

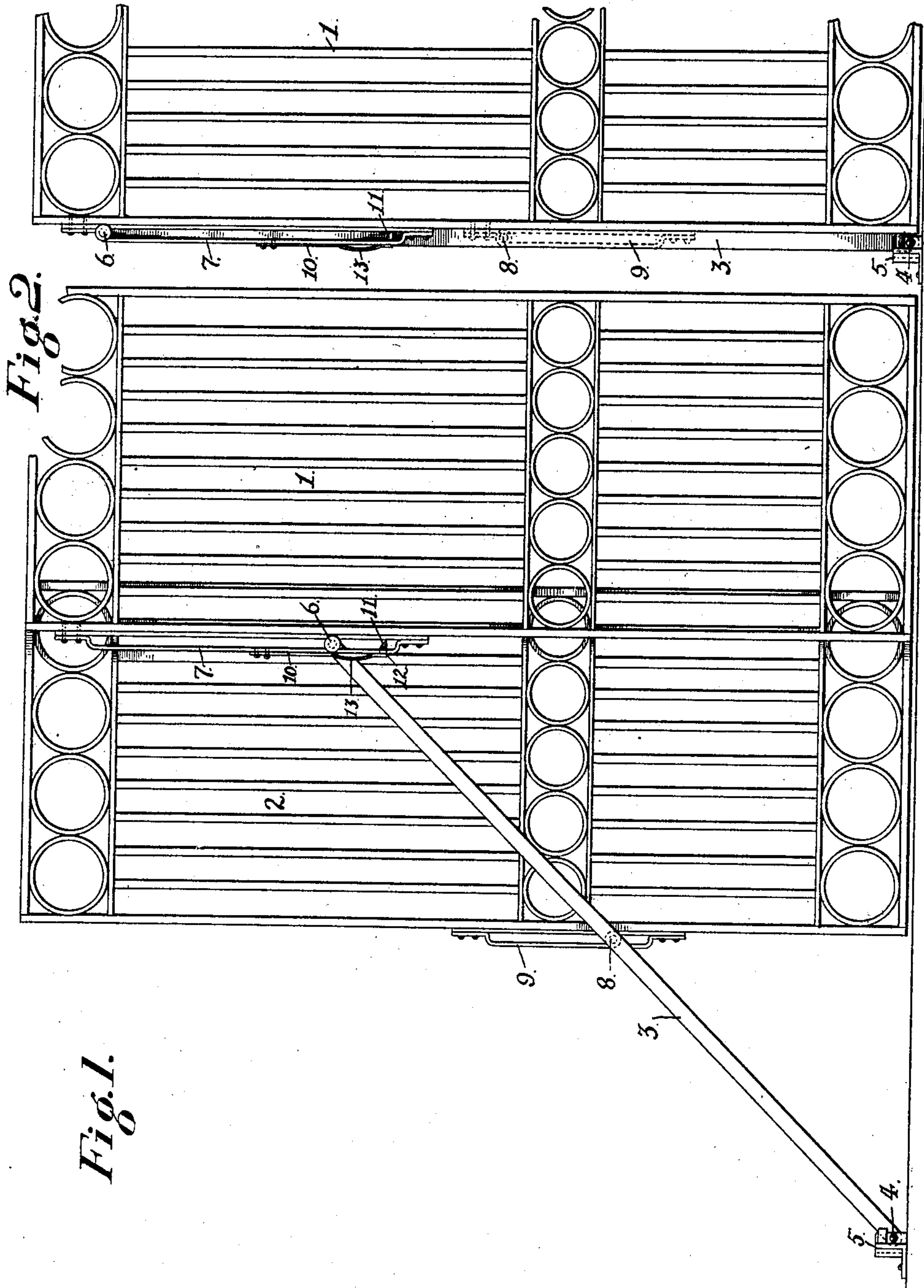
No. 897,910.

PATENTED SEPT. 8, 1908.

F. N. LONG.
ELEVATOR DOOR OPENING DEVICE.

APPLICATION FILED DEC. 9, 1907.

2 SHEETS—SHEET 1.



WITNESSES.

Arthur L. Slee.
[Signature]

INVENTOR.

Frederick Newton Long
by *[Signature]* F. Booth
his Attorney.

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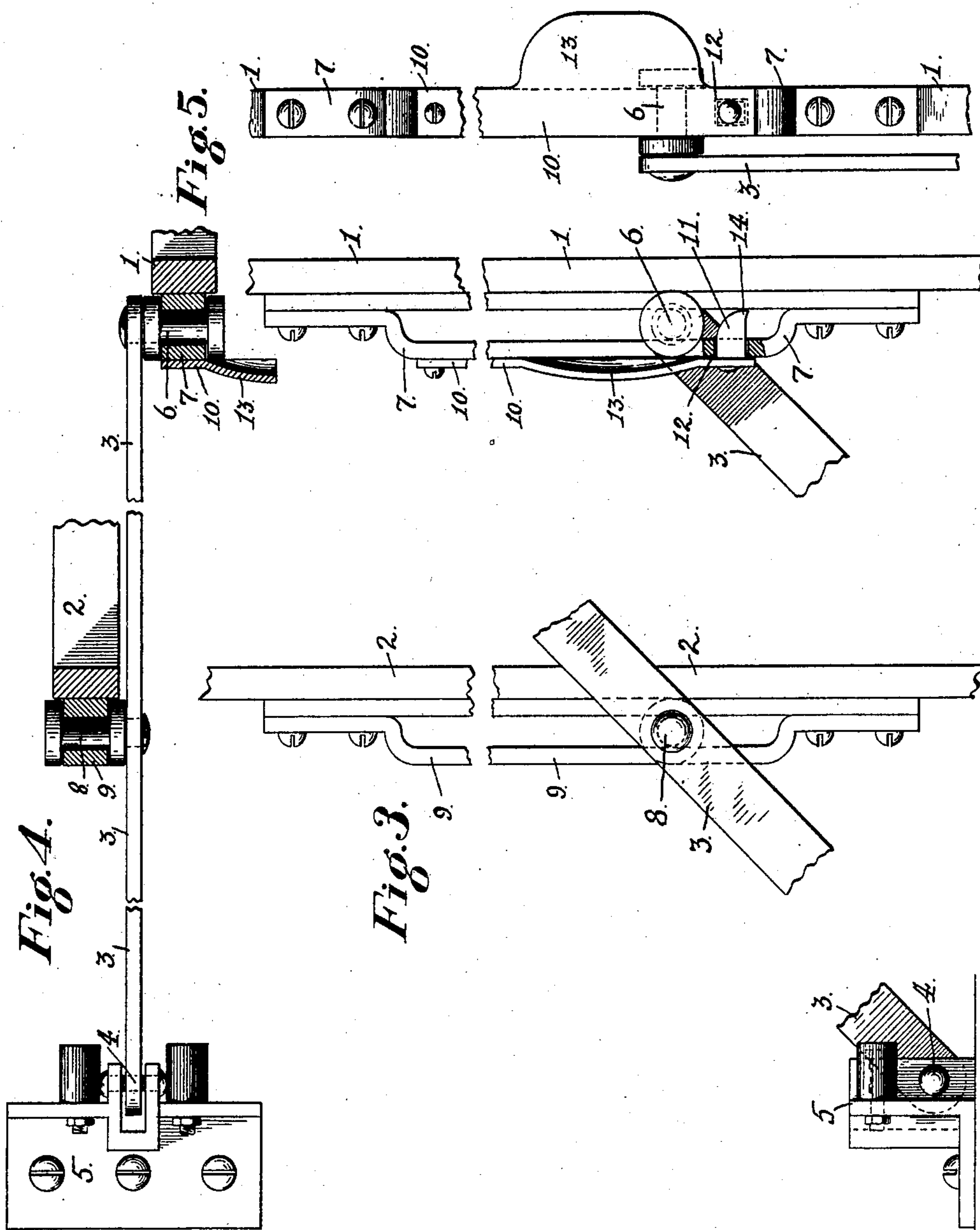
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Arthur L. Slee.
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INVENTOR.

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his Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK NEWTON LONG, OF OAKLAND, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
FREDERICK J. WHITE, OF OAKLAND, CALIFORNIA.

ELEVATOR-DOOR-OPENING DEVICE.

No. 897,910.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed December 9, 1907. Serial No. 405,731.

To all whom it may concern:

Be it known that I, FREDERICK NEWTON LONG, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Elevator-Door-Opening Devices, of which the following is a specification.

My invention relates to the class of devices or mechanism for opening elevator-doors, and is applicable to both single and plural doors.

The object of my invention is to provide simple and easily operated mechanism for locking and releasing the doors and opening and closing them; and, to this end, my invention consists in the novel link and lock which I shall hereinafter fully describe by reference to the accompanying drawings in which

Figure 1 is an elevation of my device, showing its application to a two-third opening door. In this figure the doors are in a partly open position. Fig. 2 is an elevation of the same, the doors being fully open. Fig. 3 is an enlarged, broken, side elevation of my device. Fig. 4 is a sectional plan view, broken, of the same. Fig. 5 is a front view of the adjacent part of the broken Fig. 3, showing the locking device in front elevation.

In Fig. 1, the two doors 1 and 2 are shown as slightly overlapping, being then just a little way started on their opening movement. In Fig. 2 they are shown as fully open, one being then directly behind the other.

3 is a link. At its foot it is pivoted, at 4, to a fixed bearing 5 of suitable character. At its head it is provided with a stud 6 which plays behind a vertical guide plate 7 on the door 1. At a point intermediate its ends the link is provided with another stud 8 which plays behind a vertical guide plate 9 on the door 2. As applied to the two doors, in the arrangement shown, it will be seen that if the door 1 be pushed over, the door 2 will also move, but only at half the speed of door 1, so that the two doors will arrive at their destinations in both opening and closing, at the proper time.

Secured to the face of the guide plate 7 of door 1 is a spring arm 10, the lower end of which carries a latch 11 with a beveled or

curved top, as shown. The latch 11 plays through an opening 12 in the guide plate 7 and is adapted to traverse the lower portion of the space behind the guide plate in which the stud 6 of the link 3 plays. The spring arm 10 has a handle 13.

The operation of the device, as far as described, is as follows:—When the doors are closed, the stud 6 of the link 3 is below the latch 11 and is held in that position by said latch, so that the doors are locked. But when the operator grasps the handle 13 and pulls it outward, the first effect is to withdraw the latch 11 from the path of the stud 6, and continued pressure will then force the doors open, the two studs 6 and 8 of the link 3 traveling upwardly in their respective guides. When the doors are pulled the other way, to shut them, the stud 6 will by pressure on the beveled or curved top of the latch 11, force said latch out, until said stud passes the latch, whereupon the latch will spring in again, and thus automatically lock the stud under it.

It is to be noted, (see Fig. 3) that the opening 12 in the guide plate 7 has a bottom wall which is slightly eccentric to the path of the latch, and that said latch has a toe 14 to engage with this interfering wall and form a positive stop to the further withdrawal of the latch. The purpose of this construction is to avoid throwing the entire pressure necessary to open the doors, upon the spring arm 10. The first pressure, to withdraw the latch 11 and unlock the doors, is properly against said spring arm, but as soon as the toe 14 of the latch comes in contact with the interfering bottom wall of the opening 12, and further withdrawal is unnecessary to release the stud 6, the continued pressure on the handle of the spring arm, to open the doors, instead of being borne by the spring arm, to its ultimate injury, is borne by the more solid contact of the latch with the bottom wall of the guide plate opening 12.

Although I have here shown my device as applied to plural doors, it is obvious that it is equally applicable to a single door, the locking device at the head of the link remaining the same and the only change being the omission of other doors to be connected with the link at points intermediate its ends.

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

1. In combination with a door having a guide thereon, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play in the guide of the door as the latter is opened and closed, and a latch on the door disposed in the path of the stud to lock and to release said stud.

2. In combination with a door having a guide thereon, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play in the guide of the door as the latter is opened and closed, and a spring latch on the door arranged to traverse the path of the link-stud, to lock and release it.

3. In combination with a door having a guide thereon, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play in the guide of the door as the latter is opened and closed, and a beveled latch on the door arranged to traverse the path of the link-stud to lock and release said stud, said latch having a spring arm adapted to hold it normally in the path of the stud and to yield before the pressure of said stud on the beveled side of the latch, whereby the latter is automatic in its locking action.

4. In combination with a door having a guide thereon, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play in the guide of the door as the latter is opened and closed, a beveled latch on the door arranged to traverse the path of the link-stud to lock and release said stud, a spring arm carrying said latch adapted to hold it normally in the path of the stud and to yield before the pressure of said stud on the beveled side of the latch, whereby the latter is automatic in its locking action, and a handle on the spring arm, whereby the operator can withdraw the latch to release the stud.

5. In combination with a door having upon it a guide, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play in the guide of the door as said door is opened and closed, a spring arm secured to the door, a latch carried by said arm and adapted to traverse the path of the link-stud to lock and release said stud, a handle on the spring arm to enable the operator to withdraw the latch and slide the door open, and means for limiting the withdrawal of the latch, to relieve the spring arm of the door opening pressure.

6. In combination with a door having upon it a guide plate, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play behind the guide plate of the door as said door is opened and closed, a spring arm secured to the guide plate and carrying a latch adapted to play

through an opening in said plate and traverse the path of the link-stud, to lock and release said stud, a handle on the spring arm to enable the operator to withdraw the latch and slide the door open, and a positive stop between said latch and the guide-plate-opening through which it plays, to limit the withdrawal of the latch and relieve the spring arm of the door opening pressure.

7. In combination with a door having upon it a guide plate, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play behind the guide plate of the door as said door is opened and closed, a spring arm secured to the guide plate and carrying a latch adapted to play through an opening in said plate and traverse the path of the link-stud, to lock and release said stud, a handle on the spring arm to enable the operator to withdraw the latch and slide the door open, and a positive stop between said latch and the guide-plate-opening through which it plays, to limit the withdrawal of the latch and relieve the spring arm of the door opening pressure, said stop comprising the projected toe of the latch and the lower wall of the opening in the guide plate.

8. In combination with a door having upon it a guide plate, a link pivoted at its foot to a fixed bearing and having on its head a stud adapted to play behind the guide plate of the door as said door is opened and closed, a spring arm secured to the guide plate and carrying a latch adapted to play through an opening in said plate and traverse the path of the link-stud, to lock and release said stud, said latch having a beveled top to render its locking action automatic as described, a handle on the spring arm to enable the operator to withdraw the latch and slide the door open, and a positive stop between said latch and the guide-plate-opening through which it plays, to limit the withdrawal of the latch and relieve the spring arm of the door opening pressure, said stop comprising the projected toe of the latch and the lower wall of the opening in the guide plate.

9. In an elevator-door opening mechanism and in combination with plural doors slidable in parallel planes, a link pivoted at its foot to a fixed bearing, a slidable connection between the head of the link and the door having the greatest sliding movement, a slidable connection between the other door and the link at a point on said link intermediate its ends, and means for locking and releasing the slidable connection of the head of the link, consisting of the guide on the door, the stud of the link playing in said guide, and the spring latch in the path of the stud.

10. The combination of a door provided with a guide plate having an aperture, a

link pivoted at its foot to a fixed bearing and having at its head a stud to play behind the guide plate of the door as the door is opened and closed, a latch mounted on the door and
5 arranged to work through the aperture of the guide plate to traverse the path of the link stud to lock and release said stud.

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

FREDERICK NEWTON LONG.

Witnesses:

L. B. HAMBLETON,
ALBERT J. ARENS.