

No. 652,933.

Patented July 3, 1900.

S. J. JOHNSON.

CAR DOOR.

(Application filed Nov. 3, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

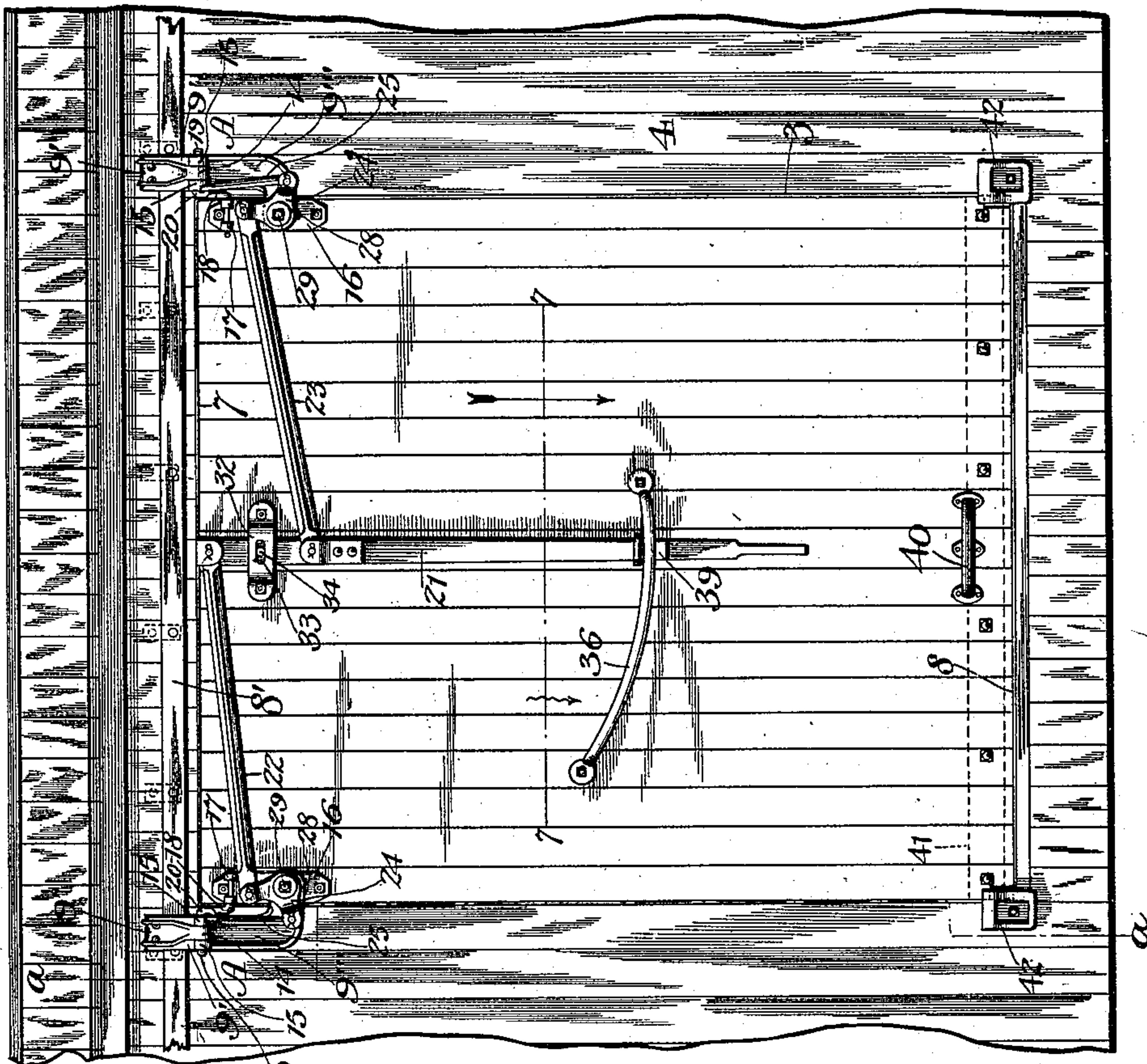


Fig. 2.

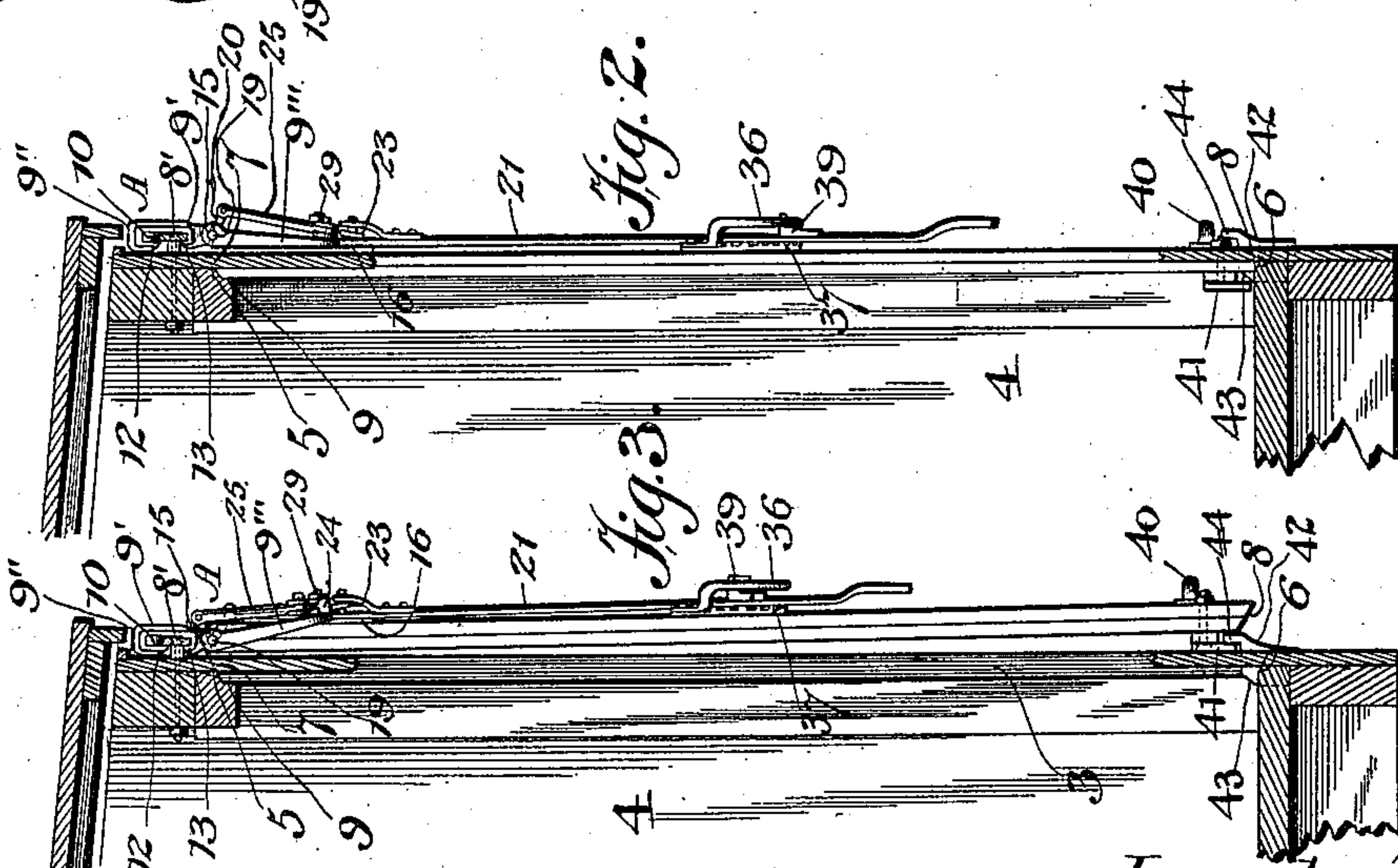
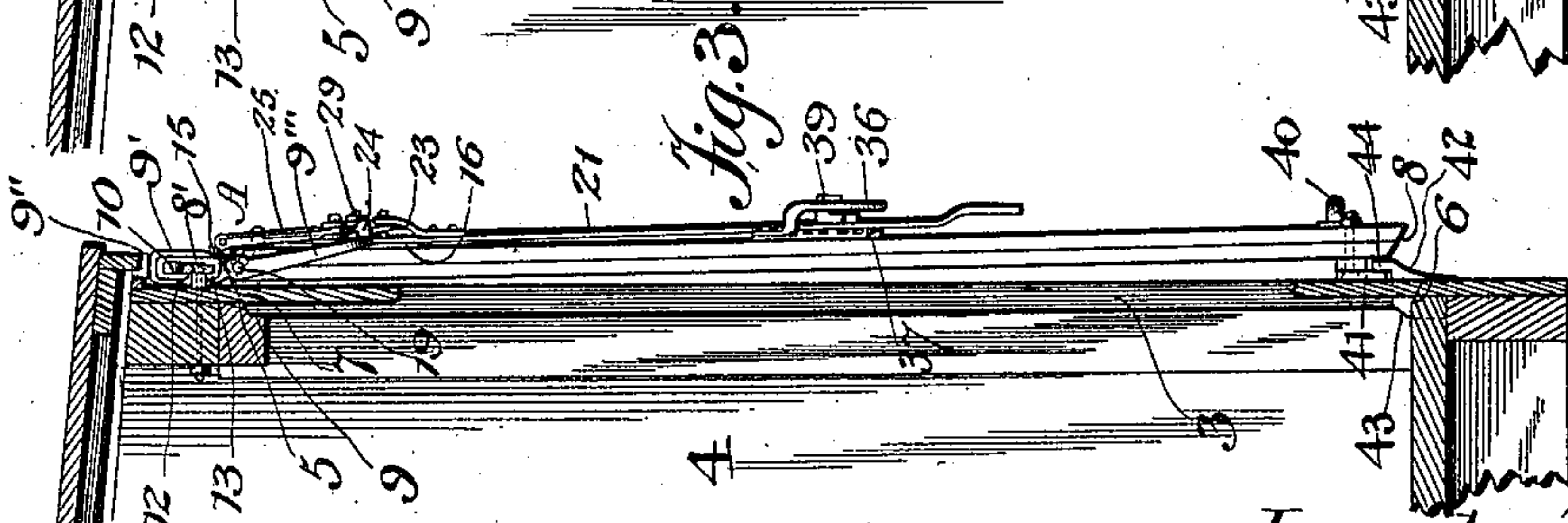


Fig. 3.



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Fig. 4.

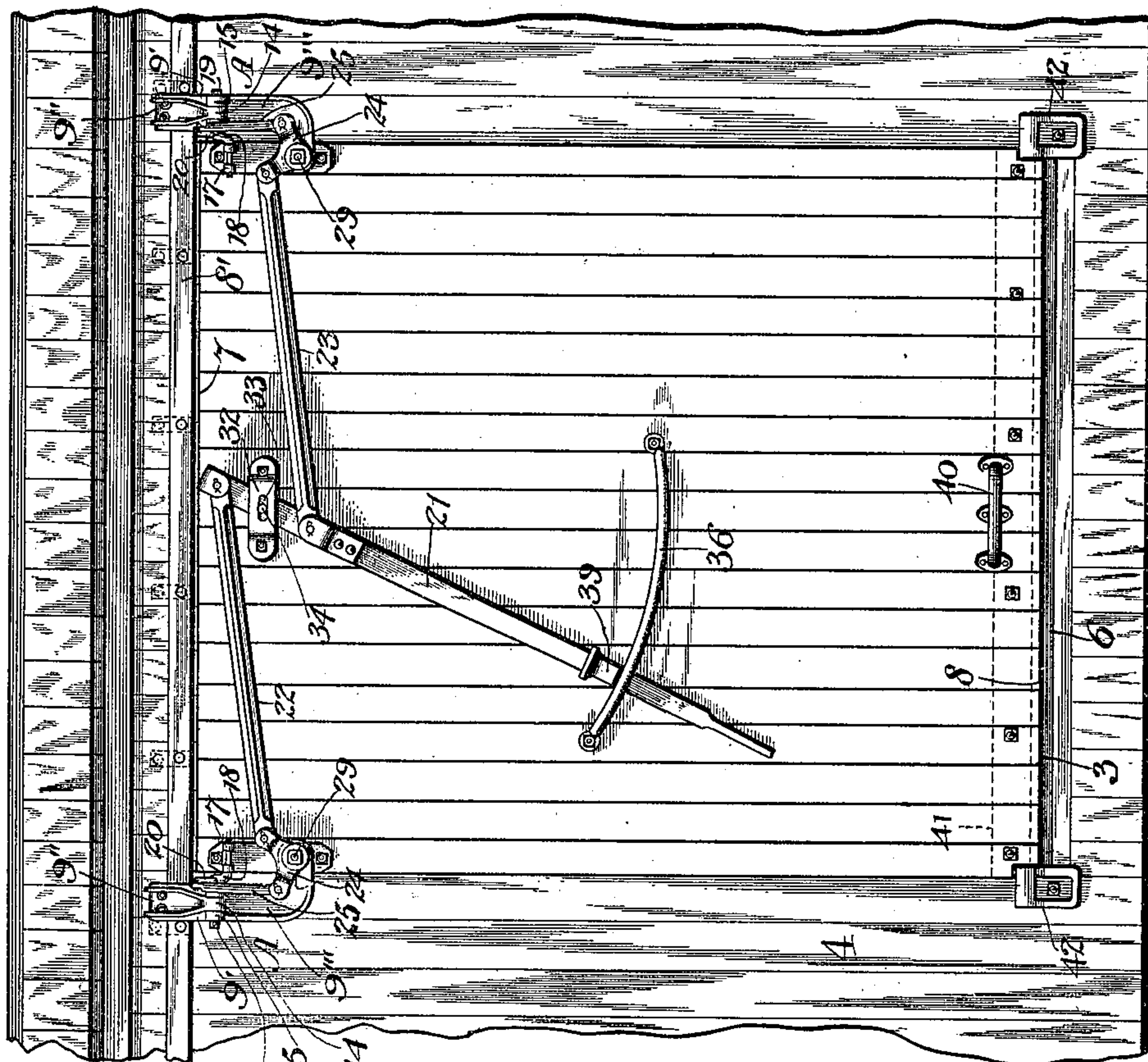


Fig. 7.

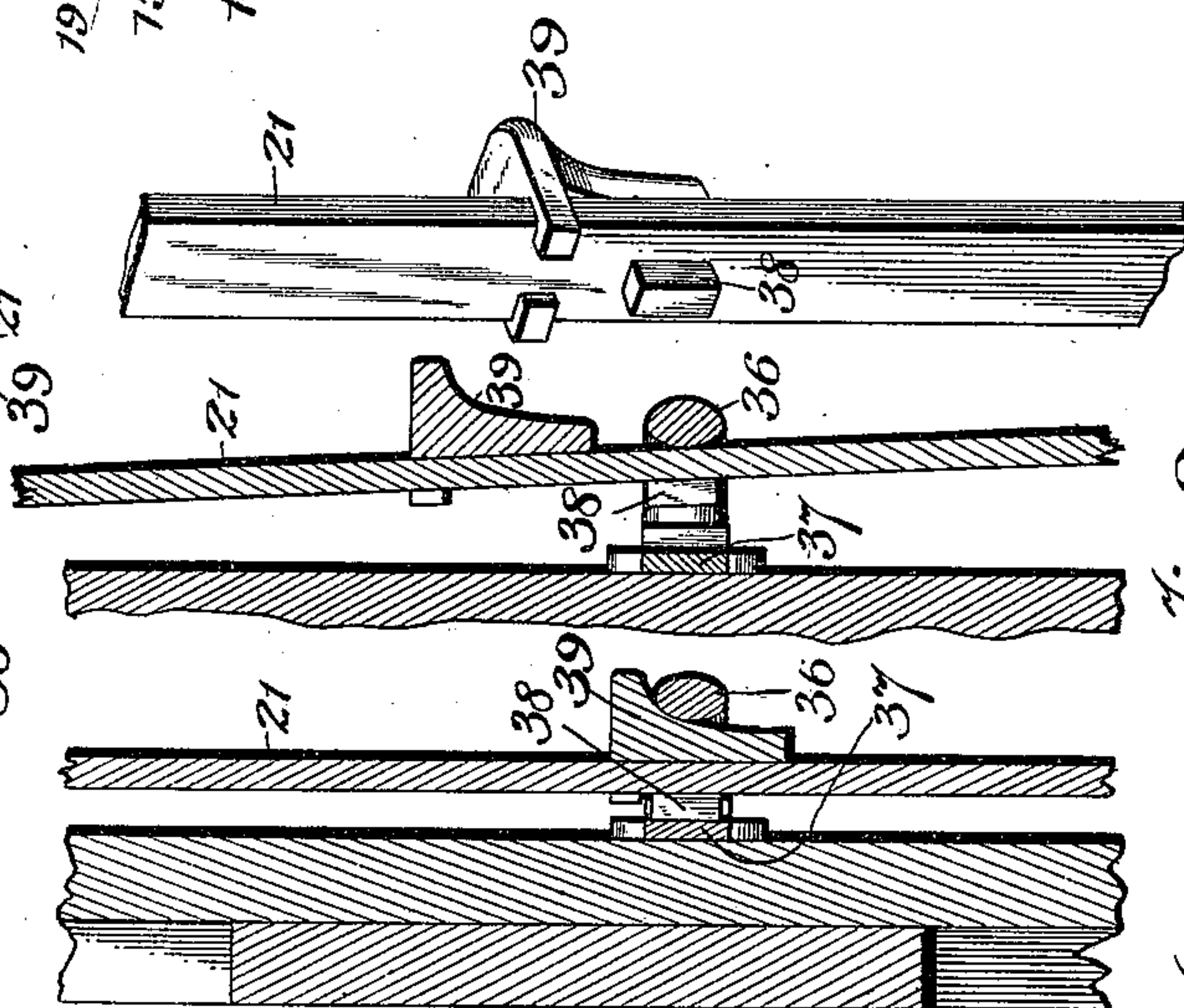
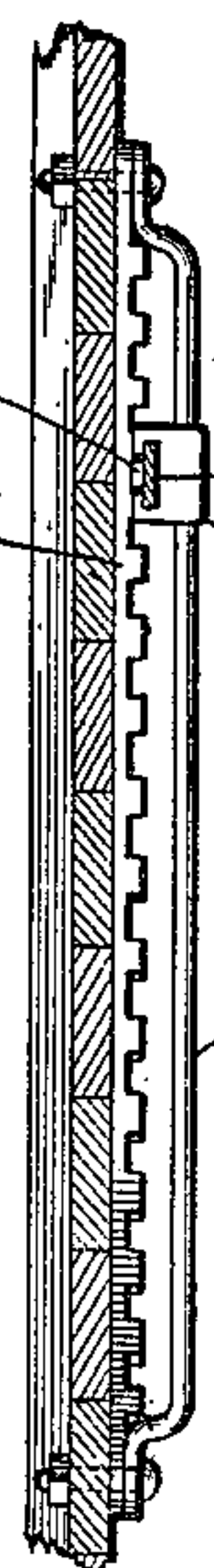


Fig. 10.

Fig. 9.

Fig. 8.

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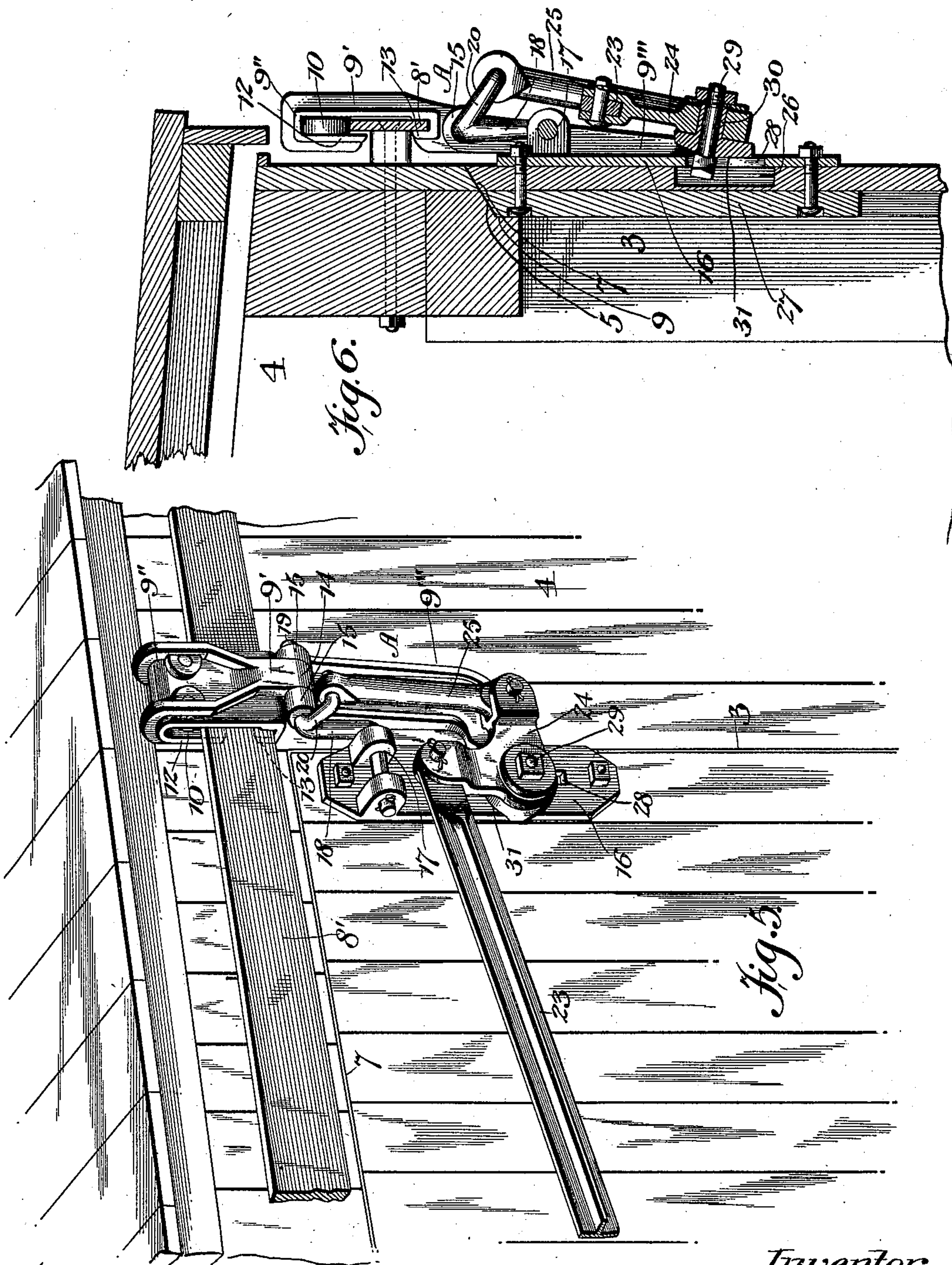
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

SINCLAIR J. JOHNSON, OF NUTLEY, NEW JERSEY.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 652,933, dated July 3, 1900.

Application filed November 3, 1899. Serial No. 735,677. (No model.)

To all whom it may concern:

Be it known that I, SINCLAIR J. JOHNSON, a citizen of the United States, residing in Nutley, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification.

This invention relates to doors, and especially to that class of doors adapted for use with freight-cars, one object of the invention being to provide an improved car-door which in its closed position will be flush with the door-case or wall of the car and which can be moved into its open position with facility and with comparatively-little labor, the operating mechanism being such that it can be quickly and easily assembled and applied to car-doors as ordinarily constructed and so organized that all parts thereof are so located as not to project to any appreciable extent at the side of the car-body.

A further object of the invention is to provide an improved car-door-supporting means including improved operating means therefor embodying means for preventing the breakage or straining of such means.

A further object of the invention is to provide an improved car-door in which the supporting and operating mechanism therefor is so constructed that the car-door can be shifted outward and upward into position to be moved away from the doorway, while such door can also be moved or swung independent of the operating mechanism at an angle to the car-wall, thereby to enable the door when not otherwise freely shiftable to be freed and shifted away from the doorway.

In the drawings accompanying and forming part of this specification, Figure 1 is a view of a part of a car, showing this improved door in position flush with the door-case or wall thereof. Fig. 2 is a sectional view thereof, taken in line *a a*, Fig. 1, showing the door in its closed position. Fig. 3 is also a sectional view taken in said line *a a*, showing the door shifted from its closed position into position to be moved away from the doorway. Fig. 4 is a view similar to Fig. 1, showing the door moved into position to be shifted away from the doorway. Fig. 5 is an enlarged perspective view of a portion of the car and the upper right-hand corner of the

door and its carrier. Fig. 6 is an enlarged sectional view of car, door, and mechanism shown in Fig. 5; and Figs. 7, 8, 9, and 10 are detail views of the locking means for maintaining the actuating means in its adjusted position.

Similar characters of reference designate like parts in all the figures of the drawings.

The present improvement, which resembles in a general way the constructions presented in my contemporaneously-pending applications Serial No. 725,642, filed July 31, 1899, and Serial No. 725,471, filed July 29, 1899, is designed to provide a car-door which in its closed position will be flush with the door-case or body-wall and which can be moved outwardly and upwardly into position to be shifted away from the door-opening and also shifted at an angle to the car-wall to facilitate the opening of the car when the door is not otherwise free to be shifted away from the doorway and may comprise in a general way a door, a plurality of shiftable carriers in connection with said door, and actuating means for shifting said door, said door in the present instance having a movable or sliding and a crank connection with said carriers and said actuating means including equalizing means in the nature of a floating actuator.

In the organization herein shown and described and which may be the preferred one, if desired, the door may comprise the usual structure ordinarily used in freight-cars, and, in fact, the supporting and actuating mechanism is such that it can be readily assembled and applied to doors as ordinarily constructed and in present use.

The door is shown of a size completely to close the doorway 3 and fit flush with the wall or casing of the car-body 4, and for this purpose the door-lintel 5 and door-sill 6 are each shown beveled, the upper and lower edges 7 and 8 of the door being correspondingly beveled, the door-lintel 5 also being so formed that a part thereof acts as a stop 9 to limit the inward movement of the door.

In the present instance the door-lintel 5 and door-sill 6 are inclined or beveled in the same direction. It is to be understood, however, that the beveling of the sill and bottom of the door is not necessary to the proper working of the door.

Secured to the car-body above the door is a track 8', adapted shiftably to support the door-carriers. This track may be of such a length that the door may be shifted thereon away from either side of the doorway, the mechanism being organized to permit this, or such track may carry additional doors, if found desirable.

In the form thereof shown the supporting means for the door comprises a pair of carriers, (designated in a general way by A,) each comprising a hanger 9', having suitable means—such, for instance, as one or more rolls 10—for engaging the track, the hangers being so constructed that they will not be thrown from the track, this result being accomplished by providing each hanger with downwardly and upwardly extending flanges 12 and 13, overlapping the inner side of the track, whereby each hanger is maintained in close engagement with the track, so as to prevent play thereof. In the present instance the major part of the hangers is located beyond the edges of the door, so that when the door is open the hangers may not appreciably project beyond the outer faces of such door. Each of these hangers 9' is shown formed as a hinge and therefore may for the present purposes be designated herein as "hinge-formed," one leaf thereof comprising that member 9'' which carries the track-rolls and having a knuckle 14 and the other leaf comprising that member 9''' which is in direct connection with the door and having knuckles 15, the pintle 19 of said leaves being formed by a crank hereinafter set forth. Each hanger, while it is formed as a hinge, also acts to a certain extent as one member of a hinge, the other member thereof comprising a plate 16, bolted to the door and carrying a bearing 17 for the reception of one arm of a supporting-crank 18, the other arm preferably forming the pintle 19 for the two leaves of the carrier, such supporting-crank being provided with an arm 20 to permit the operation thereof by means hereinafter set forth.

The actuating means in the present instance comprises suitable lever mechanism, including an actuator and a pair of connectors, one in connection with each of said cranks through the medium of a bell-crank, said actuator being effective as an equalizer to prevent the breakage or strain of the mechanism should one sill of the door meet with an obstruction during the closing or opening of said door.

Mounted on each of the hanger members 9''' is a bell-crank 24, one arm of which is in connection with the crank-arm 20 by a suitable connector 25. The opposite arms of these bell-cranks are pivotally secured to connectors, such as rods 22 and 23, the inner ends of which are pivotally secured to an actuator 21, one below and the other above the fulcrum thereof, in such manner that they are shown located in inclined planes.

To permit the proper operation of the mechanism and the steadying of the door in its

movement outwardly and upwardly, and thereby prevent the straining and twisting of the supporting and operating mechanisms, the door has a movable connection with the hangers and for this purpose is shown recessed, as at 26, adjacent to each edge thereof, it being reinforced on its inner side by a cross-beam 27, such recesses communicating with slots 28, formed in the plates 16, bolted thereto.

Projecting through the slots 28 and into the recesses 26 are headed bolts 29, the shanks of which project through tubular pivots 30, formed as a part of the hangers and constituting the pivots for the bell-cranks, which are maintained thereon by washers and nuts carried on said bolts 29, the inner side 31 of each hanger at its point of connection with the door being so formed, as by beveling the hanger in opposite directions, that the door will not be obstructed in its outward and inward movement. This movable connection of the door with the hangers, combined with the crank connection thereof, enables the door to have a substantially-parallel motion in its movement without the provision of parallel cranks. This movable connection of the door with the hangers comprises a movable pivot connection, whereby the door has a sliding connection with such hangers in its upward movement and a pivotal connection therewith in its outward movement, since while sliding or moving upward relatively to said pivot-bolts 29 it swings outward relatively thereto. To facilitate this pivotal action, the heads of the bolts 29 are beveled in opposite directions in a similar manner to the inner sides 31 of the hangers.

The actuator 21, to which the connecting-levers 22 and 23 are pivoted, preferably in such manner that they may have sufficient lateral play, comprises in the present instance a floating lever, whereby it acts as an equalizer to prevent the breakage or straining of the mechanism should one side of the door meet with an obstruction in opening or closing and also to facilitate the proper closing of the door should the mechanism at one side become worn or strained.

Bolted to the door is a keeper 32, provided with an elongated slot 33, into which extends a projection or pin 34, secured adjacent to the upper end of said actuator 21 and at a point intermediate the pivotal connection with such actuator of the connecting-levers 22 and 23. On the shifting of this actuator 21 it will be seen that when both edges of the door are free to move the connecting-levers will move simultaneously, the pin or projection 32 of the actuator rotating in the slot of the keeper. When, however, one side of the door meets with an impediment or obstruction, the crank mechanism of the opposite side will be actuated, while the projection 32 will be carried to that end of the slot nearest to such inoperative crank mechanism, and thus obtain a bearing or fulcrum at the end of the slot and permit

considerable power to be thrown upon the retarded crank mechanism to operate the obstructed side of the door.

For maintaining or locking the actuator 21 in its shifted or adjusted position the door is shown provided with a curved guide-rod or keeper 36, bolted to the door, in the rear of which is provided a rack or notched bar 37, with which a projection 38 on the actuator co-operates. To maintain the actuator in engagement with such notched bar at any desired point, a shiftable locker (shown herein as a wedge 39, sliding on the actuator) is provided. On the upward movement of the wedge the actuator can be pulled out of engagement with the notched bar and shifted in either direction within its keeper and when in the desired position can be forced into engagement with such notched bar and locked by sliding the wedge into position intermediate the outer face of the actuator and the inner face of the guide-bar or keeper 36.

The lower end of the door is provided with a handle 40, of any suitable form, whereby the lower end of the door may be pulled outward after the upper end thereof is moved outward and upward in the manner set forth.

Suitable means is provided to maintain the bottom of the door in its flush position with the door-case and also to support the same in its shifted position when the actuating means above set forth is operated, and in the present instance the door is provided on its inner side, preferably near its bottom, with a flanged member, such as an L-shaped bar 41, a part of which projects beyond the door, at each side edge thereof, such door being cut away at this point for this purpose.

Secured to the car-wall adjacent to each lower corner of the doorway is a bracket or stop 42, partly projecting into such doorway and provided with a beveled inner face 43, adapted to engage the ends of the L-shaped bar of the door and prevent outward movement of such door, such beveled face or stop facilitating the shifting of the door outward and upward when the actuating mechanism is operated. Each bracket is provided with a flange 44, adapted to be engaged by the L-shaped bar 41 when the door is shifted outward and upward, which movement is assisted by pulling the lower end of the door outward during its movement upward, which is readily done by means of the handle above set forth. The same end could, however, be accomplished by locating the flanged bar and brackets at other points than adjacent to the bottom of the door.

In operation, the door being in its closed position, the locking-wedge is shifted upward on the actuator, the actuator pulled out of engagement with the notched bar and shifted from the position shown in Fig. 1 to the position shown in Fig. 4, whereupon the connecting-levers and bell-cranks are shifted, thereby shifting the supporting-cranks 18 and moving the door outward and upward, the

hinged members 9''' of the hanger moving outward with the door while such door is moving upward relatively thereto by means of the movable pivot connection of such hanger therewith. At this time the lower end of the door can be pulled outward, so as to permit the L-shaped bar to overlap the flange of the brackets, whereupon the door can be shifted on its track edgewise and away from the door-opening and in either direction from such door-opening, such edgewise movement being limited, if desired, by a stop on the car-body, (not shown,) the bottom of the door being suitably guided during this shifting movement by flanged brackets (not shown) bolted to the door.

Ordinarily in practice owing to the falling of a portion of the freight against the door it is impossible to slide the door away from the doorway even after it has been moved out of its flush position, so that it has been necessary at times to cut through the door in order to release the same from the binding action of the freight. In the organization presented when it is impracticable to shift the door away from the doorway in the ordinary manner it can be swung upwardly on the hanger-hinges and so freed from the fallen freight. It may also be swung upwardly on such hanger-hinges sufficiently to enable it to be used as a shed, it being retained in such position by some suitable means. (Not shown.) This swinging movement can be secured by releasing the door from the brackets at the bottom, which can be done by shoving the door slightly to one side and then to the other to first free the connection at one end of the door and then at the other end thereof, it usually being possible to shove the door a few inches even though the freight has fallen against it, while impracticable to shift it sufficiently to get into the freight-car to move such freight.

When the door has been shifted on its track away from the doorway, the crank mechanism can be operated to lower the door into binding engagement with the side wall of the car, the actuator being locked in position, whereby the return movement of the door on the track will be prevented.

To close the door, it is only necessary that the operation above described be reversed.

In conclusion I desire to state that this improvement may be used in all kinds of freight box-cars—such as refrigerator-cars, &c.—and can also be used in connection with structures other than freight-cars, if desired, so that the term "car-body" as used herein and in the claims is not to be construed as a limitation to structures of that class.

By the provision of a door in which the supporting mechanism therefor is above the door all damage thereto is avoided by the backing of wagons against the car, as would be the case were such mechanism located at the bottom or sides of the door. Moreover, when the door is shiftable outwardly and upwardly it locks itself closed by its own weight, and the

tendency of the door is to remain shut, which is not the case when the door is supported at the bottom or sides or when it is movable outwardly and downwardly. Furthermore, when freight becomes displaced or has fallen against the door such door can be more readily moved outwardly and upwardly than moved outwardly and downwardly, since such downward movement tends to increase the binding effect of the displaced freight, as the car-floor will prevent all movement of the freight with the door.

Having described my invention, I claim—

1. The combination, with a car-body having a doorway, of a door therefor; one or more hangers shiftably supported on said body; crank mechanism connecting said hanger or hangers with said door; a bell-crank in operative connection with said crank mechanism and having its direction of movement parallel to the plane of the doorway; and actuating means in connection with said bell-crank and effective to move the door into position to be shifted away from the doorway.

2. The combination, with a car-body having a doorway, of a door therefor; means for supporting said door on said body for shiftable movement, and said door having a movable pivot connection with said supporting means; and means for shifting said door into position to be moved away from the doorway and comprising a pair of members and equalizing means intermediate said members.

3. The combination, with a car-body having a doorway, of a door; a plurality of carriers shiftably supported on said body and each embodying crank mechanism including a bell-crank; and means for actuating said bell-cranks to move the door into position to be shifted away from the doorway, said actuating means including an equalizer.

4. The combination, with a car-body having a doorway, of a door; a pair of carriers shiftably supported on said body and each embodying crank mechanism including a bell-crank; and means for actuating said bell-cranks to move the door into position to be shifted away from the doorway, said actuating means including a floating-lever actuator.

5. The combination, with a car-body having a doorway, of a door; supporting means for said door and comprising hangers mounted on said body for shiftable movement; a supporting-crank connecting each of said hangers with said door; a bell-crank carried by each of said hangers and in connection with said supporting-cranks; and means for operating said bell-cranks thereby to move the door into position to be shifted away from the doorway.

6. The combination, with a car-body having a doorway, of a track secured to said body; a door; a pair of hangers shiftably mounted on said track; a supporting-crank connecting each of said hangers with said door; a bell-crank supported on each of said hangers and in connection with said supporting-crank; and a lever system for operating said bell-

cranks thereby to move the door into position to be shifted away from the doorway.

7. The combination, with a car-body having a doorway, of a door; one or more hangers shiftably supported on said body, each comprising a pair of hinged members; a crank connecting each of said hangers with said door; and actuating means for operating said crank or cranks thereby to move the door into position to be shifted away from the doorway.

8. The combination, with a car-body having a doorway, of a door; a plurality of hangers shiftably supported on said body, each comprising a pair of hinged members; a crank connecting each of said hangers with said door; and actuating means for operating said crank or cranks thereby to move the door into position to be shifted away from the doorway, said actuating means including equalizing means.

9. The combination, with a car-body having a doorway, of a track secured to said body; a pair of hangers mounted on said track, each comprising a pair of hinged members; a door; crank mechanism connecting said hangers with said door; a bell-crank supported on each of said hangers and in connection with said crank mechanism; and means for operating said bell-cranks thereby to move the door into position to be shifted on said track.

10. The combination, with a car-body having a doorway, of a pair of hangers supported for shiftable movement on said body; a door having a movable pivot connection with said hangers; crank mechanism connecting said hangers with said door; and means for operating said crank mechanism thereby to move the door into position to be shifted away from the doorway.

11. The combination, with a car-body having a doorway, of a door therefor; a pair of hangers supported on said body for shiftable movement relatively thereto and each having a movable connection with said door; a crank connecting each of said hangers with said door; and means for operating said cranks thereby to move the door into position to be shifted away from the doorway.

12. The combination, with a car-body having a doorway, of a door provided with recesses therein; a pair of hangers supported on said body for shiftable movement, each having a projection extending into one of said recesses, whereby the door has movable pivot connections with said hangers; a crank connecting each of said hangers with said door; and means for operating said cranks thereby to move the door into position to be shifted away from the doorway.

13. The combination, with a car-body having a doorway, of a door therefor; a pair of hangers supported on said body for shiftable movement, said door having a movable connection with each of said hangers; a crank connecting each of said hangers with said door; and means for operating said cranks to

move the door into position to be shifted away from the doorway, and including an equalizer.

14. The combination, with a car-body having a doorway, of a door therefor; a track secured to said body; a pair of hangers mounted on said track for shiftable movement, said door having a movable connection with each of said hangers; a crank connecting each of said hangers with said door; and means including a floating actuator for operating said cranks to move the door into position to be shifted away from the doorway.

15. The combination, with a car-body having a doorway, of a door therefor; one or more hinge-formed members shiftable supported on said body, said door having a movable pivot connection with said hinge-formed member or members, whereby said door may be shifted with one part of said hinge-formed member and simultaneously moved in a transverse direction independently thereof; and means for moving the door relatively to said member or members and into position to be shifted away from the doorway.

16. The combination, with a car-body having a doorway, of a door fitting therein; a pair of hinge-formed hangers supported on said body for shiftable movement, said door having a movable connection with each of said hangers; a crank connecting said door with each of said hangers; and means for operating said cranks thereby to move the door into position to be shifted away from the doorway.

17. The combination, with a car-body having a doorway, of a door fitting therein; a track secured to said body; a pair of hinge-formed hangers supported on said track for shiftable movement, said door having a movable connection with each of said hangers; a crank connecting said door with each of said hangers; means for operating said cranks thereby to move the door into position to be shifted away from the doorway, said means including equalizing means.

18. The combination, with a car-body having a doorway, of a door fitting therein; a track supported on said body; a pair of hangers mounted on said track for shiftable movement, each of said hangers comprising a pair of hinged members, said door having a movable connection with one member of each of said hangers; a supporting-crank connecting said door with each of said hangers; a bell-crank pivoted to each hanger and in operative connection with said supporting-cranks; and actuating means for operating said bell-cranks thereby to move the door into position to be shifted away from the doorway.

19. The combination, with a car-body having a doorway, of a door fitting therein; a track secured to said body; a pair of hangers supported on said track for shiftable movement, each of said hangers comprising a pair of hinged members, said door having a movable pivot connection with one member of each of said hangers; cranks connecting said door with said hangers, said cranks forming

the pintles of said hinged members; and means for operating said cranks and thereby the door into position to be shifted away from the doorway.

20. The combination, with a car-body having a doorway, of a door fitting therein; a pair of hangers mounted on said body for shiftable movement, said door having a movable connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with said supporting-cranks; and means for operating said bell-cranks and thereby the supporting-cranks to move the door into position to be shifted away from the doorway.

21. The combination, with a car-body having a doorway, of a door fitting therein; a pair of hangers mounted on said body for shiftable movement, said door having a sliding and pivotal connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with said supporting-cranks; means for operating said bell-cranks and thereby the supporting-cranks to move the door into position to be shifted away from the doorway, and including an actuator; and means for locking said actuator.

22. The combination, with a car-body having a doorway, of a door fitting therein; a pair of hangers mounted on said body for shiftable movement, said door having a movable pivot connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with said supporting-cranks; and means for operating said bell-cranks and thereby the supporting-cranks to move the door into position to be shifted away from the doorway, said means including an equalizer.

23. The combination, with a car-body having a doorway, of a door fitting therein; a pair of hangers mounted on said body for shiftable movement, said door having a sliding and pivotal connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having a connection with said supporting-cranks; and means for operating said bell-cranks and thereby the supporting-cranks to move the door into position to be shifted away from the doorway, said means including an equalizer comprising a floating lever.

24. The combination, with a car-body having a doorway, of a door fitting therein; a track mounted on said body; a pair of hangers mounted on said track for shiftable movement, said door having a sliding and pivotal connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with said supporting-cranks; a floating actu-

ating-lever supported on said door and having connection with each of said bell-cranks; and means for locking said actuating-lever in position.

5 25. The combination, with a car-body having a doorway, of a door fitting therein; a track mounted on said body; a pair of hangers mounted on said track for shiftable movement, said door having a movable pivot connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with said supporting-cranks; a floating actuating-lever supported on said door and having connection with each of said bell-cranks; and means for locking said actuating-lever in position and comprising a notched bar and a shiftable wedge effective to wedge the actuator into engagement with said bar.

26. The combination, with a car-body having a doorway, of a door therefor; a pair of carriers shiftable supported on said body and including crank mechanism in connection with said door; a slotted keeper secured to said door; an actuator provided with a projection extending into said slot; connectors secured to said crank mechanism and having their inner ends pivotally connected to said actuator one above and one below the projection thereof.

27. The combination, with a car-body having a doorway, of a door fitting therein; a track mounted on said body; a pair of hangers supported on said track for shiftable movement, said door having a movable connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with each of said supporting-cranks; a slotted keeper secured to said door; an actuating-lever provided with a projection extending into said slot; connectors secured to said bell-cranks and having their inner ends pivotally connected to said actuating-lever one above and one below the projection thereof.

28. The combination, with a car-body having a doorway, of a door fitting therein; a track mounted on said body; a pair of hangers supported on said track for shiftable movement, said door having a movable connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with each of said supporting-cranks; a slotted keeper secured to said door; an actuating-lever provided with a projection extending into said slot; connecting-levers secured to said bell-cranks and having their inner ends pivotally connected to said actuating-lever one above and one below the projection thereof; and means for locking said actuating-lever in position.

29. The combination, with a car-body having a doorway, of a door therefor; means for

supporting said door for shiftable movement on said car-body; means for moving said door into position to be shifted away from said doorway and including an actuator; and means for locking said actuator in position and comprising a notched member, a keeper, and a shiftable wedge effective to wedge the actuator into engagement with said notched member.

30. The combination, with a car-body having a doorway, of a door therefor; means for supporting said door; one or more hangers shiftable supported on said body; crank mechanism connecting said hanger or hangers with said door; means for moving said door into position to be shifted away from the doorway and including an actuator; and means for locking said actuator and comprising a notched member, a keeper, and a shiftable wedge mounted on said actuator and shiftable into position intermediate the actuator and said keeper to maintain the actuator in engagement with said notched member.

31. The combination, with a car-body having a doorway, of a door fitting therein; a track mounted on said body; a pair of hangers mounted on said track for shiftable movement, each of said hangers comprising a pair of hinged members, said door having a sliding and pivotal connection with each of said hangers; a supporting-crank connecting each of said hangers with said door; a bell-crank mounted on each of said hangers and having connection with said supporting-cranks; an actuator having a pin-and-slot connection with said door; connectors pivoted to said bell-cranks and actuator one above and one below said pin-and-slot connection; locking means for said actuator, comprising a notched member at the under side of said actuator, a keeper at the outer side thereof, and a shiftable wedge for maintaining said actuator in engagement with said notched member; and means for maintaining the bottom of the door in the doorway and for supporting the same when moved outwardly therefrom.

32. The combination, with a car-body having a doorway, of a door therefor; means including crank mechanism for supporting said door on said body for shiftable movement, and also for swinging movement, whereby it may be swung at an angle to the car-body, said door also having a movable pivot connection with said supporting means; and means including crank mechanism for moving said door into position to be shifted away from the doorway.

33. The combination, with a car-body having a doorway, of a door therefor; means including crank mechanism for supporting said door on said body for shiftable and also for swinging movement, whereby it may be swung at an angle to the car-body, said door also having a movable connection with said supporting means; and means for moving said door into position to be shifted away from the doorway.

34. The combination, with a car-body having a doorway, of a door therefor; means for supporting said door on said body for shiftable movement and for swinging movement, whereby it may be swung at an angle to the car-body, said door having a movable pivot connection with said supporting means; and actuating means for moving said door into position to be shifted away from the doorway.

35. The combination, with a car-body having a doorway, of a door; a plurality of means for supporting said door on said body for swinging movement relatively to said body, and means in connection with each of said supporting means and including equalizing means for moving said door into position to be shifted away from the doorway.

36. The combination, with a car-body having a doorway, of a door; a plurality of means for supporting said door on said body for swinging movement relatively to said body, and actuating means in connection with each of said supporting means for moving said door into position to be shifted away from the doorway, said actuating means including equalizing means comprising a floating lever.

37. The combination, with a car-body having a doorway, of a door; a plurality of means for supporting said door on said body for swinging movement at an angle to said car-body, and for shiftable movement away from the doorway, and means having connection with each of said supporting means for moving said door into position to be shifted away from the doorway and embodying crank mechanism and equalizing means.

38. The combination, with a car-body having a doorway, of a door; a plurality of means for supporting said door on said body for swinging movement at an angle to the car-body, and for shiftable movement away from the doorway, and means having connection with each of said supporting means for moving said door into position to be shifted away from the doorway and embodying crank mechanism and equalizing means, said equalizing means comprising a floating actuator.

39. The combination, with a car-body hav-

ing a doorway and a track, of a door flush with the wall of said body and supported on said track for shiftable movement, and for swinging movement at an angle to the car-body, and means for moving said door from its flush position outwardly and upwardly into position to be shifted on said track away from the doorway, and comprising a pair of members and equalizing means intermediate said members.

40. The combination, with a car-body having a doorway and a track, of a door flush with the wall of said body and supported on said track for shiftable movement, and for swinging movement at an angle to the car-body, and means for moving said door from its flush position outwardly and upwardly into position to be shifted on said track away from the doorway, and comprising a pair of members, and equalizing means comprising a floating lever intermediate said members.

41. The combination, with a car-body having a doorway, of a door flush with the wall of said car-body and supported for shiftable movement away from the doorway and for swinging movement relatively to said wall; actuating means for moving said door into position to be shifted away from the doorway and comprising a pair of members and equalizing means intermediate said members; and means for locking said actuating means in position.

42. The combination with a car-body having a doorway, of a pair of hangers shiftable supported on said body; a door flush with the car-wall and supported on said body for swinging movement at an angle to said car-body; crank mechanism connecting said hangers and door; means for moving said door outwardly and upwardly into position to be shifted away from the doorway; and means for maintaining said door in position in the doorway and for supporting the bottom thereof when moved outwardly and upwardly.

SINCLAIR J. JOHNSON.

Witnesses:

C. A. WEED,
F. N. CHASE.