

No. 704,746.

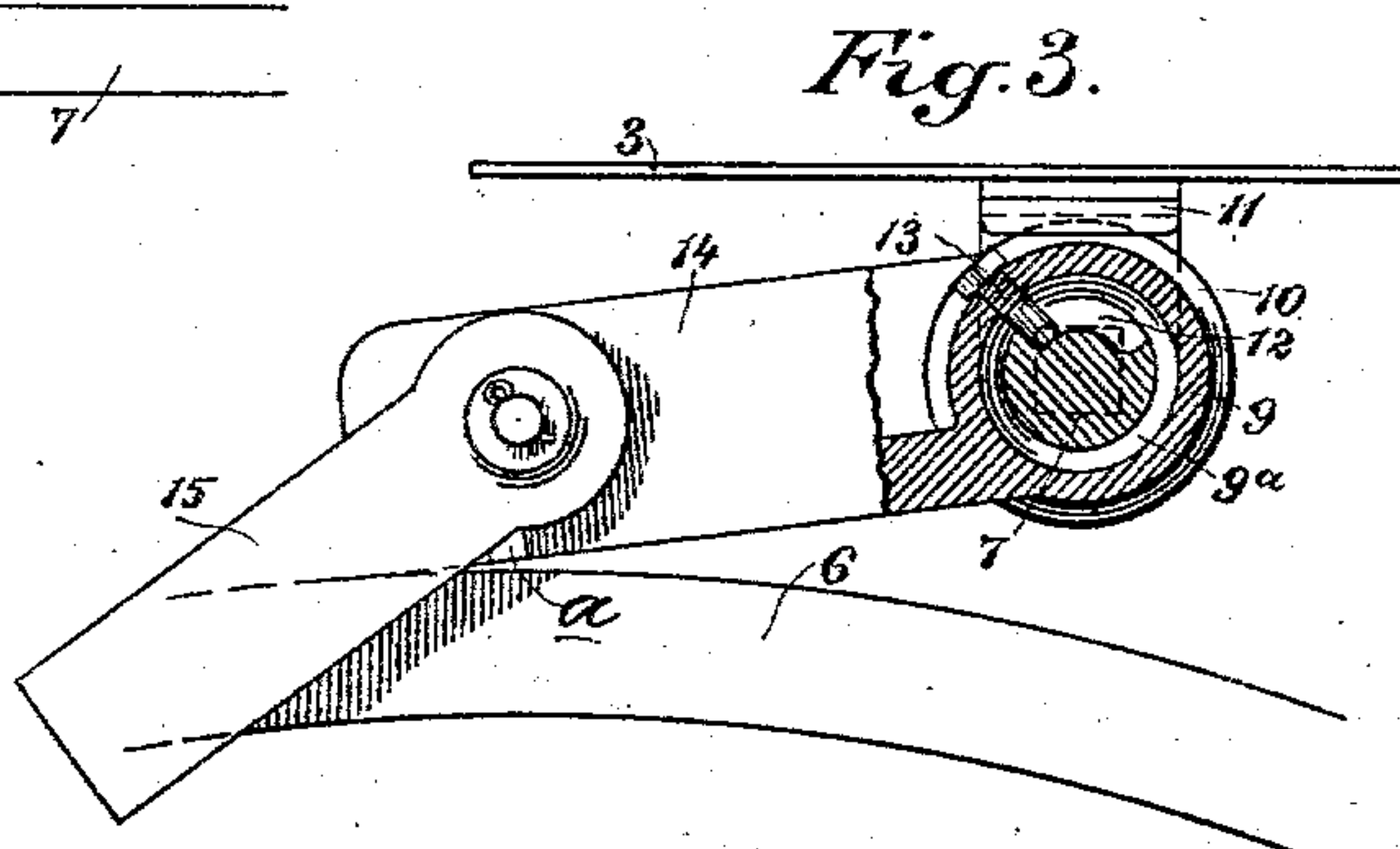
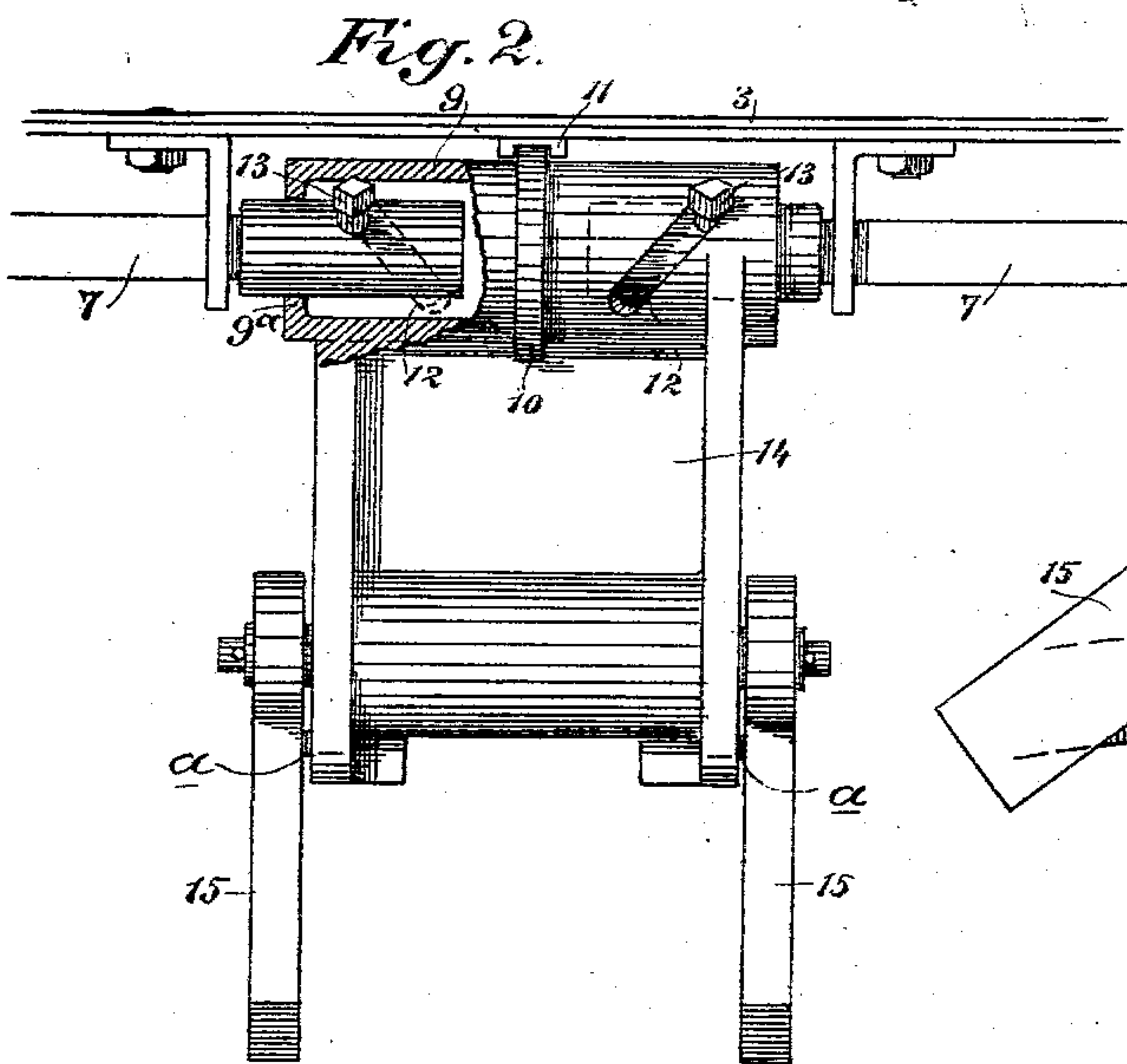
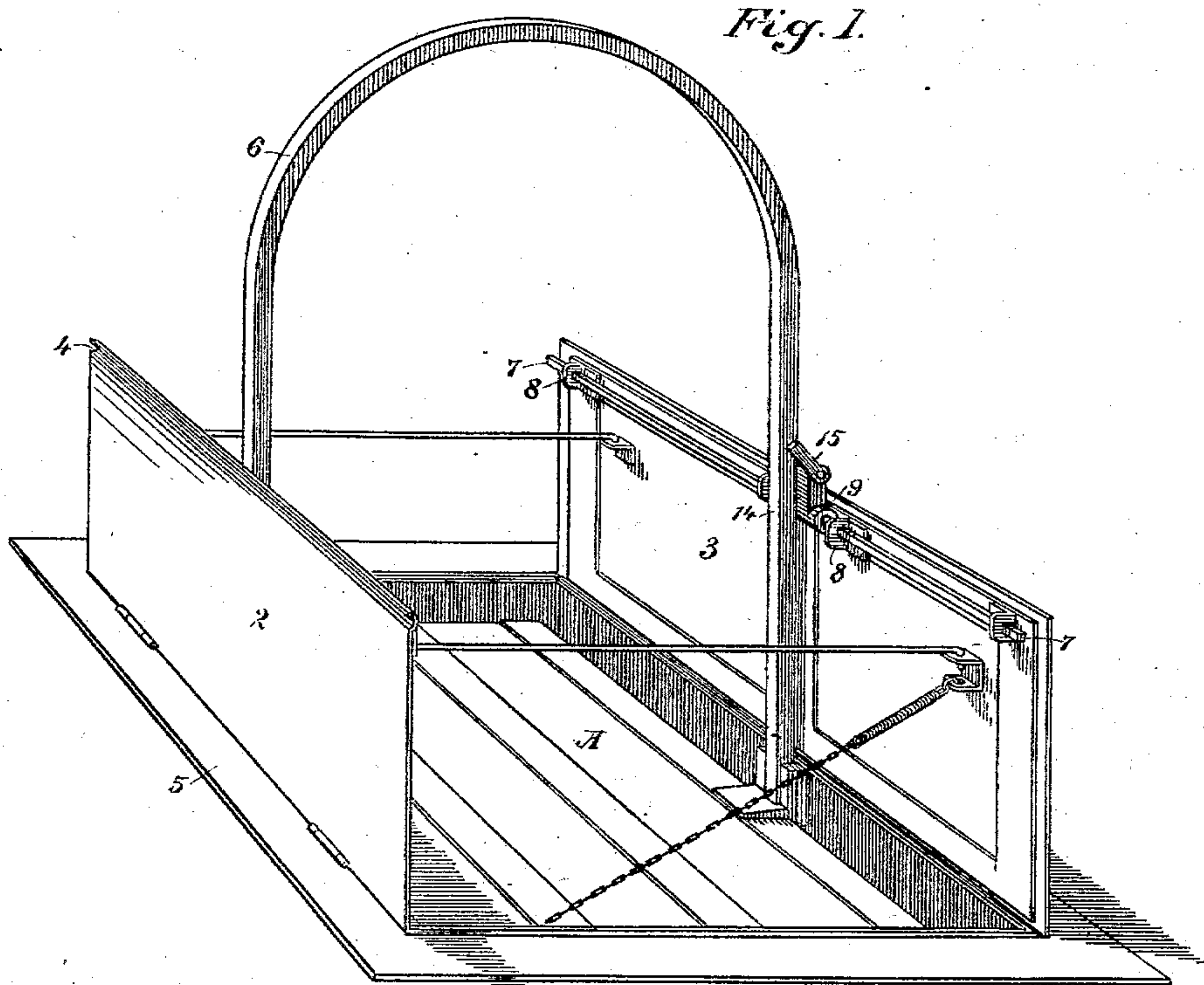
Patented July 15, 1902.

P. H. JACKSON.

AUTOMATIC LOCKING MECHANISM FOR SIDEWALK OR OTHER ELEVATOR DOORS.

(Application filed Feb. 3, 1902.)

(No Model.)



Witnesses,
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UNITED STATES PATENT OFFICE.

PETER H. JACKSON, OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC LOCKING MECHANISM FOR SIDEWALK OR OTHER ELEVATOR DOORS.

SPECIFICATION forming part of Letters Patent No. 704,746, dated July 15, 1902.

Application filed February 3, 1902. Serial No. 92,366. (No model.)

To all whom it may concern:

Be it known that I, PETER H. JACKSON, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Automatic Locking Mechanism for Sidewalk or other Elevator Doors; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an automatic mechanism for securing and releasing elevator-hatchway doors. It is especially applicable to the doors which close over sidewalk elevator-platforms or hoists.

It consists in a mechanism whereby the doors are automatically unfolded and lifted as the elevator-platform or hoist rises and closed and bolted as the platform sinks below the sidewalk.

Referring to the accompanying drawings, Figure 1 is a view of a hatchway and elevator-platform. Fig. 2 is a detail view of the bolt-operating device. Fig. 3 shows a modification of the same.

As shown in the present drawings, A is an elevator-platform, here shown as depressed below the level of the sidewalk, and in Fig. 1 the doors 2 and 3 are shown open and fixed in place by transverse hook-rods, which also form guards when the platform is down, in the manner usual to this class of devices. The door 2 has a metal gutter 4 extending along the free edge, this gutter serving to receive any drip which may pass through when the doors are closed. Both doors are hinged to the hatchway-frame 5, which is fixed in the sidewalk or floor and open outwardly from each other, as shown. The doors may either meet at the center or one may overlap the other.

As here shown, the door 3 closes over the door 2, so that it slightly overlaps the gutter 4. In order to open these doors when the elevator-platform rises and to allow them to close gradually when it descends, a bail 6 is fixed to the sides of the elevator-platform and is suitably guided, so that it travels vertically. When the upper convexity of the bail contacts with the closed doors, it begins to raise them, and they gradually separate as the bail rises until the vertical portions of the bail standing between the doors will hold them open as long as the elevator is at the level of

the sidewalk. When the elevator descends until the curvature of the bail arrives opposite the inner surfaces of the doors, the latter gradually close, following it down until the bail is entirely below the doors, when they lie flat and flush with the sidewalk. These doors are locked from the inside by means of longitudinally-slidable bolts 7, the outer ends of which are preferably made rectangular or flattened and slide through correspondingly-shaped guides 8, which prevent them from turning. The ends of these bolts are adapted to engage either with holes or sockets made in the hatchway sides, or they may pass beneath the overhanging ledges of the hatchway-frame and, if necessary, may be bent or have offsets formed to allow of this engagement. At points near the inner ends of these bolts are also guides 8, and between these guides the bolts are made cylindrical in shape and the cylindrical ends enter a sleeve 9, the interior diameter of which is here shown as being greater than the exterior diameter of the bolts, so that there is no frictional contact through a great portion of the length of the sleeve. At the ends, however, the sleeve is formed with inwardly-projecting annular flanges, as at 9^a, and the openings through these flanges are just sufficient diameter for the bolts to slide, and the sleeve is thus practically supported upon the bolts. Around the exterior of the sleeve and practically near the center is an annular projecting flange 10, and this flange lies between lugs or projections 11 upon the frame of the door 3, so that the sleeve is prevented from moving endwise in either direction.

Either the sleeve or the inner ends of the bolts 7 have inclined slots made in them and corresponding pins projecting from the unslotted part enters the slots of the slotted portion, so that when the door is turned up or down the pins traveling in the slots will when the doors are to be opened act to withdraw the bolts from their locking engagement, and thus release the door and when closed will force the bolts forward to lock the door.

As here illustrated, the inclined slots 12 are made through the sleeve, one upon each side of the rib or flange 10, and a pin or pins 13, one for each bolt, extending into the slots. From one side of the sleeve an arm or weight

14 projects, and to this is pivoted a loosely-hanging weight 15. The position of these weights is such that when the doors are closed the weights hang down in such a way that the sleeve will have been turned so that the pins 13 have been acted upon by the inclined or diagonal slots 12 so as to project the bolts and engage them with the locking-notches.

When the cage rises and the arch or bail 6 strikes the projecting arm or weight 14, it revolves the weight, and as the latter is guided by its flange 10 and prevented from end movement the inclined slots in either the sleeve or the bolts acting upon the pins in the other member will withdraw the bolts and disengage them from the locking-slots, thus leaving the door free to be opened. The swinging weight 15 will be lifted up at the same time, and when the arm 14 has risen nearly to its highest point the weight 15 engages with stops *a*, which prevent its hanging pendent and cause it to be thrown outwardly, so that it will have its full action upon the arm 14 and sleeve to turn them when the arm 14 is released by the descent of the bail 6. The weight thus carried is sufficient to turn the sleeve in the opposite direction, and thus acting through the inclined or diagonal slots and pins after the door has been closed to press the bolts outward into the locking position.

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

1. In an elevator-well or the like, hinged doors and devices by which they are opened and closed in unison with the movements of the elevator-platform, oppositely-slidable bolts carried by one of the doors, a hollow sleeve having an annular guide-flange around its periphery, and a channel in which said flange is turnable to prevent end motion, diagonal slot-and-pin connections between the bolts and sleeve and means whereby the sleeve is turned in one direction when the doors are opened to withdraw the locking-bolts and allow it to turn in the opposite direction when the doors are closed to project the bolts and lock the doors.

2. The combination with bolts guided and slidable in line upon the edge of an elevator-hatchway door, of a guided revoluble sleeve of larger interior diameter than that of the bolts having diagonal slots through the periphery and into which the adjacent ends of the bolts extend, pins projecting from the

bolts into said slots, a weighted arm projecting from the side of the sleeve, a bail carried by the elevator adapted to contact with said arm and turn the sleeve when the elevator rises whereby the bolts are drawn toward each other, said weight acting to revolve the sleeve in the opposite direction after the elevator has descended and the door is closed whereby the bolts are moved outwardly and the doors locked.

3. The combination with bolts slidable in guides upon a hatchway-door, of a sleeve into which the contiguous ends of the bolts enter, said sleeve having an interior diameter greater than that of the bolts, and intumed flanges at the ends forming bearings on which the sleeve is supported, a weight projecting from the side of the sleeve, means carried by the elevator-platform and adapted to turn the sleeve, said sleeve and bolts having pin-and-slot connections whereby the turning of the sleeve advances or retracts the bolts.

4. The combination with slidable bolts, and a turnable sleeve into which the ends of the bolts enter, said bolts and sleeve having pin-and-slot connections, of a weight projecting from one side of the sleeve, one or more supplemental weights loosely pivoted thereto, and stops by which the swing of said weights is limited.

5. An elevator-hatchway having doors hinged at opposite sides to close centrally, bolts guided and slidable parallel with and contiguous to the edge of one of the doors, a hollow sleeve into the ends of which the adjacent ends of the two bolts extend forming two members, said bolts and sleeve having pin-and-slot connections, an annular flange projecting around the periphery of the sleeve, lugs or channels upon the door between which said flange is guided and turnable, a weight fixed to and projecting from the sleeve at right angles with its axis of rotation, a supplemental weight projecting from the outer end of the first-named weight and turnable loosely with relation thereto, and stops by which the turning movement is arrested, and the weight caused to stand at an angle when the doors are opened.

In witness whereof I have hereunto set my hand.

PETER H. JACKSON.

Witnesses:

S. H. NOURSE,

CHAS. E. TOWNSEND.