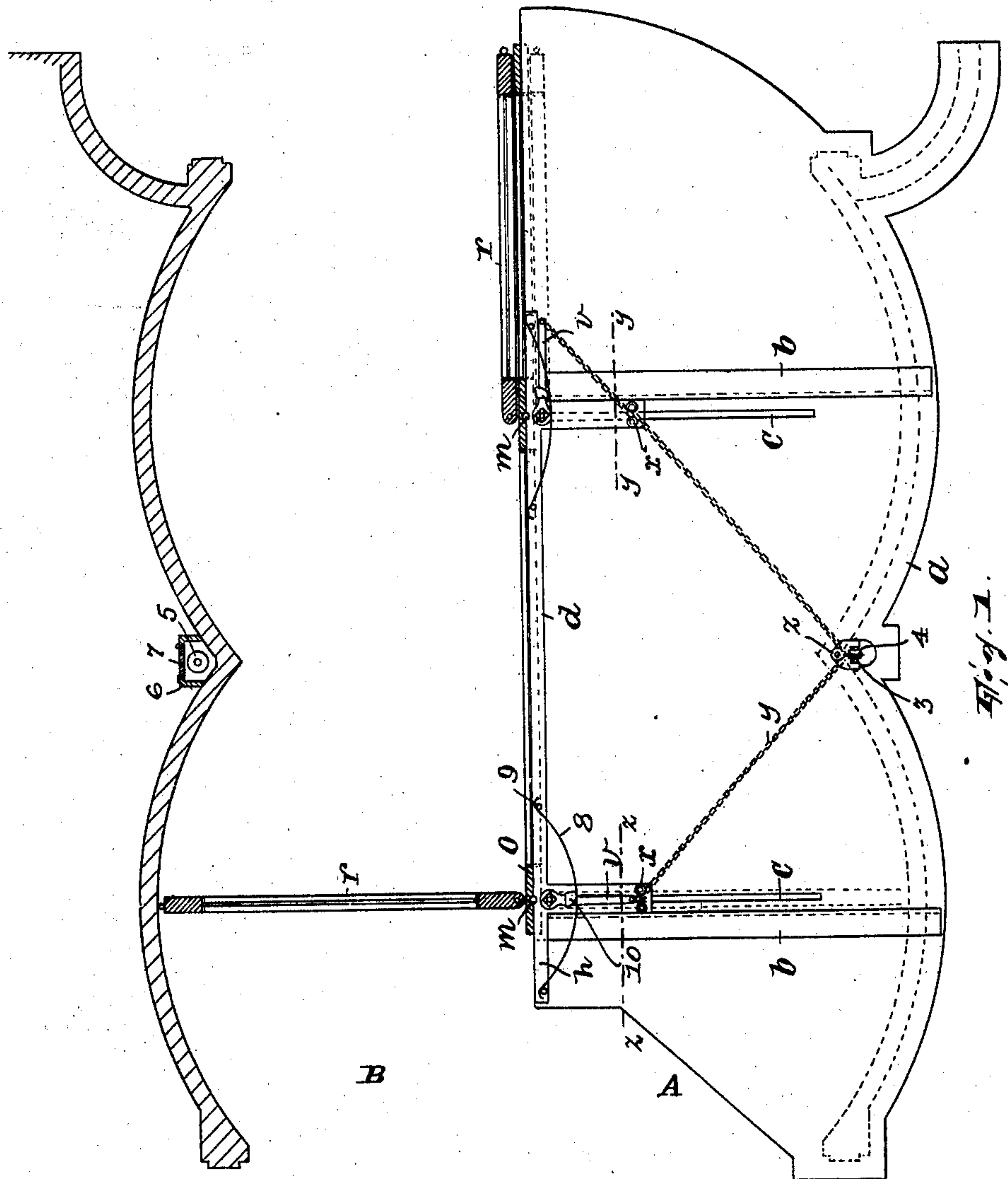


F. Y. PARSONS.  
DOOR STRUCTURE.  
APPLICATION FILED FEB. 26, 1909.

963,386.

Patented July 5, 1910.

3 SHEETS—SHEET 1.



WITNESSES

Wm. M. L. L.  
Elio Kaufmann.

INVENTOR,

Floyd Y. Parsons,

BY

John W. Steward.

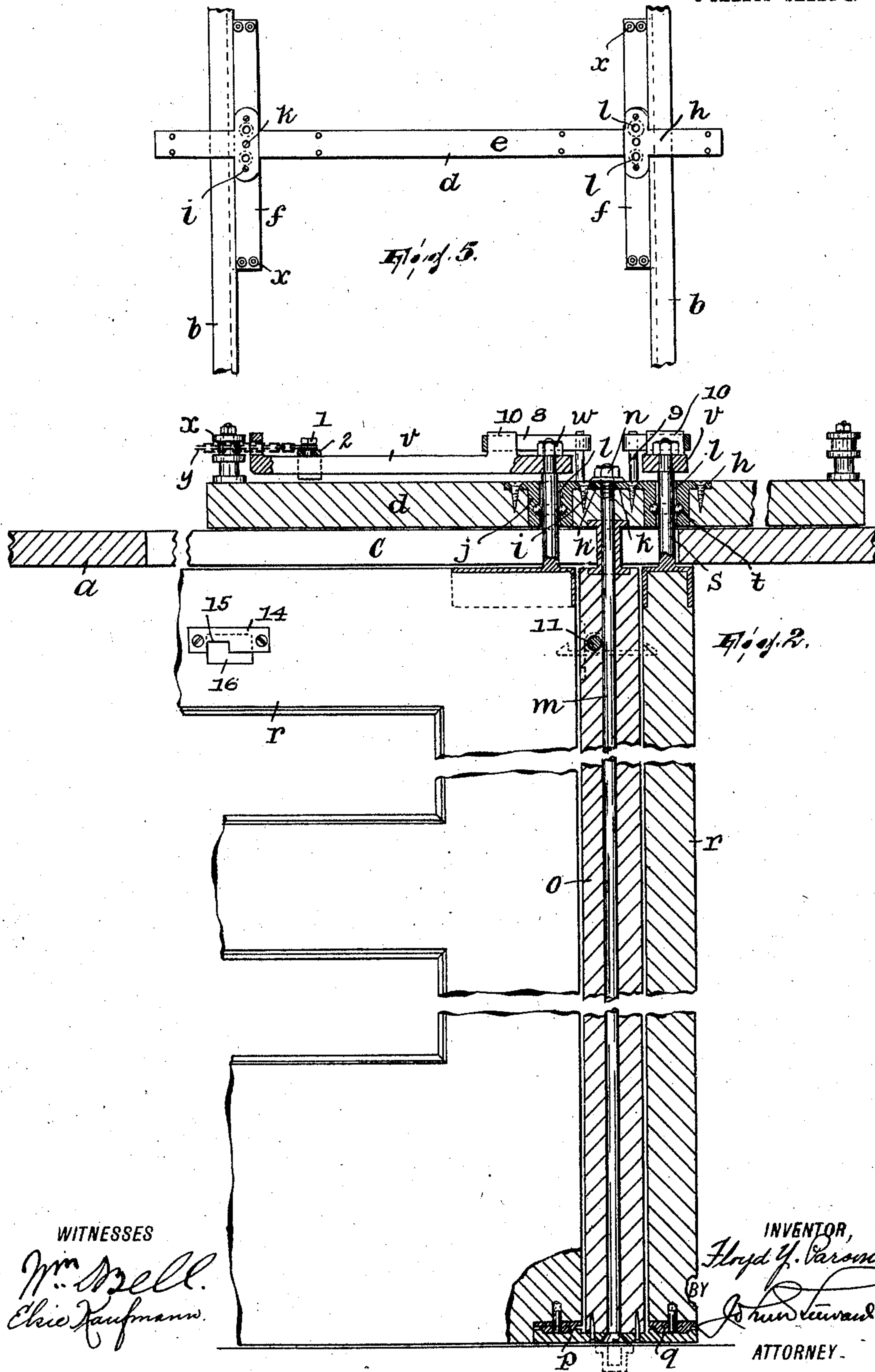
ATTORNEY.

F. Y. PARSONS.  
DOOR STRUCTURE.  
APPLICATION FILED FEB. 26, 1909.

963,386.

Patented July 5, 1910.

3 SHEETS—SHEET 2.



WITNESSES  
*Wm. Bell.*  
*Elio Kaufmann.*

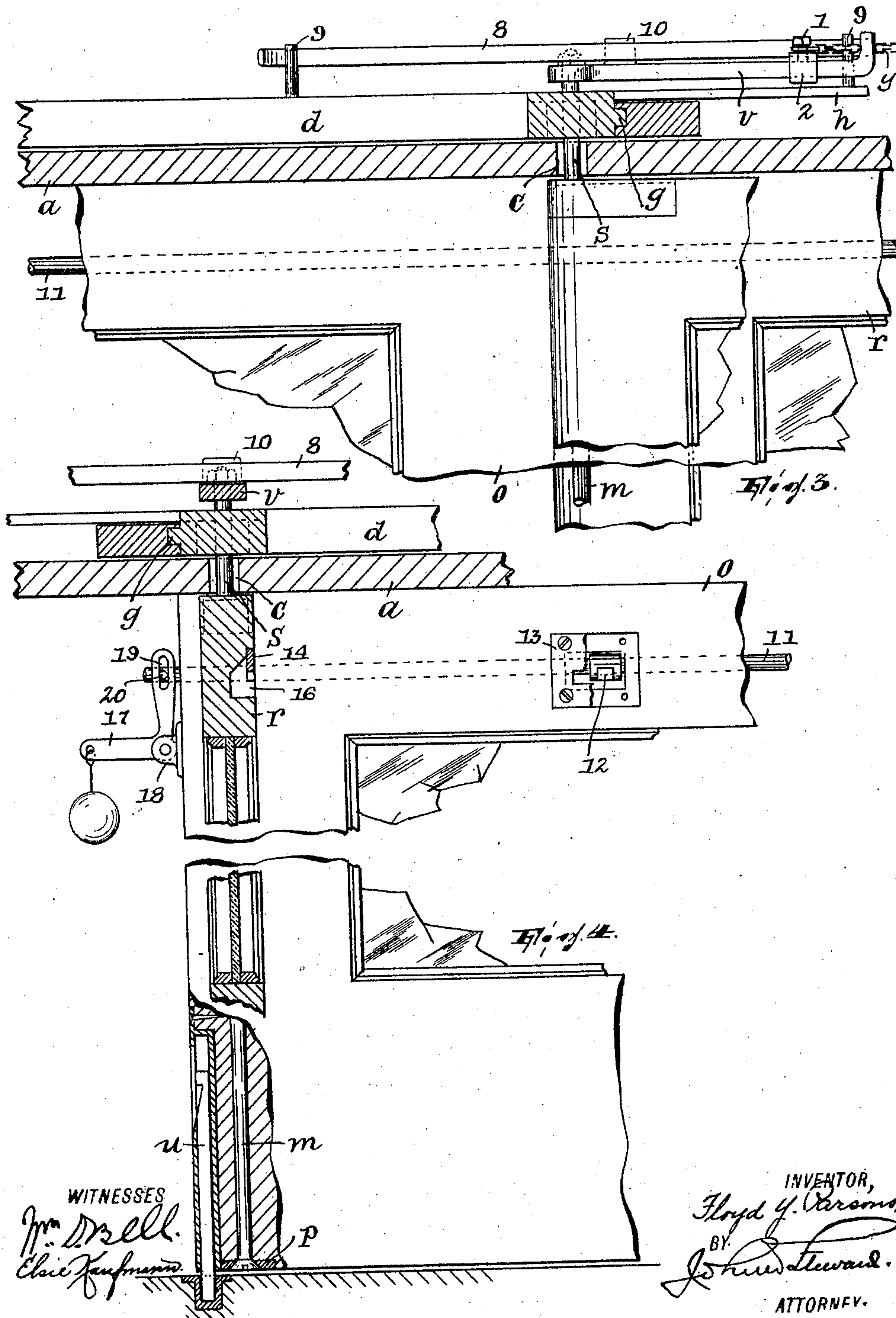
INVENTOR,  
*Floyd Y. Parsons.*  
BY *John Stewart.*  
ATTORNEY.

F. Y. PARSONS.  
DOOR STRUCTURE.  
APPLICATION FILED FEB. 26, 1909.

963,386.

Patented July 5, 1910.

3 SHEETS—SHEET 3.



WITNESSES  
Jm. Dr. ell.  
Elsie Kaufmann

INVENTOR,  
Floyd Y. Parsons,  
BY  
John H. Stewart.  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

FLOYD Y. PARSONS, OF PATERSON, NEW JERSEY.

## DOOR STRUCTURE.

963,386.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed February 26, 1909. Serial No. 480,197.

*To all whom it may concern:*

Be it known that I, FLOYD Y. PARSONS, a citizen of the United States, residing in Paterson, Passaic county, New Jersey, have invented a certain new and useful Improvement in Door Structures; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates to storm-doors of the kind broadly characterized by a plurality of leaves or members so arranged and related that one always occupies the closed position while the other is leaving the passage clear.

The principal objects of the invention are to increase the normal fairway of door-structures of this kind and to provide a door-structure which, in emergencies or when an abnormal fairway is otherwise required, may be quickly and readily made to leave the opening entirely free or clear, and which will never so obstruct the passage as to render it an element of danger in case of panic within the building.

To this end the invention consists in (1) providing two leaves or members in operative relation to the same passageway and means for transmitting the movement of each to the other in such manner that upon moving either toward the open position the other will be moved toward the closed position; (2) allowing for a certain yielding in the mechanism so that both doors may be opened at once, if occasion requires; and (3) a novel arrangement whereby the two sets of leaves or members, which will usually be provided to control two distinct passageways, may be brought into flatwise relation to each other and then moved bodily to one side of the opening forming the passageways.

The invention further consists in certain novel combinations and arrangements of parts permitting other advantages which will appear in this specification or be at once apparent to those skilled in the art.

In the accompanying drawings, wherein the invention is fully illustrated, Figure 1 is a view of the improved door-structure, one-half in longitudinal horizontal section

and one-half in plan; Fig. 2 is an enlarged vertical sectional view in substantially a plane corresponding with the axes of movement of the inner doors, the right-hand one of which is assumed to be open; Fig. 3 is a similar vertical sectional view on line  $y-y$  of Fig. 1; Fig. 4 is a similar vertical sectional view on line  $z-z$  of Fig. 1; and, Fig. 5 is a plan view of a certain framing and the guides in which it moves.

$a$  designates the casing having its side-walls in the form of two segments and its roof traversed by two guides  $b$  which are grooved longitudinally on their adjoining faces (Figs. 3, 4 and 5); between the guides and adjoining and parallel to them are the slots  $c$ , formed in the roof of the casing. A framing  $d$  is fitted between the guides and comprises the longitudinal piece  $e$ , the cross-pieces  $f$  secured to the ends of the part  $e$  and having tongues  $g$  fitted into the grooves of the guides, and the castings  $h$  which are T-shaped in form and constitute extensions of the part  $e$ , to which they may be secured by screws  $i$  or the like; said castings have the downwardly extending bushings  $j$ , and each also has three aligned holes  $k$  and  $l$ ,  $l$ , the former between the bushings and the latter in them. The holes  $k$ ,  $l$ ,  $l$  register with the slots  $c$  in the roof of the casing, and the holes  $k$  are penetrated by inverted long bolts  $m$  which extend through the slots and depend nearly to the floor, nuts  $n$  being screwed onto their upwardly protruding ends. These bolts penetrate and support a partition  $o$  which in the normal position of the parts extends centrally of the casing and divides the space of the casing into two passageways A and B, the former being the exit and the latter the entrance passage. Secured to the lower edge of the partition are two step-bearing plates  $p$ , each penetrated by a bolt  $m$  and projecting in opposite directions from the partition. In these plates are stepped the lower bearings  $q$  of the doors  $r$ , the upper bearings of which are trunnions  $s$  passed through the bushings  $j$ , which may contain suitable anti-friction devices  $t$ . The framing and the partition therefore constitute a supporting structure for the doors which is suspended from the roof of the casing and which, upon folding the doors flat against the partition, may be bodily shifted to one side of the casing, thus leaving a clear passage therethrough of double width. There are four doors, two for



each passage-way, and each turns on its axis in either direction from the position where it closes its passage-way (at right angles to the partition). To secure the partition in its normal position, a bolt or bolts *u* may be arranged in its lower part and adapted to engage in the floor.

In the normal position of the doors for each passage-way, one stands wide open in the direction in which the traffic moves through the passage-way and the other closed. A crank *v* is secured by a nut *w* on the protruding end of the trunnion *s* for each door, the crank lying in the same plane as the door. On each end of each cross-piece *f* of the framing is arranged a pair of pulleys *x*, the space between them being directly alined with the axes of movement of each two inner (or outer) doors. Between these pulleys extend the ends of a chain or other flexible connection *y* which is attached at its ends to the ends of the crank of the two doors of the same passage-way, said chain extending, between the pairs of pulleys *x*, around a pulley *z*. For the purpose of rendering this connection adjustable with respect to the cranks, allowing slack to be taken up, its extremities may be attached to set-screws 1 mounted in U-shaped clips 2 on the cranks and adapted to secure the clips at any point on the cranks. The chain should be taut when the doors occupy the position above stated to be the normal one.

In order that there may be a yield in case both doors are opened simultaneously, the pulley *z* may be attached to the upper end of a flexible connection 3 which extends over a pulley 4 in the roof of the casing and carries a weight 5 movable vertically in a box 6 having a door 7 to permit access thereto. So long as one door occupies the open position the flexible connection of course retains the other closed. But in order to retain the former open until the other is moved toward the open position, I provide the plate-springs 8 which engage at their ends the pins 9 on the framing *d* and, between their ends, the cams 10 on the cranks; the high part of each cam is on the side thereof toward which the door usually opens, so that even should the open door be moved away from its full open position the spring will immediately act to move the other door toward the open position and thereby prevent any slack being formed in the flexible connection and possibly clogging the action of the doors.

Both doors for each passage-way may be locked open by the following means: A sliding rod 11 extends longitudinally through the partition *o*, preferably in the upper part of the same. This carries the pairs of elastic hooks 12 which protrude from the partition through slotted plates 13 attached thereto; one pair of these hooks is

adapted to hold the outer pair of doors and the other the inner pair. Each door, at a point mating with the plates 13 when the door is open, has a plate 14 attached thereto and formed with a notch 15, the plate partly covering a recess 16 in the door. When the rod 11 is moved lengthwise, its hooks will stand in such positions that they will be received by the notches of plates 14 when the doors are opened; but on moving the rod to its other limit of movement the opening of the doors will bring the plain edge-portions of their plates 14 against the hooks so that the hooks will snap under the plates and hold the doors open. The rod may be actuated by a lever 17 pivoted in a bracket 18 at the inner end of the partition and having a slot 19 receiving a pin 20 on the rod.

It will be obvious, in view of the foregoing, that my improved door-structure possesses several marked advantages over door-structures of the same class now in use. Should there be a sudden exit of a number of persons through the passage-ways at a time, the rod 11 may be moved to the locking position so that the doors will be held open; but even though this be not done, the doors will always yield to pressure, even though the two doors for one passage-way be pushed upon at once, so that they can never dangerously block the passage-ways. Again, the manner in which the movement of one door is transmitted to the other has the advantage that the segmental portions of the sides of the casing may be shorter than is now possible with the well-known multiple-leaf revolving storm-door, thereby materially widening the passageways. This is due to the fact that, because the advance of the chain is accomplished with gradually reducing velocity as one door is opened and causes the other to close, owing to the end of the chain from which its movement emanates being drawn around one of the pulleys *x* by a part moving in the arc of a circle, the plane in which the position of one door will coincide with that of the other as they move in opposite directions is several degrees less than forty-five and nearer the plane marking the closed position of each door than that marking its open position. (It will be observed that the inner pulley *x* in each pair, to wit, the one which is the nearer to the point *z*, is the one forming the active guide for the chain in accomplishing the coöperation of the doors, the outer pulley in each instance serving mainly to prevent the chain from being unshipped from the inner ones.) Moreover, the doors may be operated reversely. For instance, the doors for passage-way B in Fig. 1 are shown in a position where a person has passed through that passage-way, going out, instead of through passage-way A; as soon as the inner door in that case is moved to the



open position by the next incoming person, the outer one will be closed, leaving the doors in their usual arrangement.

Frequently, in mild weather, one door in each passage way may be secured open and only the other one utilized to close the passage-way, in which case the weight 5 of course operates normally to retain the working door in the closed position.

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

1. In a door-structure or the like, the combination of two independently pivoted 15 members normally occupying the one the closed and the other the open position, and means, yieldingly connecting said members and operative to transform the movement of one member toward the open position 20 into a movement of the other member toward the closed position, for transmitting the movement of one member to the other, substantially as described.

2. In a door-structure or the like, the 25 combination of two independently pivoted members normally occupying the one the closed and the other the open position, a flexible connection connecting said members and operatively engaged with each member 30 at a point removed from its pivot, and a guide for the flexible connection disposed relatively adjacent to but removed from the pivot of one member and at least as far 35 from the other member as approximately the plane of the closed position of the first member is from the other member, whereby when one member is moved toward the open 40 position the other member will be moved toward the closed position, substantially as described.

3. In a door-structure or the like, the combination of two independently pivoted 45 members normally occupying the one the closed and the other the open position, a flexible connection connecting said members, and operatively engaged with each member at a point removed from its pivot, 50 and guides for the flexible connection respectively adjoining but removed from the pivots of said members and each at least as far from the relatively farther member as the plane of the closed position of the member corresponding to said guide is from 55 said farther member, whereby when one member is moved toward the open position the other member will be moved toward the closed position, substantially as described.

4. In a door-structure or the like, the 60 combination of two independently pivoted members normally occupying the one the closed and the other the open position, a flexible connection connecting said members and operatively engaged with each member at a point removed from its pivot, 65 a guide for the flexible connection disposed

relatively adjacent to but removed from the pivot of one member and at least as far from the other member as approximately the plane of the closed position of the first member is from the other member, whereby 70 when one member is moved toward the open position the other member will be moved toward the closed position, and a yielding means maintaining a bend in said connection, substantially as described. 75

5. In a door-structure or the like, the combination of two independently pivoted 80 members, means normally tending to hold each member in the open position, and means, comprising a connecting medium between the members adapted to transmit the movement of one to the other whereby when one member is moved toward the open position the other member will be moved toward 85 the closed position, for holding one member in the closed position when the other is held in the open position by the first means, substantially as described.

6. In a door-structure or the like, the combination of two independently pivoted 90 members normally occupying the one the closed and the other the open position, means, yieldingly connecting said members and operative to transform the movement of one member toward the open position into 95 a movement of the other member toward the closed position, for transmitting the movement of one member to the other, and means for locking both members simultaneously in the open position, substantially as described. 100

7. In a door-structure or the like, the combination of a supporting structure, two 105 members independently pivoted therein, means, connecting the members, for normally holding one member in the closed position and the other in the open position, and a common means for locking both members to the support in the open position, 110 substantially as described.

8. The combination of means forming a 110 passageway, two members pivoted independently of each other each substantially at one side thereof and substantially at one side of said passageway, said members normally occupying the one the closed and the other the 115 open position, and means whereby to transform the pivotal movement of one member in one direction into a pivotal movement of the other member in the relatively opposite direction, substantially as described. 120

9. The combination of means forming a passageway, two members pivoted independently of each other each substantially at one side thereof and substantially at one side of said passageway, and mechanism, comprising 125 means connecting the members and operative to transform the pivotal movement of one member in one direction into the pivotal movement of the other member in the relatively opposite direction, for normally 130



holding one member in the closed position and the other in the open position, substantially as described.

10. The combination of means forming a passageway, two members pivoted independently of each other each substantially at one side thereof and substantially at one side of said passageway, and mechanism, comprising means connecting the members and operative to transform the pivotal movement of one member in one direction into the pivotal movement of the other member in the relatively opposite direction, for normally moving one member toward the closed, and the other toward the open, position, substantially as described.

11. The combination of means forming a passageway, two members pivoted independently of each other each substantially at one side thereof and substantially at one side of said passageway, one member being disposed in said passageway relatively nearer than the other to one end of the passageway, means acting to hold each member in the open position when it is in that position, and means, active to hold one member closed when the other is open, whereby to transform the movement of one member in one direction into a movement of the other in the relatively opposite direction, substantially as described.

12. The combination of means forming a passageway, two members pivoted independently of each other each substantially at one side thereof and substantially at one side of said passageway, one member being disposed in said passageway relatively nearer than the other to one end of the passageway, and means whereby to transform the movement of either member in one direction into a movement of the other in the relatively opposite direction, substantially as described.

13. The combination of means forming a passageway, two members each pivoted substantially at one side of said passageway, one member being disposed in said passageway relatively nearer than the other to one end of the passageway, a yielding flexible connection connecting said members and operatively engaged with each at a point removed from its pivot, and a guide for the flexible connection disposed approximately in the plane, extending transversely of the passageway, occupied by the pivot of one member, substantially as described.

In testimony, that I claim the foregoing, I have hereunto set my hand this twenty-fifth day of February, 1909.

FLOYD Y. PARSONS.

Witnesses:

JOHN W. STEWARD,  
WM. D. BELL.