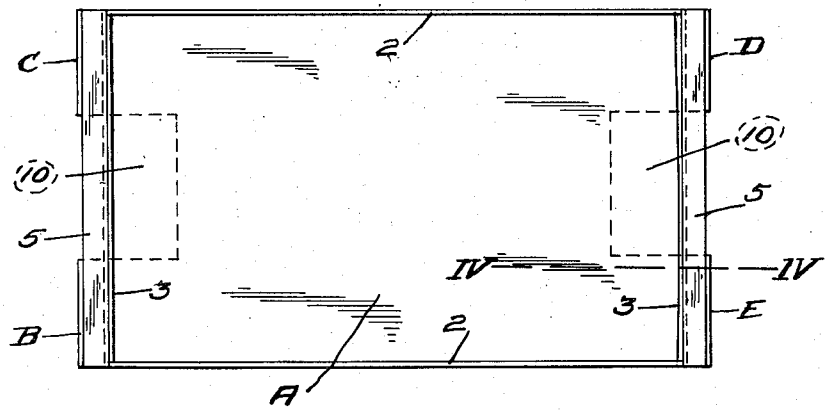
Aug. 7, 1951 L. M. GIMBAL 2,563,330

TRAY

Filed April 26, 1947

Fig. 1.



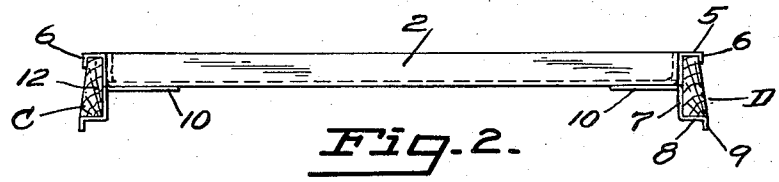


Fig. 2.

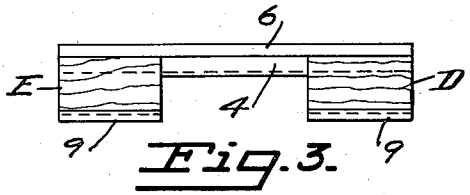


Fig. 3.

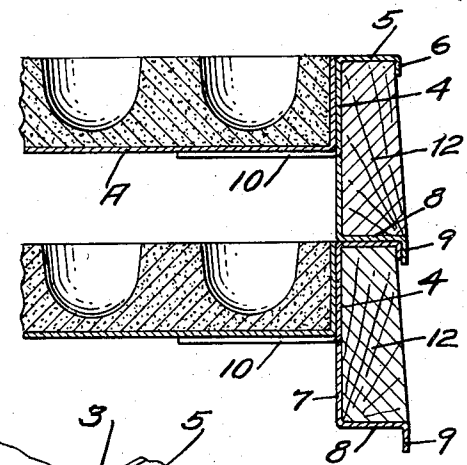


Fig. 4.

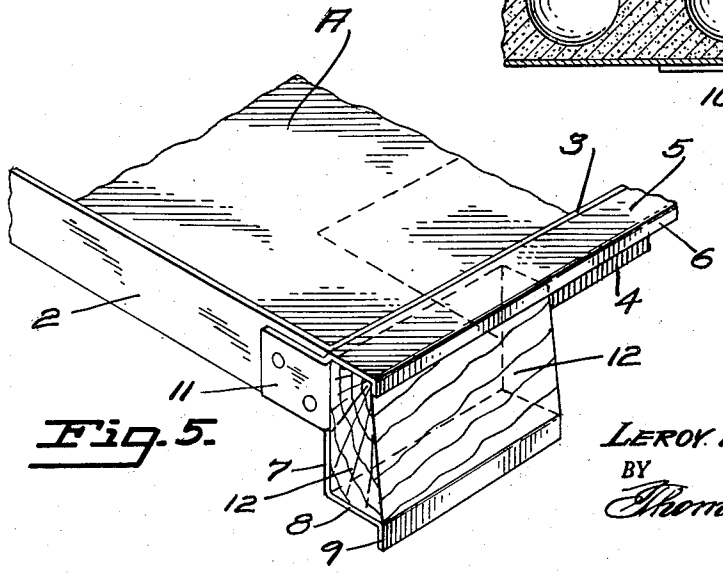


Fig. 5.

INVENTOR.
LEROY M. GIMBAL.
BY
Thomas Castberg
Atty.

Patented Aug. 7, 1951

2,563,330

UNITED STATES PATENT OFFICE

2,563,330

TRAY

Leroy M. Gimbal, Oakland, Calif.

Application April 26, 1947, Serial No. 744,219

5 Claims. (Cl. 220—97)

1

This invention relates to trays, and especially to trays generally known as starch trays such as used in the molding and forming of candy.

The object of the present invention is generally to improve and simplify the construction and operation of trays of the character described; to provide a tray which can be advantageously formed of a plastic material or sheet metal such as aluminum and the like, and at the same time possess adequate rigidity and strength; to provide a tray which may be readily stacked, said trays being freely slidable one on top of the other but being locked against endwise movement with relation to each other; to provide a tray which when piled in stack formation will lend itself to be lifted and transported by trucks from one place to another in a candy factory; to provide a tray which is suitable both for machine and hand operation; and further, to provide a tray which reduces loss and waste of starch to a minimum.

The tray is shown by way of illustration in the accompanying drawings in which:

Fig. 1 is a plan view of the tray;

Fig. 2 is a side elevation;

Fig. 3 is an end view;

Fig. 4 is an enlarged section taken on line IV—IV of Fig. 1, showing two trays stacked one on the other; and

Fig. 5 is a perspective view showing one corner of the tray.

Referring to the drawings in detail, and particularly Figs. 1 and 5, A indicates the bottom of a sheet metal tray which in actual practice is rectangular in shape and averages for instance sixteen inches in width and twenty-nine inches in length. The tray is provided with integral sides 2—2 and ends 3—3 and each end is reenforced as best shown in Fig. 5 by a reenforcing plate 5 which extends across that end of the tray. As there is one reenforcing plate 5 at each end of the tray and as both are identical in construction, the description of one should suffice. The upper portion of the reenforcing plate 5 is channel shaped in cross-section lengthwise of the tray to define an upper horizontal ledge and a down-turned flange 6. Near the corners of the tray and at each of its own ends, the plate 5 is extended downwardly to provide a vertical wall 7 and is then bent horizontally at right angles to provide a horizontal wall 8 and is then downwardly again at right angles to form a vertical hook or retaining member 9. The extended vertical wall 7, together with the horizontal wall 8 and the hook 9, form supporting legs B, C, D and E, one at each corner of the tray, two of such legs being included in each reinforcing plate 5.

2

The considerable spaces between the legs B and C and the legs E and D allow for hand grips on the reinforcing plates 5 between each pair of legs. A portion of the reinforcing plate 5 between the vertical walls 7 of its pair of legs (say B and C) is bent at right angles and inwardly to provide a tongue 10 extending horizontally under the bottom of the tray. The inwardly bent tongues 10 have a width equal to the grip spaces. They extend in under the bottom of the tray and are secured thereto, forming pads under the tray at each end thereof which protect the tray from wear and tear, for instance when the trays are resting on conveyor chains or the like. These pads or tongues, together with lugs 11 formed at the ends of the reenforcing plates and bent to overlie the sides of the tray, also make the attachment of the reenforcing plates 5 to the ends of the tray more rigid as both the pads 10 and the lugs 11 are riveted, soldered or spot welded in place.

In order to increase the rigidity of the legs B, C, D and E, and furthermore to prevent accumulation of starch on parts of the reinforcing plates, filler blocks 12 are secured between the upper surface of the horizontal walls 8 and the under side of the upper horizontal ledge of the channel. These filler blocks may be made of wood or any other suitable material, and they may be secured frictionally by fitting them snugly and driving them into place against the walls 7 and 8 and the hook 6, or they may be cemented or otherwise secured in that position.

In actual practice starch trays are commonly used in machines for manufacturing candy articles of various kinds and size. The trays are placed upon a conveyor which moves them beneath filling means by which each tray is filled with starch. The tray is then advanced beneath a scraper which removes the excess starch and levels off the starch remaining in the tray. The trays are fed from a stack to the starch filling machine one by one by hand and they are again stacked when removed from the filler and leveller. A special lifting jack truck moves the stack of starch-filled trays to a drying room and when dry, the stack is moved to a printing or molding machine where the trays are again removed from the stack one by one and delivered to a printer where a die descends and impresses in the starch mold cavities or impressions of a desired shape and size. The trays are again

stacked by hand and moved by the truck to a machine which deposits molten candy in the cavities. The trays are moved step by step in this machine and a charging mechanism delivers the molten candy to row after row filling each row of cavities with molten candy as the tray is advanced step by step. The trays are again stacked after being filled with molten candy and the truck transfers the stack to a drying or cooling room and when the candy has reached the proper degree of hardness or consistency, the stack is again removed by a truck to a machine known as a starch buck. This machine separates the starch from the candy. After this the trays may require washing or cleaning, but if that is not necessary, they are returned to the starch filling machine and the cycle of operation is repeated.

In practically all the machines heretofore referred to, the trays in passing through are supported upon conveyor chains. These chains subject the bottom section of the trays to wear and tear which in this instance is absorbed by the bottom pads 10.

An interlocking device permits ready stacking of the trays and prevents the trays when stacked from toppling over when trucked from one place to another. This is accomplished in the present instance by the horizontal right angular bent wall 8 and the vertical retaining flange 9 on each tray leg. The horizontal walls 8 rest on the upper surface of the channel part of the reinforcing plate 5 of a lower tray, and the hooks or flanges 9 project downwardly over the downturned flanges 6, thus locking the trays against lengthwise movement with relation to each other, but at the same time permitting the trays to slide freely sidewise one on top of the other when they are being stacked and when they are being removed from a stack.

In plastic or metal trays, particularly ones of aluminum, the tops of the trays can be made fairly narrow. Also the legs can be narrow, due to the use of the retaining flanges 9. The special construction of the legs here employed makes it practical to form a tray from sheet aluminum or like metal. The legs are materially reenforced by the filler blocks 12. This not only adds strength to the legs to permit the trays to be stacked fairly high, but it also prevents accumulation of starch on the legs. The outer faces of the filler blocks 12 slant slightly. When the tray passes through the filling machine and the scraper which levels the starch, no starch can accumulate on or around the legs nor on the upper surface of the member 5 as this is level with the end and sides of the tray and will thus be scraped clean while passing under the scraper. Hence, wastage or loss of starch is reduced to a minimum.

Heretofore wooden trays have generally been employed and square blocks were used for legs. Such trays have a tendency to splinter when carried by the chain conveyors and also to splinter when the starch is being levelled as there is frictional contact between the scraper and the tray when the scraper passes over the same. These objections are entirely overcome when a plastic material or metal is employed throughout in the construction of the tray here shown. Furthermore, cleaning and washing of the trays is simplified and sterilization is possible. As hand grips are formed at each end of the tray in the spacing formed between the legs, the trays can be readily grasped when being removed from the stack or when they are being stacked, thus making the hand operation of removing the trays and stacking the trays easier on the operator.

While the tray shown has been more or less specifically described and illustrated, it should be understood that changes may be resorted to within the scope of the appended claims and that the materials and finish of the several parts employed may be such as the experience or judgment of the manufacturer may dictate or varying conditions or uses may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A tray having a bottom, a pair of sides and a pair of ends, reinforcing plates secured to and depending from the outer faces of said ends, each of said reinforcing plates at its upper edge being out-turned to provide a top flange and at its lower edge being out-turned to provide a bottom flange, filler blocks confined between and abutting said flanges, and a downwardly turned depending flange at the outer edge of said bottom flange positioned to engage the outer edge of the top flange of a subjacent, similar tray.

2. A tray having a bottom, a pair of sides and a pair of ends, reinforcing plates secured to and depending from the outer faces of said ends, each of said reinforcing plates at its upper edge being out-turned to provide a top flange and at its lower edge being out-turned to provide a bottom flange in vertical registry with said top flange, and a downwardly turned depending flange at the outer edge of said bottom flange positioned to engage the outer edge of the top flange of a subjacent similar tray, said flanges being open-ended for transverse sliding of one tray upon another.

3. A tray of the character described having a bottom, a pair of sides and a pair of ends, a reinforcing plate secured to each of the ends, said reinforcing plate having an out-turned flange along its upper edge, a downwardly extending portion at each end of each reinforcing plate to form a supporting leg, a horizontal wall at the lower end of each leg extending outwardly to form a flat supporting surface, and a downwardly bent retaining flange at the outer edge of each horizontal wall, said horizontal wall and said retaining flange being open ended and positioned slideably to engage with said out-turned flange on a subjacent tray of the character described.

4. A tray of the character described having a bottom, a pair of sides and a pair of ends, a reinforcing plate secured to each end, said reinforcing plate providing a channel along its top and extending across the end of the tray, a downwardly extending portion at each end of said reinforcing plate to form a supporting leg, a right angular bent portion at the lower end of each leg extending outwardly to form a horizontal wall, a downwardly bent retaining flange at the outer edge of each horizontal wall, and filler blocks secured between the upper face of each horizontal wall and the under surface of the upper edge of the respective reinforcing plate.

5. In a tray of the character described having a bottom, a pair of sides and a pair of ends, a reinforcing plate secured to and extending along each end section, said reinforcing plate being provided with an outwardly extending flange along its upper edge, and being provided at each of its ends with a downwardly extending portion to form a supporting leg, there being a right angular bent horizontal wall at the lower end of each leg extending outwardly to form a

flat supporting surface, and there being a downwardly bent retaining flange at the outer edge of each horizontal wall, said reinforcing plate between said legs extending inwardly under the bottom of the tray and being secured thereto to form a pad.

LEROY M. GIMBAL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,010,801	Rapp	Dec. 5, 1911
1,038,923	Mathy	Sept. 17, 1912
1,066,359	Adams	July 1, 1913
1,895,323	Hauf	Jan. 24, 1933
1,947,055	Moorman	Feb. 13, 1934
1,986,716	Downey	Jan. 1, 1935
2,268,458	Moore	Dec. 30, 1941