Nov. 10, 1931. E. C. PITCHER 1,831,031

SLIDING DOOR CONSTRUCTION

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Fig. 1.

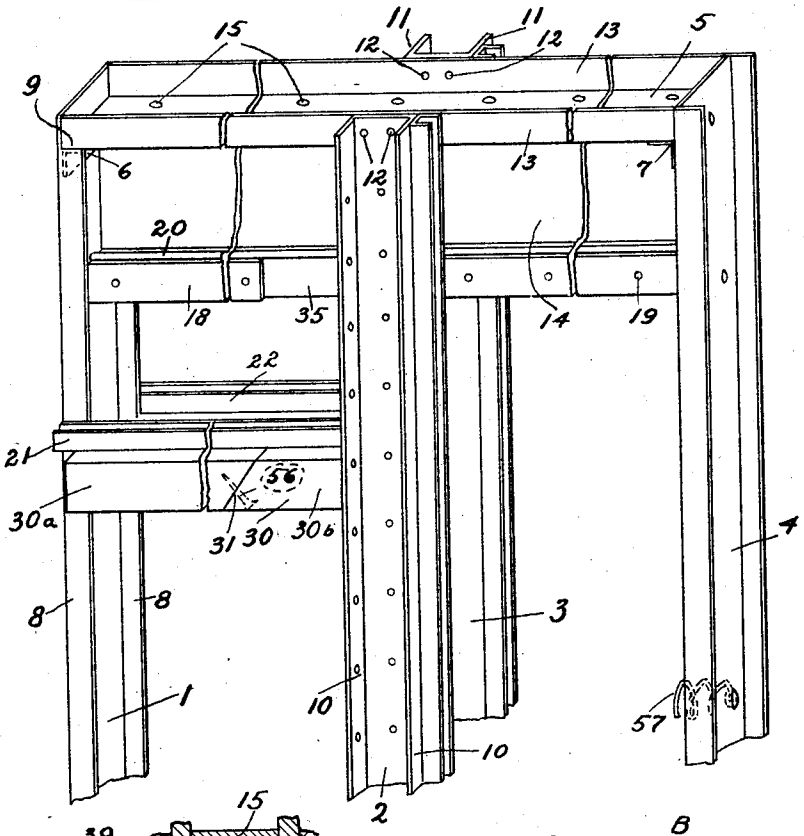
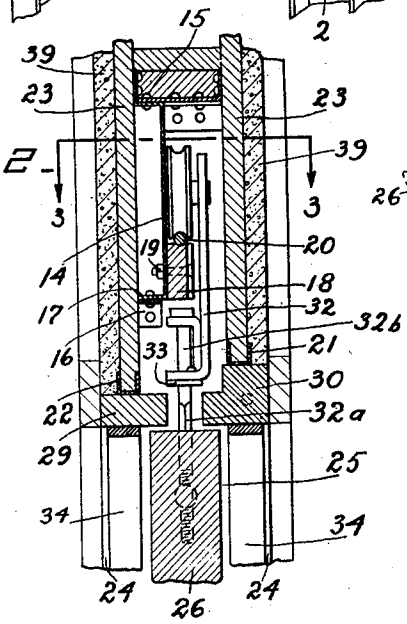


Fig. 2.



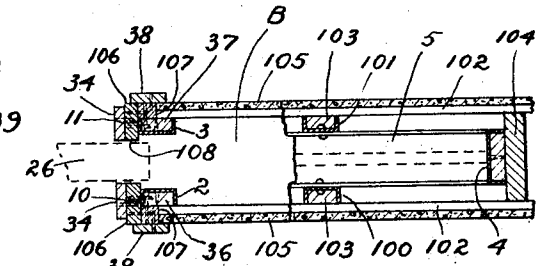


Fig. 7.

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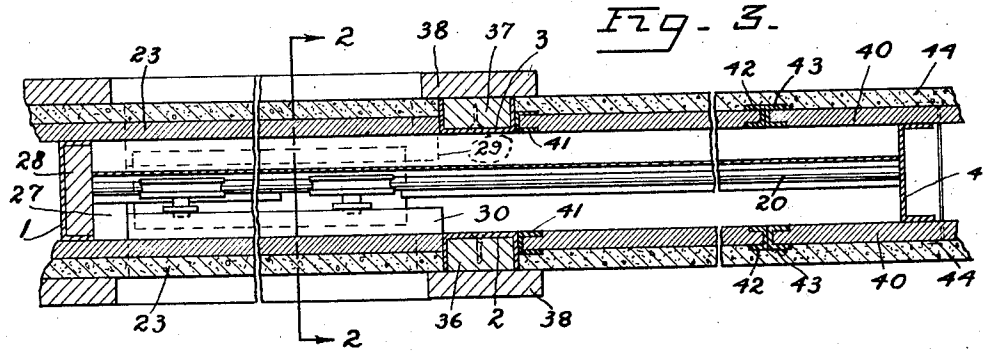
Fig. 3.



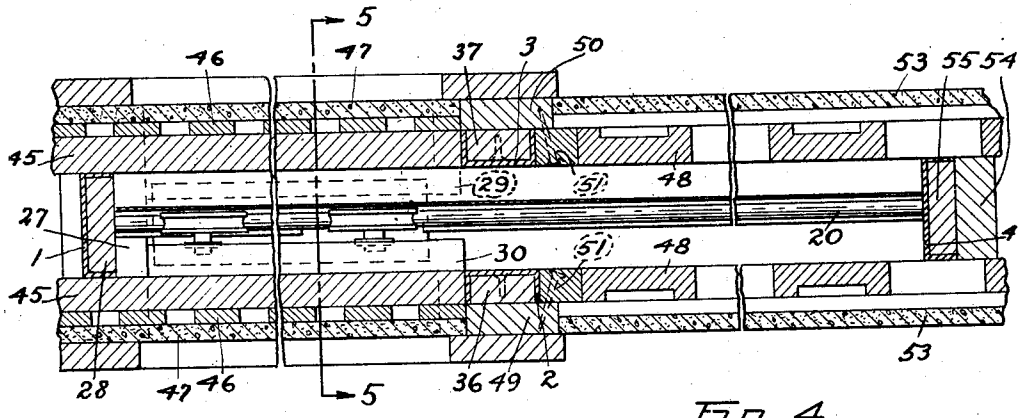


Fig. 4.

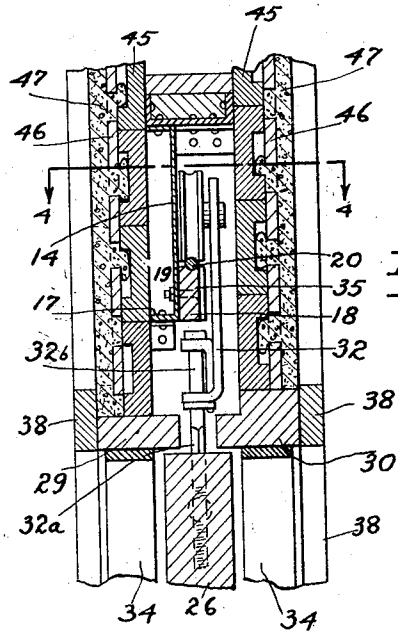


Fig. 5.

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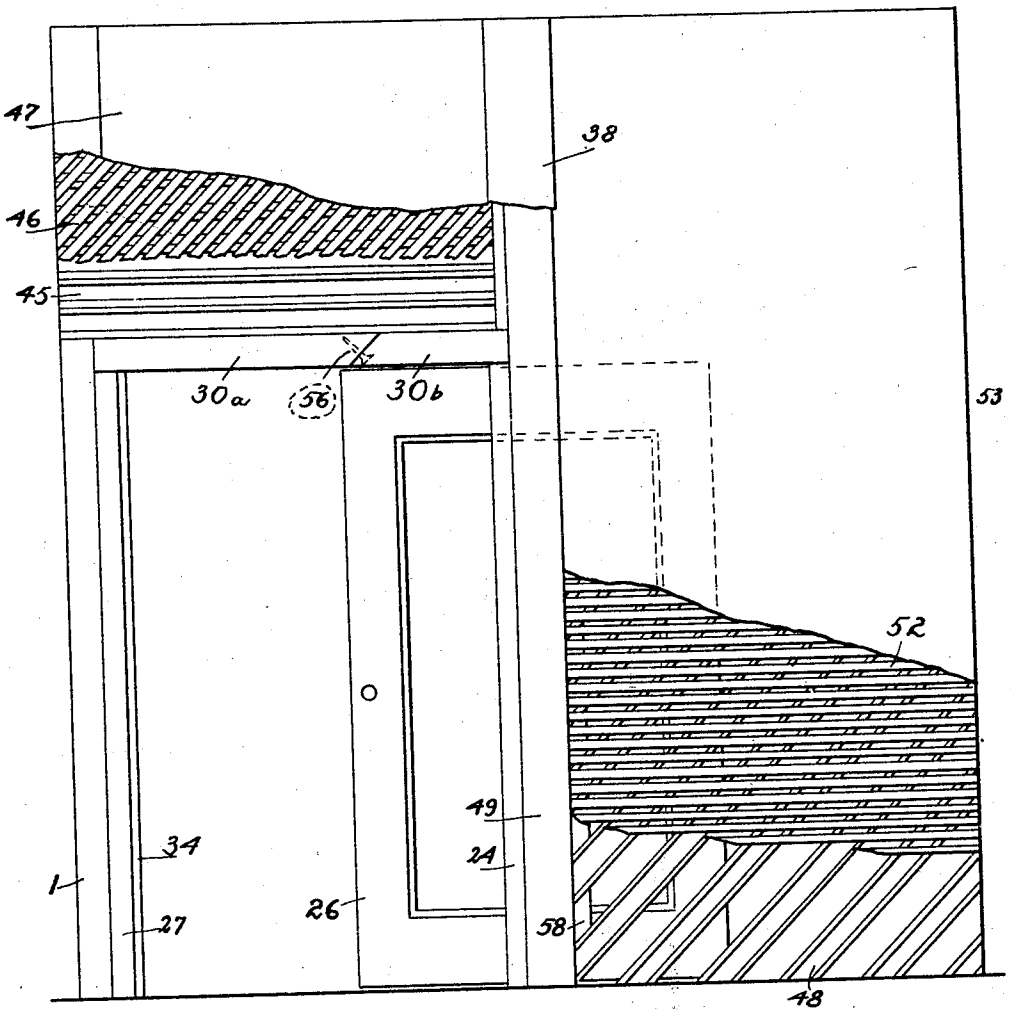

Fig. 6.

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Patented Nov. 10, 1931

1,831,031

UNITED STATES PATENT OFFICE

ELMER C. PITCHER, OF HAYWARD, CALIFORNIA

SLIDING DOOR CONSTRUCTION

Application filed September 12, 1930. Serial No. 481,563.

My invention relates to improvements in a sliding door construction, and it consists in the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide a metal sliding door structure that can be manufactured and shipped in assembled or in a knock down condition. The device is primarily designed to be used in buildings constructed of steel which are known as class A buildings, and the same device can also be used in buildings constructed of wood known as class C buildings. The metal part of the device is made narrow enough to fit into walls four inches thick used in class A constructions. By the addition of filler strips to the same metal structure, the device can be used in walls five inches thick employed in class C structures.

The steel frame for the sliding door is so constructed as to allow the nailing on of wall board or lath for holding plaster and also jambs, casing and interior finish.

A further object of my invention is to provide a device of the type described in which the doorway of the completed structure is large enough to permit the sliding door to be removed through the doorway, it only being required to first remove the stops used in standard doorways. Also the door hangers can be removed without removing the door or finish.

Other objects and advantages will appear as the specification proceeds, and the novel features of the device will be particularly pointed out in the claims hereto annexed.

My invention is illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of the assembled device as shipped from the factory,

Figure 2 is a section along the line 2—2 of Figure 3 and shows the device used in class A construction,

Figure 3 is a section along the line 3—3 of Figure 2,

Figure 4 shows the device as used in class C construction and is a section along the line 4—4 of Figure 5,

Figure 5 is a section along the line 5—5 of Figure 4,

Figure 6 is a side elevation of the form of the device shown in Figure 4, and

Figure 7 is a horizontal section of a modified form of the device.

In carrying out my invention, I provide a substantially all metal sliding door construction which comprises an end channel iron 1 that extends vertically, two supporting channel irons 2 and 3 that form one part of a doorway, and an end channel iron 4. A horizontally-disposed channel iron 5 (see Figure 1) extends between the end channel irons 1 and 4 and is secured to the channel irons by brackets 6 and 7. The sides 8 of the channel iron 1 are cut away as at 9 for receiving the channel iron 5.

The channel irons 2 and 3 are disposed with their sides 10—10 and 11—11 facing outwardly. Rivets 12 secure the channel irons 2 and 3 to the sides 13 of the channel iron 5.

A rail-supporting channel iron 14 underlies the channel iron 5 and is secured to this channel iron by rivets 15 or other suitable fastening means. Figure 2 clearly shows how the channel iron 14 is disposed adjacent to one edge of the channel iron 5 and how the bottom of the channel iron 14 is disposed in a vertical plane. Brackets 16 (see Figure 2) secure the lower side 17 of the channel iron 14 to the end channel irons 1 and 4. A rail-supporting block 18 (see Figures 1 and 2) extends along the length of the channel iron 14 and is secured in place by bolts 19 or other suitable fastening means. A wooden rail 20 is carried by the block 18.

The structure thus far described is adapted for use in steel buildings or in buildings made of wood. It can, therefore, be manufactured in large quantities and shipped to the various types of buildings and be placed in position, after which the finishing material can be secured in place. I will first describe the device when used in a steel building. Figures 2 and 3 illustrate this type of structure.

In Figure 2 I show a small horizontally-disposed channel iron 21 extending from the

channel iron 1 to the channel iron 2 (note Figure 1). This channel iron may be secured in place by any suitable fastening means. A second small channel iron 22 (see Figure 2) extends between the channel iron 1 and the channel iron 3 and is disposed in a lower position than the channel iron 21. The channel irons 21 and 22 form the top of the door opening and support wall boards 23, these boards being placed in the channels as shown and extending upwardly to the top of the frame. Side jambs 24 made of wood (see Figure 2) extend upwardly along the sides 10 of the channel irons 2 and 3. Figure 3 also shows this construction. The jambs are spaced from each other to provide a slot 25 through which a sliding door 26 moves. The other side of the door opening is provided with a side jamb 27 (see Figure 3) and this jamb is secured in place by nails (not shown) that pass into a filler strip 28 disposed in the channel iron 1. All of the supporting channel irons 1 to 4 inclusive have perforations on their bottom and sides for receiving fastening means that secure fillers and jambs to the channels.

The side jambs 24—24 and 27 support top jambs 29 and 30. The jamb 30 is shown thicker in Figures 1 and 2 than the jamb 29. Figure 1 shows how the jamb 30 is formed in two pieces 30*a* and 30*b* and how these pieces are cut on a bias as at 31 for permitting the piece 30*b* to be removed when it is desired to gain access to the door hanger indicated generally at 32 (see Figure 2).

The particular construction of the door hanger is described and claimed in my copending application Serial No. 378,692, filed July 16, 1929. This hanger can be removed from the door when a locking member 33 is swung into inoperative position. Figure 2 shows how the member 33 can be reached when the block 30*b* is removed. The door can then be removed from the hangers 32. Of course, stops 34 are removed from the door jambs so as to provide a door opening large enough to permit the removal of the door.

It will further be noted from Figures 1, 2 and 3 that the rail-supporting member 18 is provided with a cut-away portion 35 which permits the door hangers 32 to be removed from the device or to be inserted in place when desired. The space between the member 18 and the opposing wall is not sufficient for the passage of the hanger roller. The cut-away portion or recess 35 provides room for the passage of the hanger. I have shown two hangers supporting the sliding door, although this number may be increased if desired. A wrench, not shown, can be used for engaging with a non-circular portion 32*a* of a bolt 32*b* used in the hanger 32. The turning of the bolt raises or lowers the door into the proper position.

I will now describe how the structure shown in Figure 1 is encased for class A building construction. The channel irons 2 and 3 (see Figure 3) are provided with filler strips 36 and 37, and the door casing members 38 are secured to the filler strip. The portion of the structure disposed above the small channel irons 21 and 22 is enclosed by the wall board 23 (see Figures 2 and 3). Plaster 39 covers the wall board.

The sliding door pocket defined by the channel irons 2, 3 and 4 is covered by a wall board 40 (see Figure 3) that is removably secured in small vertically-disposed channel irons 41 and is secured to the channel iron 4 by special wire fastenings shown in my copending application filed October 23, 1929, Serial No. 401,890, or nailed to extended filler strips or studs. These channel irons are secured to the sides 10 and 11 of the channel irons 2 and 3. In case the distance between the channel irons 2 or 3 and the channel iron 4 is great, double channel irons 42 and 43 are used for receiving the ends of adjacent wall boards 40. Plaster 44 is applied to the wall boards 40 and forms a continuation of the wall of the room.

As already stated, the same device shown in Figure 1 is used in class C buildings except that the small channel irons 21 and 22 are dispensed with. The wood type structure is shown in Figures 4, 5, 6 and 7, and like parts will be given like reference numerals without the need of any further description. The material covering the structure shown in Figure 1 differs from that shown in Figure 3 and provides a thicker wall which is used in class C structures. Above the top jambs 29 and 30 I dispose sheathing 45 which rests upon the top jambs 29 and 30. This sheathing is shown in Figure 6, and is provided with horizontally-disposed grooves for receiving plaster. Lath 46 is secured to the outer surface of the sheathing, and the plaster 47 is applied to the lath.

The sliding door pocket is covered by sheathing indicated generally at 48. Figure 4 shows how a filler member 49 is secured to the filler strip 36 and how a second filler member 50 is secured to the filler strip 37. Before the filler strips 49 and 50 are secured in place, they are mounted in a form, and the diagonal sheathing 48 is secured to the members by nails 51 or other suitable fastening means. The sheathing as a unit is then disposed on the outside of the pocket and the filler members 49 and 50 are secured to the filler strips 36 and 37. Lath 52 (see Figures 5 and 6) is then disposed on sheathing, and this is covered by plaster 53. The sheathing is also secured to a stud 54 that is connected to a filler strip 55 disposed in the channel iron 4.

The top jamb 30 shown in Figure 6 is in two pieces 30*a* and 30*b* as already described, and these pieces are removably held to-

gether by screws 56. The piece 30b is removed when it is desired to release the hangers from the door 26. A door spring 57 is shown in Figure 1. Small blocks 58 are disposed between the sheathing 48 and the lath 52 is secured to the blocks.

In Figure 7 I show another modified form of the invention in which vertical channel irons 100 and 101 are disposed between the channel irons 2 and 3 and the channel iron 4. The purpose of the additional channel irons 100 and 101 is to support lath 102 or wall board that is secured to filler strips 103 mounted on the channel irons 100 and 101. Screws or other fastening means are passed through the bottoms of the channel irons 100 and 101 and secure the filler strips 103 in place. Nails (not shown) secure the lath 102 or wall board to the filler strips 103.

The lath is also secured to the filler strips 36 and 37 disposed in the channel irons 2 and 3 and to a stud 104 disposed adjacent to the channel iron 4. Plaster 105 is applied to the lath 102.

The channel irons 2 and 3 have openings in their bottoms for receiving screws or other fastening means which secure the filler strips 36 and 37 to the channel irons. Side jambs 106 are secured to the filler strips 36 and 37 by nails or other suitable fastening means that pass through the jambs and on through openings in the sides 10 of the channel irons 2 and 3. Grounds 107 are secured to the filler strips 36 and 37 by nails or the like, and stops 34 are secured to the jambs 106. The lath or wall board is secured to the filler strips 36 and 37 and is abutted against the grounds 107. The plaster 105 is applied to the lath 102 and is made flush with the outer surface of the grounds 107. The door casing 38 is now secured to the grounds 107 and jambs and extends over a portion of the plaster. The door jambs 106 and stops 34 disposed adjacent to the pocket B have a slot 108 cut therein for receiving the sliding door 26. In all other respects this form of the device is identical to the other forms and needs no further description.

Although I have shown and described several embodiments of my invention, it is to be understood that the same is susceptible of various changes, and I reserve the right to employ such changes as may come within the scope of the claims hereto annexed.

I claim:

1. A sliding door structure for use in steel or frame buildings and comprising metal uprights forming the sides of a door opening and a door receiving pocket, a top metal member supported by the uprights, a metal member carried by the top member for supporting a wood rail, the rail supporting member being disposed at one side for providing clearance for door hangers.

2. A sliding door structure for use in steel or frame buildings and comprising metal uprights forming the sides of a door opening and a door receiving pocket, a top metal member supported by the uprights, a metal member carried by the top member for supporting a wood rail, the rail supporting member being disposed at one side for providing clearance for door hangers, a horizontally disposed member mounted on each side of the structure and forming the top of the door opening, one of the horizontal members having a removable portion permitting access to the door hangers, the wood rail having a recess disposed opposite to the removable portion for permitting the removal of the hangers.

3. A sliding door structure for use in steel or frame buildings and comprising a top channel iron, end channel irons supporting the top one, two other vertical channel irons secured to the sides of the top channel iron and forming one side of a door opening, a horizontally disposed channel iron secured to the top one and being disposed adjacent to one side of the structure, and a wood rail carried by the horizontal channel iron for supporting door hangers.

4. A sliding door structure for use in steel or frame buildings and comprising a top channel iron, end channel irons supporting the top one, two other channel irons secured to the sides of the top channel iron and forming one side of a door opening, a horizontally disposed channel iron secured to the top one and being disposed adjacent to one side of the structure, a wood rail carried by the horizontal channel iron for supporting door hangers, a horizontally disposed member mounted on each side of the structure and forming the top of the door opening, one of the horizontal members having a removable portion permitting access to the door hangers, the wood rail having a recess disposed opposite to the removable portion for permitting the removal of the hangers.

5. A sliding door frame constructed of channel iron and comprising uprights and a top channel iron forming a door opening and pocket, a horizontal channel iron carried by the top one, a wood rail carried by the horizontal channel iron, wall board covering the frame with the exception of the door opening, small channel irons secured to the upright channels for holding wall board, the latter acting as a foundation for plaster.

6. A sliding door frame constructed of channel iron and comprising uprights and a top channel iron forming a door opening and a pocket, a horizontal channel iron carried by the top one, a wood rail carried by the horizontal channel iron, wall board covering the frame with the exception of the door opening, small channel irons securing the wall board to the large channel irons, the wall board supporting plaster, and finishing material disposed around the door opening

and including a member extending across the top of the door opening, said member having a removable portion for permitting access to hangers slidable on the rail.

7. A sliding door frame constructed of channel iron and comprising four uprights and a top channel iron forming a door opening and pocket, a horizontal channel iron carried by the top one, a wood rail carried by the horizontal channel iron, wall board covering the frame with the exception of the door opening, small channel irons securing the wall board to the large channel irons, and finishing material disposed around the door opening and including a member extending across the top of the door opening, said member having a removable portion for permitting access to hangers slidable on the rail, the finishing material also including door stops which when removed provide a door opening as large as the door for permitting the removal of the door.

8. A sliding door frame constructed of channel iron and comprising a top member and four uprights forming a door opening and a pocket, a horizontal channel iron supported by the top one, a wood rail carried by the horizontal channel iron, filler wood strips disposed in said channel irons, sheathing secured to the filler strips for covering the frame with the exception of the door opening, said sheathing being adapted to carry lath and plaster.

9. A sliding door frame constructed of channel iron and comprising a top member and four uprights forming a door opening and a pocket, a horizontal channel iron supported by the top one, a wood rail carried by the horizontal channel iron, wood filler strips disposed in said channel irons, sheathing secured to the filler strips for covering the frame with the exception of the door opening and supporting lath and plaster, and finishing material disposed around the door opening and including a member extending across the top of the door opening, said member having a removable portion for permitting access to hangers slidable on the rail.

10. A sliding door frame constructed of channel iron and comprising a top member and four uprights forming a door opening and a pocket, a horizontal channel iron supported by the top one, a wood rail carried by the horizontal channel iron, filler strips disposed in said channel irons, sheathing secured to the filler strips for covering the frame with the exception of the door opening and supporting lath and plaster, and finishing material disposed around the door opening and including a member extending across the top of the door opening, said member having a removable portion for permitting access to hangers slidable on the rail, the finishing material also including door stops which when removed provide a door opening as large as the door for permitting the removal of the door.

11. A sliding door frame constructed of channel iron and comprising a top channel iron, end and side channel irons for providing a door opening and a door receiving pocket, a sliding door rail supported by the top channel iron, certain of the end and side channel irons having their sides facing outwardly, filler strips secured to the inside of the channel irons and forming the foundation for supporting lath or wall board and plaster.

Signed at San Francisco, in the county of San Francisco and State of California, this 5th day of September, A. D. 1930.

ELMER C. PITCHER.