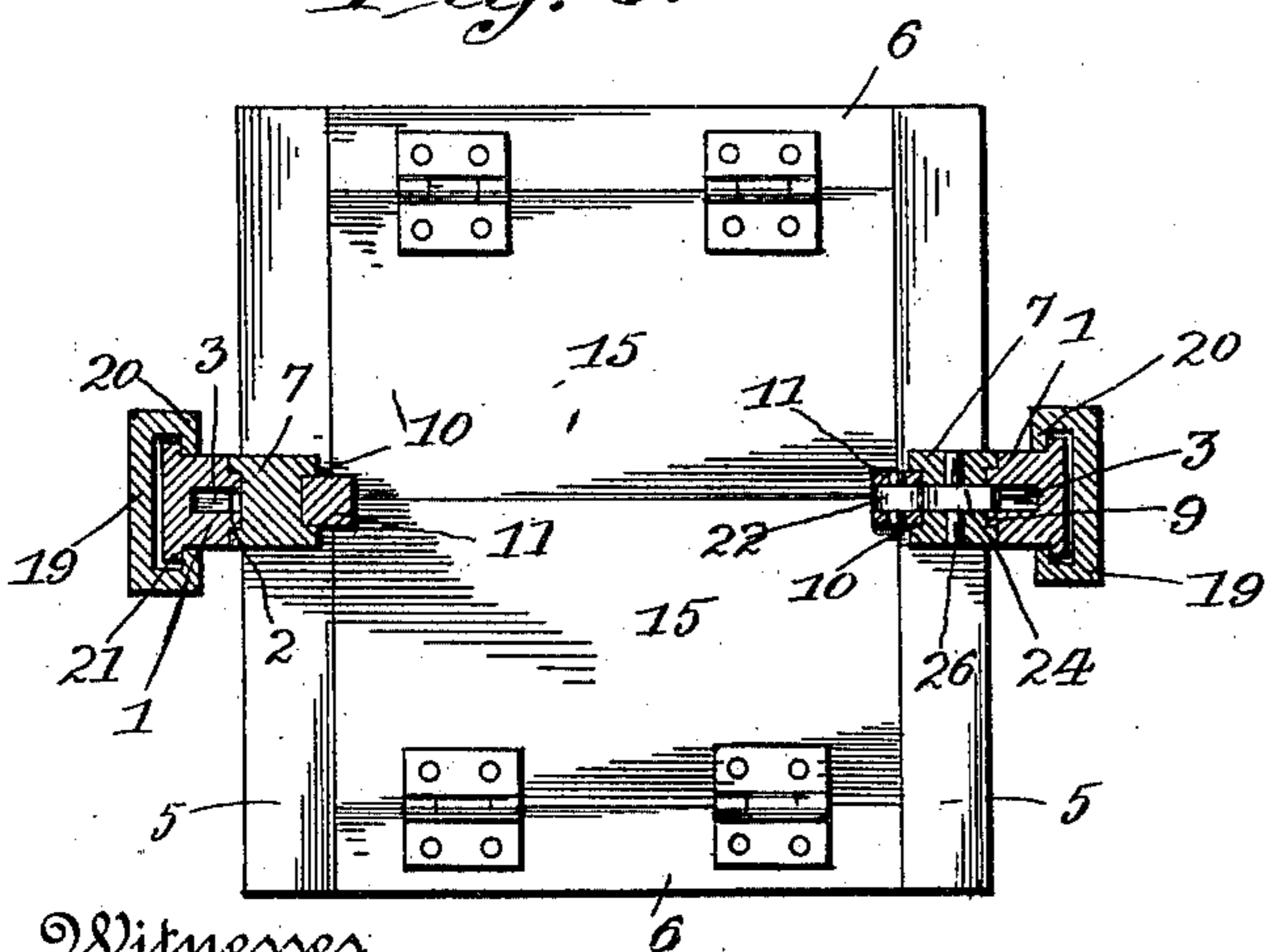


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY J. HERREN, OF WATSON, MISSOURI

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 610,901, dated September 20, 1898.

Application filed September 2, 1897. Serial No. 650,368. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. HERREN, a citizen of the United States, residing at Watson, in the county of Atchison and State of Missouri, have invented certain new and useful Improvements in Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to elevators, and particularly to safety devices for use in connection therewith; and the object in view is to provide a simple and efficient construction and arrangement of parts whereby the yielding or breaking of the hoisting devices will result in an immediate automatic application of catches, whereby the downward movement of the elevator car or platform will be checked.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of an elevator stop mechanism constructed in accordance with my invention. Fig. 2 is a vertical sectional view showing the clutches in their folded or normal positions. Fig. 3 is a horizontal section of the same, showing the floor of the elevator-car in plan. Fig. 4 is a longitudinal section of the elevator-floor. Fig. 5 is a detail view of one of the clutches and the contiguous portion of the apparatus, indicating in dotted lines the operative position of the clutch.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Mounted upon parallel vertical guides 1, preferably extending throughout the length of the elevator shaft or well, is the frame of an elevator-car, having a bottom or floor comprising side and end beams 5 and 6 and vertically-movable swinging floor-leaves 15, preferably hinged at their remote edges upon the beams 6. Rising from the side beams 5 of the floor-frame are uprights 7, connected at their upper ends by a cross-bar 8 and having channeled outer sides to receive the contiguous rabbeted surfaces of the guides 1, said inner surfaces of the guides being preferably ex-

tended to form ribs 2, which fit into the channels of the uprights or slides 7 of the elevator-frame. Said guides are also preferably channeled, as shown at 3, for the reception of racks 4, of which the projections or shoulders terminate short of the inner surfaces of the guides, as clearly shown in Figs. 2 and 3.

Mounted upon the frame of the elevator-car for limited independent vertical movement is a clutch-frame 12, comprising side bars 11 and upper and lower connecting cross-bars 13 and 14, the side bars of said clutch-frame being mounted in channels 10, formed in the inner sides of the uprights or slides 7 of said car-frame. The lower cross-bar 14 of the clutch-frame constitutes a rest which extends transversely between the side bars 5 of the car-floor frame beneath the contiguous edges of the platform or floor-leaves 15, and when the clutch-frame is in its normal position, as indicated in Fig. 2, said platform or floor-leaves are held in a horizontal position flush with the upper surfaces of the floor-frame bars 5 and 6. Obviously the weight of the occupants or contents of the elevator-car is supported indirectly by the clutch-frame, which in turn is maintained in its normal position with relation to the elevator-frame by the hoisting-rope 16 or the equivalent thereof, which preferably extends through registering openings in the cross-bars 8 and 13 and is attached to the latter, the upper side of the cross-bar 13 preferably bearing normally against the under side of the cross-bar 8, whereby in the ordinary operation of the elevator-car the clutch-frame is relieved of a portion of the strain due to the weight of the contents of the car. By mounting the remote edges of the platform or floor-leaves 15 upon the frame-bars of the elevator-car, only the inner edges of said leaves resting upon the cross-bar 14, a portion of the weight of the contents of the car is carried directly by the car-frame proper, while a sufficient downward pressure is applied through the leaves to the cross-bar 14 to insure the prompt depression of the clutch-frame with relation to the car-frame in case the hoisting-rope should become slack or should part.

Mounted in registering openings 24 and 23 in the uprights 7 and 11 of the car-frame and clutch-frame are clutches 22, the inner ends

of which are pivoted to the clutch-frame, while at their intermediate points they are provided with longitudinal slots 25, mounted upon pins 26 on the uprights of the car-frame.

5 Obviously when the clutch-frame is moved independently of the car-frame a combined swinging and longitudinal movement is imparted to the clutches, and the downward movement of the clutch-frame with relation

10 to the car-frame causes the extension of the clutches into the registering grooves 3 in the guides for engagement with the contiguous shoulders of the rack 4, and as the parting of the hoisting-rope results in the depression of

15 the clutch-frame by the weight of the contents of the elevator-car upon the platform or floor-leaves 15 it is obvious that the prompt extension of the clutches will be accomplished, and hence the descent of the elevator-car will be checked. The openings 24 in

20 the uprights of the car-frame have their upper and lower walls constructed to form horizontal and inclined shoulders 27 and 28, in contact with the latter of which the adjacent

25 edges of the clutches are arranged when the latter are in their normal position, while the extension of the clutches brings their upper and lower edges, respectively, in contact with the horizontal shoulders 27, whereby even in

30 case of the displacement of the clutch-frame by the strain applied thereto the clutches will be held in their operative positions in engagement with the racks on the guides of the car.

35 In connection with the above-described construction I also employ counterbalancing-weights 19, connected by cables 18 with the car-frame and traversing direction-pulleys 17, said weights being mounted upon the

40 outer surfaces of the guides 1 and having lips 20 offset to engage the inner surfaces of flanges 21 upon the guides.

The simplicity of arrangement and the directness of operation of the devices constituting my improved elevator-checking mechanism will be readily understood from the foregoing description, and obviously various changes in the form, proportion, and the minor details of construction may be resorted

50 to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

55 1. The combination with an elevator-car, and clutches carried thereby for engagement with fixed stops contiguous to the path of the car, of a clutch-frame mounted to slide upon the car-frame and operatively connected with

60 said clutches, the car having a platform or floor-leaf mounted for vertical swinging movement, and the clutch-frame having a transverse rest supporting the free edge of said platform or floor-leaf, and a hoisting-rope

65 connected with the clutch-frame, substantially as specified.

2. The combination with an elevator-car,

and clutches for engaging fixed stops contiguous to the path of the car, of a clutch-frame mounted for vertical sliding movement upon the car-frame and operatively connected with the clutches, said clutch-frame having a transverse rest-bar arranged under the center of the car platform or floor, and the car having a floor including swinging leaves hingedly mounted at their remote edges and bearing at their free edges upon said rest-bar, and a hoisting-rope connected with the clutch-frame, substantially as specified.

3. The combination of parallel elevator-guides having rack-bars, an elevator-car mounted to slide upon said guides and provided with side uprights or slides, clutches mounted upon said uprights or slides for engagement with the racks, a clutch-frame mounted to slide upon the uprights of the car-frame, and having a limited upward movement, said clutch-frame being operatively connected with the clutches, and the car having a sectional floor, comprising swinging leaves mounted upon the car-frame and bearing at their free edges upon a cross-bar of the clutch-frame, and a hoisting-rope connected to the clutch-frame, substantially as specified.

4. The combination of parallel elevator-guides having rack-bars, a car-frame having an interlocking sliding connection with said guides, and provided with a sectional floor having leaves hinged at their remote edges to the car-frame, clutches carried by the car-frame for engagement with said rack-bars, a clutch-frame mounted upon the car-frame and having a cross-bar arranged beneath and supporting the free edges of the car-floor leaves, the car-frame being provided in the path of the upward movement of the clutch-frame with a transverse bar forming a stop to limit the upward movement of the clutch-frame, and a hoisting-rope connected with the clutch-frame for normally mounting the same in contact with said stop, substantially as specified.

5. The combination of parallel elevator-guides provided with countersunk rack-bars and inwardly-projecting guide-ribs, an elevator-car having a frame including side uprights channeled to receive said guide-ribs, and also having a floor-frame and hingedly-mounted floor sections or leaves, clutches mounted upon the uprights of the car-frame for engagement with the racks, a clutch-frame mounted to slide upon the uprights of the car-frame and fitted in guide-channels in the inner sides of said uprights, the clutch-frame being operatively connected with the clutches and having a lower cross-bar arranged beneath and supporting the free edges of the car-floor sections or leaves, and a hoisting-rope operatively connected with the clutch-frame, substantially as specified.

6. The combination of elevator-guides having racks, of an elevator-car mounted upon

said guides and provided with counterbalancing devices, the car-frame having a sectional floor comprising swinging leaves, and also having a cross-bar, clutches mounted upon the car-frame for engagement with the racks, a clutch-frame mounted to slide in the car-frame, operatively connected with the clutches and having a cross-bar arranged to support the free edges of the car-floor sections or leaves, said cross-bar of the car-frame being arranged in the path of the upward movement of the clutch-frame, and a hoisting-rope connected with the clutch-frame, substantially as specified.

7. The combination with elevator-guides having racks, of an elevator-car mounted upon said guides, and having side uprights and hingedly-mounted floor-leaves, a clutch-frame mounted for vertical sliding movement upon the uprights of the car-frame, and having side bars connected at their lower ends

by a rest-bar arranged beneath the free edges of the car-floor leaves, said car-frame uprights and the side bars of the clutch-frame having registering openings, clutches arranged in said registering openings, pivoted at their inner ends to the clutch-frame and slotted to receive pivots on the uprights of the car-frame, the openings in the car-frame uprights having their walls constructed to form horizontal and inclined shoulders between which the clutches fit, respectively, in their normal and operative positions, and a hoisting device connected with the clutch-frame, substantially as specified.

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

HENRY J. HERREN.

Witnesses:

N. K. PEOPLES,
W. L. MILLION.