

No. 708,966.

Patented Sept. 9, 1902.

H. MEYER.
SWINGING DOOR.

(Application filed Apr. 3, 1902.)

(No Model.)

2 Sheets—Sheet 1.

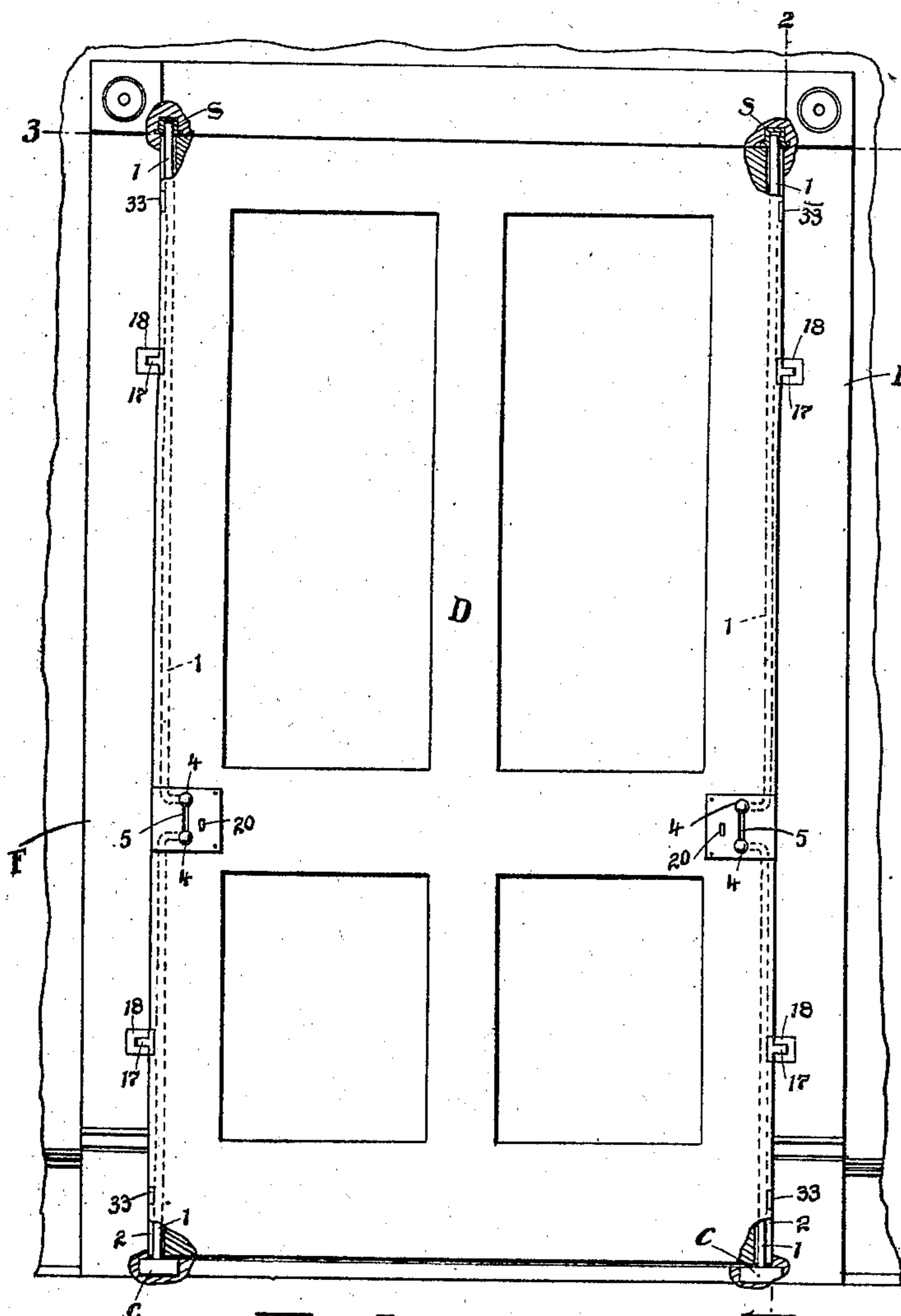


FIG. 1.

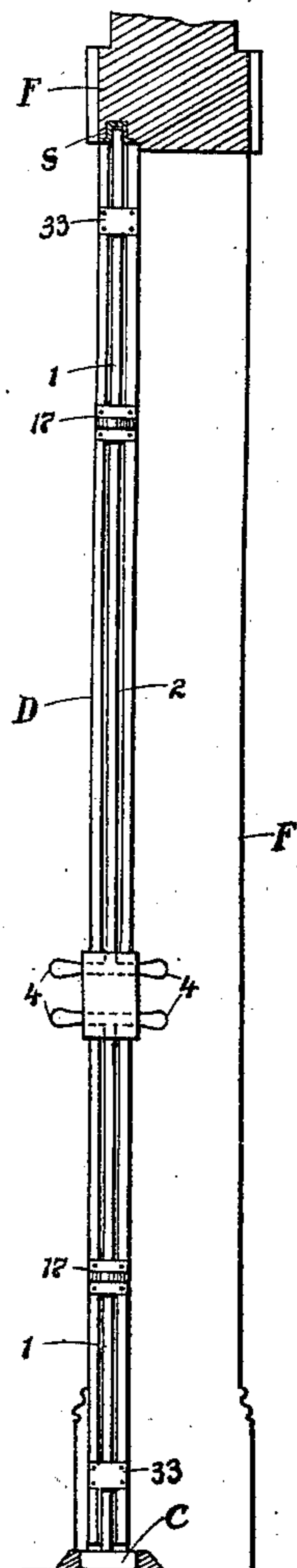


FIG. 2.

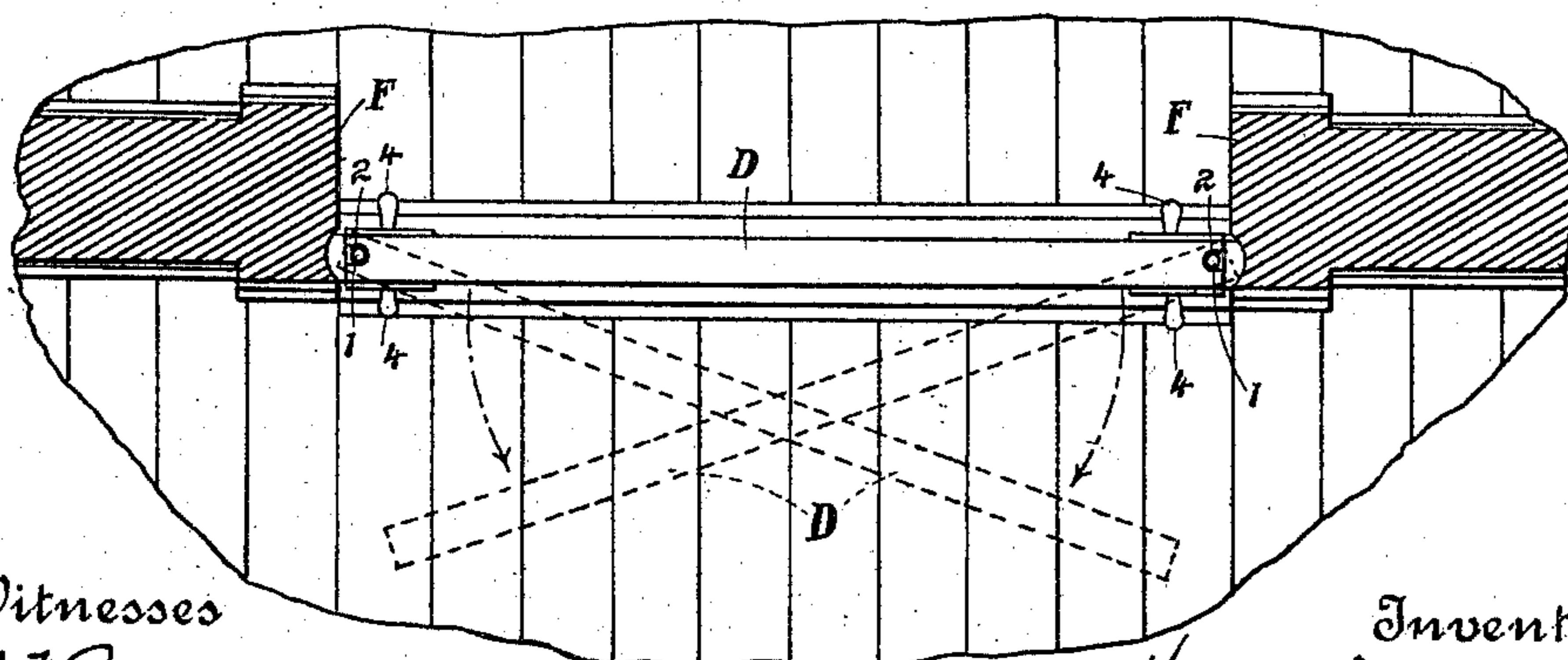


FIG. 3.

Witnesses
Phil J. Hawn
Rosa Ross.

Inventor
Henry Meyer
By his Attorney
Emil Storer

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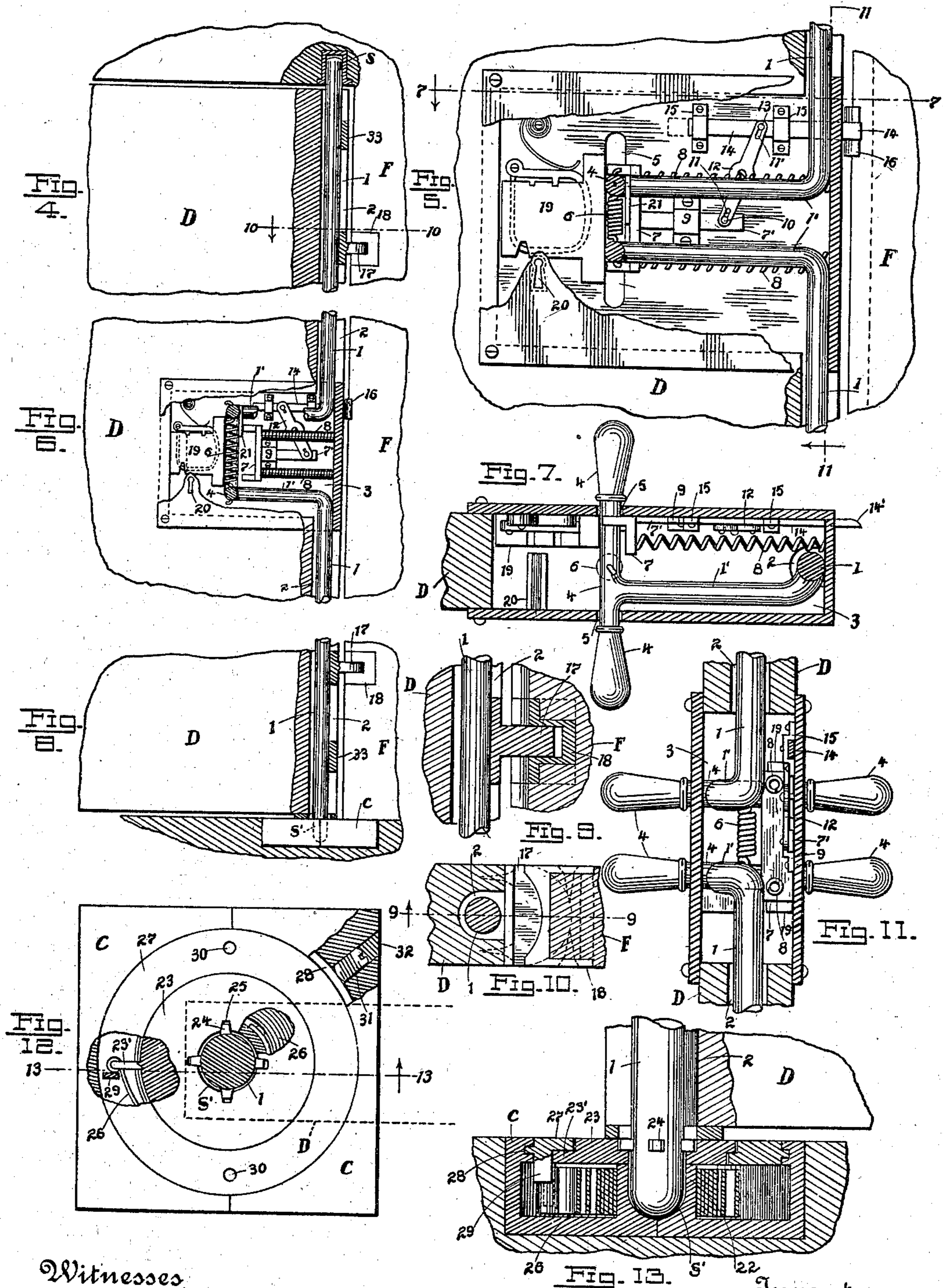
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2 Sheets—Sheet 2.



Witnesses
Robt. J. Brown
Ross Ross

Inventor
Henry Meyer
By His Attorney
Amel Harex

UNITED STATES PATENT OFFICE.

HENRY MEYER, OF ST. LOUIS, MISSOURI.

SWINGING DOOR.

SPECIFICATION forming part of Letters Patent No. 708,966, dated September 9, 1902.

Application filed April 3, 1902. Serial No. 101,217. (No model.)

To all whom it may concern:

Be it known that I, HENRY MEYER, a subject of the Emperor of Germany, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Swinging Doors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in swinging doors; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is an elevation of a door, parts being broken away to show my invention applied thereto. Fig. 2 is a vertical section on line 2 2 of Fig. 1. Fig. 3 is a horizontal section on line 3 3 of Fig. 1. Fig. 4 is an enlarged sectional elevation of the upper end of one side of the door. Fig. 5 is an enlarged detail elevation of the parts confined in the main chamber, the hinge-bars being in their disengaged position or retracted from the frame. Fig. 6 is a similar view showing hinge-bars in engagement with the frame. Fig. 7 is a horizontal section on line 7 7 of Fig. 5. Fig. 8 is a view similar to Fig. 4, but showing the lower end of the door. Fig. 9 is a vertical section on line 9 9 of Fig. 10. Fig. 10 is a horizontal section on line 10 10 of Fig. 4, showing the hinge-lugs. Fig. 11 is a vertical section on line 11 11 of Fig. 5. Fig. 12 is a top plan of the casing containing the closing-spring, and Fig. 13 is a vertical section on line 13 13 of Fig. 12.

The object of my invention is to provide a door with hinges which will permit the former to swing about either vertical edge thereof as an axis, according as occasion for such a necessity may arise.

A further object is to provide such a door with means for locking the same when necessary, such lock directly coöperating with the new hinge constituting a part of the present invention.

The improvement possesses further and other advantages better apparent from a detailed description thereof, which is as follows:

Referring to the drawings, D represents the door, and F the frame or jamb, within which the same is hung. Formed in the

frame in alinement with the opposite vertical edges of the door are sockets S for the reception of the outer ends of the retractable hinge-bars 1 1, which are disposed in the longitudinal grooves 2, formed in the door. The inner adjacent ends of the bars 1 are deflected inwardly at 1', said deflected portions being confined in a chamber 3, formed below the center of each longitudinal edge of the door. The portions 1' terminate each in a transversely-disposed handle-bar 4, projecting beyond each face of the door and operating in slots 5, formed in the walls of the chamber 3. The hinge-bars 1 1 are normally forced into engagement with the sockets S by the expansive action of a coiled spring 6, connecting the handle-bars of each pair of hinge-bars, the retraction of the latter from their sockets being accomplished by the compression of said spring, which in practice is done by gripping the adjacent handle-bars between the thumb and fingers and drawing them together, thereby compressing the spring. The retraction of the hinge-bars from their sockets on one side of the door leaves the latter free to swing about the hinge-bars remaining in engagement on the opposite side or edge of the door. The hinge-bars once retracted are held in such retracted position during the swinging of the door by the arms of the locking-yoke 7, which the moment the handle-bars are drawn sufficiently close together embraces the latter, said yoke being forced into engagement with the handle-bars under the circumstances by the expansive force of the springs 8, to which the yoke is directly connected, the opposite ends of the springs being coupled to the front wall of the chamber 3. (See Figs. 6, 7.) The base of the yoke 7 is provided with a stem 7', guided in a bracket 9, the end of the stem being provided with a pin 10, operating in a slot 11 at one end of a pivoted link 12, whose opposite end is provided with a similar slot 11', engaged by a pin 13, carried by a latch 14, guided in brackets 15 15 on the inner wall of the chamber 3. The outer projecting end of the latch is beveled and rounded off, as seen at 14', whereby as the door closes the latch is automatically forced inward by striking a similarly-rounded plate 16, carried by the door jamb or frame F. From the connections described it is appar-

ent that as the springs 8 force the yoke 7 inwardly to embrace the handle-bars 4 in their compressed position the link 12 will be swung to the position shown in Fig. 5 and the latch 14 forced outwardly. Of course the moment the door is closed the latch 14 will be forced inwardly by the jamb, restoring the parts to their normal position, freeing the yoke from engagement with the handle-bars, and permitting the spring 6 to force the hinge-bars back into their sockets. Each vertical edge of the door is provided with a pair of hinge-lugs 17, engaging suitable metallic bearings 18, said lugs serving to sustain the greater portion of the weight of the door while the latter is swinging about the axis adjacent to the lugs.

When it is desirable to lock the door permanently and prevent the compression of the handle-bars necessary to effect a retraction of the hinge-bars from their sockets, I provide the door with an ordinary locking-bolt 19, operated by a key through the keyhole 20, the key forcing the head of the bolt between the handle-bars and preventing their being drawn together, as is obvious. (See dotted position of the bolt in Fig. 6.)

It was stated above that upon the closing of the door the latch 14 in striking the jamb forces the yoke out of engagement with the handle-bars; but to insure this position one of the handle-bars is provided with a depending arm 21, which engages the yoke, only releasing the latter for purposes of gripping the handle-bars when the latter have been forced together by the operator. In other words, the arm 21 holds the yoke perfectly in check until such time as the handle-bars are compressed to their full extent. Though the outer ends of the hinge-bars were referred to as being received by sockets S, formed at the top and bottom of the door-frame, the lower sockets (which for the sake of distinction are lettered S') are in reality formed in the central stud 22 of the sectional casing C, set in the floor. Rotatable freely on top of the stud 22 is a circular disk 23, having a central opening for the free passage of the hinge-bar, the latter having disposed thereon a circle of teeth 24, adapted to enter corresponding notches 25, formed in the disk about said opening. Housed within the casing C and having one end secured to the stud 22 and the opposite end to an arm 23' of the disk 23 is a coiled spring 26. It will be apparent that as the outer ends of the hinge-bars engage their respective sockets (one pair being of course constantly in engagement) and as the door is being swung open the teeth 24 will rotate the disk 23, winding up the spring, the latter automatically closing the door when the same is released. The casing C, therefore, with its spring and disk serve as a closing device for the door, causing the latter to close automatically when released. Interposed between the disk 23 and the vertical bounding walls of the casing is an annular ring 27, having a

peripheral flange or rib 28, loosely operating in a circular groove of the casing, said ring having a depending lug 29, adapted to engage the arm 23'. The outer face of the ring 27 is provided with sockets or openings 30 for the reception of the arms of a key, (not shown,) by which the ring can be rotated for purposes of tightening the spring 26 when the latter becomes weak. When the necessary rotation has been imparted to the ring to effect the desired tension in the spring, it is locked by a screw 31, inserted into one of a series of openings 32, formed in the casing. A quarter-turn will generally be sufficient to impart the necessary tension to the spring, and it is of course obvious from the relation of the parts that a turn of the ring 27 to the right, Fig. 12, will tighten the spring, being that the lug 29 will carry the arm 23' with it.

To better guide the hinge-bars in the reciprocations, I provide the edges of the door with plates 33, which span the grooves 2, in which the bars are confined.

It will be apparent from the foregoing that either pair of bars 11 may serve as hinge-bars and that the door may be swung open from either vertical edge as a hinge-axis. (See Fig. 3.) The desirability for such an arrangement is obvious, as circumstances often arise where a door has to be removed to allow an object to pass from one room to another. With my improvement, however, the necessity for such removal can often be obviated. I do not wish to be limited to the details herein shown, as these may be departed from in a measure without affecting either the nature or spirit of my invention.

Having described my invention, what I claim is—

1. In combination with a door, suitable hinge-bars carried in the line of the swinging axis of the door, and a door-closing device in coöperative connection with one of the bars, substantially as set forth.

2. In combination with a door, a pair of hinge-bars carried at either edge of the door, the outer ends of the bars being adapted to be received by sockets formed in the door-frame, a chamber located along the edge of the door, the adjacent or inner ends of the bars having inwardly-deflected portions confined within said chamber, transverse handle-bars at the ends of said deflected portions, suitable slots being formed in the opposite walls of the chamber for the free projection of said handle-bars, a spring coupled to the handle-bars for normally forcing them apart, a spring-actuated yoke for embracing the handle-bars when forced together, a latch projecting from the chamber and adapted to impinge against the jamb, and intermediate connections between the latch and yoke for disengaging the latter from the handle-bars upon the movement of the latch in the striking of the jamb, substantially as set forth.

3. In a swinging door having movable hinge-bars, a suitable casing, a stud forming

part of the same, a rotatable disk mounted in the stud, means for effecting engagement between the disk and one of the hinge-bars, a spring having one end secured to the stud
5 and the other to the disk, and means for tightening said spring, substantially as set forth.

4. In a swinging door, a hinge-bar, a casing, a stud located at the center thereof, a
10 rotatable disk mounted on the stud, a series of notches being formed in the disk, a series of teeth carried by the hinge-bar for engaging said notches, and a spring confined within the casing and having one end secured to
15 the stud and the other to the disk, substantially as set forth.

5. In a door having suitable reciprocating hinge-bars, suitable hinge-lugs located in the

path of the bars, and bearings in the door-jamb for the reception of the lugs, substantially as set forth. 20

6. In a swinging door, suitable hinge-bars, sockets formed in the door-frame for the reception of the outer ends of the bars, means carried by the door for retracting said bars,
25 devices for automatically retaining the bars in their retracted position, and a latch for disconnecting the device which automatically retains the hinge-bars in their retracted position, substantially as set forth. 30

In testimony whereof I affix my signature in presence of two witnesses.

HENRY MEYER.

Witnesses:

EMIL STAREK,
ROSA ROSS.