

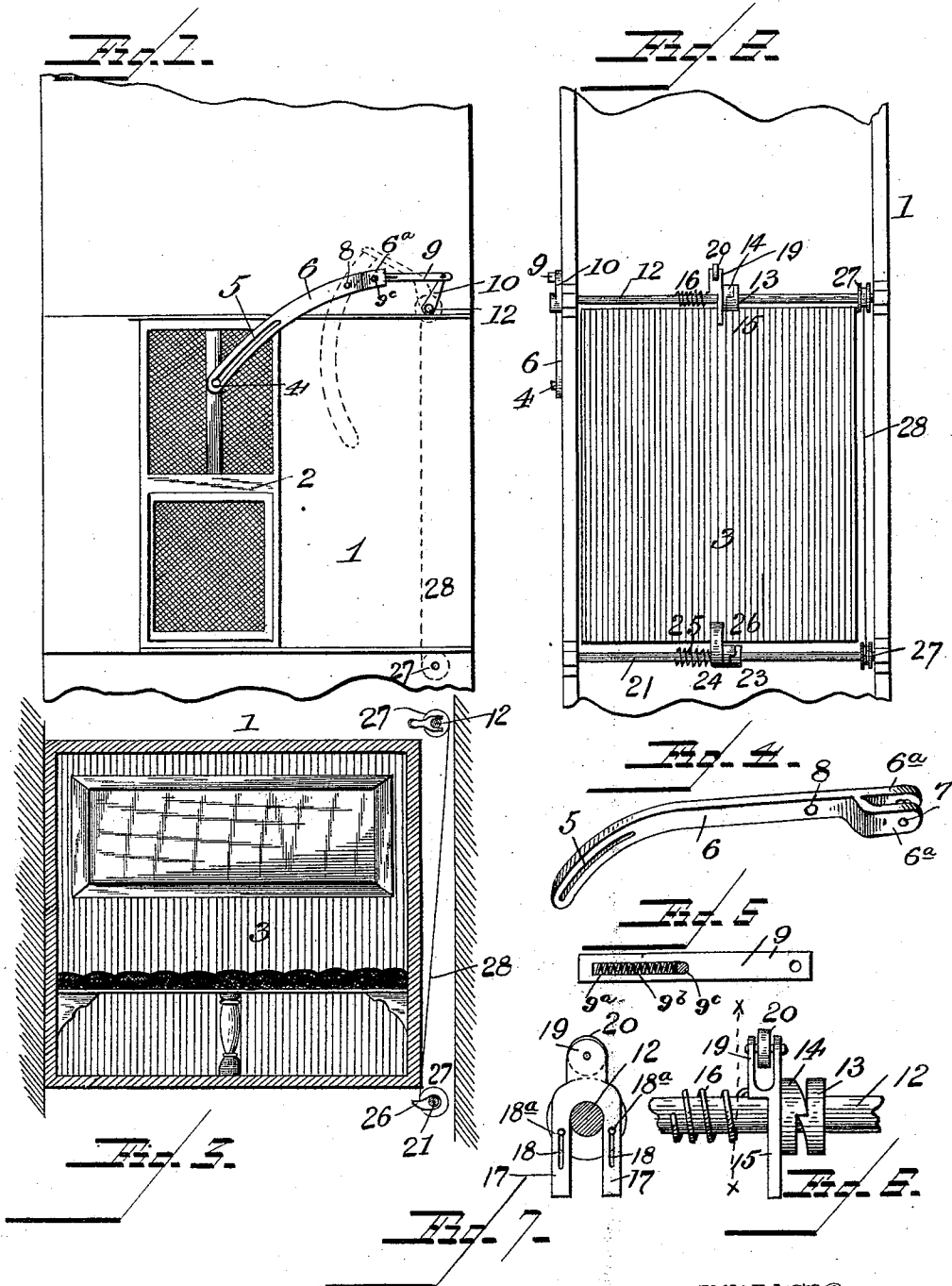
(No Model.)

E. O. CHURCH.

DEVICE FOR OPERATING ELEVATOR DOORS.

No. 527,665.

Patented Oct. 16, 1894.



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UNITED STATES PATENT OFFICE.

EDWARD O. CHURCH, OF DENVER, ASSIGNOR OF TWO-THIRDS TO J. E. PRICE AND T. B. STUART, OF ARAPAHOE COUNTY, COLORADO.

DEVICE FOR OPERATING ELEVATOR-DOORS.

SPECIFICATION forming part of Letters Patent No. 527,665, dated October 16, 1894.

Application filed May 7, 1894. Serial No. 510,353. (No model.)

To all whom it may concern:

Be it known that I, EDWARD O. CHURCH, a citizen of the United States, and a resident of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Devices for Operating Elevator-Doors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in devices for automatically closing the doors of elevator hatchways, by the movement of the elevator cage.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings: Figure 1 is an elevation of a portion of an elevator hatchway showing the door closed. Fig. 2 is a side view of the elevator hatchway, looking from the inside. Fig. 3 is a central longitudinal section of the same, showing the elevator cage. Figs. 4 and 5 are detail perspective views of the lever and connecting rod, respectively, by which the door is closed. Fig. 6 is an elevation of the upper dog, showing the clutches and part of the shaft. Fig. 7 is a cross sectional view of the same, on the line *x-x*, Fig. 6.

The numeral 1 designates an elevator shaft and 2 the sliding door thereof which may be of any ordinary or suitable construction. The numeral 3 designates the elevating cage which may also be of any ordinary construction.

Secured to the door 2 of the hatchway is a stud 4, which works in a slot 5, in a curved lever 6, provided with two arms 6^a. These arms are pivoted at 8 to the front of the hatchway, and are also pivotally connected with a bar or rod 9, which in turn is pivoted to a crank 10, of a transverse shaft 12. This bar or rod near one end is provided with a slot 9^a, in which is seated a coiled spring 9^b which bears against a pin 9^c which passes through holes 7 in the arms 6^a, by which it is connected therewith. When the door is

opened by the elevator operator this spring is compressed, so that when the door is closed, by the devices hereinafter described, said spring by its resiliency aids in closing the door.

The shaft 12 is located in the interior of the shaft near one side thereof and at or near its center is provided with a clutch member 13, securely fixed thereto. Engaging with this clutch 13 is a corresponding clutch member 14, loosely mounted thereon, and provided with a dog 15. To this dog is secured one end of a coiled spring 16, the other end of which is secured to the shaft. The object of this spring is to return the dog to normal position, after being actuated. This dog is formed with bifurcated arms 17, which embrace the shaft, provided with slots 18, through which pass headed set screws 18^a, engaging with screw holes in clutch member 14. By this means the dog is adjustably connected with the clutch member. The object of making the dog adjustable is to permit the distance it projects from the shaft to be regulated. The dog is also formed with arms 19 in which is journaled a wheel or roller 20; also journaled in the sides of the said shaft, on a line just below the lower end of the door is another transverse shaft 21, having a fixed clutch 23, a sliding clutch 24, and a coiled spring 25, similar to those above described and clutch 24 is provided with a dog 26, fixed thereto.

Secured to the rear end of each of the transverse shafts is a pulley 27, connected together by a crossed rope or belt 28.

The operation is as follows: When the hatchway door is closed, the parts will be in the position shown in full lines Fig. 1, and when open will be as shown in dotted lines. If, after opening the door, to let in or out passengers, or for any other purpose, the elevator operator neglects to shut the same, and starts the cage, the latter will strike the dog 15 or 26, according to the direction in which the dog is traveling and close the door. When the door is open, the dogs will lie in horizontal planes as seen in Fig. 3, and the parts be in the position shown by the dotted lines in Fig. 1. If, now the cage be started upward, the upper part thereof will

strike dog 15, throwing it up into a vertical position, rotating shaft 12, which in turn will throw crank 10 outward and actuate the connecting rod and lever to close the door.

5 At the same time shaft 21, is rotated, throwing dog 26 into a vertical position. If on the other hand the cage begins to descend when the door is open, it will strike pawl dog 26, which through the medium of the shaft 21

10 and rope or belt 28, will rotate shaft 12 and close the door as before stated. In these movements of the dogs, the clutch members to which they are secured, engage with the clutch members secured to the shafts whereby

15 the latter are rotated. If the upper dog should be thrown into the path of the cage while the latter is descending, or the lower dog when it is ascending, the dog and loose clutch member will turn on the shaft thus preventing injury or damage, and when the cage has

20 passed out of contact with the dog the latter and its clutch member will be forced back into engagement with the fixed clutch member by the coiled spring.

25 Having thus described my invention, what I claim is—

1. In a device for closing the doors of elevator hatchways, the combination with a sliding door, having a stud, of the slotted lever

30 pivoted to the shaft, the connecting rod, the transverse shaft having a crank connected therewith, the fixed and loose clutch members, and the spring actuated dog connected with said loose clutch member; substantially

35 as described.

2. In a device for closing the doors of elevator hatchways, the combination with the sliding door, having a stud, the slotted lever,

with which said stud engages, the connecting bar, the crank pivoted thereto, the transverse shaft to which said crank is secured, the clutch member fixed to said shaft, the loose clutch member engaging therewith provided with set screws, and the adjustable dog; substantially as described.

3. In a device for closing the doors of elevator hatchways, the combination with the sliding door, having a stud, the pivoted slotted lever connected therewith, the connecting bar, the crank and transverse shaft, the fixed and loose clutch members on said shaft, the dog connected with said loose clutch member and the coiled spring, of the lower transverse shaft, the fixed and loose clutch members thereon, the dog connected with said loose clutch member, the coiled spring and the crossed rope or belt connecting said shafts; substantially as described.

4. In a device of the character described, the combination with the transverse shaft, the fixed clutch member thereon, and the loose clutch member on said shaft provided with set screws, of the dog having arms embracing said shaft and formed with slots with which said screws engage, the wheel or roller carried by said dog and the coiled spring secured to said dog and shaft; substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

EDWARD O. CHURCH.

Witnesses:

JOHN E. PRICE,

ARTHUR J. BEST.