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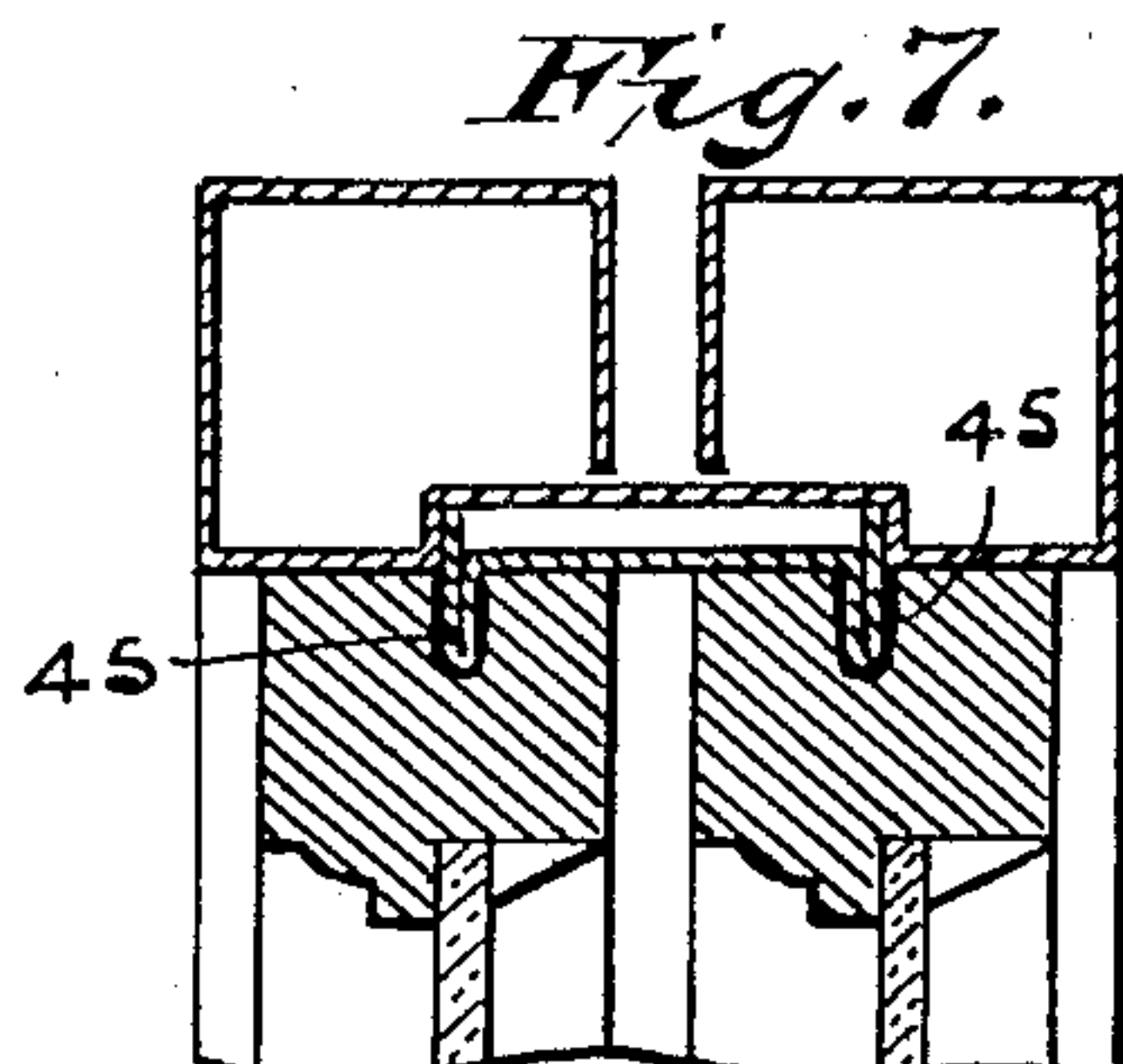
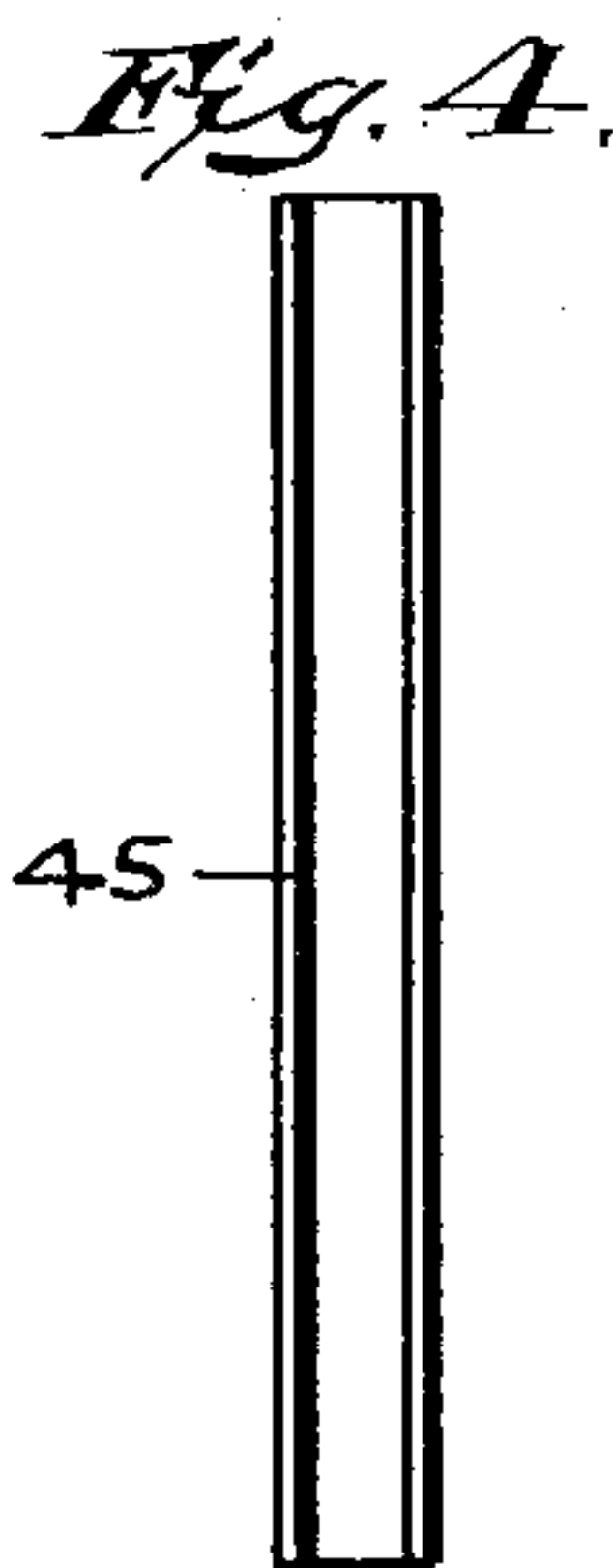
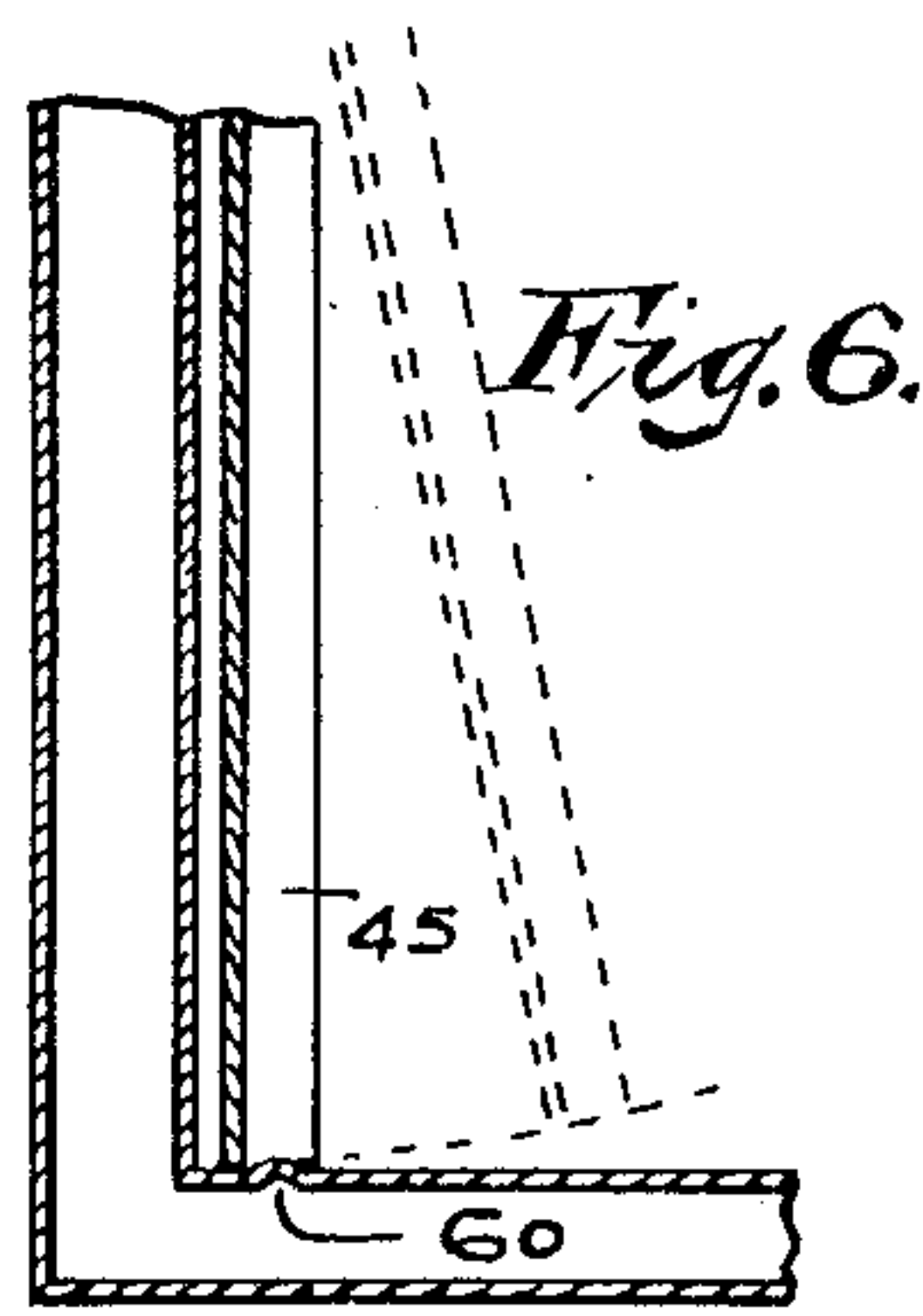
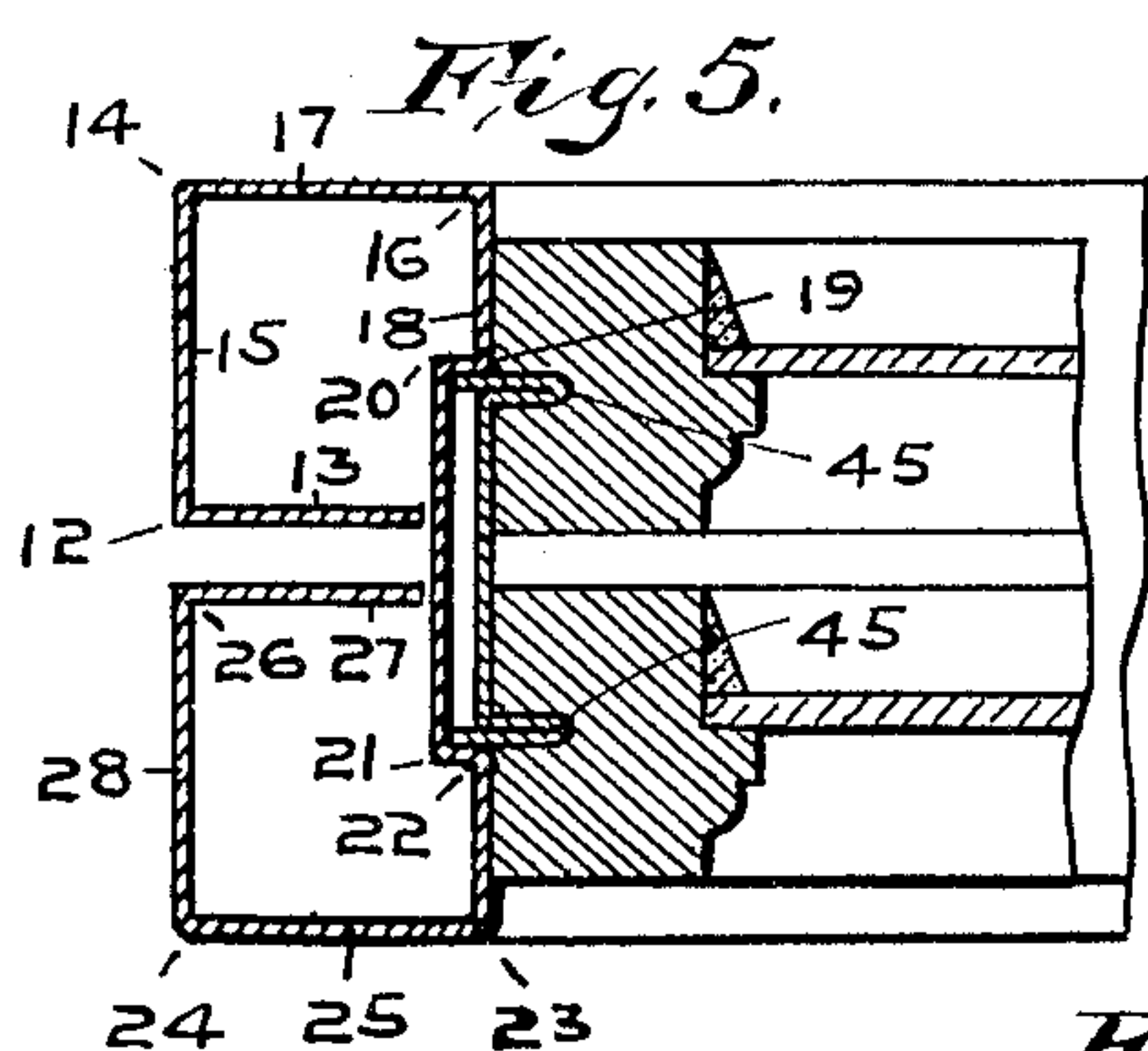
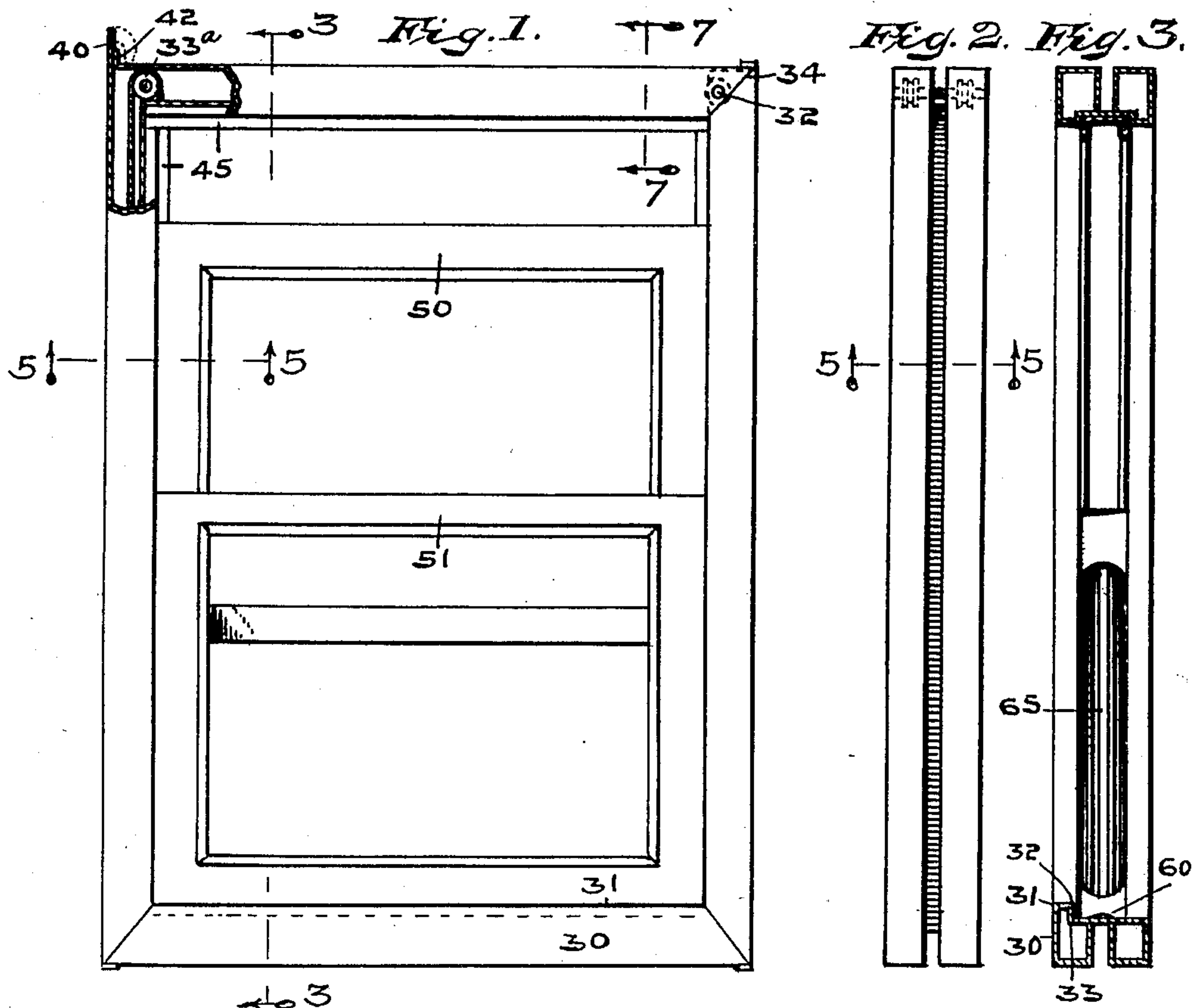
PATENTED MAY 12, 1908.

O. F. MANN.

WINDOW FRAME.

APPLICATION FILED AUG. 6, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

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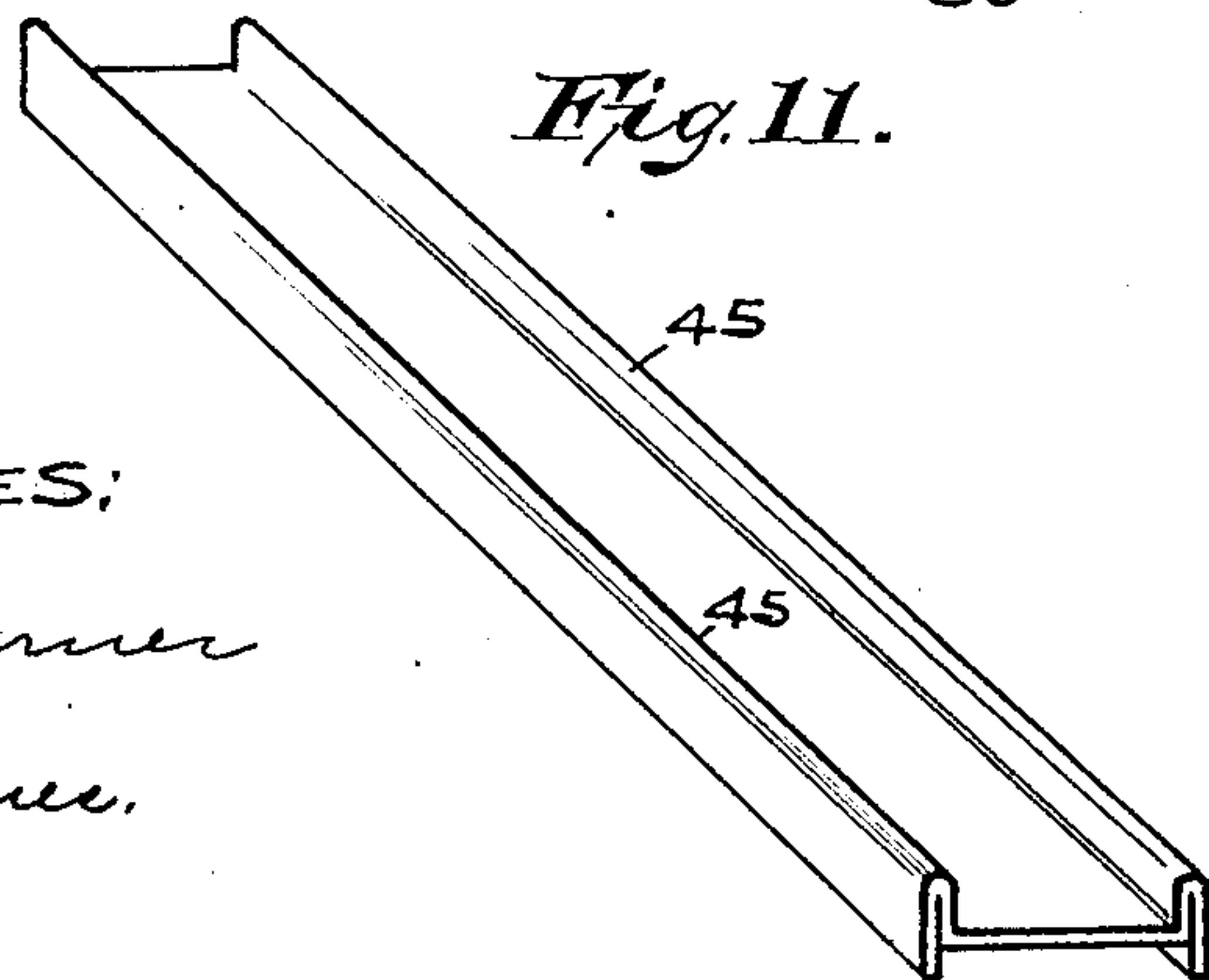
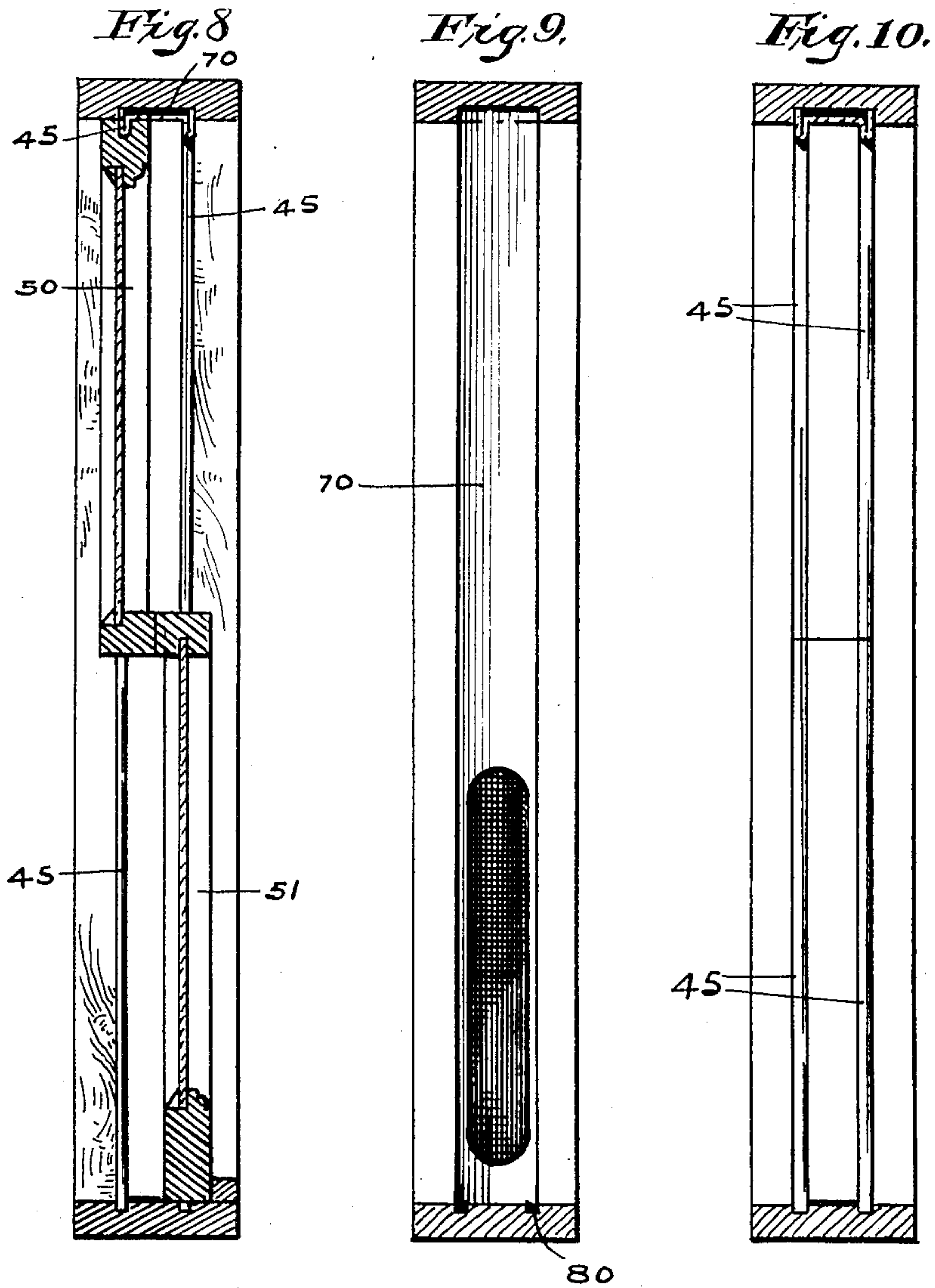
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2 SHEETS—SHEET 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

OSCAR F. MANN, OF INDIANAPOLIS, INDIANA.

## WINDOW-FRAME.

No. 887,407.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed August 6, 1907. Serial No. 387,304.

*To all whom it may concern:*

Be it known that I, OSCAR F. MANN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Window-Frames, of which the following is a specification.

This invention relates to improvements in the construction of metal window-frames, and to the mounting of window-sash in window-frames of wood as well as metal.

The object of the invention is to provide a metal frame which will be equally as desirable as frames made of wood and less expensive on account of the growing scarcity of suitable timber.

The object also is to provide means for mounting the sash in the frames on suitable runs or guides which will also serve as weather strips to exclude wind and moisture and dust from the interior of the building.

The object also is to provide means for securing the sash in the frame which will permit of the ready removal of the sash for cleaning or other purposes.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view in inside elevation of my improved window-frame and sash runs, with a pair of sash mounted in operative position therein; one corner of the frame being in vertical section to show the inside construction; Fig. 2 is an end view of the frame shown in Fig. 1; Fig. 3 a vertical section on the line 3—3 of Fig. 1; Fig. 4 a detail in side view of the lower member of the sash run which is shown as being removed in Fig. 3; Fig. 5 is a horizontal section on the line 5—5 of Fig. 1; Fig. 6 is a detail in vertical section of a lower corner of my improved window-frame; Fig. 7 is a vertical section on the line 7—7 of Fig. 1; Fig. 8 is a vertical section of a wooden frame equipped with my improved sash runs, showing the sash runs and a pair of window-sash assembled in said frame; Fig. 9 is a like view of the frame shown in Fig. 8 with the sash and sash runs removed; Fig. 10 shows the frame in vertical section as in Fig. 8, with the sash runs in place but with the sash removed, and Fig. 11 is a perspective view of one section or member of the sash run used alike in both metal and wood frames.

Like characters of reference indicate like

parts throughout the several views of the drawing.

The head, sill, and both sides of the window-frame are formed out of sheet-metal bent into suitable shape to provide casings for sash weights in the sides, and to afford the necessary rigidity and strength for head, sill, as well as sides, and as the formation or bending is the same for all four of the above named parts of the frame a description of one will suffice for all. A suitable sheet of metal is bent longitudinally near one edge at right angles as shown at 12 to form the inside flange 13. Then the sheet is bent parallel with the first bend, at right angles to form the bend 14 and the back plate 15 which latter is at right angles to the flange 13. The sheet is next bent at right angles at 16 to form the outer casing 17 of the frame, parallel with the flange 13. The inner side of the window-frame thus formed has the inner bend 19 at right angles, the outer bend 20 at right angles, the outer bend 21 at right angles and the bend 22 at right angles and in opposite direction to the bend 21, the last four bends forming a broad longitudinal channel in which the sash runs or guides for securing and guiding the window-sash, are placed. The metal sheet is next bent longitudinally and at right angles at 23, and again at right angles at 24 thereby forming the inside casing 25 of the window-frame. Another longitudinal bend 26 adjacent to but at a suitable distance from the first bend 12 produces the flange 27 parallel with the first flange 13, and the back plate 28 supplementing the like plate 15. As the longitudinal channel receives the sash-runs it is not required in the window-sill, the bends forming this channel are accordingly omitted for this member of the frame. The sill instead has its inner face carried up higher than the corresponding outer face of the sill and bent inwardly at right angles at 31, then downwardly at right angles at 32 and then outwardly at right angles at 33 to form an elevated rib across the window against the inside of the sash to act as a weather guard.

In joining the head, sill, and sides of the frame together, the ends of the side members are introduced between the corresponding ends of the side members of the head and sill. The side members of both of the parts of the window-frame thus united interlap so



as to reinforce the thickness of the frame in the manner shown in Fig. 1, to receive and support the bolts 32 on which the cord-pulleys 33<sup>a</sup> are mounted. The lapping side members of the head and sill are preferably cut diagonally as shown at 34, while the corresponding parts of the sides of the frame are cut square across and are inserted within the diagonal other ends.

As shown in Fig. 1 the back plates 15 and 28 are longer than the height of the window-frame so as to form the extensions 40 which are bent double around the similar but shorter extensions 42 from the heads and sills of the frame and then both extensions are bent over horizontally against the head and sill members. These bent extensions are preferably soldered together so as to produce strong and rigid frame-corners. The sash runs or guides are also made out of sheet metal. A rectangular sheet of proper dimensions has each of its longitudinal edges bent at right angles to form parallel flanges and each of these flanges are bent double in an outward direction to form the sash guides or flanges 45 which are each of double thickness of material. The outer members of each of the ribs 45 are wider than the inner members, thereby causing said outer members to project past the bottoms of the sash runs. These bottom projections are the parts that are inserted into the longitudinal channels of the head and two sides of the window-frame.

50 represents the top window-sash and 51 the lower window-sash. The top rail, and the two side rails of the top sash are grooved longitudinally to receive the corresponding one of the flanges 45 of the sash runs and these flanges form the means for retaining the sash in the window-frame and for guiding it when the sash is raised and lowered. Like longitudinal grooves are formed in the side rails of the lower sash to receive the corresponding flanges 45 of the sash runs, and these flanges 45 hold the sash 51 in the window-frame and direct it in its movement up and down.

The sash runs for one side of the window-frame may obviously be in one piece for both sash the entire height of the window as the window sash may be readily slipped into place by an edgewise movement of the sash, but there is not room enough to slip the other edges of the sash upon the guides on the opposite sides of the window-frame. To meet this difficulty I divide the sash-runs on one side of the window-frame transversely at its middle and insert the top section first. Then I introduce the top sash into position on the sash runs on the opposite side of the window-frame and then push the sash up where it belongs, into engagement with the short section

of the sash run first mentioned. I then place the lower sash in like manner, raise it to its elevated position and while both sash are thus raised I introduce the lower section of the sash-run. The joint will preferably come above the bottoms of the two window-sash when the latter are in their raised positions thereby compelling the introduction of the upper end of the lower section of the two-part sash-run to be inserted between the raised window-sash and window-frame, thereby retaining the upper end of the sash-run in proper position and only requiring the pressing of the lower end of the section into place in the vertical channel of the frame to complete the job. A swell 60 will preferably be pressed up out of the metal of the sill to engage the lower end of the sash run section and hold the latter in place after it is inserted. This lower removable piece of the sash-run can be taken out at any time by raising the lower sash and then the sash can be removed by reversing the operation described for their assembling, thus permitting the removal of the sash for ready cleaning or other purposes. Suitable openings 65 will be formed to permit the introduction of sash weights and these openings will be covered and completely hid by the sash-runs.

In the modification shown in Figs. 8, 9, and 10, wooden window-frames are used instead of the metal frames above described, and longitudinal channels 70, which are easily milled out before the frames are nailed together, are provided. These channels are to receive the sash-runs which are bent up out of sheet-metal in exactly the same manner and shape as previously described and as shown in Fig. 11, which sash-runs are introduced into the window-frame and then the sash introduced into the frame in exactly the same manner as previously described.

The lower section of the divided sash-run for the wooden frame will be notched up at the bottom between the flanges so as to leave the lower ends of the flanges projecting a short distance and these projecting ends will drop into sockets 80 formed in the window-sill.

Having thus fully described my invention what I claim as new and wish to secure by Letters Patent of the United States is,—

1. The combination of a window-frame having longitudinal inside channels in the head and sides of the frame, a plurality of window-sash having longitudinally grooved rails, and sash-runs located in the channels of the frame, said runs having as many longitudinal flanges as there are grooved sash, each of said flanges entering a groove of a corresponding one of said sashes.

2. A sheet-metal window-frame having its head, sill, and sides formed out of metal plates



bent longitudinally to form double tubes each of which are rectangular in cross section.

3. A sheet-metal window-frame having its  
5 head, sill, and sides formed out of metal plates bent longitudinally to form double tubes each of which are rectangular in cross section, the longitudinal edges of the plate forming middle partitions or flanges.

10 4. A sheet-metal window-frame having its head, sill, and sides formed out of metal plates bent longitudinally to form double tubes each of which are rectangular in cross section, said frames being additionally bent  
15 to form longitudinal inside channels.

5. A sheet-metal window-frame having its head, sill, and sides formed out of metal plates bent longitudinally to form double tubes each of which are rectangular in cross  
20 section, the longitudinal edges of the plate

forming middle partitions or flanges, said frame being additionally bent to form longitudinal inside channels.

6. A sheet-metal window-frame having its head, sill, and sides formed out of metal  
25 plates bent longitudinally to form double tubes each of which are rectangular in cross section, the top, bottom, and sides of the frame being interlapped at the corners of the frame to reinforce the thicknesses at those  
30 places.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this 27th day of July, A. D. one thousand nine hundred and seven.

OSCAR F. MANN. [L. s.]

Witnesses:

J. A. MINTURN,  
F. W. WOERNER.