To all whom it may concern:

Be it known that I, Lewis C. Norton, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented an Improvement in Devices for Operating Doors, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to door-operating devices of that type which comprise two members pivotally connected together, one of which is pivotally connected to a fixed support and the other of which is pivotally connected to the door, and a combined door-closing spring and check which operates to close the doors automatically when they are opened and to check the closing movement thereof.

The objects of my invention are to provide a novel construction of this type wherein when the door is fully opened the spring will be acting on the door-operating device in an advantageous manner to give the door its initial closing movement, and when the door is closed the door-operating device will be locked against manipulation by unauthorized persons, and otherwise to improve door-operating devices of this nature all as more fully hereininafter described.

In the drawings wherein I have illustrated some selected embodiments of my invention, the figure is a view showing a door with the operating mechanism connected thereto.

In the drawings 1 designates a sliding door which is suspended and slides back and forth on a suitable track 2. The door-operating device comprises two members 3 and 4 pivotally connected together at 5, the member 4 being pivot to a fixed support or abutment, as at 6, and the member 5 being pivot to the door, as at 7. The door 1 may be any sliding door, although a device of this sort is especially applicable for operating elevator doors. When the door is shut the members 3 and 4 are in line with each other, thus locking the door closed.

For opening the door 1 I have provided a handle 8 which is pivotally secured to the door at 9 and which is connected to the toggle levers 3, 4 in such a way that the initial swinging movement of the handle to the right will break the toggle levers and con-

continued movement will open the door. The member 3 is extended beyond its pivot 7, as at 10, and this extended end 10 has a link 11 pivotally connected thereto which is pivotally connected to an arm 12 rigid with the lever 8. The construction is such that when the door is closed the link 11 and arm 12 are in alignment with each other, but when the handle 8 is turned to the right the end 10 of the member 3 will be drawn downwardly, thus breaking the toggle lever and permitting the door to be opened.

The advantage of the construction wherein the link 11 and arm 12 are in alignment when the door is closed is that these two members form in themselves a toggle lever which when they are straightened lock the members 3, 4 from being broken by a lateral pressure against either member. This is especially useful where the device is used for operating elevator doors because it prevents unauthorized persons from inserting an implement through the grating of the elevator well thereby to break the toggle levers 3, 4 and open the door 1.

The member 4 has extending therefrom an arm 19 to which is pivotally connected at 18 the piston rod 17 of a combined door closer and check 14 of any suitable construction. This combined door closer and check is provided on the interior thereof with a spring which acts to draw downwardly on the arm 19 when the door is open or in the dotted line position in the figure, thereby closing the door, and is also provided with a checking device to check the closing movement of the door. Any suitable door closer and check may be employed for this purpose, although the one herein shown is similar to that set forth and described in my co-pending application Sec. No. 856,541, filed August 13, 1914. The member 4 is made of less length than the member 3 so that when the door is opened, as shown in dotted lines in the figure the member 4 will stand vertically, while the member 3 has an inclined position. The arm 19 extends substantially at right angles to the member 4, so that when the door is open said arm 19 extends horizontally and the downward pull of the door-checking device has its maximum effect in tending to turn the member 4. Moreover, since the member 3 is sufficiently longer than the member 4 so that it stands at an inclined position the turning mov-
ment of the member 4 and the consequent lateral movement of the upper end of the member 4 is more effectively transmitted to the door through the inclined member 3 than would be the case if the two members 3 and 4 were of the same length.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

10 In a device of the class described, the combination with a sliding door, of a door-operating device comprising two members pivotally connected together, one of which is pivot to a fixed support and the other of which is pivotally connected to the door, said latter member having a portion extending beyond its pivotal point of connection with the door, a handle pivoted to the door and provided with an arm, and a link connecting said arm with the end of said extension, said two members being in alignment and said link and arm also being in alignment when the door is closed.

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

LEWIS C. NORTON.

Witnesses:
E. M. CLARK,
E. E. CHRISTIANSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."