

March 8, 1932.

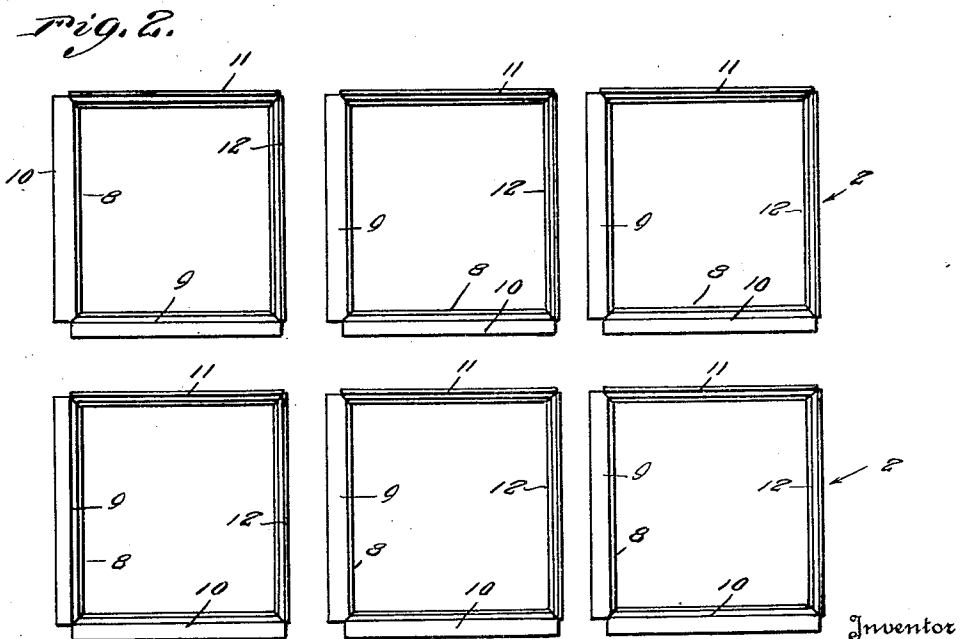
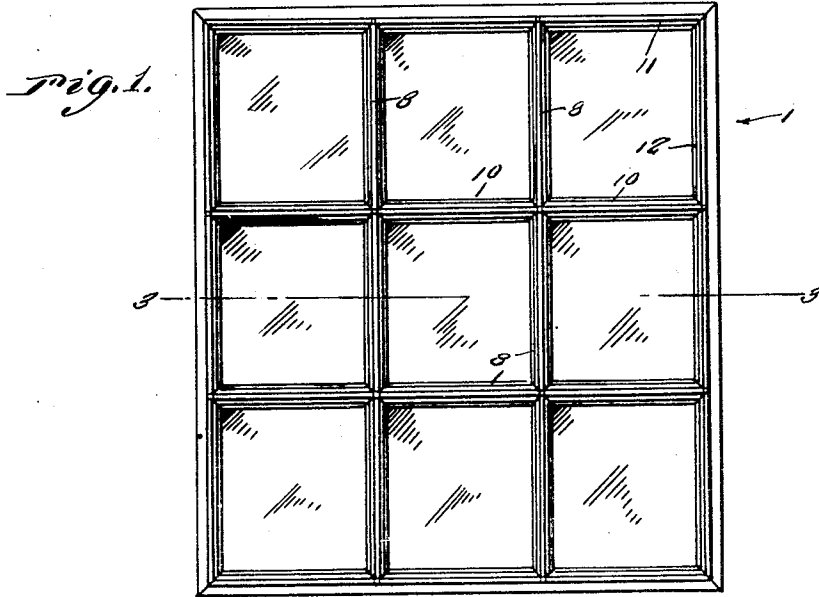
E. W. SPINK

1,848,673

DOOR OR WINDOW CONSTRUCTION

Filed Oct. 31, 1930

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

Fig. 3.

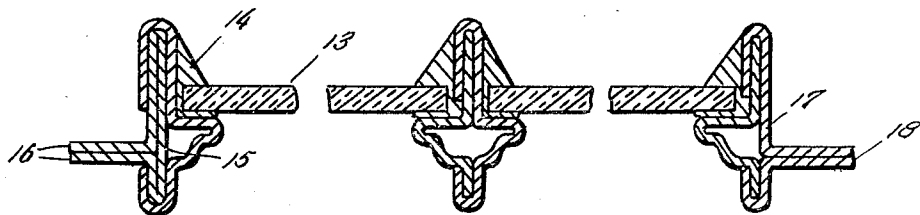


Fig. 4.

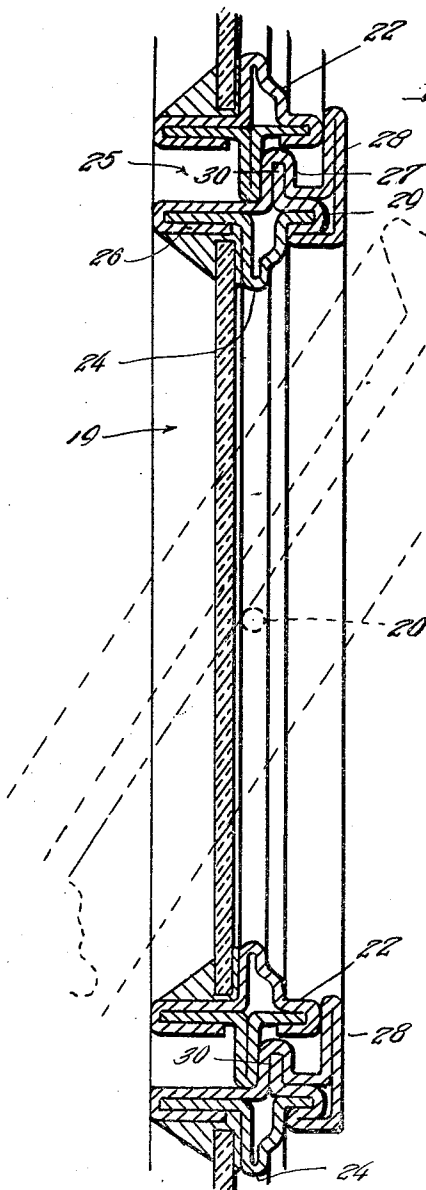


Fig. 5.

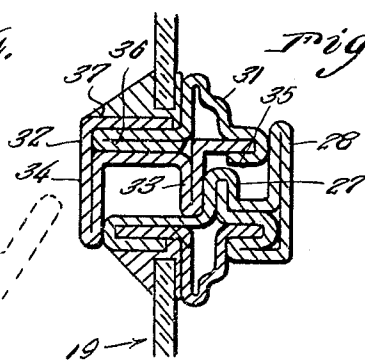


Fig. 6.

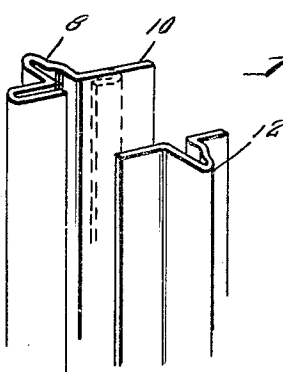
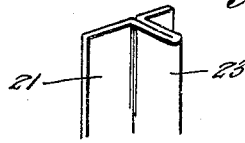


Fig. 7.



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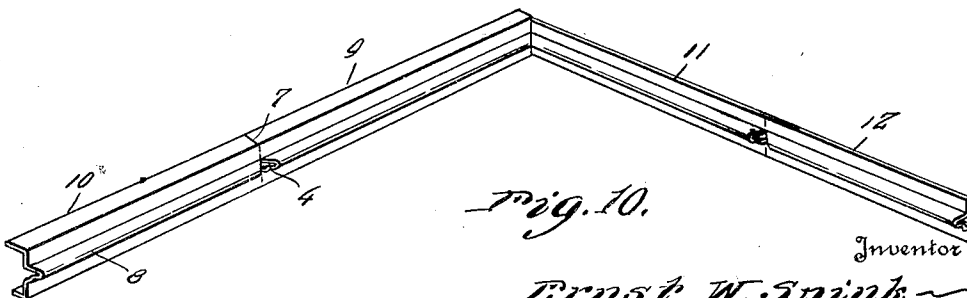
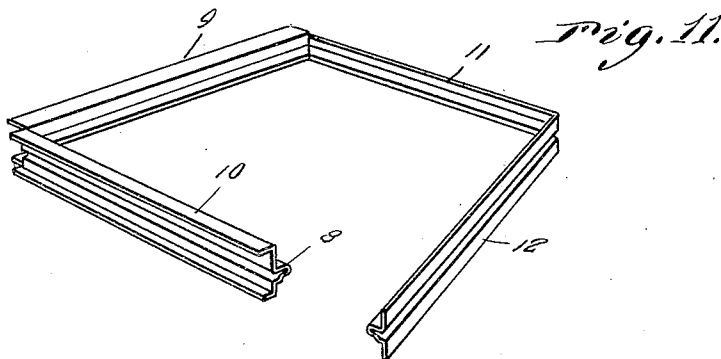
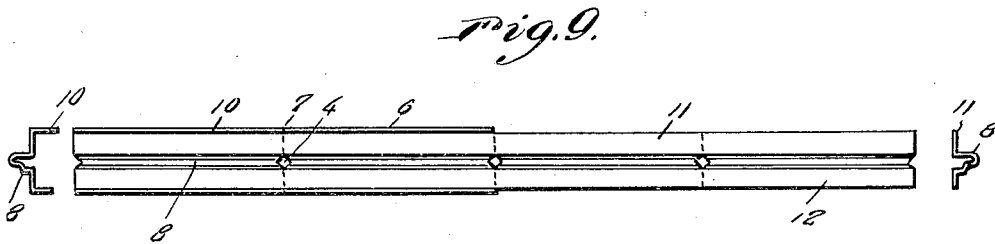
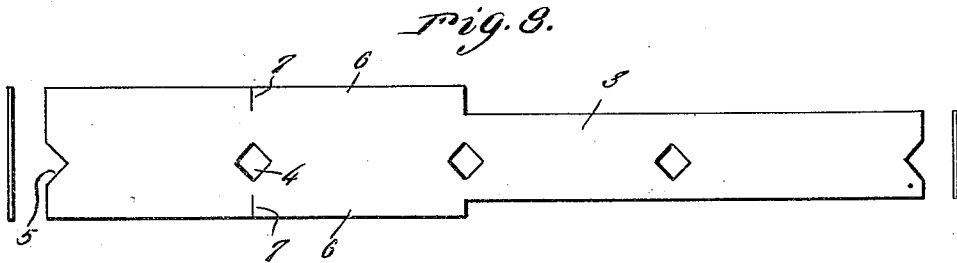
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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DOOR OR WINDOW CONSTRUCTION

Application filed October 31, 1930. Serial No. 492,583.

The present invention relates to window or door construction and has for its primary object to provide, in a manner as hereinafter set forth, a unitary structure comprising a plurality of metallic glass or pane supporting sections embodying a novel construction and arrangement whereby a window or door unit of any desired area may be constructed therefrom.

Another important object of the invention is to provide a window or door construction of the character described wherein each of the sections comprising the units embody novel means for rigidly connecting said sections with adjacent sections, the abutting walls of the assembled sections being constructed to co-act with each other for securing the sections in assembled relation.

Another important object of the invention is to provide a window or door construction of the character set forth embodying a novel construction whereby the section frames may be formed from a single piece of material adapted to be cut and stamped into shape through the medium of a suitable machine.

Still another important object of the invention is to provide a window or door construction embodying a novel form of main or outer frame for securing the units in position in an opening in a building wall.

A still further important object of the invention is to provide a window or door unit having one or more swingable sections therein, the invention further contemplating means for providing a weatherproof joint between the free ends of the swingable sections and the stationary portions of the unit with which said free ends are engaged when the swingable sections are in closed position.

Other objects of the invention are to provide a device of the character set forth which will be simple in construction, strong, durable, easily assembled and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention may become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:—

Figure 1 is a view in elevation of an assembled window unit in accordance with this invention.

Figure 2 is a view in elevation showing the sections which may comprise a unit separated from each other and with the main frame removed.

Figure 3 is an enlarged horizontal sectional view taken substantially on the line 3—3 of Figure 1 with intermediate portions broken out.

Figure 4 is a vertical horizontal sectional view through a portion of a unit having mounted therein a swingable section.

Figure 5 is a detail view in vertical cross section through a slightly modified form of the joint forming strips for the swingable sections.

Figure 6 is a fragmentary view in perspective showing the end portions of the male and female bars which are secured together in a manner to provide the mullions of the window or door units.

Figure 7 is a fragmentary perspective view showing the end portions of the main or outer frame strips.

Figure 8 is a view showing the metallic blank from which the section frames are formed.

Figure 9 is a view showing the blank after the same has been stamped or bent to the desired cross sectional shape.

Figure 10 is a perspective view showing the stamped blank bent transversely at its middle.

Figure 11 is a perspective view showing the stamped blank bent transversely at three

points to provide the four sides of a section, the ends of the blank being separated.

Referring to the drawings in detail, it will be seen that the reference numeral 1 designates generally an assembled unit which comprises a plurality of distinct glass or pane supporting sections which are designated by the reference numeral 2 and illustrated to advantage in Figure 2 of the drawings. Each of the sections 2 comprises a polygonal frame which, as illustrated to advantage in Figures 8 to 11, inclusive, of the drawings, is preferably formed from a single strip of metal 3 which is adapted to be bent transversely at longitudinally spaced points to provide the upper, the lower and the vertical sides of the section frames. Substantially diamond-shaped openings 4 are cut in the strip or blank 3 at the points therein where the same is to be bent and the ends of said strip or blank are also recessed or notched as at 5. One half of the strip or blank 3 is of materially greater width than the other half of said strip or blank to provide the longitudinal marginal extensions or flanges 6 which are incised as at 7 to permit transverse bending of the comparatively wide portion of the strip or blank. The longitudinal center of the strip or blank 3 is crimped in a manner to provide a glass or pane engaging bead or rib 8 after which the strip or blank is bent to the form illustrated to advantage in Figure 11 of the drawings and the ends thereof secured together by suitable means. It will thus be seen that a section has been provided having a vertical side and a lower side 9 and 10, respectively, which are provided with the integral coupling flanges 6 and an upper side 11 and another vertical side 12 are provided which are not equipped with coupling flanges. All of the sides of the section frames are provided with the inwardly extending glass or pane supporting beads or ribs 8, as will be readily apparent.

When the unit 1 is to be fabricated, the desired number of the sections 2 are assembled with the sides 9 and 10 of certain of the sections in abutting engagement with the sides 12 and 11 of the adjacent and the subjacent sections, respectively. In this position said sides 12 and 11 are disposed between the flanges 6 and said flanges are then bent or turned over the marginal portions of the sides 12 and 11 in a manner to dispose their free marginal edges adjacent opposite sides of the beads or ribs 8, as clearly seen in Figure 3 of the drawings. Thus the unflanged sides 11 and 12 of the sections 2 constitute male members and the flanged sides 9 and 10 constitute female members. In this manner the sections are securely connected together to provide a unit of the desired size or area such as is illustrated in Figure 1 of the drawings.

The interlocked sides of the sections con-

stitute mullions for receiving the window panes 13, said panes being secured in position by any suitable means such as putty or the like 14. If desired, the frame sections may be constructed with the flanges 6 turned at right angles to their respective sides and the unflanged sides of the adjacent and the subjacent sections inserted therebetween or one of the flanges of each of the female sides may be turned to its final position and the corresponding marginal portion of the male flange inserted thereunder after which the other flange of the female side may be turned over the other marginal portion of the male side, as suggested in Figure 6 of the drawings. When the latter method of assembly is resorted to the last named flange extends in the plane of its respective side until the sections are in position relative to each other.

After the sections 2 are secured together in assembled relation in a manner to provide the unit 1 anchoring bars or strips are provided on the upper, lower and side edges of the unit. It will be seen that the female members or sides comprise one of the vertical edges and the lower edge of the unit 1 and the male members or sides constitute the upper edge of the unit 1 and the other vertical edge of said unit 1. The anchoring bar or strip which is mounted on the side edges formed by the female members is designated by the reference numeral 15 and is folded or bent longitudinally upon itself to provide a flat bar of double thickness the longitudinal marginal portions of which are bent outwardly at right angles to provide the opposed, abutting anchoring flanges 16 to be anchored in the wall of a building in any desired manner. The flanges 6 are turned over the marginal portions of the anchoring bar 15 for rigidly securing said bar to the unit. The anchoring bars which are mounted on the side edges of the unit 1 which are formed by the male members or sides of the sections 2 are designated by the reference numeral 17 and are formed of an elongated strip of metal having a longitudinal intermediate portion bent or folded to provide an anchoring flange or lip 18 of double thickness, the longitudinal marginal portions of the bars 17 being turned over the marginal portions of the male members or sides for securing the bars 17 thereon. It will be apparent, of course, that the anchoring bars on the side edges of the unit 1 which are formed by the female members or sides of the sections 2 may be formed from a single, integral piece of material and the anchoring bars 17 on the other edges of the unit 1 may also be formed integrally with each other from a single piece of material. It will be further understood that the sides of the frames of the sections 2 may be formed of separate pieces of material which are secured together at their ends in any desired manner.

In Figure 4 of the drawings there is illus-

trated a portion of a unit having mounted therein a swingable section which is designated generally by the reference numeral 19, said section being pivotally supported intermediate its vertical sides between the vertical mullions of the unit as at 20. In this form of the invention a male member 21 is secured in the lower horizontally disposed female member 22 of the superposed section of the unit by turning the flanges of the female member 22 over the longitudinal marginal portions of the male member 21. A longitudinal intermediate portion of the male member 21 is bent or folded in a manner to provide a longitudinally extending abutment 43. The vertical side members of the frame of the swingable sections 19 may be of any suitable construction to provide a tight joint with the adjacent vertical mullions of the unit when the swingable section is in closed position but the upper portion of the frame of the swingable section 19 comprises a male member 24 of a cross sectional shape similar to the male sides or members 11 and 12 of the sections 2. A female member 25 is mounted on the male member 24 and comprises a metallic strip having one marginal portion turned over the corresponding marginal portion of the male member 24 as at 26. Intermediate portions of the female member 25 are then bent or folded in a manner to provide the spaced, parallel, longitudinally extending, upstanding abutments 27 and 28. The abutment 27 is adapted for engagement with the abutment 23 on the male member 21 and the abutment 28 is engageable with the adjacent side of the female member 22 of the superposed sections of the unit. The female member 25 is then formed in a manner to provide a groove or channel 29 for the reception of the other marginal portion of the male member 24 and has its other marginal portion 30 disposed between the folds which form the abutment 27.

The arrangement at the lower end of the swingable section 19 is such that the identical elements which are used at the upper end are also used at the lower end with the only difference being in the arrangement of said elements. It will be noted that at the lower end of the swingable section 19 the male and female members 21 and 22 constitute the lower side of the frame of the swingable section 19 and the male and female members 24 and 25 constitute the upper portion or side of the subjacent sections of the unit. It will thus be seen that a construction is had which permits a swinging section to be provided in the unit and which requires a minimum number of different parts.

This arrangement provides two points of contact between the upper and lower sides of the frame of the swingable section 19 and with the lower side of the superposed sections of the unit and with the upper side of the sub-

jacent sections of the unit. This provides a weather-proof joint, as will be apparent.

In Figure 5 of the drawings there is illustrated a slightly modified form of the invention illustrated in Figure 4. In this form of the invention there is provided a member 31 and a member 32 on the lower side of the superposed section of the unit, the member 32 being bent or folded longitudinally in a manner to provide the spaced, parallel, longitudinally extending abutments 33 and 34. The abutment 33 is for engagement with the abutment 27 on the swingable section 19 of the unit. The abutment 28 of the member 25 is engageable with one side of the member 31 in the same manner in which the abutment 28 engages the member 22 in Figure 4 of the drawings. The abutment 34 is adapted for engagement with the side of the member 25 which is remote from the abutment 28 and in this manner a three point contact is provided between the upper and lower ends of the section 19 and the adjacent sides of the sections 2 of the unit 1. One marginal portion of the member 32 is secured by the flange 35 of the member 31. The marginal portion of the member 31 which is remote from the flange 35 is folded upon itself as at 36 and the corresponding marginal portion of the member 32 is turned thereover, as at 37. As in Figure 4 of the drawings, the elements which are mounted on the ends of the swingable section and the adjacent sides of the stationary sections of the unit 1 are reversed.

It is believed that the many advantages of a device in accordance with this invention will be readily understood, and although the preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the details of construction may be had which will fall within the scope of the invention as claimed.

Having thus described my invention, what is claimed as new is:—

1. A structure of the character described comprising a unit including a plurality of sections, each of the sections comprising a pane supporting frame, and means on certain of the sides of each section frame for engagement with certain of the sides of adjacent section frames for securing said frames together.

2. A structure of the character described comprising a unit including a plurality of sections, each of the sections comprising a pane supporting frame, and integral flanges on certain of the sides of each section frame for engagement with certain of the sides of adjacent section frames for securing said frames together.

3. A structure of the character described comprising a unit including a plurality of sections, each of the sections comprising a pane supporting frame formed of a single strip of material, one portion of the strip be-

ing of greater width than the remaining portion in a manner to provide flanges on certain of the sides of the section frames, said flanges engageable with certain of the sides of adjacent section frames for securing said frames together.

4. A structure of the character described comprising a unit including a plurality of sections, each of the sections comprising a polygonal frame, the section frames each being formed of a single strip of material having an intermediate portion thereof folded in a manner to provide longitudinal pane supporting ribs, said strip bent transversely at spaced points and having its ends connected together, one portion of the strip being of greater width than the remaining portion of the strip in a manner to provide integral flanges on certain of the sides of the section frames for engagement with certain of the sides of adjacent section frames.

5. A structure of the character described comprising a unit including a plurality of sections, each of the sections comprising a polygonal pane supporting frame, and integral flanges on adjoining sides of each of the section frames for engagement with certain of the sides of adjacent and subjacent frames for securing the sections together.

6. A structure of the character described comprising a unit including a plurality of sections, each of the sections comprising a pane supporting frame, and means on certain of the sides of each section frame for engagement with certain of the sides of adjacent section frames for securing said frames together, and an anchoring frame extending around the edges of the unit.

7. A structure of the character described comprising a unit including a plurality of sections, each of the sections comprising a pane supporting frame, and means on certain of the sides of each section frame for engagement with certain of the sides of adjacent section frames for securing said frames together, and an anchoring frame extending around the edges of the unit, said anchoring frame including a metallic bar secured to the free edges of certain of the section frames and folded in a manner to provide an outwardly extending flange.

8. A structure of the character described comprising a unit including a plurality of stationary sections, each of the stationary sections comprising a polygonal frame, integral flanges on certain of the sides of the frames for engagement with certain of the sides of adjacent section frames for securing the sections together, and a swingable section pivotally mounted between certain of the stationary sections.

9. A structure of the character described comprising a unit including a plurality of stationary sections, each of the stationary sections comprising a polygonal frame, in-

tegral flanges on certain of the sides of the frames for engagement with certain of the sides of adjacent section frames for securing the sections together, and a swingable section pivotally mounted between certain of the stationary sections, and means on the ends of the swingable section engageable with the adjacent sides of the adjacent stationary sections for providing a weather-proof joint when the swingable section is in closed position.

In testimony whereof, I affix my signature.
ERNST W. SPINK.

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