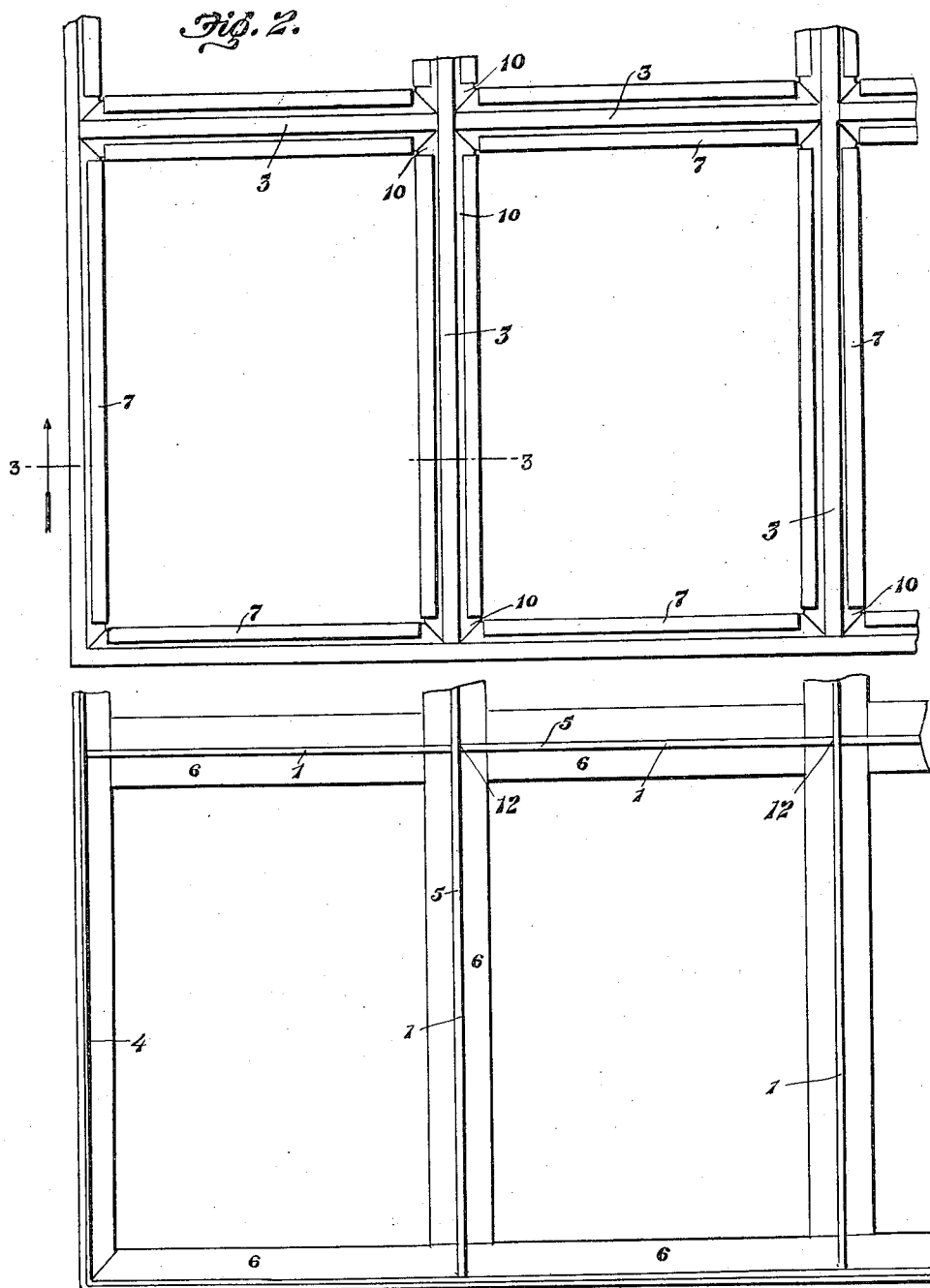


A. W. WALTER.
METAL FRAME.
APPLICATION FILED MAR. 11, 1911.

1,032,036.

Patented July 9, 1912.

3 SHEETS—SHEET 1.



Witnesses

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Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 3.

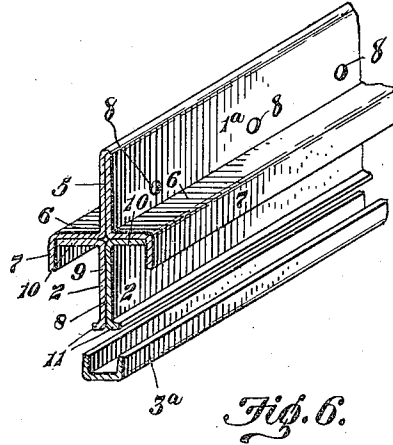
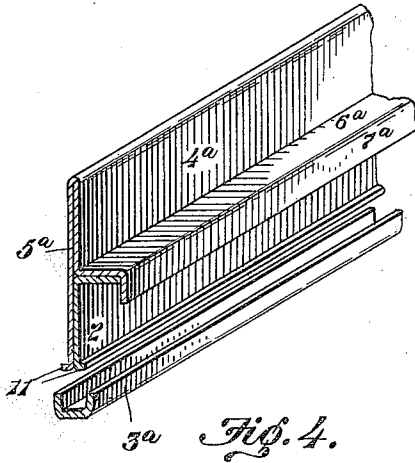
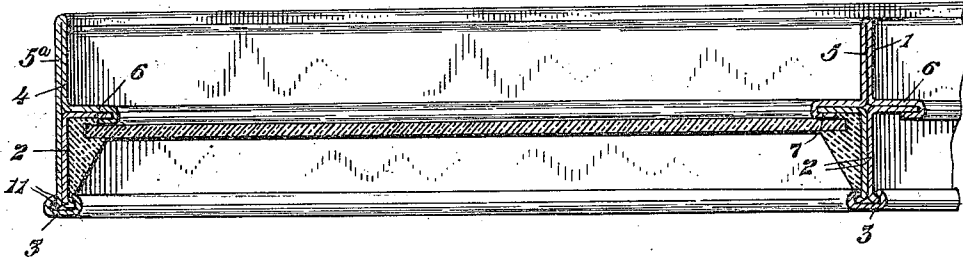


Fig. 5.

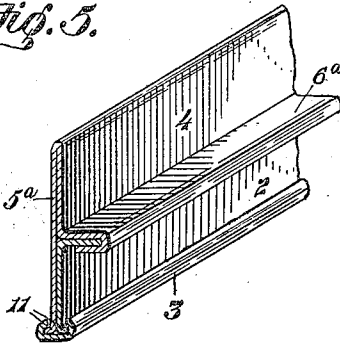
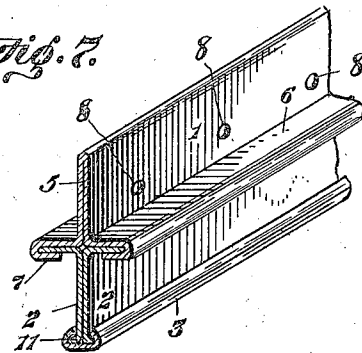


Fig. 7.



Witnesses

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3 SHEETS-SHEET 3.

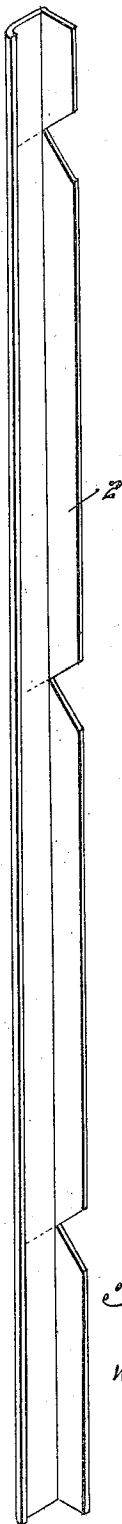


Fig. 8.

Witnesses

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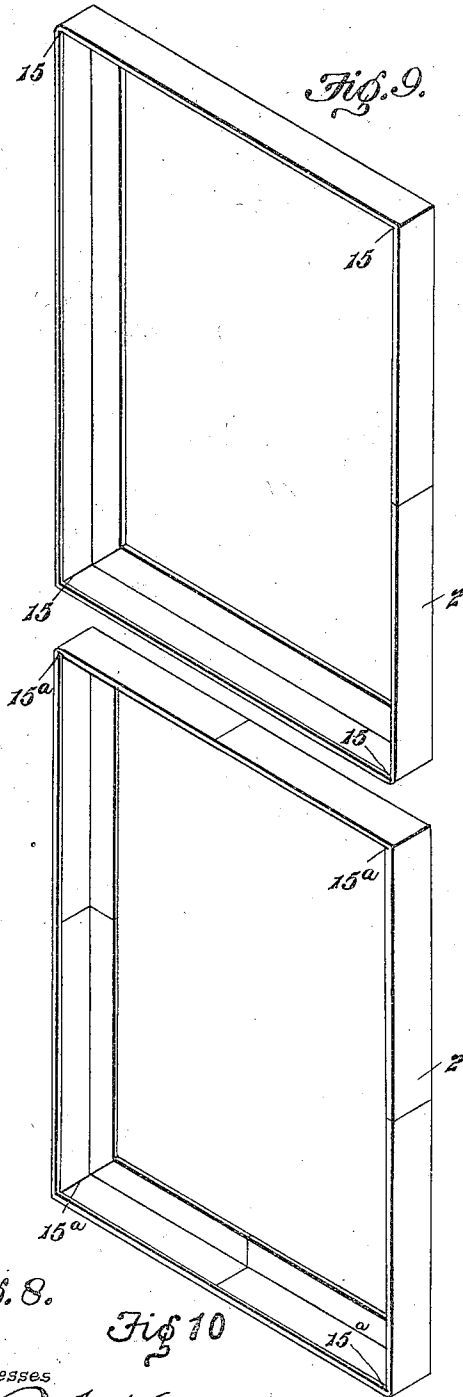


Fig. 10

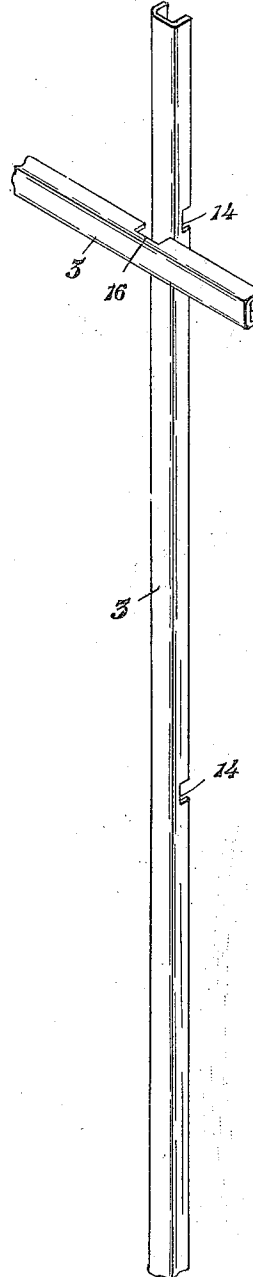


Fig. 11.

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UNITED STATES PATENT OFFICE.

ANTON W. WALTER, OF CANTON, OHIO.

METAL FRAME.

1,032,036.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed March 11, 1911. Serial No. 613,908.

To all whom it may concern:

Be it known that I, ANTON W. WALTER, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Metal Frames, of which the following is a specification.

The invention relates to a sheet metal construction for the bars, stiles or muntins in doors, windows, partitions and other frames; and the object of the improvement is to combine a minimum number of simple shapes of sheet metal strips in such a manner as will make a light and durable as well as a strong and rigid frame, and in which may be conveniently inserted and secured panes of glass or other forms of panels.

A preferred form of the invention, thus set forth in general terms, as embodied in a window sash, is illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a fragmentary inside elevation of the improved sash; Fig. 2, a fragmentary outside elevation of the same; Fig. 3, an enlarged cross section on line 3—3, Fig. 2, showing a pane of glass inserted and secured in the frame; Fig. 4, a fragmentary perspective view of the strips forming the stile or side bar of the sash, partly assembled; Fig. 5, a fragmentary view of the same, completely assembled; Fig. 6, a fragmentary view of the strips forming the muntin or interior bars of the sash, partly assembled; Fig. 7, a fragmentary perspective view of the same, completely assembled; Fig. 8, a detached perspective view of one of the continuous angle strips; Fig. 9, a perspective view of the same bent to form a continuous panel frame; Fig. 10, a modified form of same, divided into four continuous corner sections; and Fig. 11, a detached perspective view of a continuous clamping strip, with a fragmentary view of a continuous cross clamping strip, slightly separated.

Similar numerals refer to similar parts throughout the drawings.

Each interior bar of the sash is composed of the folded strip 1—1^a, two single angle strips 2, and one U-shaped finishing strip 3—3^a, as more clearly shown in Figs. 3, 6 and 7; and each exterior bar is composed of a single angle folded strip 4—4^a, one single angle strip 2, and one finishing strip 3—3^a, as shown more clearly in Figs. 3, 4 and 5. The double angle folded strips 1 for

the interior bars are made of a strip of sheet metal 1^a folded laterally upon itself to form the two-ply rib 5, thence bent laterally outward in opposite directions to form the angle flanges 6, and thence at reverse angles to form the clamping flanges 7; which is the preliminary shape of the strip as designated 1^a in Fig. 6. The two sides of the rib 5 may be spot-welded or riveted together, as shown at 8, to hold the sides of the ribs rigidly together, but this is not necessary in all cases. The two single angle strips 2 are then assembled with two flanges, preferably the wider flanges, abutting each other, forming the two-ply rib 9, and with the angle flanges 10 diverging in the same plane in opposite directions, which angle flanges are inserted to abut the angle flanges 6 of the folded strip in the socket formed between the clamping flanges 7 thereof, as also shown in Fig. 6; after which, the clamping flanges 7 are bent around the edges of the angle flanges 10, thus binding all these parts securely together, as shown in Fig. 7.

The free edges 11 of the abutting flanges of the single angle strips are flared slightly outward, and the finishing strip 3, which is originally formed substantially U-shaped in cross section, as shown at 3^a in Fig. 6, is placed over the flared edges 11 of the single angle strips, and the sides of the finishing strip are then bent and clamped securely around these flared edges, as shown in Figs. 3 and 7, thus securely clamping and holding the abutting flanges of the single angle strips together and forming a bead on the exposed edge of the rib 9 thus formed.

In making the sash, the vertically disposed folded strips 1 are preferably extended continuously from the upper to the lower cross bar of the sash, while the similar transverse strips are preferably made in short sections extending between the vertical strips, as shown in Fig. 1, although this particular arrangement of these strips is not essential; and for this arrangement of these strips it will be understood that the flange portions 6, with the corresponding clamping flanges 7, are cut shorter than the two-ply rib portion 5 of the cross strips, so that the rib portion will extend across the flange portion 6 of the vertical strip to a junction with the rib portion 5 thereof, as shown at 12 in Fig. 1. Furthermore, each one of the single angle strips is preferably made long enough to extend continuously around the

whole of one panel frame. To form the frame, the angle flange 10 of this strip is notched as shown at 14 in Fig. 8, whereupon the rib flange of the strip is then bent at the places shown in dotted lines in the same figure, to make the respective angles 15 of the panel frame, which is thus completely formed of a continuous angle strip, as shown in Fig. 9; and it is evident that by making this strip of a continuous piece the strength and rigidity of the completed frame is greatly increased. A modified form of making the panel frame is illustrated in Fig. 10, wherein it is made of four sections of the single angle strip, each one extending continuously from one angle 15^a thereof to a point at or near the middle of the side thereof, and it is evident that the continuous angles thus formed serve to strengthen the frame when all the parts are clamped together. And finally, the vertically-disposed finishing strips are preferably extended continuously from the upper to the lower bar of the sash, while the similar transverse strips may be made in short sections extending between the vertical strips, as shown in Fig. 2, although this particular arrangement of these strips is not essential; and it will be understood that the sides of the continuous finishing strips are provided with the notches 14 to fit over the edge of the rib 9 formed by the abutting flanges of the single angle strip. When it is desired to make the cross finishing strips continuous, suitable notches are provided in the sides thereof to fit over the vertical finishing strip at the intersections thereof, as shown at 16 in Fig. 4.

In cases where the increased strength given by the folded ribs 5 is not required, it is not necessary to combine the two single angle strips with the particular form of folded strip set forth herein; and, for merely holding the single angle strips together, the folded strip may be considered a means for holding the angle flanges of the single angle strips together. The single angle folded strips 4 for the exterior bars are made of a strip of sheet metal 4^a folded laterally upon itself to form the two-ply rib 5^a, and one side is then bent laterally outward to form the angle flange 6^a, and thence at a reverse angle to form the clamping flange 7^a in the same manner that one side of the double angle strip 1 is formed; while the other side of the double ply rib is extended without an angle and has its edge 11 flared outward; which is the preliminary shape of the strip as designated 4^a in Fig. 4. One single angle strip 2 is then placed in position with one flange, preferably the wider flange, abutting against the extended portion of the double ply rib of the strip 4^a, and the angle flange abutted against the angle flange 6^a of said strip, after which the flange 7^a thereof is clamped around the

edge of the angle flange 10 of the single angle strip which secures these parts rigidly together as shown in Fig. 5; after which the U-shaped clamping strip 3^a is placed over and clamped around the flared edges 11 of the abutting portions of the single angle strip and the extended part of the folded strip, thus securely clamping these parts together as shown at 3 in Fig. 5. This formation of the exterior bars makes the same with a substantially flat outer face, which makes a neat finish for the exterior of the frame; but it will be understood that the exterior bars can be made substantially like the interior bars. It is evident that a pane of glass can be set and securely held as a panel in one of the frames of the sash thus made by cutting the glass so that it will freely pass by the edges of the bead formed by the finishing strips 3 and then setting the glass against the clamped flanges 7 of the folded strips, as shown in Fig. 3; and in this relation of the parts it is evident that the glass may be securely held in position by a fillet of putty 16 which can be filled in around and under the edge of the glass in the space beyond the edge of the clamped flange 7, and that the bead formed by the finishing strip 3 on the edge of the rib 9 or 9^a, serves to retain the putty in place, thus making a well-cushioned as well as securely retained putty joint.

I claim:

1. A bar composed of a sheet metal strip folded laterally upon itself and thence outwardly to form flanges, two angle strips having corresponding flanges butted together and the other flanges abutted against the corresponding flanges of the folded strip, the flanges of the folded strip being bent and clamped around the edges of the flanges of the angle strips and the free edges of the angle strips being flared outward, and a U-shaped strip having its sides bent and clamped around the flared edges of the angle strips.

2. A bar composed of a sheet metal strip folded laterally upon itself and thence outwardly to form flanges, two angle strips having corresponding flanges butted together and the other flanges abutted against the corresponding flanges of the folded strip, one set of flanges being bent and clamped around the edges of the abutting set of flanges and the free edges of the angle strips being flared outward, and a U-shaped strip having its sides bent and clamped around the flared edges of the angle strips.

3. A series of panel frames each including an angle strip having its inner flange notched and the outer flange bent to form a continuous frame, the outer flange being abutted against the similar flange of another frame and the free edges of the abutted flanges being flared apart, U-shaped strips having

their sides bent and clamped around the flared edges of the angle strips, and laterally folded strips bent outward to form flanges and thence bent and clamped around the edges of the inner flanges of the angle strips.

4. A series of panel frames each including an angle strip having its inner flange notched and the outer flange bent to form a continuous frame, the outer flange being abutted against the similar flange of another frame

and the free edges of the abutting flanges being flared apart, U-shaped strips having their sides bent and clamped around the flared edges of the angle strips, and means for holding the inner flanges of the angle strips together.

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Witnesses:

FERD J. ZETTLER,
RUTH A. MILLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."