July 17, 1951 R. H. WRIGHT ET AL 2,560,786

METHOD OF FORMING BRACKET UNITS

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Fig. 1

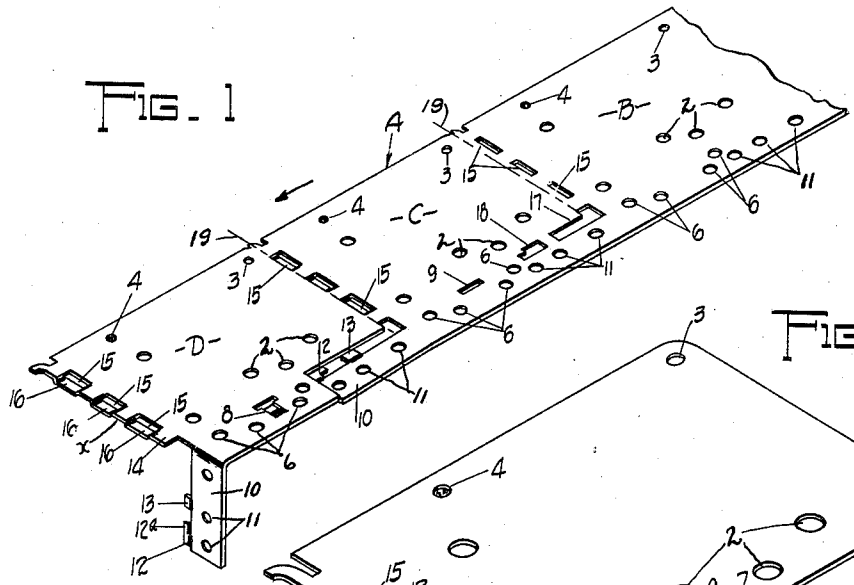


Fig. 2

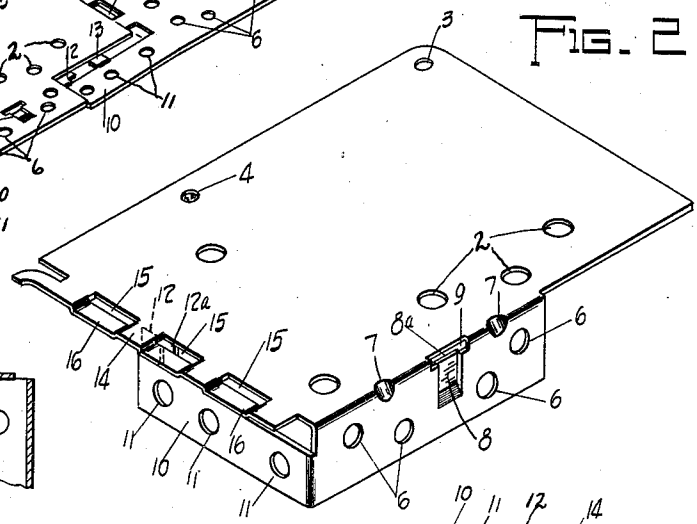


Fig. 6

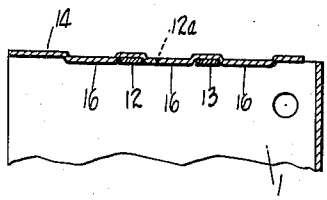


Fig. 4

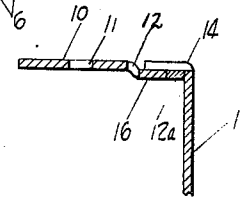


Fig. 3

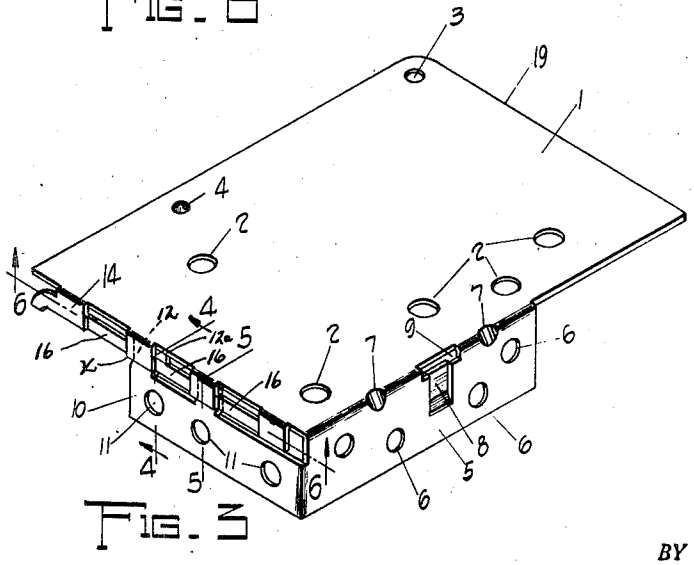
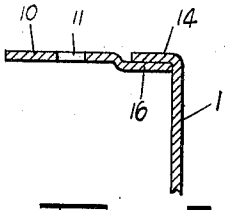


Fig. 5



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METHOD OF FORMING BRACKET UNITS

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1 Claim. (Cl. 113—116)

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This invention pertains to the art of producing brackets, and particularly bracket structures such as employed for supporting Venetian blinds upon window frames, or the like. The invention involves a novel method of die stamping and forming brackets of the class referred to.

In carrying out the invention it is contemplated to produce brackets of integral form with mounting flanges that are cut and/or bent from the bracket blank or body metal in such a manner as to eliminate separate structures requiring special attachment thereof to the bracket body, and, additionally, in such a manner that the bending process utilized will interlock certain of the mounting means or flanges so they mutually reinforce one another in the final article of manufacture.

This invention contemplates a method of forming blind brackets, or the like, in which a metal blank in the nature of a continuous strip may be fed to appropriately constructed dies, so that the latter may act on the strip material in progressive step operations to punch the material, press out certain parts thereof, and bend certain parts into their interlocked final condition of use.

A special saving of material is accomplished also by the method of this invention in that practically no scrap metal is wasted in the production of brackets by the process of this invention.

A full understanding of this invention will be had upon referring to the following detail description of the processing operation in conjunction with the accompanying drawings, and in the latter:

Figure 1 is a perspective view of a metal blank in strip form showing certain of the progressively effected operations thereon leading to the final operations of bending certain parts of the bracket means into mutually reinforcing interlocking disposition, and the cutting off of the final bracket completed.

Figure 2 shows the condition of the bracket when the back and top mounting flanges have been bent to assume their final angular disposition in relation to the bracket body.

Figure 3 is a perspective view of the bracket as when the same has been bent to its final condition respecting all parts thereof, and the interlocking of the top mounting flange to the body is completed.

Figure 4 is a sectional view taken about on the line 4—4 of Figure 3, and

Figure 5 is a sectional view taken about on the line 5—5 of Figure 3, and

Figure 6 is a sectional view taken about on the line 6—6 of Figure 3, looking in the direction of the arrows, the Figures 4, 5, and 6 being generally fragmentary views.

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First referring to Figure 1 of the drawings, it will be noted, as previously indicated, that it is contemplated to punch, cut, and bend a single strip of material generally designated at A in order to form bracket units of the invention, and, as seen in the above mentioned figure, said strip comprises three bracket units in progressive states of formation, said units generally designated as B, C, and D.

For an understanding of the method of this invention, Figures 2 and 3 will be now referred to for a description of the construction of the bracket unit as to the various portions thereof which are punched, cut, pressed, and bent in the progressive die operations upon the strip of material A, performed in the carrying out of the process of manufacture. The bracket structure of Figure 3 is the completed structure, and that shown in Figure 2 is partially completed. The bracket unit may be said to comprise the body 1 formed with the screw receiving openings 2 so that the body 1 may be screwed directly to the frame of a window, the screws at the openings 2 forming what is termed a side mounting means. The body 1 is also formed with an opening 3 which is adapted to receive a pivot provided by a suitable rivet and which pivot will hold in place on the bracket body 1 a facia board clip or supporting member of the type such as known in the art and not forming a part of the invention. A small pressed down projection 4 is likewise pressed from the metal of the body 1 and provides an interlock member for the facia board clip previously referred to, not shown. One of the longer edges of the approximately rectangular body 1 of the plate structure is provided with a back mounting flange 5 which flange is bent at right angles to the plane of the body and is formed with a plurality of screw openings 6, four in number. At the angle of the joinder of the flange 5 with the body 1 there are formed indentations 7 of the metal for providing what may be characterized as small bracing webs. Also pressed inwardly from the outer face of the back mounting flange 5 is a projection 8 which is employed to perform a locking function, said projection terminating adjacent to a slot 9 in the blank of material, which slot is located at the angle of connection of the parts 5 and 1. The projection 8 is deflected from the inner side of the flange 5 and slants slightly from the inner face or side of the flange with increasing depth in the direction of the body 1 and its ter-

minal inner end is slightly spaced from the body to form a locking edge 8a. This locking edge cooperates with a head bar shelf and supporting member, not shown, but used in conjunction with the bracket.

In conjunction with the back mounting flange 5 it is noted that there is employed a top mounting flange 10 which is virtually an integral extension of the end of the flange 5 near the adjacent corner of the bracket body 1. The member 10 is an integral extension of the member 5 and is formed with a plurality of screw receiving openings 11 to enable attachment of the top mounting flange 10 to the top of a window frame when the bracket unit of the invention is to be supported in this manner for in turn supporting the Venetian blind unit which is to be carried thereby and hung from the top of the window frame. As seen best in Figure 1, the top mounting flange 10 is formed with a hook lug near its free end and a second locking lug slightly spaced from the said hook lug, these lugs being designated 12 and 13 respectively. The lugs 13 are pressed inwardly from the plane of the outer face of the flange 10 so as to lie in a plane depressed from said outer face of the flange 10 about the thickness of the metal of the flange. The purpose of the parts 12 and 13 will appear shortly hereinafter.

At its end adjacent to the location of the back mounting flange 5 and the top mounting flange 10 the body plate 1 is extended to provide what I term an attachment flange 14, the joinder of which with the body 1 is weakened by a series of slots 15 opposite which the metal of the flange is depressed or pressed out of the plane of the body metal a distance approximately the thickness of said metal in its plate formation, whereby to provide the depressed webs 16 that virtually form recesses in the outer face of the flange 14.

When the flange 5 is bent at right angles to the body 1 of the bracket unit, the flange 10 previously bent at right angles to the flange 5, will be swung into a position at right angles to the adjacent end edge of the body 1 with the locking lugs 12 and 13 lying perpendicular in respect to the plane of the inner face or side of the body 1. Thereupon the flange 14 is bent from the body 1 at right angles thereto so as to overlie the locking lugs 12 and 13 depressed from the plane of the top mounting flange 10, whereby the body of the hook lug 12 will lie at the inner face of the metal and against such inner face of the metal from which the attachment flange 14 is made at the point generally indicated at x between the two depressed web portions 16 more remote from the flange 5. Likewise, the locking lug 13 will occupy a similar position in respect to the attachment flange 14 occupying the space between the two depressed web portions 16 more adjacent to the flange 5. When the lug 12 is in the position previously referred to, its lateral hook portion 12a will lie in the plane of the depressed web part 16 at the inner side thereof as seen in Figure 3, shown better in the section of Figure 4, so as to become interlocked against outward swinging movement of the top mounting flange 10. The hook portion of the lug 12 is designated 12a.

Thus it will be seen that when the flange 5 with the flange 10 is swung to a right angular position in respect to the plane of the body plate 1, the flange 10 will likewise be positioned at

the same angle to the end edge of the plate or body 1. Thereafter, when the attachment flange 14 is bent to a position right angularly respecting the body 1 and at the outer side of the lugs 12 and 13, said lugs will become interlocked with the portions 16 of the flange 14 in a manner previously described, whereby the flanges 10 and 5 will mutually reinforce each other in supporting whatever parts are loaded thereon in the mounting of the Venetian blind unit upon a bracket unit of the type of our invention.

This now brings us to the method of actually forming the final completed bracket as seen in Figure 3, and in describing such method, reference is first made to Figure 1 of the drawing.

It will be assumed that the strip of material such as flat metal will be fed to a series of progressive dies for operating on sections of the strip, which sections will ultimately become, when finished, the completed bracket unit of the present invention. The strip A as seen in Figure 1 will be fed in the direction of the arrow, the first die operating thereon will punch the twelve holes, 6, 2, 3, and 11, as seen at the right end of the strip in Figure 1. Thereupon the strip is fed forward to the next station and die and the second die punches out the three slots 15 previously described, slot 9, and the slots 17 and 18 which will later facilitate the formation of the locking lugs 12 and 13. The forming of the slot 9 readies the metal for the later formation of the locking or latch lug 8. The material then passes to the third station or die, the metal strip having been operated on according to the showing thereof at C in Figure 1, and certain operations are performed to bring the metal into the condition of the section of the strip designated D in Figure 1. It is at the third station depicted at D in Figure 1 that the top mounting flange 10 of the unit C is cut free of the body 1 of the bracket unit D, and the lugs 12 and 13 pressed out of the plane of the flange, in respect to the flange 10 of the unit marked C in Figure 1. Also, at this third station the latch or lug 8 is pressed to offset it from the plane of the flange 5, and the top mounting flange 10 of the unit D is bent at right angles to the body plate of said unit D. At this third station also the parts 16 of the flange 14 are pressed from the plane of the body of the unit D to provide the formation as shown at the left end of the strip of material as seen in Figure 1.

The bracket unit is now substantially in the condition in which it is shown in section D in Figure 1, and as the strip is carried on to the fourth station and fourth die the final bending and interlocking of certain portions of the unit are performed. It is here at this fourth station that the bending die acts upon the back mounting flange 5 and bends the same to a position at right angles to the plane of the bracket body. This action simultaneously carries the previously bent off top mounting flange 10 to the position in which it is shown in Figure 2, along with the flange 5. When the parts are in the condition of Figure 2 by the bending operation of the die at station 4, and subsequently to such bending action of the die of one of the die sections comes into action and bends the attachment flange 14 from its condition shown in Figure 2 to the position thereof in Figure 3 wherein the top mounting flange 10 is caused to be interlocked at the lugs

12 and 13 with certain portions of the flange 14 intermediate and adjacent to the slots 15, or certain of the latter.

Thus it is that at station 4 the die members operating upon the unit D as seen in Figure 1 will perform the final bending and interlocking operation, the latter particularly respecting the flanges 5 and 10, and simultaneously cut off the bracket units along the edge line 19 at one end, fully completing the structure of said unit ready for assembly, as an integral or single bracket body, with such other parts as may be required to be applied to same when in use, in the manner shown in our Patent #2,515,067 dated July 11, 1950.

Summarizing, therefore, it will be seen that the bracket unit is completely punched, and formed and/or bent, in four stages of operation with suitable dies at such stations. The first section or unit, as punched like section B of the strip of metal, will not have the flange 10 which is always cut out of a previous section, and will therefore be the only waste portion of the material, aside from the punchings of the holes or slots which are entirely negligible. The manner of die bending the flange 5 from a side edge portion of the strip that is in alignment with the extending flange section 10, and interlocking the flanges 5 and 10, provides a bracket unit of utmost rigidity and avoids the separate operation of mechanically uniting the usually separately formed flange 10, as commonly practiced, not to mention the advantage derived from the material reinforcement between parts 5 and 10.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

The method of forming a bracket unit of the class described, which includes successively partially blanking out a strip of sheet metal to provide bracket body sections having a portion along a side edge thereof extending into the next preceding bracket body section to provide for each section an extension forming a top mounting flange section having an outer longitudinal edge continuing the adjacent outer longitudinal edge of the body of its body section, forming lock lugs on the inner edge of said extension flange sections, severing each extension flange section from the preceding body section, bending the said extension flange section at a right angle to its body section, forming lock lug receiving elements at the end edge of each bracket body section adjacent to its extension flange for receiving said lock lugs, and then bending a portion of the body of each body section aligned with its extension flange section at a right angle to the bracket body section to carry the extension flange section at its inner edge into a position beneath the bracket body section, bending the end of each bracket body section having the lock lug receiving elements into overlying relation with respect to the adjacent lock lugs of the respective extension flanges so the lock lug receiving elements are interlocked with the extension flange lock lugs, and severing the bracket body section from the strip of sheet metal.

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