Aug. 27, 1929. G. M. DUVALL 1,725,903

METAL RECEPTACLE AND METHOD FOR MAKING SAME

Filed Nov. 7, 1927

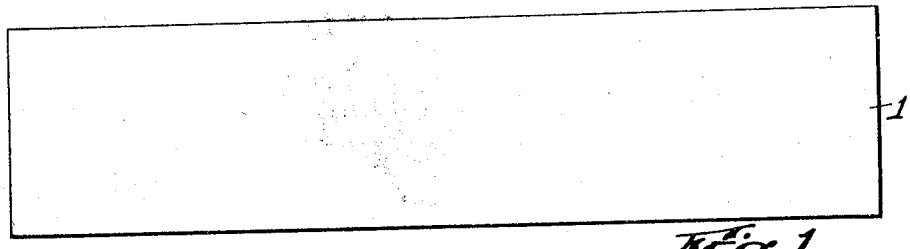


Fig. 1.

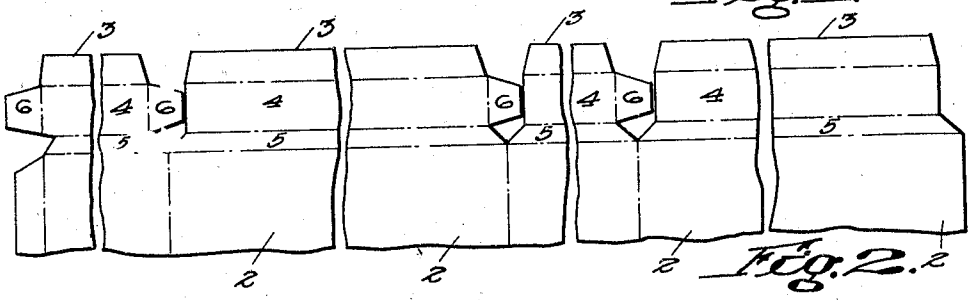


Fig. 2.

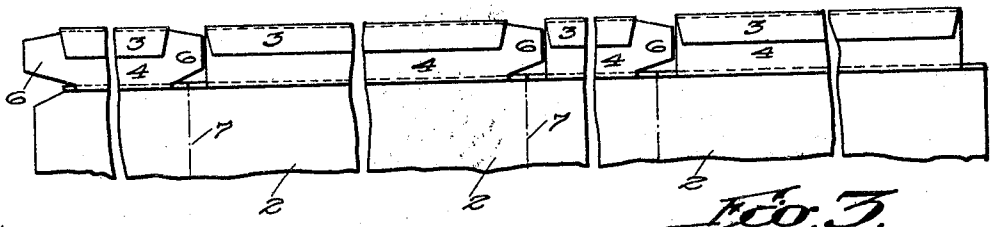


Fig. 3.

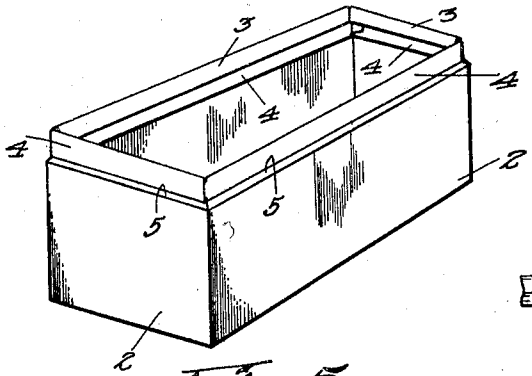


Fig. 5.

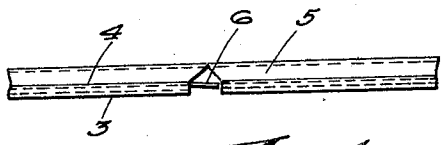


Fig. 4.

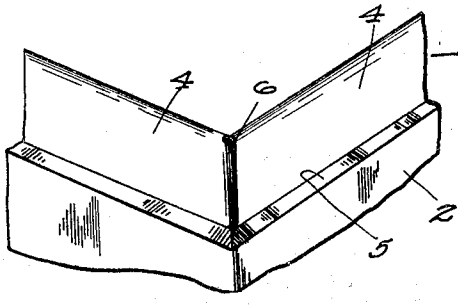


Fig. 6.

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Patented Aug. 27, 1929. 1,725,903

UNITED STATES PATENT OFFICE.

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METAL RECEPTACLE AND METHOD FOR MAKING SAME.

Application filed November 7, 1927. Serial No. 231,635.

The invention relates to metal boxes and to the art of making them; particularly to boxes in which a single integral blank is employed in the formation of all the side walls. One object of the invention is to provide in such a box a reinforced turned-over upper edge, thus eliminating sharp or rough edges which are liable to cut the hands, and at the same time to provide a ledge or seat for the box lid or cover. These two features have never existed in combination before in a box with sides or walls made from a single blank, because of the difficulty of making the box corners fit together properly. Another feature of the invention resides in a specific tongue construction, to be hereinafter described, by which the tight interlocking of the box corners is produced.

Other and further objects will appear from the following description, taken in connection with the accompanying drawings, in which—

Fig. 1 is a plan view of a metal blank from which the several sides or walls of a box or receptacle embodying the invention are made.

Fig. 2 is a plan view of the blank after it is cut, the blank being shown broken away, in order that the parts thereof that relate to the present invention may be shown on an enlarged scale.

Fig. 3 is a plan view of the blank after the portions which form the reinforcing bead and the cover seat or ledge, respectively, have been bent into the desired shape, the blank being also shown broken away in this figure.

Fig. 4 is a fragmentary edge view of the blank, showing it in the same condition as it is shown in Fig. 3.

Fig. 5 is a perspective view of a completed box constructed in accordance with the invention.

Fig. 6 is an enlarged perspective view of one of the upper corners of the box.

Like reference characters refer to like parts in the different figures.

In Fig. 1 is shown a rectangular sheet metal blank 1, from which the sides or walls of a rectangular box may be made in accordance with the invention. The first operation consists in cutting one longitudinal edge of the blank to the shape shown in Fig. 2; this cutting can be done by a press to save labor, if desired.

In Fig. 2 the body portion of the blank, which has been broken away as already stated, is indicated by the numeral 2. One edge of the blank has been cut to produce a plurality of bead portions 3 (four in number in case the box is to be rectangular, as shown), a plurality of outside edge portions 4, a plurality of ledge or seat portions 5 and a plurality of tongues 6. The latter project from the ends of the portions 4, which are rectangular; each portion 4 may have a tongue 6 projecting from it from a similar end, or one of those portions 4 located at the end of the blank may have no tongue, and the opposite end portion 4 may have two tongues, as shown in Fig. 2.

The tongues 6 may be trapezoidal, as shown in Fig. 2, or any other expedient may be adopted to allow close fitting of the beads 3 when the box is finally assembled. The beads 3 are also preferably slightly trapezoidal as shown, for the same reason. The seat portions 5 are trapezoidal, with the non-parallel sides at angles substantially of 45° and 135°, respectively, to the parallel sides, for a reason that will presently appear. The outside edge portions 4 are rectangular in those cases in which the inset upper edge is in a plane parallel to the side of the box.

After the blank is cut as shown in Fig. 2, it is bent to the shape shown in Fig. 3. The bead portions 3 have been bent over to lie in a plane parallel with and close to the portions 4. The blank has also been bent at the bases of the portions 4, and at the top of the body portion 2, each bend forming a large dihedral angle. The non-parallel sides of the trapezoidal portions 5 now lie in a plane, with adjacent sides of successive portions forming right angles. This is so because the said non-parallel sides made angles of 45° with the bottom parallel sides.

The next step in the making of the box or receptacle consists in transversely bending the body portions along the dot and dash lines 7. After a very slight amount of such bending, the tongues 6 will contact with the adjacent portions 3 and 4; these should be opened slightly and the tongues entered between them. The relation of these parts

just prior to the bending is best shown in Fig. 4; further bending of the body portion 2 causes the tongues to be forced into the space between the bead portions 3 and the outside portions 4, the tongues flexing as they are driven into this space; finally when the body portion 2 is bent to form the side walls of the box at right angles to each other, the tongues have right angle bends where they join the portions 4.

The condition of a box corner which has been thus bent is best shown in Fig. 6. The non-parallel sides of adjacent portions 5 lie close together because they were separated by a right angle when in condition of Fig. 3, and have been subsequently brought together through 90°. If any space is still left between the adjacent portions 5, they can be swaged inwardly to close the gap.

The completed box structure is shown in Fig. 5. In this figure the ledge 5 is not shown exactly perpendicular to the side walls 2, and it should be understood, that although this ledge may be made perpendicular as shown in Fig. 3, it is not an essential element of my invention. Of course, if the ledge is not exactly perpendicular, the angle of the non-parallel sides of the trapezoidal portions 5 should be changed.

From the foregoing, it will be seen that I have provided a simple method of making from a single blank, continuous box sides with a reinforced upper edge, which can be fitted together very nicely owing to the provision of the tongues 6, and which provides the ledge to act as a seat for a box lid or cover. Various changes in the details of the structure and the method of making it can be made without departing from the spirit of the invention, which is set forth in the following claims.

I claim:

1. In an article of the class described, the combination with a pair of side wall portions formed of one piece of sheet material bent to make a dihedral angle, and a pair of cover seats or ledges bounding the upper portions of said side walls and likewise formed of said single piece of sheet material, of a pair of beaded upper edges likewise formed of said single piece of sheet material and extending upwardly from said seat or ledge, and a tongue extending from one of said beaded upper edges in interlocking engagement with the adjacent beaded upper edge.

2. In an article of the class described, a pair of side wall portions bent to form a dihedral angle, a pair of trapezoidal ledge or seat portions bent inwardly of said dihedral angle, corners of said trapezoidal portions being located in the vertex of said dihedral angle, and the non-parallel sides of said trapezoidal portions starting from said corners substantially engaging each other, a pair of edge portions extending upwardly from a pair of the parallel sides of said trapezoidal portions, with adjacent sides of said edge portions substantially touching each other, and a pair of bead portions contiguous to said edge portions and bent over to lie in a plane parallel therewith, the whole being formed from a single piece of sheet material.

3. In an article of the class described, a pair of side wall portions bent to form a dihedral angle, a pair of trapezoidal ledge or seat portions bent inwardly of said dihedral angle, corners of said trapezoidal portions being located in the vertex of said dihedral angle, and the non-parallel sides of said trapezoidal portions starting from said corners substantially engaging each other, a pair of edge portions extending upwardly from a pair of the parallel sides of said trapezoidal portions, with adjacent sides of said edge portions substantially touching each other, a pair of bead portions contiguous to said edge portions and bent over to lie in a plane parallel therewith, and a tongue extending from one side of one of said edge portions, said tongue being bent and fitting between the adjacent edge portion and the turned over bead portion, the whole being formed from a single piece of sheet material, and having close fitting joints.

4. A sheet metal blank cut to define a body portion for a box or receptacle, a plurality of trapezoidal portions whose non-parallel sides are formed by cutting and whose parallel sides are defined by imaginary lines separating said portions from the body portion on one side, and from the edge portions on the other side, a plurality of quadrilateral edge portions, one side of each being defined by the imaginary line dividing it from its adjacent trapezoidal portion, a side parallel to said last named side being defined by an imaginary line dividing it from a bead portion, a plurality of quadrilateral bead portions, three sides of which are defined by cutting, the fourth side of each being defined by the aforesaid imaginary line dividing it from the adjacent edge portion, and a plurality of tongue portions extending sideways into the space left between the adjacent edge portions, said tongue portions being equal in number to the number of edge portions and said tongue portions defining one boundary of said edge portions, the fourth boundary of said edge portions being defined by cutting.

Dated this thirty-first day of October, 1927.

GEORGE M. DUVALL.