July 31, 1923. 1,463,347

F. G. WALKER

FOLDABLE CLOSURE

Filed Jan. 10, 1921 2 Sheets-Sheet 1

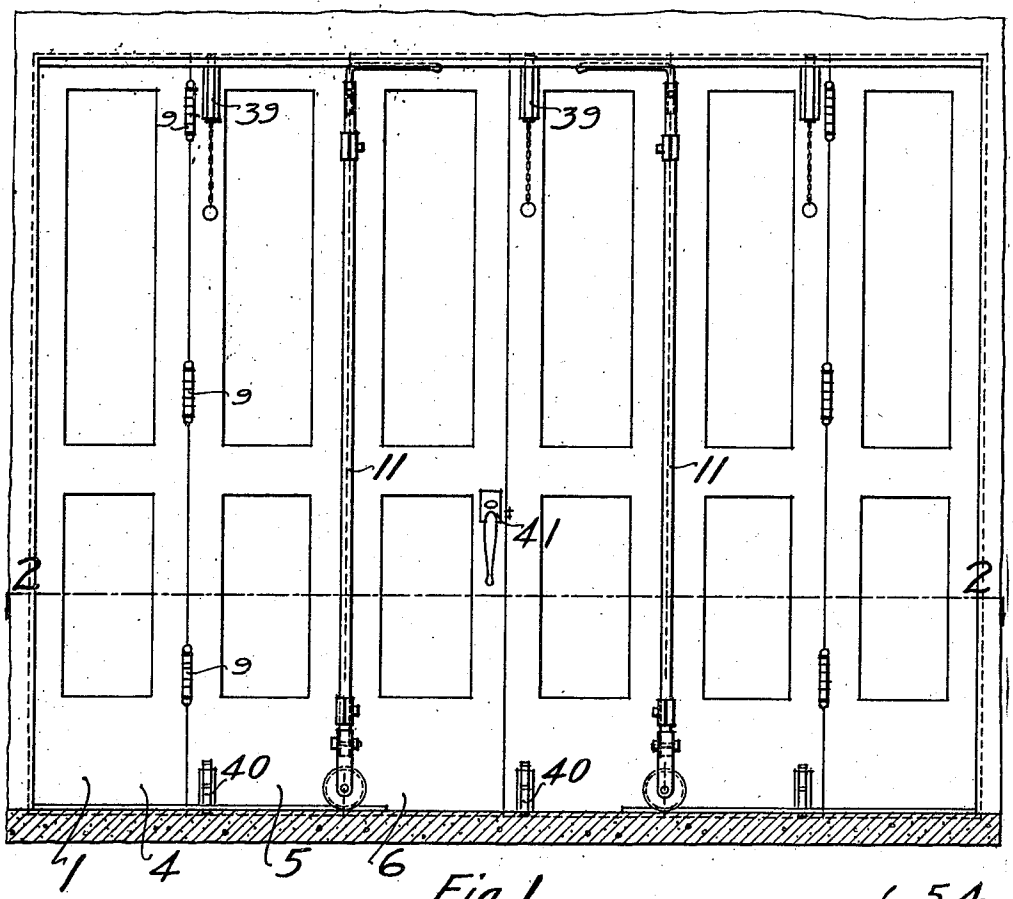


Fig. 1

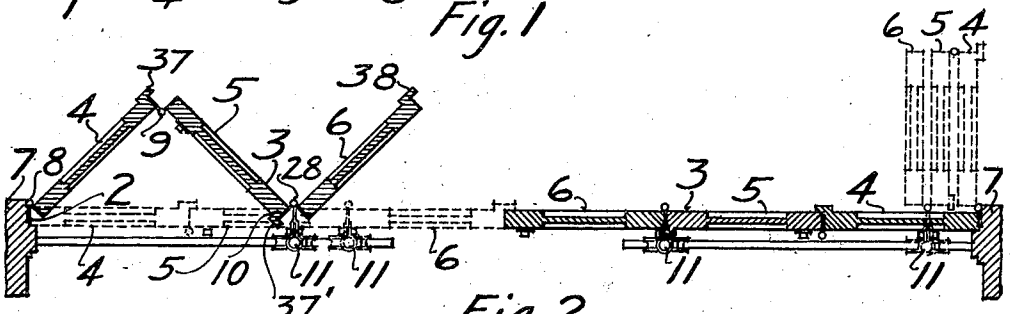


Fig. 2

Frederick G. Walker INVENTOR

Murray Lotz & Wilson BY

ATTORNEY

July 31, 1923. 1,463,347

F. G. WALKER

FOLDABLE CLOSURE

Filed Jan. 10, 1921 2 Sheets-Sheet 2

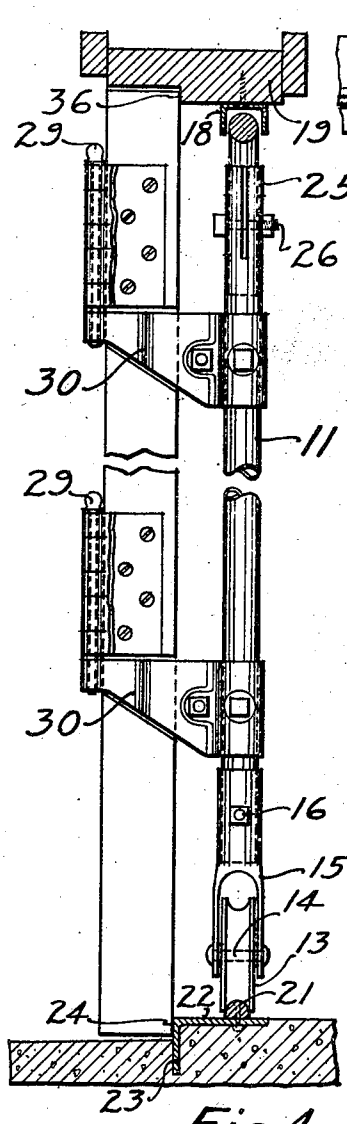


Fig. 4

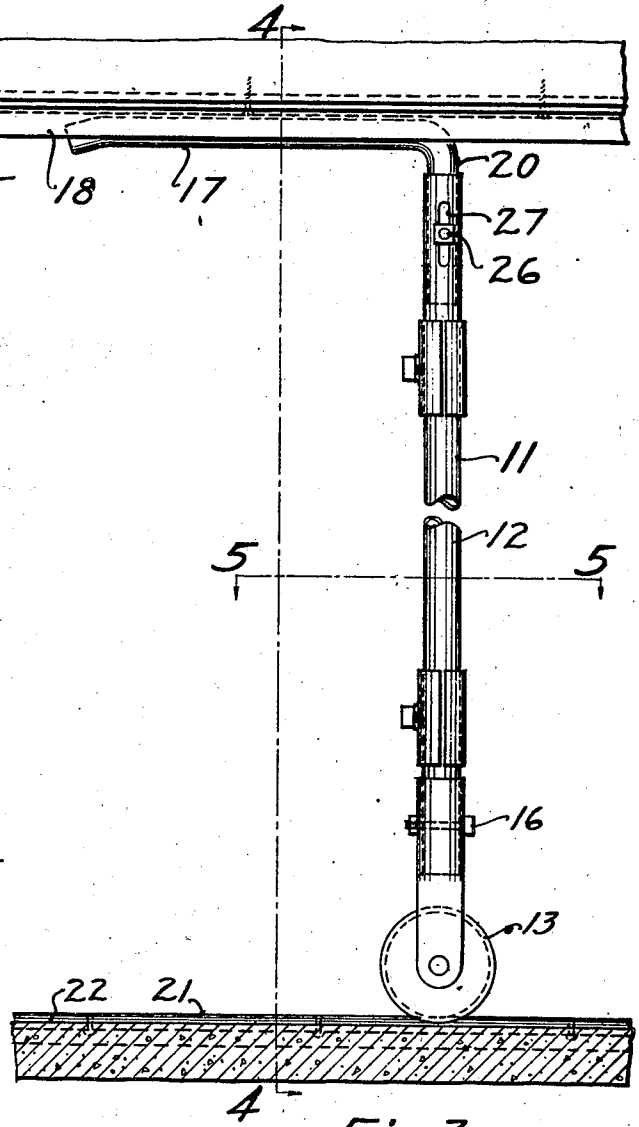
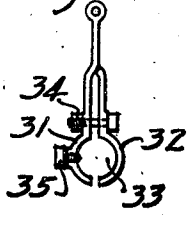


Fig. 3

Fig. 6



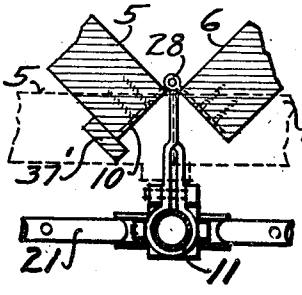


Fig. 5

INVENTOR

Frederick G. Walker

BY Murray Lotz & Wilson

ATTORNEY

Patented July 31, 1923. 1,463,347

UNITED STATES PATENT OFFICE.

FREDERICK G. WALKER, OF CHICAGO, ILLINOIS.

FOLDABLE CLOSURE.

Application filed January 10, 1921. Serial No. 436,227.

To all whom it may concern:

Be it known that I, FREDERICK G. WALKER, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Foldable Closure, of which the following is a specification.

My invention relates to improvements in folding doors or partitions and has special reference to means for connecting and supporting the leaves or parts of the door.

The object of my invention is to simplify and cheapen the construction of folding door supports, to the end that the cost shall be reduced and the installation of the doors be more cheaply, easily and quickly accomplished.

A further object of my invention is to provide supporting devices of simple character to which the doors can be easily and quickly connected with little labor and without the necessity of the provision of special doors.

A further object of my invention is to provide means for supporting and sliding the doors or the leaves thereof, which shall eliminate the necessity of posts or other parts arranged in the plane of the door when closed, in other words, which shall provide a foldable closure for the door opening consisting of door leaves arranged edge to edge from side to side of the door opening.

My invention will be more readily understood by reference to the accompanying drawings forming part of this specification, and in which:—

Figure 1 is an elevational view of the inner side of a folding door constructed and supported in accordance with my invention;

Figure 2 is a horizontal sectional view of the door on the line 2—2 of Figure 1, one half of the door being shown in closed position in full lines and in fully open condition in dotted lines, the other half of the door being shown in partly open condition in full lines and in closed position in dotted lines;

Figure 3 is a fragmentary elevational view of the door supporting device looked at from the inner side;

Figure 4 is a fragmentary vertical sectional view on the line 4—4 of Figure 3, showing the hinged edge of the farther door;

Figure 5 is a fragmentary horizontal section on the line 5—5 of Figure 3 showing the doors partly open in full lines and fully closed in dotted lines; and

Figure 6 is a top plan view of one door supporting bracket.

In said drawings, 1 represents a foldable closure for an opening 2. The closure shown consists of two equal parts 3 each consisting as shown of three leaves, 4, 5 and 6. In further describing my invention description of one part 3 of the door will apply equally to the other part, as the two parts are substantial duplicates of each other.

The several leaves of the complete closure lie in a single plane and fill the door opening 2 from the jamb 7 at one side to the opposite jamb 7 at the other side. When the opening is closed, the several leaves are arranged in edge to edge relation. The leaf 4 is hinged at one edge to the jamb or side door part 7 by hinges 8 arranged with their pivots at the outer side of the door so that the leaf can swing outwardly. The next leaf 5 is hinged at one edge to the free edge of the leaf 4 by means of hinges 9 arranged with their pivots at the inner face of the door to permit the leaf 5 to swing or fold inwardly upon the leaf 4 as the door is opened.

For supporting the opposite edge 10 of the leaf 5 and guiding it in the door opening and closing movements I provide a vertical support 11. This support 11, as shown in the drawings, consists of a vertical metal member 12 preferably for reasons of cost and lightness, in the form of a pipe. At its lower end this pipe carries a supporting grooved wheel or roller 13 which is rotatably mounted on a fixed axle pin 14 carried in a divided bracket 15 socketed upon the lower end of the pipe and adapted to be held against rotation thereon by a through bolt 16.

At its upper end the pipe support member is provided with a laterally extending rigid guide member 17 adapted to be received within a U-shaped guide 18 secured to the upper door frame beam 19 and parallel with the door opening 2. In the form shown the guide member 17 consists of a metal rod-like member bent at right angles to form the lateral extending member 17 and also to form a shorter end 20 adapted to be received in the upper end of the pipe member 12.

The grooved support wheel 13 is adapted to rest upon and roll along a convex guide member or track 21 secured to the floor parallel to the plane of the door opening 2. In the construction shown the track 21 is secured to one flange of a metal angle bar 22 forming a door sill, the other flange 23 extending downwardly into the concrete floor and forming a closure ledge 24 at the bottom of the door opening against which the doors close.

The support member 11 is made adjustable as to length so that in the installation thereof it can be arranged to fit snugly and yet be freely movable between the rail 21 and the guide 18. This is accomplished in the form shown by splitting the upper end 25 of the pipe 12 so that the pipe can be clamped upon the end 20 of the lateral guide 17, which is of a size to fit snugly within the pipe 12. The split end 25 of the pipe 12 is adapted to be clamped upon the end 20 by a bolt 26 which extends through the pipe and through the end 20 transversely to the split in the pipe. In order to permit the vertical adjustment spoken of I provide vertical slots 27 in the wall of the pipe 12 to permit the bolt 26 to be adjusted longitudinally thereof with the guide member 17.

The guide arm 17 prevents the support member 11 from twisting or turning around and permits it to move freely back and forth on the rail 21, as the door is opened and closed and with practically no friction.

For connecting the leaves 5 and 6 to the support 11 I preferably provide hinges 28, one leaf of which is secured to the edge 10 of the leaf 5 and the other of which is adapted to be secured to the adjacent edge of the door leaf 6 for mounting said leaf 6 to open and close.

It will be obvious that for a wider opening further supports 11 and additional door leaves could be provided.

The leaves of each of the hinges 28 are fixedly mounted on a hinge pin or pintle 29 which extends below the hinge butts and is received in the free end of a support bracket 30. Preferably the pintle 29 is headed at each end to prevent its easy removal and to prevent the separation of the hinge from the bracket.

The bracket 30 extends inwardly between the adjacent edges of the leaves 5 and 6 which are provided with suitable cutout portions to permit the edges of the doors to close tightly together about the bracket. The inner end of the bracket 30 is secured to the support 11 by some suitable means which permits the relative vertical adjustment of the bracket and support so that the leaves of the door can readily be hung to swing freely and properly and the support arranged to move freely back and forth. I preferably form the rear end of the bracket so that it can be tightly clamped upon the support, and for this purpose I preferably make the bracket of two members 31 and 32. These two members together provide a vertical opening 33 to receive the support and the two members are adapted to be bolted together and tightly clamped upon the support 11 by a clamping bolt 34 arranged between the support and the pintle.

The member 32 extends out toward the pintle and has a bearing on the opposite member so that when the bolt 34 is tightened the grooved ends of the two members are clamped tightly upon the support.

As a further precaution I may provide a set screw 35 mounted in the member 31 and provided with a pointed end adapted to be forced into the support 11.

While I have shown the guide groove for the guide member 17 as being formed of a U-shaped member, it is obvious that the groove might be provided in other ways.

The leaves of the door, as has been explained, close at the bottom of the door opening against the ledge 24 and at the top of the opening I provide a ledge 36 against which the leaves close. To complete the tight closure of the opening I provide an overlapping batton 37 on the outer face of the leaf 4 and a similar batton 37′ on the inner face of the leaf 5 adapted to project over the adjacent edge of the leaves 5 and 6 respectively and close the joint between the two leaves, and I provide a similar overlapping batton 38 on one of the center leaves 6 to project over the free edge of the other center leaf 6 and close the joint at the middle of the door.

For securing the door in closed position I provide suitable locking bolts 39 on the upper part of the door for engagement with the top door frame and also suitable locking bolts 40 at the bottom of the door for engagement with the metal door sill.

One of the center leaves 6 carries one of the upper locking bolts 39 and one of the lower locking bolts 40 and I provide a suitable lock or latch 41 for fastening the other center leaf 6 to the bolted leaf.

The support 11 supports the edge 10 of the leaf 5 and also the leaf 6 and guides these parts in the opening and closing movements, the three parts or leaves of each door being capable of being folded back in accordion pleated fashion, as indicated in dotted lines in Figure 2.

In use the two center leaves 6 may be opened to give access to the center part of the garage or one or the other or both sets of leaves may be folded back as desired to give access to either or both sides of the garage.

As many modifications of my invention will readily suggest themselves to one skilled in the art I do not limit or confine my invention to the specific constructions herein shown and described.

I claim:

1. In a device of the kind described, a support for a folding door comprising a pipe member, a support wheel secured at its lower end formed to engage a guide rail, a vertically adjustable guide member at the upper end of the support one portion adapted to extend longitudinally of the door opening and to engage an upper guide to prevent rotation of the support, and relatively thin support brackets adapted to be clamped to the pipe member at suitable heights and adapted to extend between the adjacent edges of door leaves to engage door hinges.

2. In a device of the kind described, a support for a folding door comprising a pipe member, a support wheel carried by the lower end of the member for engagement with a suitable track, a metal guide member having arms at a right angle to each other, one thereof adapted to be received and clamped in the upper end of the pipe member, a grooved guide at the top of the opening parallel therewith in which the other arm is received, means permitting the adjusting of the guide member up and down to adjust the length of the support and door support brackets removably secured to the pipe member.

3. In a door closure of the kind described, a plurality of leaves hinged together to be folded together to uncover the opening, door supports movable longitudinally of the door opening and extending from the bottom to the top of the opening, guides at the bottom and top of the door opening for engaging the supports, support brackets carried by the supports extending out between adjacent hinged edges of the leaves, and means for pivotally mounting the leaves on the outer ends of the support brackets.

4. In a device of the kind described, a support for a folding door comprising a pipe member, a support wheel secured at its lower end formed to engage a guide rail, a vertically adjustable guide member at the upper end of the support having an arm adapted to extend longitudinally of the door opening and to engage an upper guide to prevent rotation of the support, relatively thin support brackets adapted to be clamped to the pipe member at suitable heights and adapted to extend between adjacent edges of door leaves, and means for pivotally mounting the leaves on the outer ends of the support brackets.

Signed at Chicago, Illinois, this 5th day of January, 1921.

FREDERICK G. WALKER.