

No. 652,931.

Patented July 3, 1900.

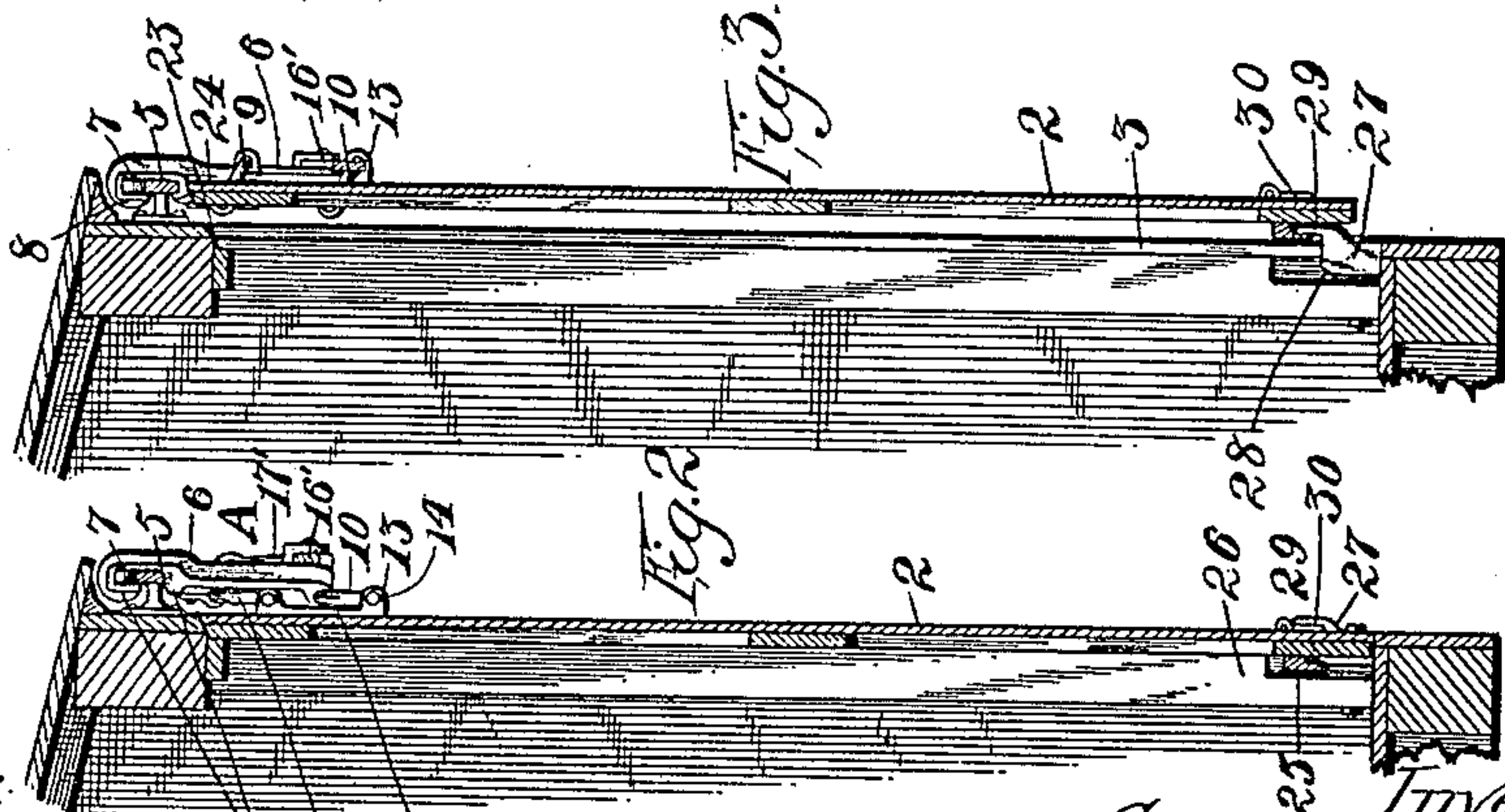
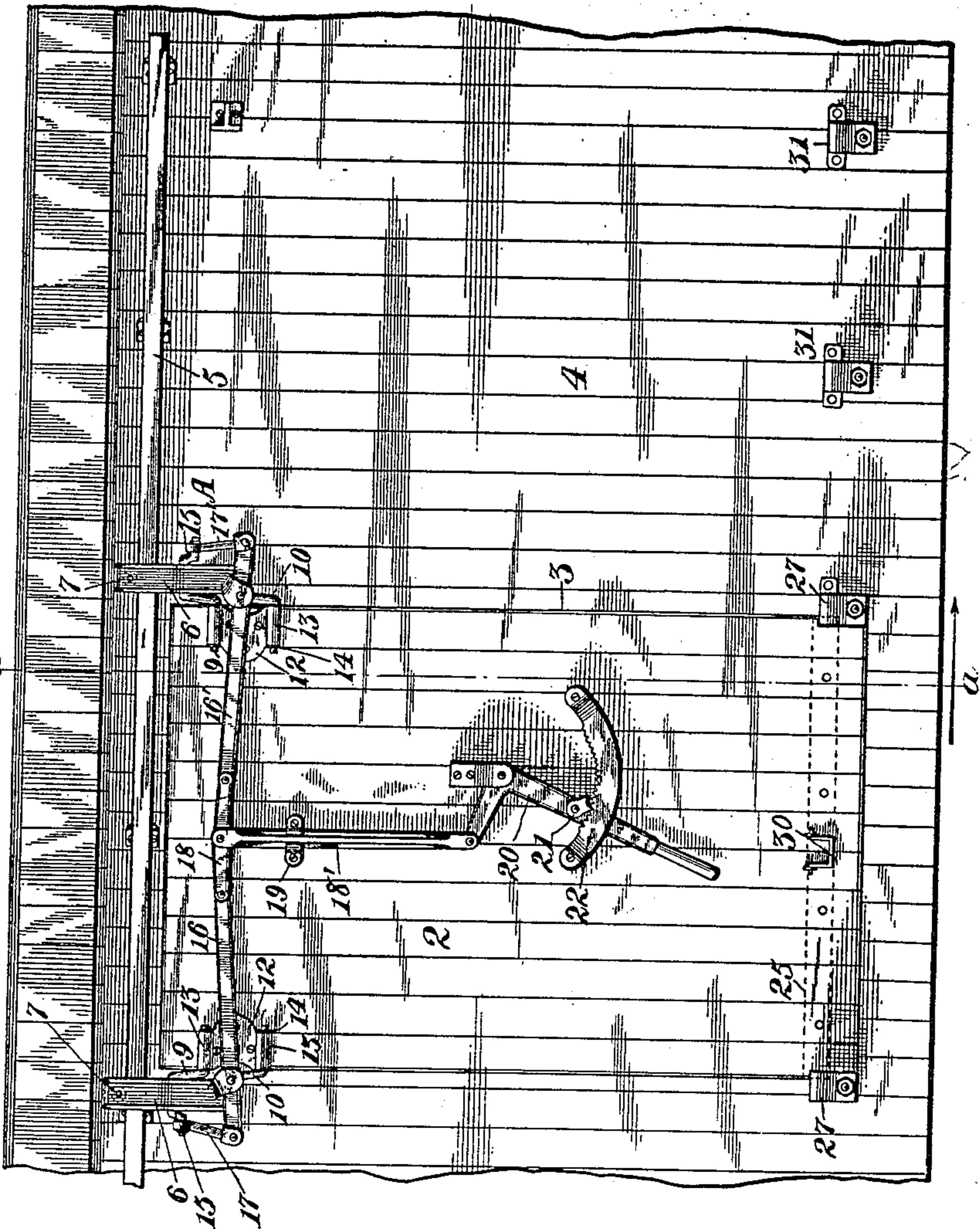
S. J. JOHNSON.
CAR DOOR.

(Application filed July 29, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1



Witnesses:

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Doors, Car, Sliding,
Lateral Movement.
Link Support.

DRAFTSMAN

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4 Sheets—Sheet 2.

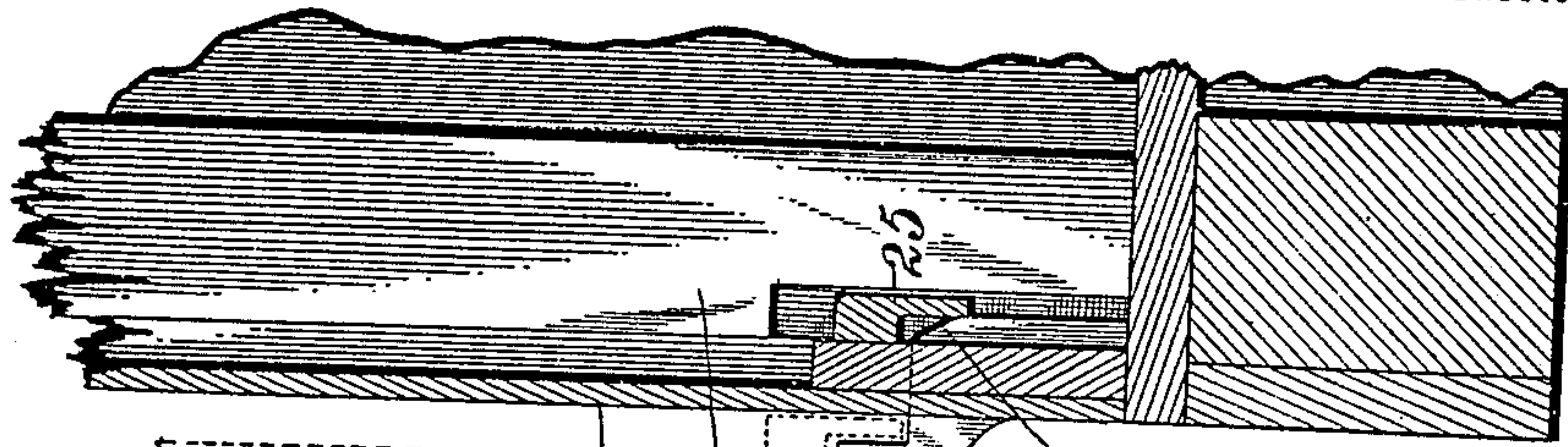
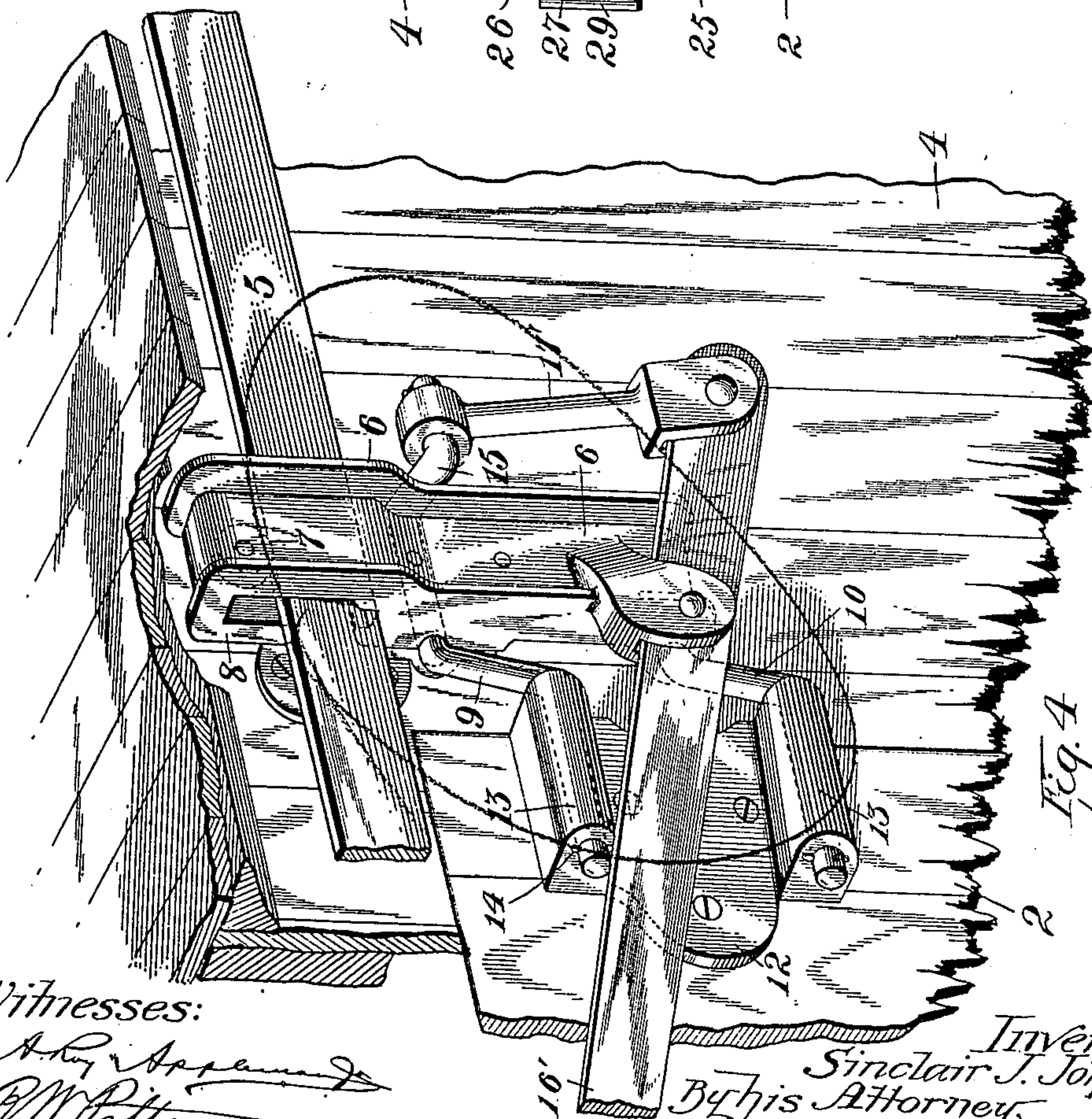
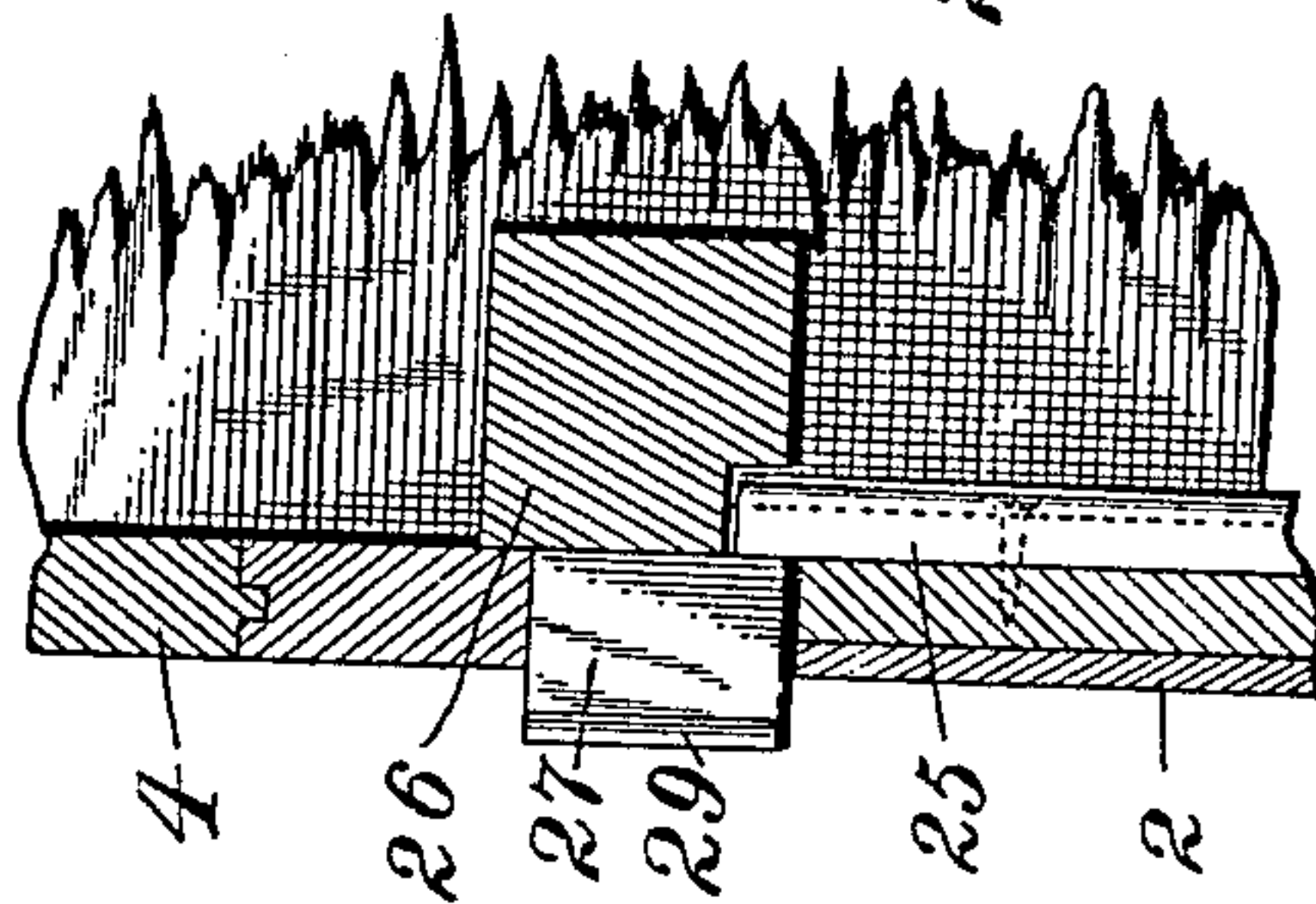


Fig. 6.



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Doors, Car, Sliding,
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S. J. JOHNSON.

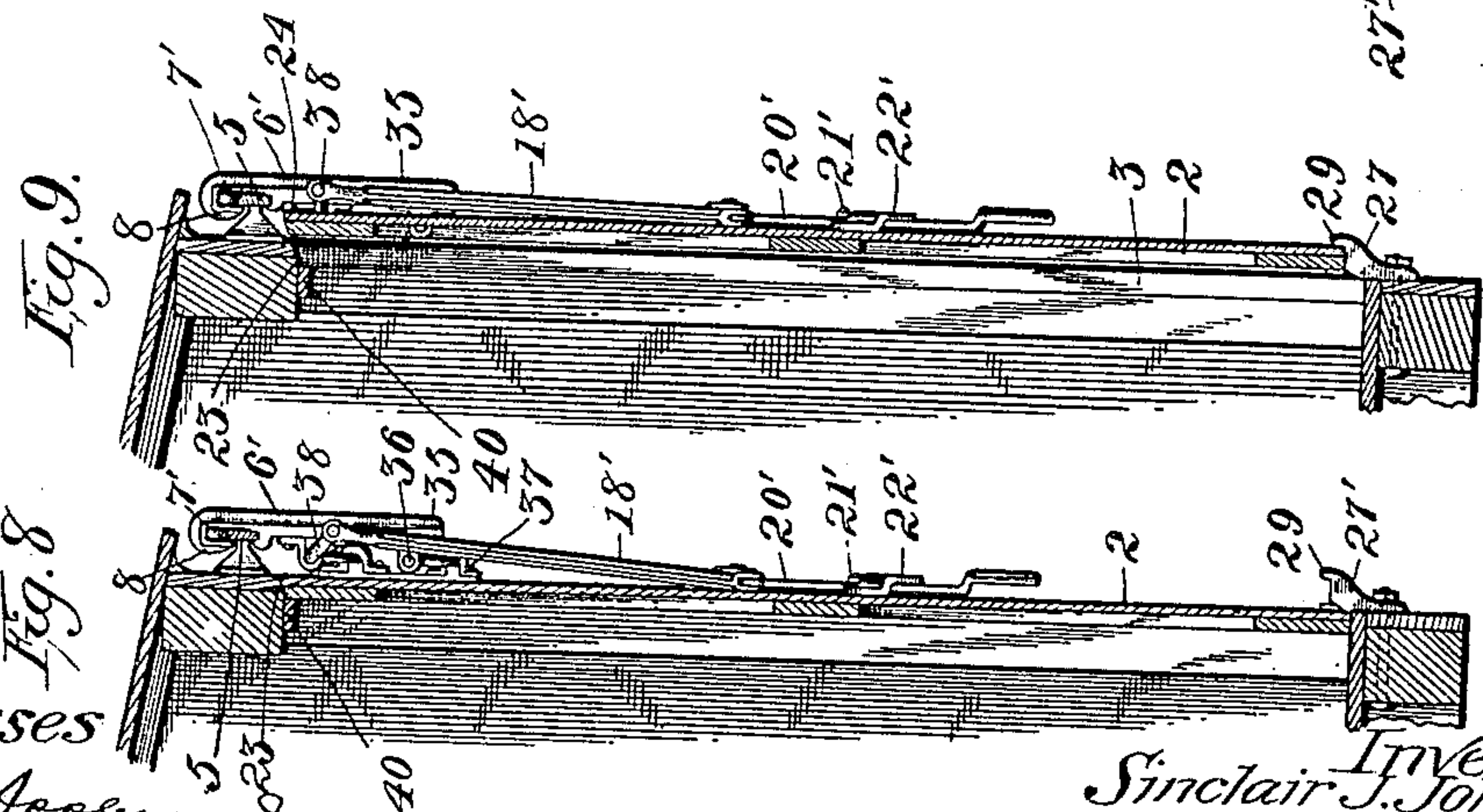
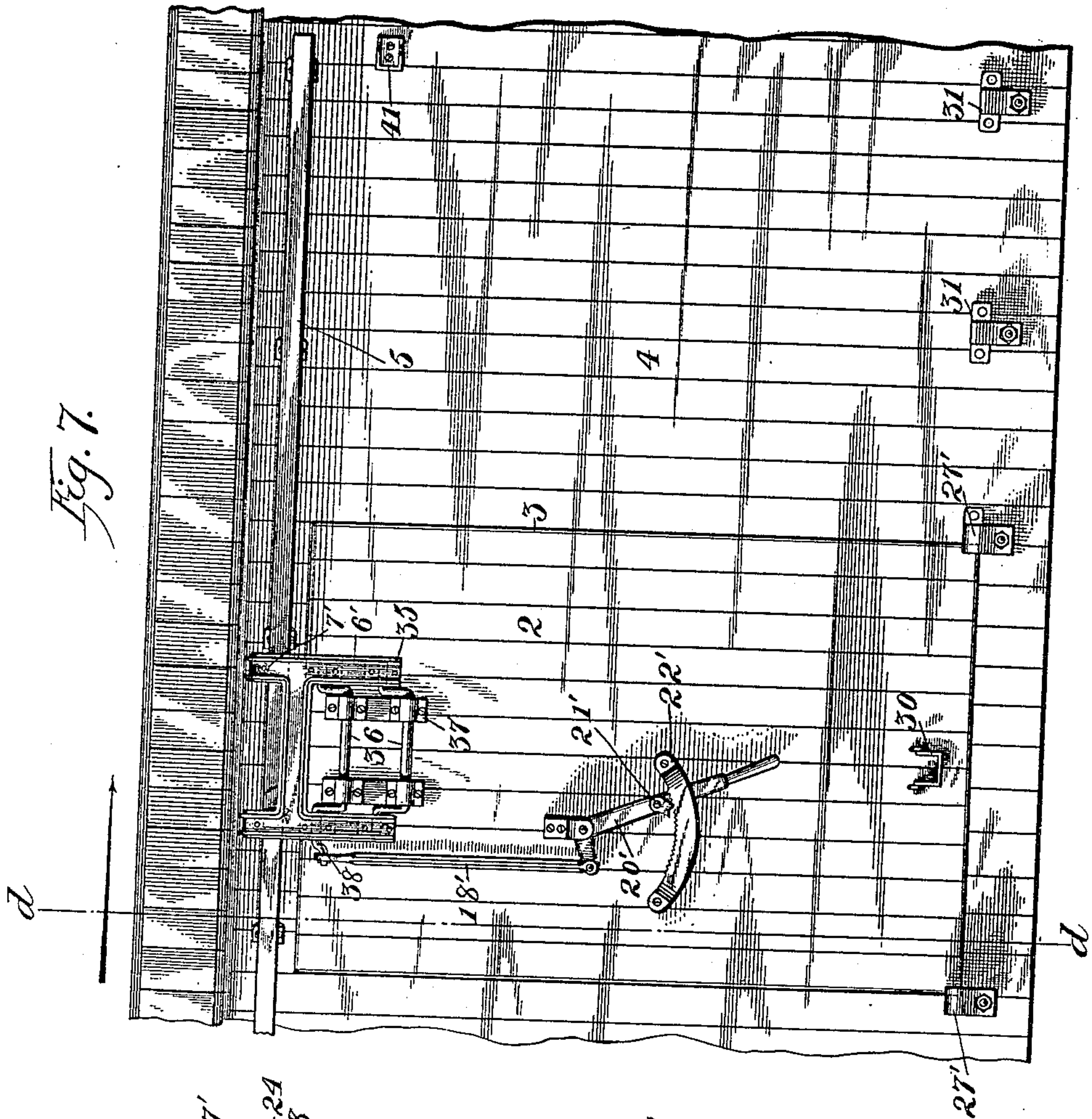
CAR DOOR.

(Application filed July 29, 1899.)

Patented July 3, 1900.

(No Model.)

4 Sheets—Sheet 3.



Witnesses

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24
Doors, Car, Sliding,
Lateral Movement.
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No. 652,931.

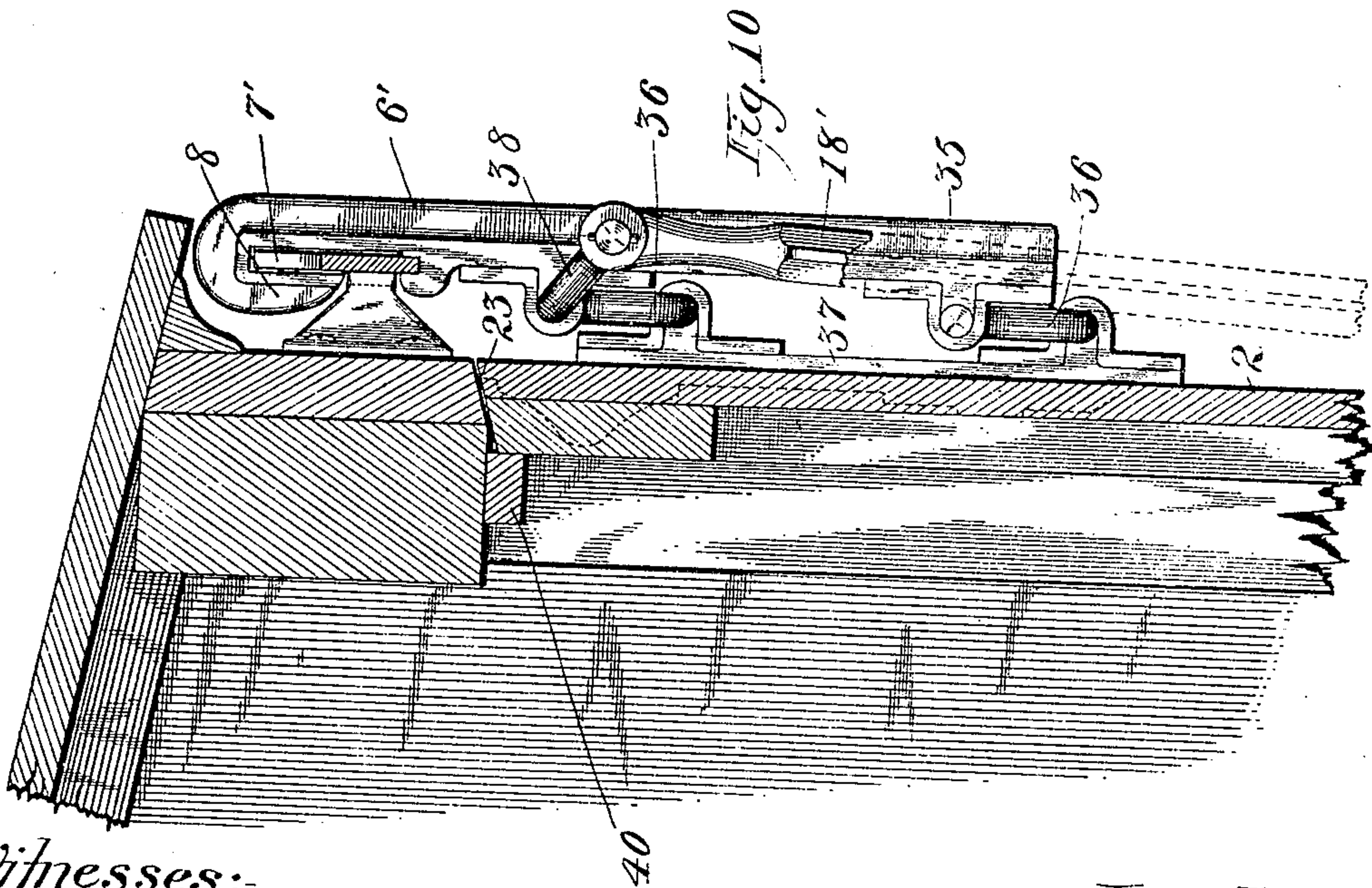
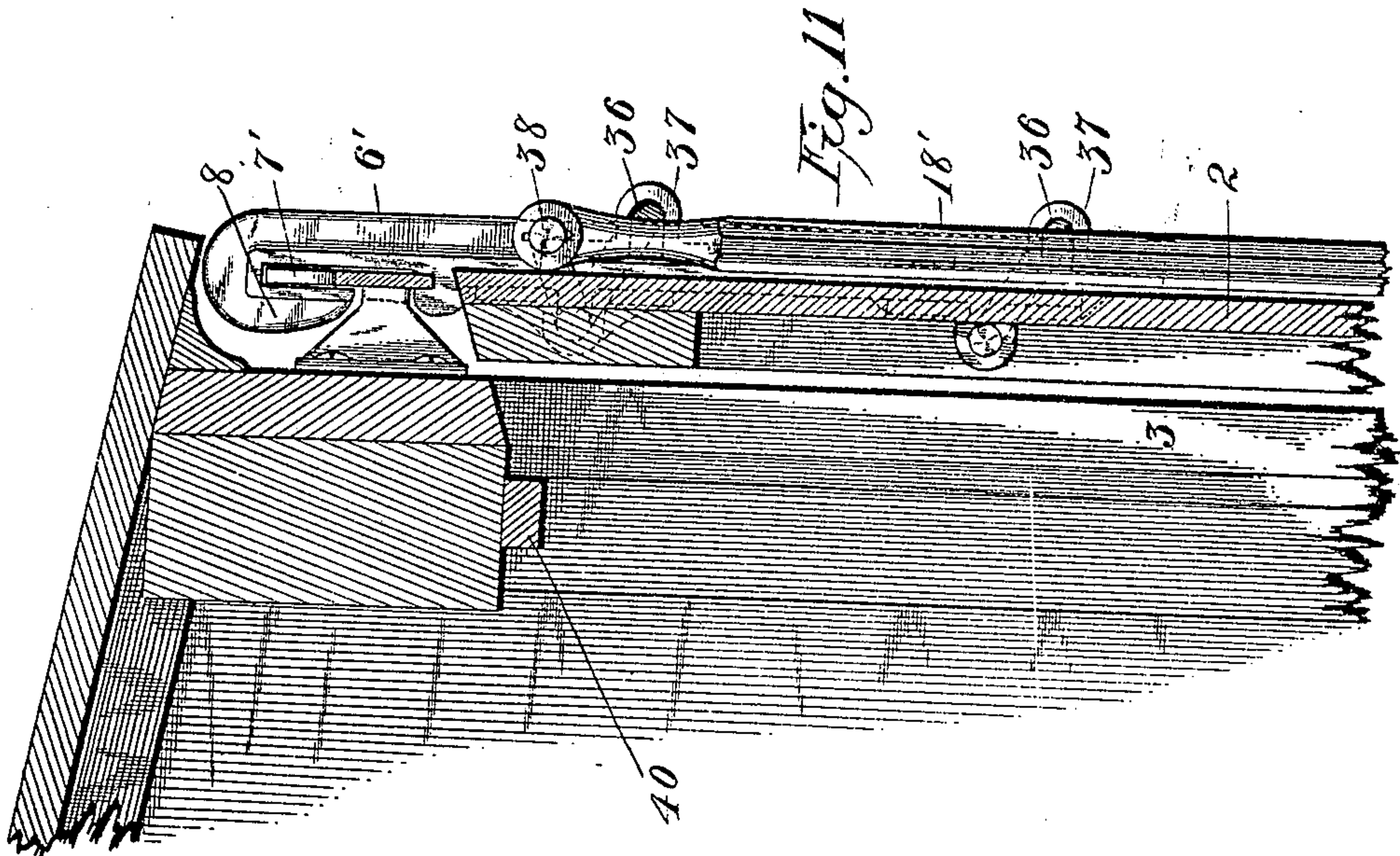
S. J. JOHNSON.
CAR DOOR.

Patented July 3, 1900.

(Application filed July 29, 1899.)

(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

SINCLAIR J. JOHNSON, OF NUTLEY, NEW JERSEY.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 652,931, dated July 3, 1900.

Application filed July 29, 1899. Serial No. 725,471. (No model.)

To all whom it may concern:

Be it known that I, SINCLAIR J. JOHNSON, a citizen of the United States, residing at 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 car-doors adapted for use with freight box-cars, the 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 can be moved into its open position with facility and with comparatively-little labor and is, moreover, so assembled with the car-body that in use it will not get out of working order.

A further object of the invention is to provide improved means for supporting and operating a door of the class described, such means being effective in the closing of the door to move the same into position flush with the door-case or car-wall and effective in the opening of the door to shift it in a plurality of directions from such flush position, whereby it can be readily moved away from the doorway or opening and also operative to lock the door in its closed position or in its open position against the side of the car to prevent return movement thereof opposite 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. 3 is also a sectional view taken in said line *a a*, Fig. 1, with the door shifted from its flush position in readiness to be moved away from the doorway. Fig. 4 is an enlarged view, partly in section and having a part thereof broken away, of the upper right-hand corner of the door and its carrier. Fig. 5 is an enlarged view of one side of the door-case, showing in section the lower part of the door when in its closed position flush with such case and in dotted lines the position of the door when it has been shifted into position in readiness to be moved away from the doorway. Fig. 6 is a cross-sectional view of that portion of the door-case and door shown in Fig. 5. Fig. 7 is a

view similar to Fig. 1, showing a somewhat-different form of door-carrier. Fig. 8 is a sectional view taken in line *d d*, Fig. 7. Fig. 9 is also a sectional view taken in said line *d d*, the door, however, being shown shifted into position to be moved away from the doorway. Figs. 10 and 11 are enlarged sectional views, taken in said line *d d*, of the upper portion of the door and showing the same in its closed and in its shifted position in readiness to be moved away from the doorway.

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

The present improvement is designed to provide a car-door which in its closed position will be flush with the door-case or body-wall, the improved operating means of which is effective to move said door in a plurality of directions from its flush position into a position from which it can be readily moved away from the doorway, and for this purpose I have provided an improved structure comprising in a general way a door having one or more carriers and an actuator or actuating means effective to operate the door in two directions, either into position flush with the door-case or body-wall or from such position into position to be moved away from the doorway; and the improvement comprises in a general way a door, a carrier secured to said door, means for supporting said carrier, and actuating means for shifting the door, and which means is so organized that the door will have a parallel motion and will effectively lock the door in its closed position or in its open position against the side of the car.

In the form thereof herein shown and described and which may be its preferred form, if desired, the door 2 may comprise the usual structure ordinarily used in freight box-cars and of a size to fit within the doorway 3 flush with the car-body 4. Secured to such car-body 4 above the door is a track 5, adapted to support the door-carrier. This track may be of such 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 one form thereof the door is provided with a pair of carriers, (designated in a general way by A,) each comprising a hanger 6,

having suitable means—such, for instance, as a roll 7—for engaging the track, and so constructed that in working it will not be thrown therefrom, this object being secured 5 by providing the hanger with a downwardly and upwardly extending flange 8 overlapping the inner side of the track. In the present instance the hangers are located beyond the edges of the door, so that when the door is 10 open the hangers may not appreciably project beyond the outer face of such door. Each hanger is so constructed that it is in close engagement with the under edge of the track, so as to prevent play of such hanger relatively 15 thereto. This feature combined with the construction of carrier hereinafter set forth permits the provision of a door having a steady parallel motion, so that during its shifting movement there will be no swinging or vibra- 20 tory movement.

Pivotaly carried by each hanger, which acts as one member of a hinge for shiftable movement relatively thereto, is a pair of cranks 9 and 10, one below and in parallelism 25 with the other. These cranks are secured to the door by a suitable plate 12, having bearings 13, into which the ends of the cranks extend, being fixed against separation therefrom by some suitable means, such as pins 14, 30 such plate thus constituting the other member of the hinge.

In the present organization the door is shown hung below the pivotal axes of the cranks with their hangers, whereupon when 35 the door is closed the crank-arms may be in a substantially perpendicular or dead-center position and effectively maintain the door against opening movement. One of the cranks—as, for instance, the crank 9—of each 40 pair is provided with a crank-arm 15 for the attachment of door-actuating means, which in one form thereof comprises a pair of connecting-levers 16 and 16', each pivotaly secured to a hanger adjacent to the lower end 45 thereof, whereby such hangers constitute the fulcrum therefor, such levers being provided with connecting-rods 17 and 17', secured to the crank-arms. The inner ends of these connecting-levers 16 and 16' are pivotaly secured 50 to an equalizer (shown as a member 18) pivotaly secured to a connecting-rod 18', suitably guided by a guide 19, secured to the door, the lower end of said rod being secured to an actuator, such as an angle-lever 20, pivotaly 55 secured to the door and carrying a pawl 21 in operative engagement with a ratchet 22, fixed to the door. On shifting this angle-lever—as, for instance, to the right—it will be seen that the inner ends of the connecting-levers 60 16 and 16' are drawn downward, thereby shifting the outer ends thereof upward to throw the crank-arms 15 outwardly and upwardly in the arc of a circle, whereby the door is shifted from its flush position obliquely or in 65 two directions outwardly and upwardly, this shifting movement being facilitated by beveling the door-lintel 23 and the upper edge of

the door 24. In the use of this equalizer 18 should one side of the door in closing meet with an obstruction this device will act to prevent the breakage or strain of the actuating mechanism, since it is shiftable to operate one set of cranks while permitting the other set to remain inoperative, and is therefore an essential feature in an improvement in which considerable power is exerted. 75

Suitable means is provided to maintain the lower part of the door in its flush position with the door-case and also to maintain the same in its shifted position when the actuating means above set forth is operated, and 80 in the present instance the door is provided on its inner side near its bottom with a flanged member, such as an L-shaped bar 25, a part of the ends of which project beyond 85 the door, at each side thereof, such door being cut away at this point for this purpose and the door-posts 26 also being cut away to provide a space for such L-shaped bar when the door is in its closed position flush with 90 the casing.

Secured to the car-wall adjacent to each lower corner of the doorway is a bracket or stop 27, partly projecting into such doorway and provided with a beveled inner face 28 95 and adapted to engage the ends of the L-shaped bar 25 of the door when closed to prevent outward movement of such door, such beveled faces facilitating the shifting of the door outwardly and upwardly when the actuating mechanism is operated. Each bracket 100 27 is provided with a flange 29, adapted to be engaged by the L-shaped bar 25 when the door is shifted outwardly and upwardly, (see dotted lines, Fig. 6,) such shifting movement 105 being sufficient to carry the bar 25 of the door from its normal position back of such brackets into position to be engaged by the flange thereof, which movement may be assisted when necessary by pulling the lower 110 end of the door outward during its movement upward, which can be readily done by means of a handle 30, secured to the door.

In operation when it is desired to open the door the pawl 21 is released from the ratchet 115 22 and the actuating-lever 20 thrown to the right, whereby the cranks are shifted into position to swing the door outward and upward from its flush position, Fig. 2, into the position shown in Fig. 3, in which position it 120 is maintained by the locking action of the pawl, the lower portion of the door being assisted in this movement when necessary by pulling the same outward by the handle 30. At this time the door is in position to be 125 moved away from the doorway, which is accomplished by moving the same on its track, the bottom of the door being guided at this time by a series of brackets 31, similar to the brackets 27, secured to the wall of the car 130 and cooperating with the L-shaped bar 25 of the door. These brackets prevent the swinging movement of the bottom of the door should it be open while the car is running.

To prevent the return movement of the door on its track, the actuator is shifted to permit the cranks to throw the door against the side of the car, in which position the door binds and is effectively and automatically locked by its own weight and by the angular position of the crank-arms, which at this time are off their dead-centers or perpendicular positions and are locked against movement by the pawl-and-ratchet mechanism.

When it is desired to close the car, the door is shifted from its position against the side of the car to permit it to run free on its track, and it is then moved into position opposite the doorway, the bottom pushed inwardly sufficient to permit the bar 25 to engage the beveled surface of the bracket 27, the pawl released from its ratchet, the actuating-lever 20 thrown to the left, thereby shifting the door downward and inward into position flush with the door-casing, whereupon the pawl acts to prevent the return movement of such actuator-lever.

In this improvement it will be seen that when the door is closed it is maintained shut by its own weight, assisted by the crank and actuating mechanisms, and that when it is open it can be locked against movement on its track, and this without the use of an independent locking means or throwing the track-rolls off the track.

In the construction shown in Fig. 7 the door is provided with only one door-carrier, which in this instance comprises a hanger 6', located centrally of the door and provided with a pair of track-engaging rolls 7' and a pair of depending members 35, by and intermediate which a pair of double cranks 36 are supported, such cranks being secured to the door by suitable plates 37. One of these cranks is provided with a crank-arm 38, to which is secured a connecting-rod 18', the opposite end of which is secured to an actuator, such as an L-shaped lever 20', pivotally secured to the door and carrying a pawl 21' in engagement with a ratchet 22', also secured to the door. The movement of the door when this actuating mechanism is operated is substantially similar to that above set forth, except that in this instance in order to open the door the lever is thrown to the left, whereby the force exerted on the connecting-rod is in a direction coinciding with the movement of the door, whereas in the form shown in Fig. 1 the force exerted on the member 18' is in a direction opposite to the movement of the door. In this form, however, the bottom of the door is shown held in its flush position by brackets 27', thereby dispensing with the L-shaped bar, such brackets directly engaging the lower edge of the door when in its shifted position.

In practice the door-lintel 23 is provided with a stop, such as a bar 40, to prevent the door from being shifted beyond its flush position, while the outer wall of the car is pro-

vided with a stop 41 to limit the sliding movement of the door.

I desire to state that while the present organization is such that the door is shifted from its flush position into position for edgewise or sidewise movement on the outside of the car, nevertheless it is to be understood that the same mechanism could be utilized by mere modification of details, so as to shift the door toward the interior of the car to permit the same to slide on the inside thereof—as, for instance, by some suitable means connected to the actuator 20 and projecting exteriorly of the car—and therefore in the specification and claims it is to be understood that when the word “outwardly” or its equivalent is used it is not to be considered a limitation, since the door may be moved inwardly as well as outwardly, as above set forth. Moreover, I desire to state that this improvement may be used in all kinds of freight box-cars, such as refrigerator-cars, &c., and can, moreover, be used in connection with structures other than freight-cars, if desired, so that the term “car-body” or “car structure” as used in the claims is not to be considered a limitation to structures of that class.

In conclusion it will be seen that the door-actuating means comprises a crank-and-lever system which owing to its organization is effective to exert a powerful leverage upon the door, while requiring comparatively little effort to operate the same.

By the provision of a carrier embodying a pair or more of cranks it will be seen that the door has a steady parallel motion, thus avoiding the swinging movement which might be present if the carrier embodied only one crank, and that 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 upwardly than moved 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. In practice it is frequently necessary to cut into the door in order to get at the freight to release it from its binding position against the door, into which position it has fallen, and this binding effect is overcome by moving the door upwardly, since such upward movement acts to carry the freight away from the floor and to shift this sufficiently to enable the door to be opened,

whereas when the door is moved in the opposite direction the freight is only wedged more firmly against the door and the floor of the car. Also by having the door shifted outwardly and upwardly, as in applicant's construction, the manipulation of the lower end of the door is accomplished with much less labor than is the case when the door is shifted outwardly and downwardly.

10 Having described my invention, I claim—

1. The combination, with a car-body having a doorway, of a door fitting flush therein; a stationary support secured to the car-body; a carrier in permanent engagement with and shiftably on said support and embodying crank mechanism for supporting the door; and actuating means for shifting said door, independently of any movement of the whole carrier, upwardly and outwardly.

20 2. The combination, with a car-body having a doorway, of a stationary track secured to said body; a door; means shiftably on said track for supporting said door for parallel movement independently of such track and effective to maintain such parallel movement during the shifting of the door; and means operative to shift the door into position to be moved away from the doorway.

30 3. The combination, with a car structure having a doorway, of a door; carrying mechanism for supporting said door on said body for parallel movement outwardly and upwardly; and actuating means effective to shift said door outwardly and upwardly into position to be moved away from the doorway.

35 4. The combination, with a car-body having a doorway, of a door; a plurality of means for supporting said door on said body; and means operative to shift the door from its closed position into a position in readiness to be moved away from the doorway and embodying equalizing means in operative connection with one part of each of said supporting means.

40 5. The combination with a car-body having a doorway, of a door; a plurality of means for supporting said door on said body for movement into position to be moved away from the doorway; an equalizer in operative connection with one part of each of said means; and means in operative connection with said equalizer for shifting said door.

45 6. The combination, with a car structure having a doorway, of a door; a plurality of means embodying cranks for supporting said door on said body for movement into position to be shifted away from the doorway; an equalizer in operative connection with one part of each of said supporting means; and an actuator for operating said cranks through said equalizer to move the door.

50 7. In combination, with a car structure having a doorway, a door flush with the wall of such structure; a pair of carriers for supporting said door on said body; and actuating means embodying equalizing means for shifting the door simultaneously outwardly and upwardly.

8. In combination, with a car-body having a doorway, a door flush with the wall of such body; a pair of carriers for supporting said door on said body; and a lever system embodying an equalizer for operating a pair of said carriers to shift the door outwardly and upwardly.

9. The combination, with a car-body having a doorway, of a door therefor; a pair of carriers shiftably supported on said body and supporting said door; and actuating means embodying equalizing means in operative connection with one part of each of said carriers for moving the door into position to be shifted away from the doorway.

10. The combination, with a car-body having a doorway, of a door; a plurality of means for supporting said door on said body for movement into position to be shifted away from the doorway; means for moving said door into such position and including equalizing means in operative connection with each of said supporting means and an actuator; and means for maintaining said actuator in position against movement.

11. The combination, with a car-body having a doorway, of a door, a plurality of means for supporting said door on said body for movement into position to be shifted away from the doorway; means for moving said door into such position and including equalizing means in operative connection with each of said supporting means and an actuator; and pawl-and-ratchet mechanism for maintaining said actuator in position against movement.

12. The combination, with a car-body having a doorway, of a door therefor; a pair of hangers shiftably supported on said body; crank mechanism connecting said hangers and door; and actuating means for said crank mechanism and including an equalizer and effective to operate said crank mechanism and 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 fitting flush therein; a stationary track secured to said body; a carrier in permanent engagement with and shiftably on said track and embodying crank mechanism for supporting said door; and a lever system in connection with said crank mechanism and effective to shift the door outwardly and upwardly.

14. The combination, with a car-body having a doorway, of a door; a track, a hanger shiftably supported on said track for permanent engagement therewith, crank mechanism connecting said hanger with said door to permit movement of said door independently of said hanger; and means for actuating said crank mechanism to move the door outwardly and upwardly, and into position to be shifted away from the doorway.

15. The combination, with a car-body having a doorway, of a door flush with the wall of such body; a track, a hanger shiftably

24 supported on said track for permanent engagement therewith; crank mechanism connecting said hanger with said door to permit movement of the door independently of said hanger; and a lever system for operating said crank mechanism to shift the door outwardly and upwardly.

16. The combination, with a car-body having a doorway, of a door therefor; a hanger shiftably supported on said car-body; a pair of parallelly-located cranks connecting said hanger and door thereby to maintain parallel movement of said door; and actuating 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 therefor; a pair of hangers shiftably supported on said car-body; a pair of parallelly-located cranks connecting each of said hangers with said door thereby to maintain parallel movement of said door; and actuating means for operating said cranks thereby to move the door into position to be shifted away from the doorway.

18. The combination, with a car-body having a doorway, of a door therefor; a track supported on said body; a hanger shiftable on said track; a plurality of parallelly-located cranks connecting said hanger and door thereby to maintain parallel movement of said door; and means for actuating said cranks to move the door into position to be shifted away from the door-opening.

19. The combination, with a car-body having a doorway, of a stationary track secured to said body; a door; means shiftable on said track for supporting the door for parallel movement independently of such track into position to be moved away from the doorway and effective to maintain such parallel movement during the shifting of the door; means for moving said door into such position and including an actuator; and pawl-and-ratchet mechanism for maintaining such actuator in position against movement.

20. In combination, with a car structure having a doorway, a door fitting flush therein; a track supported on said structure; a carrier comprising a hanger movable on said track, and a pair of cranks pivotally secured to said hanger and door; and means for actuating said cranks thereby to shift the door from its flush position outwardly and upwardly, such means comprising a lever system.

21. In combination, with a car-body having a doorway, a door fitting flush therein; a hanger supported by said car-body; a pair of cranks pivotally carried thereby and secured to said door; means for actuating said cranks to shift the door into position to be shifted away from the doorway, such means including an actuator; and means for maintaining the same in its adjusted position.

22. In combination, with a car-body having a doorway, a door fitting flush therein; a hanger supported by said car-body; a pair of

cranks pivotally carried thereby and secured to said door; means for actuating said cranks thereby to shift the door, such means including an actuator; and a pawl-and-ratchet mechanism for maintaining said actuator in its adjusted position.

23. In combination, with a car structure having a doorway, a door fitting flush therein; a pair of carriers supporting said door and including a pair of cranks; a pair of connecting-levers, one connected to each of said cranks; and an actuator for operating said levers thereby to throw said cranks into position to shift the door into and out of its flush position.

24. In combination, with a car-body having a doorway, a door fitting flush therein; a track carried by said body; a pair of hangers shiftable thereon; two sets of crank-arms pivotally secured to said hangers and to said door; a pair of levers pivotally secured to said hangers and having connection with a crank-arm of each set; an equalizer secured to said levers; and an actuator connected to said equalizer and effective to shift the door from its closed position into a position to be moved away from the doorway.

25. In combination, with a car-body having a doorway, a door fitting flush therein; a track carried by said body; a pair of hangers shiftable thereon; two sets of cranks pivotally secured to said hangers and door; a pair of levers pivotally secured to said hangers, each having connection with one crank of each set; an actuating-lever secured to said door and operatively connected with said levers; and pawl-and-ratchet mechanism for maintaining said actuating-lever in its adjusted position.

26. The combination, with a car-body having a doorway, of a door therefor, one of said parts having a flanged bar; a stationary track secured to said body; means shiftable on said track for supporting the door for parallel movement independently of such track and effective to maintain such parallel movement during the shifting of the door; means for moving the door into position to be shifted away from the doorway; and means carried by the other of said parts and cooperating with such flanged bar to control the bottom of said door.

27. The combination, with a car-body having a doorway, of a door therefor provided with a flanged bar; means for supporting said door on said body for parallel movement outwardly and upwardly, and effective to maintain such parallel movement during the shifting of the door outwardly and upwardly and means for moving the door into position to be shifted away from the doorway; and flanged members secured to said car-body and cooperating with the flanged bar on the door to control the bottom of said door.

28. The combination, with a car-body having a doorway, of a door therefor; a hanger shiftably supported on said body; a pair of

parallelly-located cranks connecting said hanger and door thereby to maintain parallel movement of said door; means for actuating said cranks to move the door into position to be shifted away from the doorway; and means for supporting the bottom of said door.

29. The combination, with a car-body having a door, of a door therefor; a track secured to said body, a pair of hangers shiftably supported on said track and in permanent engagement therewith; crank mechanism connecting said hangers with said door to permit movement of said door independently of said hangers; means for actuating said crank mechanism to move said door outwardly and upwardly; a flanged bar secured to said door; and brackets cooperating with said flanged bar to maintain the bottom of said door in position in the doorway and for supporting said door during the shifting thereto.

30. In combination, with a car-body having a doorway, a door fitting flush therein; a track carried by said body; a pair of hangers shiftable thereon; two sets of cranks pivotally secured to said hangers and door; a pair of levers pivotally secured to said hangers, each having connection with one crank of each set; an actuating-lever secured to said door and operatively connected with said levers; pawl-and-ratchet mechanism for maintaining said actuating-lever in its adjusted position; and means for maintaining the bottom of said door in its closed position.

31. In combination, with a car-body having a doorway, a door fitting flush therein; a track carried by said body; a pair of hangers shiftable thereon; two sets of crank-arms pivotally secured to said hangers and door; a pair of levers pivotally secured to said hangers, each having connection with one crank of each set; an actuating-lever secured to said door and operatively connected with said levers; pawl-and-ratchet mechanism for maintaining said actuating-lever in its adjusted position; and means for maintaining the bottom of the door in its shifted position.

32. In combination, with a car-body having a doorway, a door fitting flush therein; a track carried by said body; a pair of hangers shiftable thereon; two sets of cranks pivotally secured to said hangers and door; a pair of levers pivotally secured to said hangers, each having connection with one crank of each set; an actuating-lever secured to said door and having connection with said levers; pawl-and-ratchet mechanism for maintaining said actuating-lever in its adjusted position; and means for maintaining the bottom of the door in its closed position and in its shifted position.

33. In combination, with a car-body having a doorway, a door fitting flush therein; a track carried by said body; a pair of hangers shiftable thereon; two sets of crank-arms pivotally secured to said hangers and door; a pair of levers pivotally secured to said hangers, each having connection with one crank of

each set; an equalizing member pivotally connected with said levers; an actuating-lever pivotally secured to said door and having connection with said equalizing member; pawl-and-ratchet mechanism for maintaining said actuating-lever in its adjusted position; and means for maintaining the bottom of the door in its closed and shifted positions, respectively.

34. The combination, with a car-body having a doorway, of a door therefor; a track carried by said body; a hanger running on said track for supporting said door; a pair of parallelly-located cranks connecting said door and hanger for maintaining parallel movement of said door; actuating means for said cranks and effective to move the door into position to be shifted on its track away from the doorway; a flanged bar secured to said door; and a plurality of flanged brackets secured to said body and cooperating with said flanged bar to support and guide the door.

35. The combination, with a car-body having a doorway, of a door therefor; a hanger shiftably supported on said body; a pair of parallelly-located cranks connecting said door and shiftable hanger, thereby to maintain parallel movement of said door the connections of said cranks with said door being below the connection thereof with said hanger; and means for actuating said cranks to move the door into position to be shifted away from the doorway.

36. The combination, with a car-body having a doorway, of a door therefor; a pair of hangers shiftably supported on said body; a crank connecting each of said shiftable hangers with said door, the connection of each of said cranks with the door being below the connection thereof with the hangers; and means for actuating said cranks thereby to move the door outwardly and upwardly into position to be shifted away from the doorway.

37. The combination, with a car-body having a doorway, of a door therefor; a hanger shiftably supported on said car-body, a crank connecting said hanger and door and having its axis in a horizontal plane, whereby the door may be moved outwardly and upwardly; and actuating means for operating such crank, thereby to move said door into position to be shifted away from the doorway.

38. The combination, with a car-body having a doorway, of a door therefor; a pair of hangers shiftably supported on said car-body; a crank connecting each of said hangers with said door and having its axis in a horizontal plane whereby the door may be moved outwardly and upwardly; and actuating means for operating said cranks thereby to move said door into position to be shifted away from the doorway.

SINCLAIR J. JOHNSON.

Witnesses:

C. A. WEED,
CHAS. FINKLER.