Nov. 5, 1935. H. T. HALLOWELL 2,020,179

TOTE BOX

Filed Dec. 29, 1932

Fig. 7.

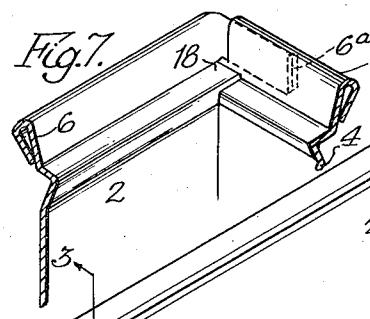


Fig. 1.

Fig. 6

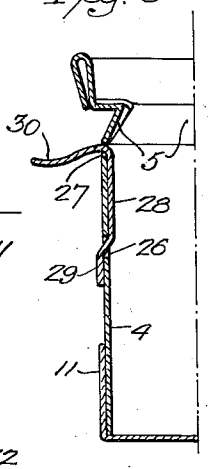


Fig. 2.

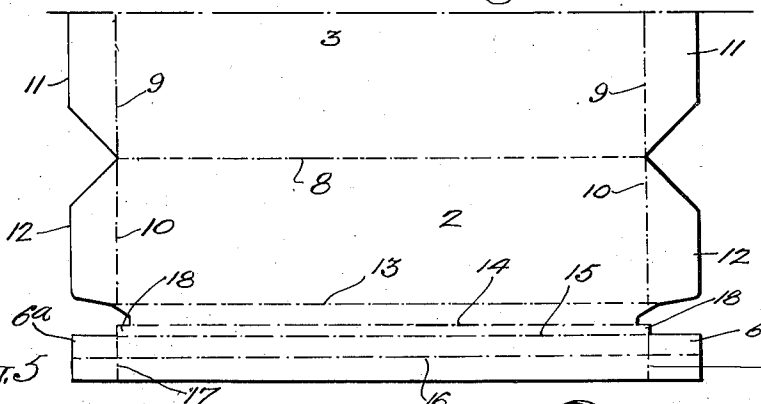


Fig. 5

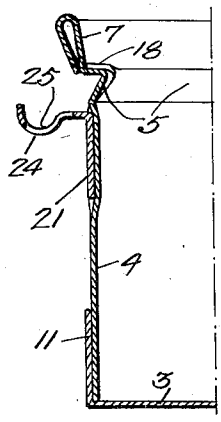


Fig. 3.

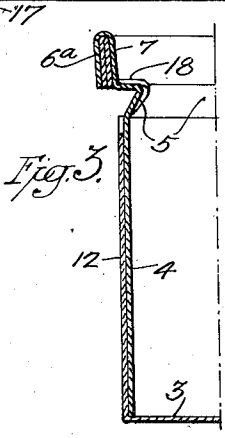
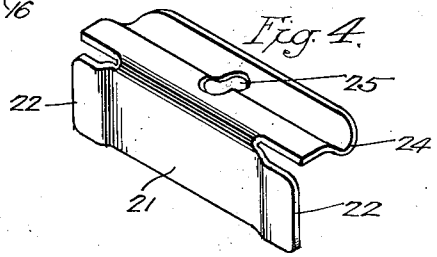


Fig. 4.



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UNITED STATES PATENT OFFICE

2,020,179

TOTE BOX

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Application December 29, 1932, Serial No. 649,392

3 Claims. (Cl. 220—73)

This invention relates to improvements in metal "tote" boxes, and a principal object of the invention is to provide a box of this character of relatively simple and rugged construction as compared with previous articles of the same general character.

Another and more specific object of the invention is to provide a novel interlocking upper edge construction forming in effect a rigid frame for the top of the box and one capable of withstanding the rough usage and impact to which the upper edge portion of a box of this type is subjected.

In the attached drawing:

Figure 1 is a view in perspective of a box made in accordance with my invention;

Fig. 2 is a view showing a fragment of the blank from which the side walls and bottom of the box are formed;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a detached view in perspective of one of the handle elements;

Fig. 5 is a section on the line 5—5, Fig. 1, and

Fig. 6 is a view similar to Fig. 5 but showing a modified form of handle.

Fig. 7 is a perspective view of one corner of the box.

With reference to the drawing, the box in a preferred form comprises side walls 2, 2 and a bottom wall 3 formed integrally; and non-integral end walls 4, 4. As shown in Figs. 1, 3, 5 and 6, both the side and end walls are formed adjacent their upper edges with an inwardly projecting angular offset 5 forming a rest for the bottom of a superimposed box of like construction permitting the stacking of these boxes one above the other in obvious manner. Those portions 6 and 7 of the side and end walls of the box extending above the offset 5 occupy a substantially vertical plane outwardly offset from the plane of the lower portions of the corresponding side walls to permit insertion of the lower portion of one box within the top of the other in the stacking operation. Also as shown in Figs. 3 and 5, these portions 6 and 7 are beaded over outwardly to form a rounded and reinforced upper edge for the said walls.

The end walls 4, 4 of the box are simple plates formed with the angular offset 5 adjacent the top and the turned-over upper edge portion 7. The integral side walls 2 and bottom 3 are produced from a blank, a portion of which embraces one side wall and approximately one-half of the bottom 3, as shown in Fig. 2. This blank is folded along the line 8 to form an angle of approximately 90°, that portion above the line constituting the bottom 3 of the box, and that portion below the line constituting the side wall 2. The blank is also folded along the lines 9, 9 and 10, 10, the tabs 11, 11 and 12, 12 abutting to form in effect and as shown in Fig. 1 a continuous flange embracing the side and bottom edge portions of the end plates 4. At the upper end of the wall portion 2 the blank is bent along the lines 13, 14 and 15 to produce the angular offset 5 previously mentioned, and again along the line 16 to produce the turned-over upper edge portion 6. It will be noted that that portion of the blank which forms this upper edge is extended beyond the normal end edge of the side wall portion 2, which edges are defined in Fig. 2 by the lines 10, 10, and these projecting and turned-over portions 6a of the blank are eventually folded along the lines 17 so as to project into the ends and between the inner and outer folds of the upper edge portion 7 of the end walls 4, see Figs. 1, 3 and 7. It will also be noted that the portions 18 of the blank, when the latter is folded, form in effect continuations of the upper flat surfaces of the offsets 5 of the side walls 2 which overlie the corresponding surfaces of the offsets 5 of the end walls 4, see Figs. 1, 3, 5 and 7. Thus the upper edge portions of the side walls 2 are supported by these tabs 18 upon the inward offsets 5 of the end walls 4, while the projecting upper edge elements 6a of the side walls 2 underlie and support the upper edge portions of the end walls 4. By this interlocking means there is effected a mutual support which renders the entire upper edge portion of the box extremely strong and rigid.

In fabricating the box, I prefer to weld the meeting edges 19 of the tabs 11 and 12 and to unite the end walls 4 to the tabs by means of spot-welding. I also prefer to unite the upper edge portions of the side and end walls by welding at the meeting edges 20, see Fig. 1, and a further union may be effected by spot-welding the portions 6a and 7. It will be understood, however, that I do not wish to limit myself to this particular method of fabrication.

These metal boxes are employed in factories for holding small metal parts, machined or unmachined, and it is accordingly necessary to provide a handle construction of considerable strength in order to withstand the strains placed upon it. These handles also should be so formed as to present a smooth and comfortable surface for engagement with the hands. I have provided a handle of extremely simple form which

well meets all the requirements. This handle is shown in Fig. 4 and comprises a portion 21 adapted to lie against the outer face of an end wall of the box and terminate at each end in an inwardly offset tab 22, which tabs as shown in Fig. 1 are adapted to project through vertical slots 23 in the said end walls and to lie against the inner surface of the said end wall. At the top of the portion 21, the handle turns outwardly at an angle of approximately 90°, and at its outer end is provided with a rounded depression 24 which affords a smooth and hand-fitting grip. The handle is also provided at the middle of the outwardly projecting hand grip portion with an opening 25 for reception of a hook or other lifting medium. As shown in Fig. 5, that portion of the end wall 4 between the slots 23 is slightly offset inwardly for reception of the portion 21 of the handle. This handle is readily produced from sheet metal as a simple blank and subsequently shaped to desired form and inserted in the slots 23. This handle requires no other means than the natural interlock through the medium of the tabs 22 to hold it in position and cannot be displaced by any normal strain.

A modified form of handle is shown in Fig. 6 wherein the end wall 4 is shown as provided with a pair of spaced horizontal slots 26 and 27 for reception of the handle element 28. This handle element has a portion adapted to lie against the inner face of the wall 4 between the slots 26 and 27, a lower offset portion 29 which projects outwardly through the slot 26 and downwardly against the outer face of the wall 4, and a transversely projecting handle grip portion 30 which projects outwardly through the slot 27.

It will be apparent from the above description that I have provided an extremely strong and rugged "tote" box capable of withstanding any of the relatively heavy but normal strains to which a box of this type is subjected. Of particular importance is the rugged construction of the upper edge portion of the box which necessarily receives the brunt of the wear and which in effect constitutes the essential framework of the box. The ruggedness extends to the handle formation which is particularly well suited to withstand the heavy strains to which it is subjected. With this ruggedness I have maintained a maximum simplicity of form and manufacture.

It will be apparent that there may be change in detail without departure from the essential features of the invention.

I claim:

1. A box of the character set forth comprising side and end walls, the top of each of said walls being turned outwardly and downwardly to form a reinforced upper edge of multiple thickness, the turned-over upper edge portion of one pair of opposite walls projecting at each end beyond the edges of said walls and extending transversely into the ends of and between the walls of the turned-over upper edge portions of the other walls to thereby afford the box a mechanically interlocked and reinforced upper edge, and projecting elements at each end of each of the last-named walls and adjacent the upper edges thereof overlying and bearing upon a projecting portion of the adjoining walls to thereby effect a mutual support at the upper edges and at each end of the side and end walls.

2. A box of the character set forth comprising side and end walls, each of said walls having adjacent the upper edge an inwardly projecting horizontal offset, the upper wall of the offsets of one pair of opposite walls having at each end projecting portions overlying and resting upon the offsets of the other walls, the upper edge portions of the walls above said offsets being turned outwardly and downwardly, and the down-turned portion of one of said walls projecting transversely into the ends of and between the inner and outer walls of the down-turned upper edge portion of the adjoining walls to thereby produce a mechanical interlocking of the upper edge portions of said walls.

3. A box of the character set forth comprising side and end walls, the top of each of said side walls being turned outwardly and downwardly to form a reinforced upper edge of multiple thickness, the turned-over upper edge portion of one pair of opposite walls projecting at each end beyond the edges of said walls and extending transversely into the ends of and between the walls of the turned-over upper edge portions of the other walls to thereby afford the box a mechanically interlocked and reinforced upper edge.

HOWARD T. HALLOWELL.