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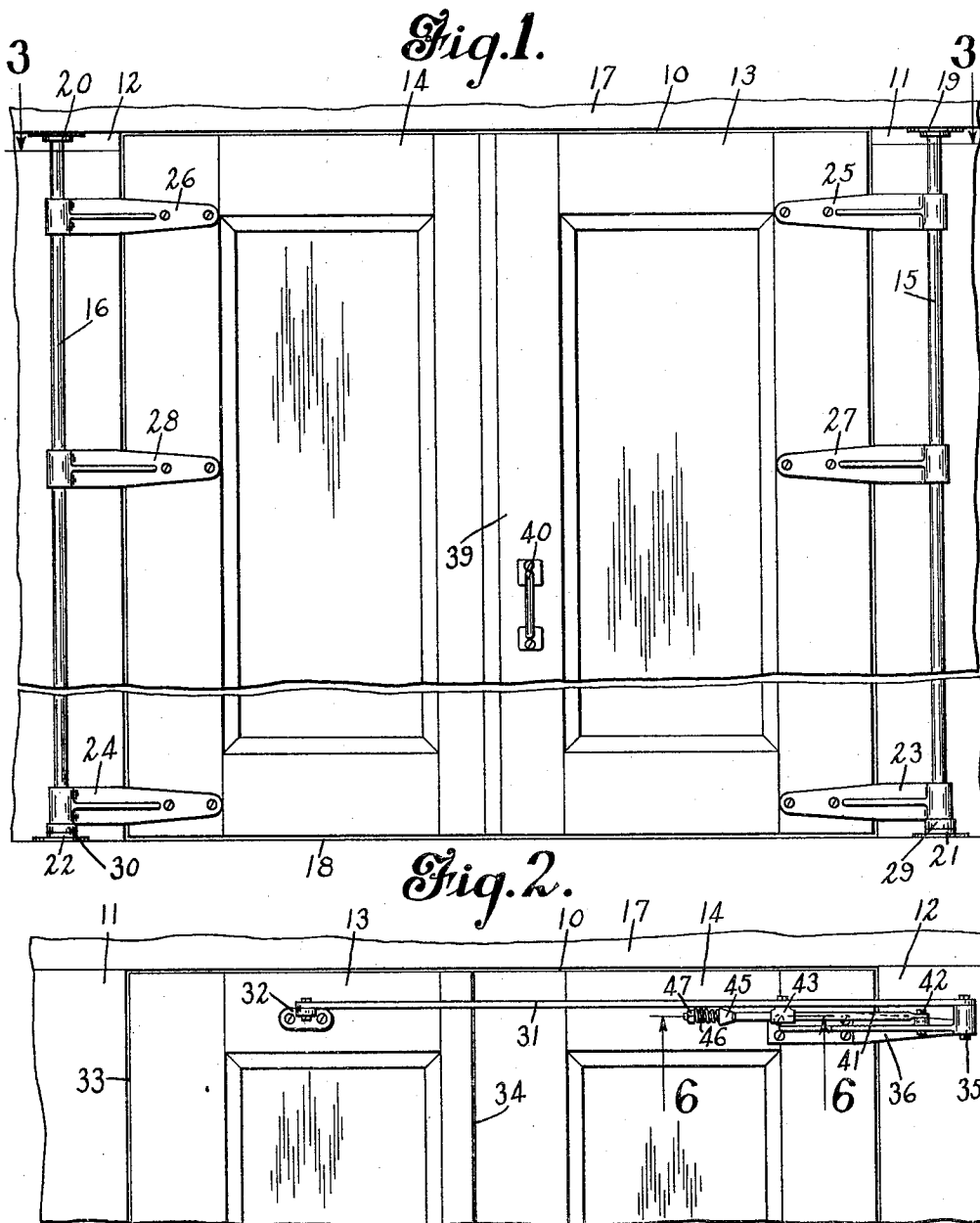
C. L. PHILLIPS ET AL

1,867,589

HOLD OPEN AND CLOSING MECHANISM FOR DOUBLE DOORS

Filed March 7, 1929

2 Sheets-Sheet 1



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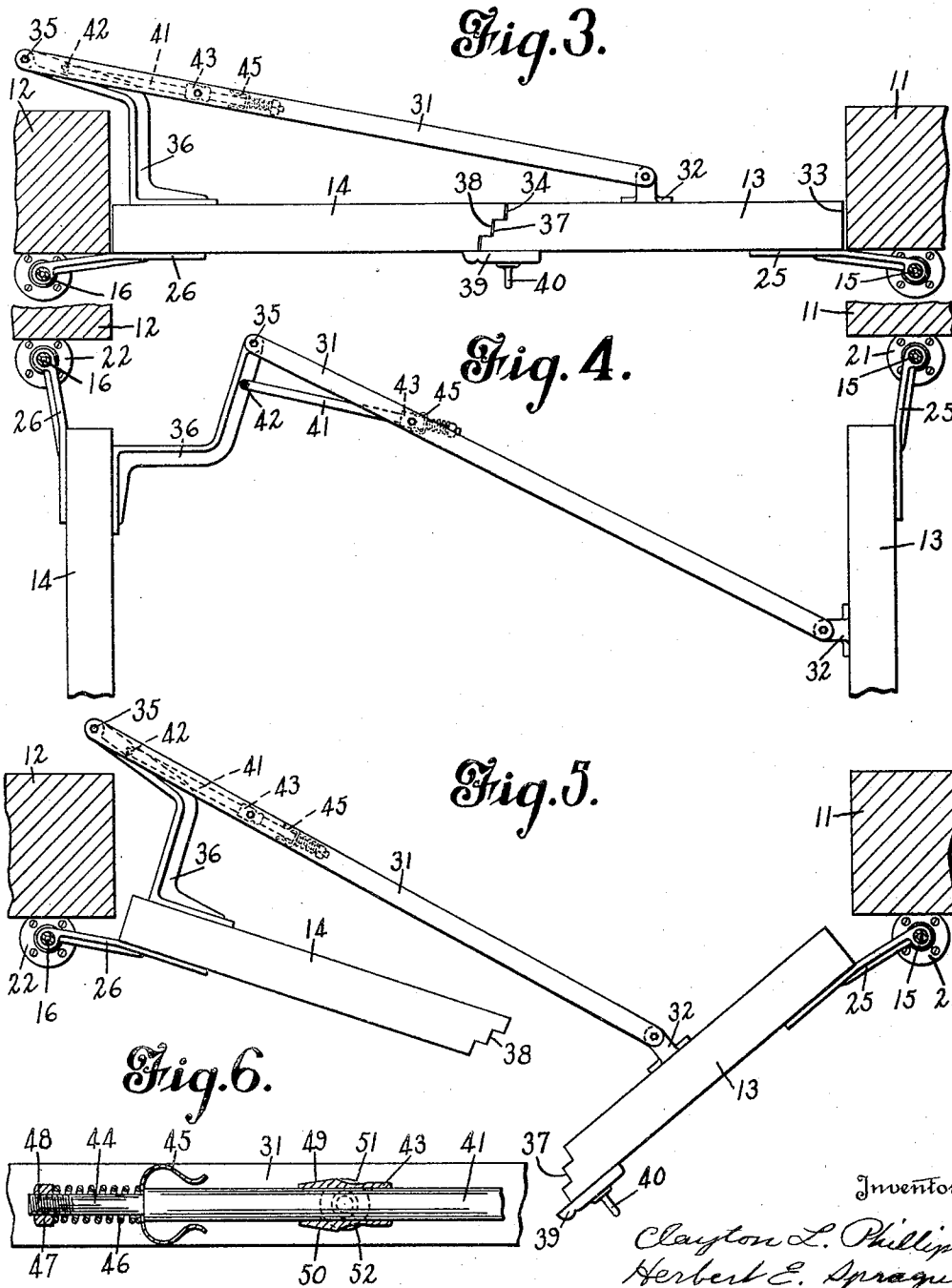
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UNITED STATES PATENT OFFICE

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HOLD OPEN AND CLOSING MECHANISM FOR DOUBLE DOORS

Application filed March 7, 1929. Serial No. 344,968.

Our invention relates to hold open and closing mechanism for double doors, and more especially to a mechanism for simultaneously opening a pair of abutting doors 5 and holding the same in open position.

Our invention relates especially to doors for refrigerator rooms, but is by no means limited thereto, but is of general utility in any situation where double doors or the 10 like may be provided.

In the usual refrigerator room or garage provided with double doors, each door must be opened independently, and independent means is provided for holding the doors 15 in open position. It is in general an object of the present invention to provide an arrangement for double doors wherein both doors may be opened simultaneously by movement of one of the doors.

20 Another object of the invention is to provide a simple but efficient means for holding a pair of doors in open position.

Still another object of the invention is to provide a mechanism for the simultaneous 25 opening of double doors wherein one of the doors is opened ahead of the other door and closed after the other door, to prevent the doors from becoming jammed.

30 A still further object of the invention is to provide in a mechanism of the above character resilient stop mechanism for limiting the amount the doors may be opened.

To these and other ends, the invention consists in the novel features and combination 35 of parts to be hereinafter described and claimed.

In the drawings,

40 Fig. 1 is a front elevation of a double door arrangement for a refrigerator room or the like having a hold open and closing mechanism, according to our invention applied thereto;

Fig. 2 is a view similar to Fig. 1, but showing the opposite sides of the doors;

45 Fig. 3 is a sectional view along line 3—3 of Fig. 1;

Figs. 4 and 5 are views similar to Fig. 3, but showing the doors in different positions; and

50 Fig. 6 is a sectional view along line 6—6

of Fig. 2, showing a part of the mechanism for holding the doors in open position.

Referring to the drawings in which we have illustrated our invention by showing a preferred embodiment of the same, the reference 55 numeral 10 indicates, in general, an opening in the wall of a refrigerator room or the like at the opposite sides 11 and 12 of which a pair of doors 13 and 14 are hingedly mounted by means of a pair of vertical rods 15 and 16 which are laterally offset from the adjacent 60 edges of the doors and extend on opposite sides of the opening 10 from the ceiling 17 to the floor 18. The upper ends of rods 15 and 16 are rigidly supported by means of 65 plates 19 and 20 in which the rods are received, plates 19 and 20 being secured to the ceiling 17 in any desired manner, while the lower ends of rods 15 and 16 are supported in plates 21 and 22, secured to the floor 18. 70

Mounted on doors 13 and 14 near the bottom edge thereof and pivotally supported on rods 15 and 16 are hinge arms 23 and 24. Near the upper ends of doors 13 and 14 are 75 hinge arms 25 and 26, while at an intermediate point are hinge arms 27 and 28. Hinge arms 23, 25 and 27 are pivotally mounted on rod 15 to support door 13 for swinging movement thereon, while hinge arms 24, 26 and 28 are pivotally mounted on rod 16 80 for swinging movement. The weights of the doors are taken up by thrust bearings 29 and 30 interposed between hinge arm 23 and plate 21 and hinge arm 24 and plate 22, the thrust bearings not being shown herein in detail. 85

In the usual arrangement of double doors, it is necessary to open each door independently, and one of the features of the present invention resides in an arrangement wherein 90 both doors of a pair of double doors may be opened simultaneously upon opening movement of either door. A suitable means to this end may take the form of a door connecting link 31, one end of which is pivotally mounted on a bracket 32, mounted on the inside of the 95 door 13, near the upper edge thereof, and substantially half way between the inner edge 33 and the outer edge 34, while the other end of link 31 is pivotally supported at 35 on a bracket 36 mounted on and extending rear- 100

wardly from door 14 and around door frame 12, so that the pivotal mounting 35 is spaced rearwardly from door 14 a considerable distance, and in the present instance is substantially opposite the rod 16.

Preferably the pivotal mounting on bracket 32 is rearwardly of the line joining the pivotal mounting 35 and rod 15 when the doors are in closed position. The meeting edges 37 and 38 of doors 13 and 14 may be notched or stepped in order to provide a relatively tight joint therebetween, while an overlapping strip 39 may extend longitudinally of the doors, near their meeting edges, for the same purpose. Near the edge 37 of door 13, and at a convenient distance from floor 18, is a handle 40, by means of which doors 13 and 14 may be opened and closed.

Assuming the doors 13 and 14 to be in closed position, as shown in Figs. 1, 2 and 3 of the drawings, the opening movements of the doors are as follows: Door 13 is swung on rod 15 by means of handle 40, the first movement of door 13 bringing the pivotal mounting on bracket 32 into alignment with the pivotal mounting 35 on bracket 36 and rod 15 and tending to urge door 14 still further into closed position. Door 13 may be swung, until the pivotal mounting on bracket 32 is substantially the same distance forwardly of the line drawn between rod 15 and pivotal mounting 35 as it is rearwardly thereof in the closed position, before door 14 starts to open, continued movement on the part of door 13 swinging door 14 about rod 16, as shown in Fig. 5, and finally into the position shown in Fig. 4, wherein the doors are fully opened. It will be readily understood that in closing the movements of the doors are reversed so that door 14 is fully closed ahead of door 13, and thus the stepped edge of door 13 may be received in the stepped edge of door 14 without any possibility of the doors jamming.

It is highly desirable that the doors may be held in open position and another feature of the invention resides in a simple but efficient arrangement for this purpose.

Referring now particularly to Figs. 2 and 5, the reference numeral 41 indicates a rod pivotally mounted at 42 on bracket 36 and slidably received in sleeve 43 pivotally mounted on link 31, the outer end 44 of rod 41 being reduced for the reception of a spring clip 45 slidably mounted thereon and urged inwardly on reduced end 44 by means of compression spring 46, one end of which bears against clip 45, while the opposite end bears against a nut 47 received on a threaded end 48 of rod 41, and by means of which the tension of spring 46 may be adjusted. The sleeve 43 on its opposite sides is tapered, as at 49 and 50, and beyond the tapered portions is notched, as at 51 and 52.

The operation of the holding device is as

follows: Upon movement of door 14 in opening, bracket 36 swings about pivotal mounting 35 angularly away from link 31, carrying pivotal mounting 42 with it and reciprocating rod 41 in sleeve 43. Upon continued movement of door 14, clip 45 comes in contact with sleeve 43, the arms of the clip moving over the tapered sides 49 and 50 of sleeve 43 and into notches 51 and 52. Further movement of doors 13 and 14 is resisted by compression spring 46 against which clip 45 is forced by sleeve 43, the spring acting as a resilient stop limiting the opening movement of the doors.

Upon the door being fully opened, the fingers of clip 45 are received in notches 51 and 52 of sleeve 43 frictionally holding the doors against movement. In order to close the doors sufficient pressure is brought to bear thereon to disengage the clip 45 from the sleeve 43, whereupon the doors may be swung freely into closed position.

From the above description of the nature of our invention and of the preferred embodiment of the same, it will be readily understood that we have provided a relatively simple arrangement wherein a pair of double doors may be opened simultaneously by movement of one of the doors and in which the doors may be releasably held in open position, the holding means also acting as a stop resiliently limiting the amount the doors may be opened.

It will be further understood that the arrangement is such that jamming of the doors in opening or closing is relatively impossible.

Our invention is not limited to use with the form of hinge door mounting shown, nor do we specifically claim herein the novel features of this hinge mounting since these form the subject matter of a separate co-pending application filed by Clayton L. Phillips on March 7, 1929, and bearing the serial number 344,969, now Patent No. 1,799,315, granted April 7, 1931.

While we have shown and described a preferred embodiment of our invention, it is to be understood that the same is not to be limited to all the details shown but is capable of modification and variation within the spirit of the invention and the scope of the appended claims.

What we claim is:

1. A mechanism for holding a pair of doors mounted for pivotal movement into and out of an opening in open position, said mechanism including a pair of members adapted to be connected to the doors for relative movement when the doors are opened or closed, and means cooperating with said members and adapted to restrain them against relative movement when the doors are fully opened, said last named means including a rod pivotally mounted on one of said members, a sleeve pivotally mounted on the other member in which said rod is slidably received, a U-shape

member slidably mounted on the rod and having a pair of arms adapted to engage said sleeve, and resilient means for opposing sliding movement of said U-shape member on said rod.

5 2. A mechanism for holding a pair of doors mounted for pivotal movement into and out of an opening in open position, said mechanism including a pair of members adapted to
10 be connected to the doors for relative movement when the doors are opened or closed, and means cooperating with said members and adapted to restrain them against relative movement when the doors are fully
15 opened, said last named means including a rod pivotally mounted on one of said members, a sleeve pivotally mounted on the other member in which said rod is slidably received, said rod being provided with a reduced end forming a shoulder, a U-shape
20 member slidably mounted on the reduced end of the rod and having a pair of arms adapted to releasably engage said sleeve, said U-shape member normally contacting with said shoulder, and a coiled spring mounted on the reduced end of the rod and urging said U-shape
25 member against said shoulder.

In witness whereof, we have hereunto set our hands this 5th day of March, 1929.

30 CLAYTON L. PHILLIPS.
HERBERT E. SPRAGUE.

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