United States Patent

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[54] **SORTER DEVICE**
10 Claims, 4 Drawing Figs.

[52] U.S. Cl. **209/126,** 206/72
[51] Int. Cl. **B07c 7/02**
[50] Field of Search 133/1, 3; 220/1, 66; 209/71, 122, 126; 206/72

[56] References Cited
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ABSTRACT: A sorting tray having a bottom and two upstanding converging sides secured thereto. The ends of these sides which approach each other do not meet but are closely spaced from one another, thereby forming an exit opening. The bottom has a plurality of low transverse upstanding ribs secured thereto defining separate sorting compartments in serial relationship to one another for releasable retention of articles.

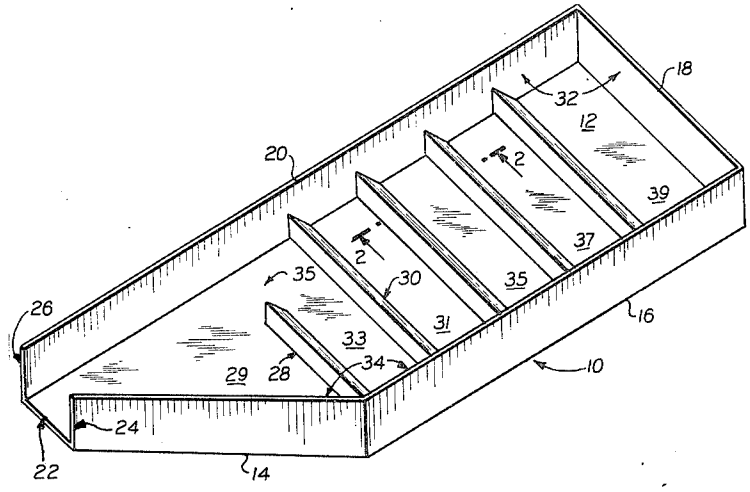


FIG. 1.

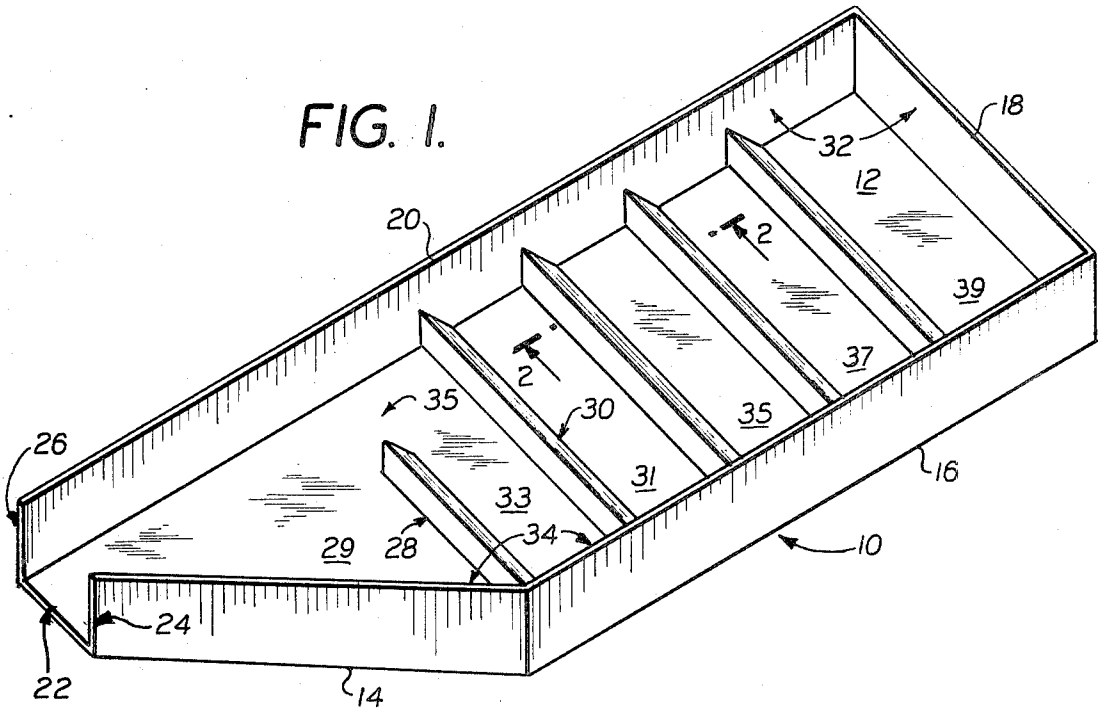


FIG. 2.

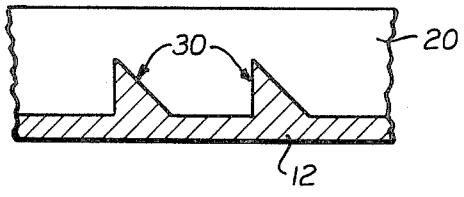
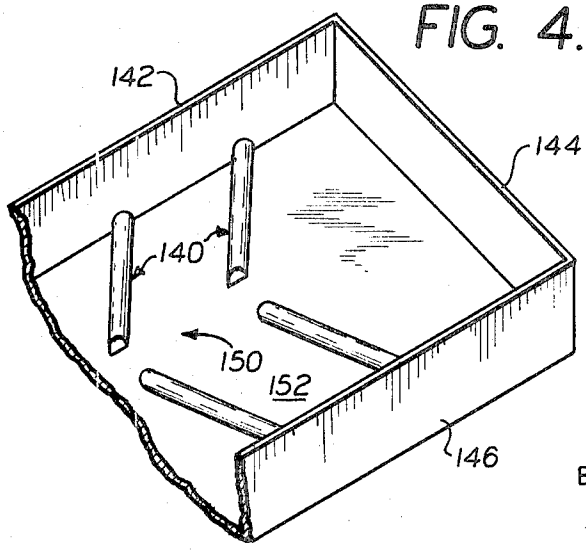


FIG. 4.



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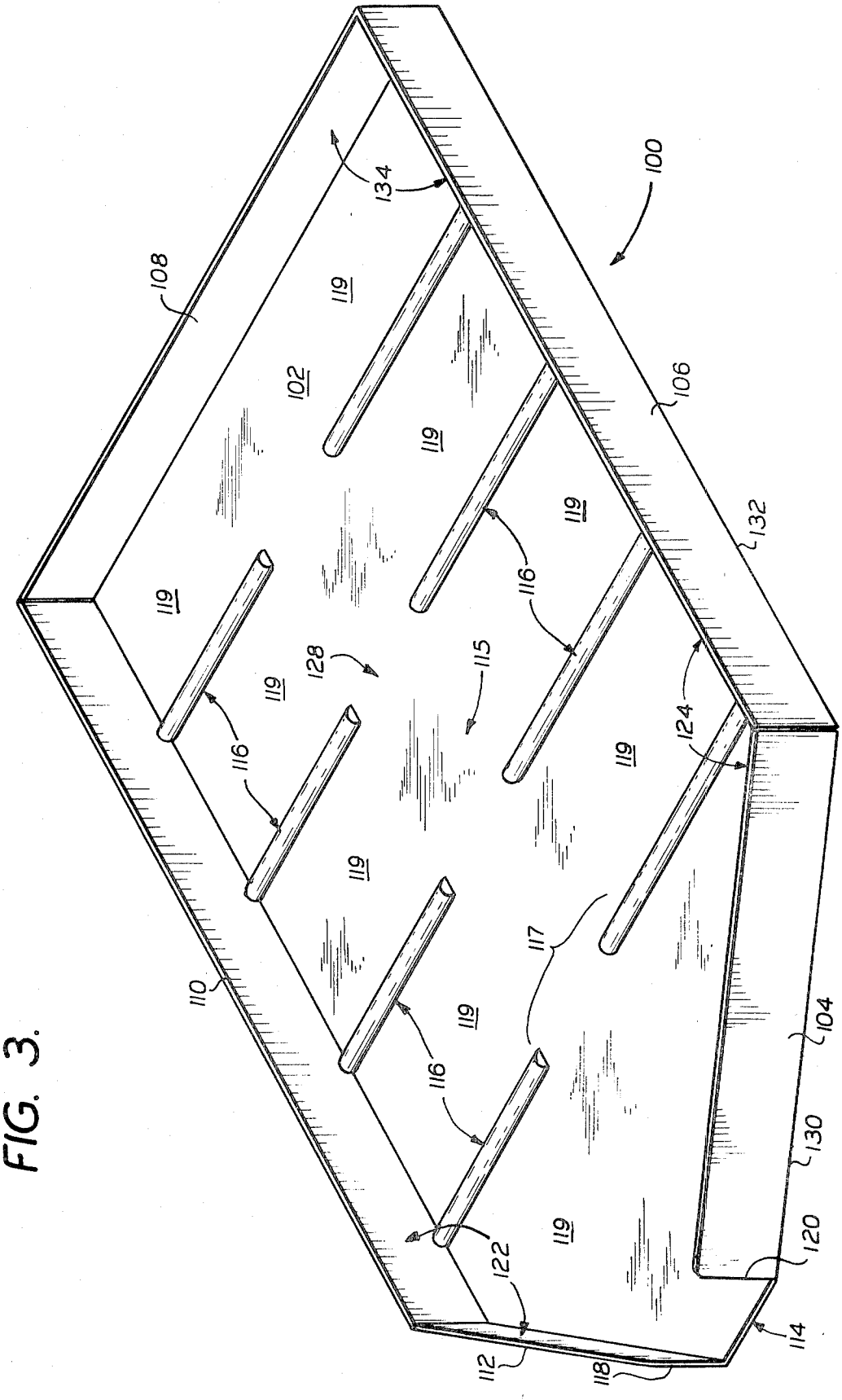

100
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FIG. 3.

SORTER DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to the field of sorting devices. More particularly it pertains to a sorting tray for sorting and separating small articles such as coins, hardware, screws, nails, nuts, bolts and the like.

2. Description of the Prior Art

Many activities and occupations require the handling of small articles of various sizes, shapes and uses, such as, for example, carpentry work, various electrical and mechanical building and repairing operations, various types of hobby activities, etc. It is usually desirable during such activities to maintain temporarily each, or groups of the articles separate or to sort them according to their use, size or type to avoid loss thereof and to make them readily accessible when needed.

SUMMARY OF THE INVENTION

I have discovered a unique tray which allows for facile sorting of articles of the type hereinabove described and for maintaining the articles separate from others of different type whereby each type of article is readily accessible for use and may be separately dispensed therefrom as needed.

My invention is a sorting tray comprising a bottom and two upstanding converging sides secured thereto. The ends of the converging sides do not meet, but are closely spaced apart from one another to form an exit opening from said tray. The tray further comprises a plurality of low transverse ribs upstanding from the bottom, which define separate sorting compartments in serial relationship to one another for releasably retaining articles.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a sorting tray in accordance with the present invention;

FIG. 2 is a partial section view along the line 2—2 of the tray of FIG. 1;

FIG. 3 is a view similar to FIG. 1 showing a modification of the present invention;

FIG. 4 is a fragmentary view similar to FIG. 3 showing a further modification of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in detail and particularly to FIG. 1, a sorting tray 10 is comprised of a bottom 12 and four sides, converging sides 14 and 20 and additional sides 16 and 18. Sides 14 and 20 have ends, 24 and 26, respectively, which are close to but spaced apart from one another so as to form a spoutlike exit opening 22.

Sides 20 and 16 are parallel to one another and low upstanding triangular-shaped ribs 30 are disposed perpendicularly and are connected to sides 20 and 16 and extend completely across bottom 12. Thus sides 20 and 16 and ribs 30 define compartments designated as 31, 33, 35, 37 and 39; and sides 20 and 14 and ribs 28 define compartment 29, all of said compartments being in serial relationship to one another and suitable for retaining sorted articles. Rib 28 extends partially across the bottom 12 to define compartments 33 and 29 and slot 35 so as to provide unimpeded communication between compartments 33 and 29.

The height of ribs 30 and rib 28 is sufficiently low so that article may easily be transfered thereover from one compartment to another by tilting the tray or by manually sliding or rolling the articles from one compartment to another. Ribs 30 and Rib 28 and sides 14, 16, 18 and 20 should be high enough, however, to maintain the articles in the separate compartments when the tray 10 is horizontal or only slightly tilted. Sides 14, 16, 18 and 20 have sufficient height to retain the articles and generally ribs 30 and rib 28 are between about one-quarter to one-half the height of the sides.

As shown in FIG. 2, ribs 30 have a triangular cross-sectional shape, preferably that of a right triangle with the 90° angle thereof facing away from the exit opening 22. Such configuration facilitates movement of articles towards exit opening 22. The ribs may have other shapes, such as rounded, rectangular, etc.

Thus, articles retained, for example, in compartment 39 may easily be transferred forward as by tilting tray 10 or sliding the articles serially over ribs 30 from compartment 39 to compartments 37, 35, 31 and 33 through slot 35 into compartment 29 and then out through exit opening 22. In this manner, ribs 30 and 28 are in cooperating relationship with exit opening 22 so as to facilitate removal of articles from tray 10. Alternately, it is possible to retain articles in compartments 31, 35, 37 and 39 and remove only those articles in compartment 33 by tilting tray 10 angularly so that side 20 and exit opening 22 are lower than side 16. Thus, articles in compartment 33 will move towards side 20, through slot 35 into compartment 29 and out through exit opening 22. The convergence of sides 14 and 20 make exit opening 22 into a spout or funnel, thereby facilitating the transfer of the articles, as by pouring, into containers thereof.

Sides 18 and 20 meet to form angle 32 and sides 14 and 16 meet to form angle 34, which angles are preferably unequal. These angles are suitably chosen so that the edges of sides 14 and 16 and the corresponding edges of sides 18 and 20 may be used as guides for tracing commonly used angles on wood, paper, etc. For example, angle 34 may suitably be 135° or 120° which would give tracing angles of 45° and 60°, respectively, and angle 32 may suitably be 90°.

While FIG. 2 shoes the tray as being made of metal, it is understood that other suitable materials may be used, such as, for example, wood, plastic, etc.

FIG. 3 illustrates a different embodiment of a sorting tray in accordance with my invention. As shown therein, the tray, designated generally as 100 comprises a bottom 102 and five upstanding sides, 104, 106, 108, 110 and 112, secured thereto. Sides 104 and 112 converge and the ends thereof, 120 and 118, respectively, form exit opening 114. The other ends of sides 106 and 110, respectively, form angle 122 and 124 which preferably are unequal. Angles 122 and 124 are suitably chosen so that edges 130 and 132 and the corresponding edges of sides 110 and 112 may be used as guides for drawing 45° and 60° angles. Sides 108 and 106 meet to form angle 134 which is preferably 90° so that the edges of said sides may be used as guides for drawing a 90° angle.

Low, upstanding, rounded ribs 116 are secured to bottom 102 and disposed in pairs 117 at spaced intervals to sides 106 and 110 thereby forming compartments 119. The ribs 116, comprising each pair 117, are directly opposite one another and have one end thereof extending outwardly equal distances towards but not touching opposing ribs 116, thereby forming a series of equally sized, aligned slots 128 therebetween. Slots 128 in turn form a longitudinal center aisle 115 leasing to exit opening 114. Therefore, each of compartments 119 is in direct, open communication with center aisle 128 which in turn communicates directly with exit opening 114. Thus, articles in any one of compartments 119 may be directly removed therefrom through aisle 128 and out of exit opening 114 either by manual sliding of the articles or appropriate tilting of tray 10 without serial transfer of the articles over the ribs from compartment to compartment.

Referring now to FIG. 4, in yet another modification of the present invention, rounded ribs 140 are oblique to sides 106 and 110, forming acute angles therewith, which acute angles face away from side 144. Such orientation clearly would additionally facilitate the transfer of articles from compartment 152 to center aisle 150.

Sorting trays of the type comprising my invention may further have various useful indicia drawn or etched thereon such as measuring scales, rules, screw, nail or nut and bolt gauges, drill bit gauges and the like which enhance the utility of the tray.

Variations can, of course, be made without departing from the spirit and scope of my invention.

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

1. A sorting tray having a storage position and a discharge position which is angularly related to said storage position, said tray comprising

a. a bottom;

b. two upstanding, converging sides secured to the bottom and having ends closely spaced from one another, thereby forming an exit opening; and

c. a plurality of transverse ribs upstanding from the bottom for defining successive separate sorting compartments for releasably retaining articles dependent on the orientation of said bottom, said compartments being arranged successively toward said exit opening, the contour of said ribs being sufficient to serially transfer said articles from the preceding compartment to the successive compartment in the direction of said exit opening when said bottom is oriented in said discharge position and to retain said articles in said compartments when said bottom is in said storage position.

2. The tray of claim 1, wherein said converging sides form a portion of a continuous peripheral wall comprising additional sides about the bottom, said exit being the only opening in said peripheral wall.

3. The tray of claim 2, wherein the two converging sides and the additional sides define unequal angles.

4. The tray of claim 3 wherein the unequal angles are 135° and 120°.

5. The tray of claim 3 wherein the unequal angles are 135° and 90°.

6. The tray of claim 3 wherein the unequal angles are 120° and 90°.

7. The tray of claim 3 wherein the transverse rib closest to the exit opening has an opening therein whereby to provide unimpeded communication between the two compartments closest to said exit opening.

8. The tray of claim 7 wherein there are four sides, two of said sides being parallel to each other, and wherein said transverse ribs are disposed perpendicularly to said parallel sides.

9. The tray of claim 3 wherein each of the transverse ribs has an opening therein whereby to provide unimpeded communication between the compartments.

10. The tray of claim 9 wherein there are five sides, two of said sides being parallel to each other, and wherein said transverse ribs are disposed perpendicular to said parallel sides, said openings in said ribs being aligned one with another to form an aisle, said aisle being in unimpeded communication with said exit opening and said compartments.

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