United States Patent [19]

Wheeler

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[54] **SORTING AND POURING TRAY**

[76] Inventor: **Lloyd M. Wheeler**, 9431 Glenwood, Overland Park, Kans. 66212

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[52] **U.S. Cl.** **209/123**, 206/72, 209/126

[51] **Int. Cl.** **B07c 7/04**

[58] **Field of Search** 206/72, 42; 133/1; 209/122, 123, 126

[56] **References Cited**

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Primary Examiner—Richard A. Schacher
Attorney—Lowe, Kokjer, Kircher & Bowman

[57] **ABSTRACT**

A tray for depositing objects in a container utilizes a generally planar member which presents a pouring and sorting surface. The surface has a pair of longitudinally extending converging edges with an outlet opening in the member between the edges for allowing objects to gravitate from the surface. Sidewall structure encloses the surface and extends along the converging edges to cooperate with the member in presenting a pouring spout for directing objects to the opening. A lip projects from beneath the plane of the member and can be placed over an opening in a container to hold one end of the tray, and also facilitate pouring of objects into the container. The lip is located beneath the outlet opening in the member and an extension of the sidewall structure cooperates with the lip to present a funnel extending from the outlet opening. When the member is placed on a surface the lip presents a supporting leg which holds one end of the member in an elevated position to facilitate sorting of objects. The end of the member opposite the lip is of a width sufficient to present a stable base for the tray.

7 Claims, 7 Drawing Figures

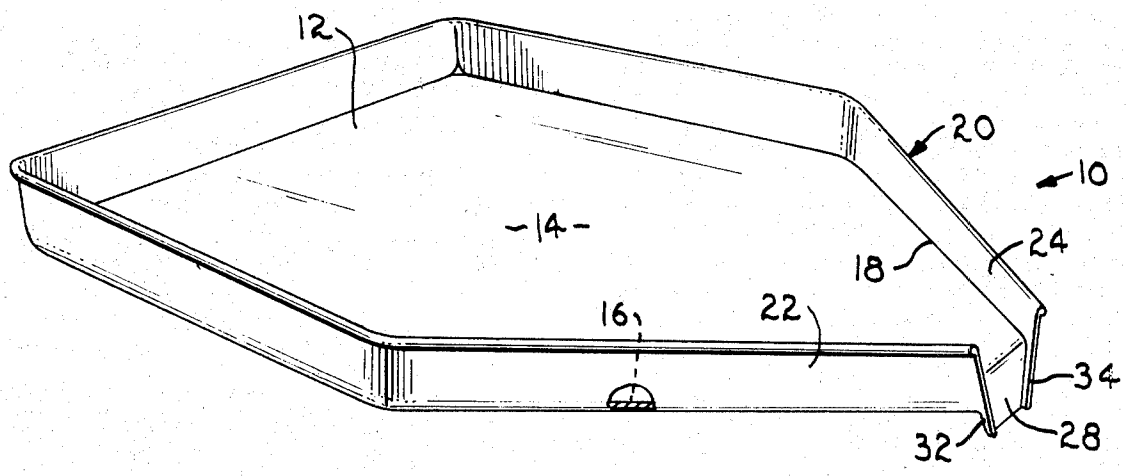


Fig. 1.

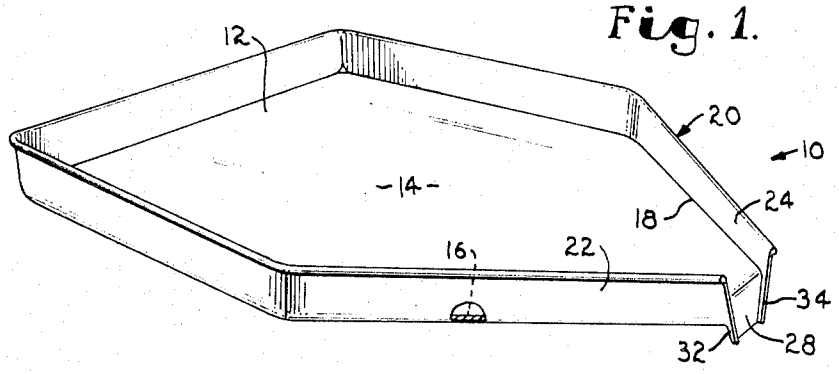


Fig. 5.

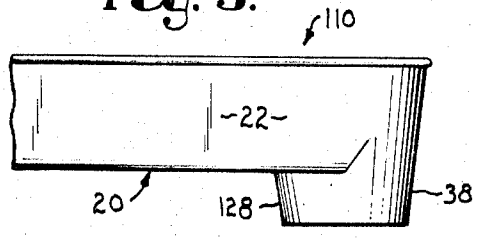
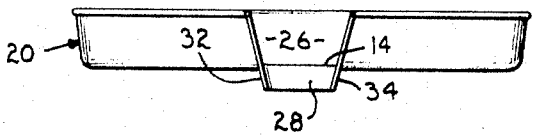


Fig. 2.



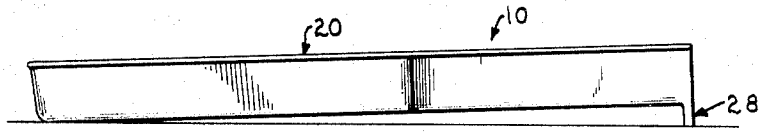


Fig. 3.

Fig. 4.

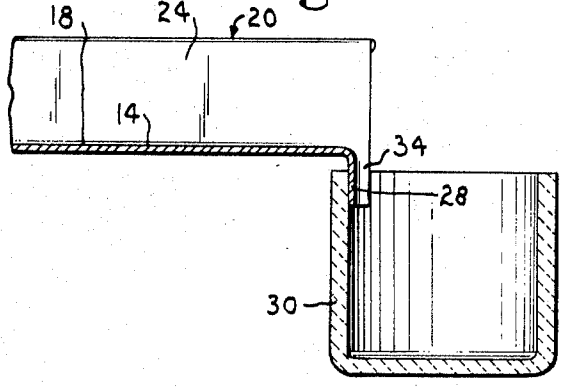
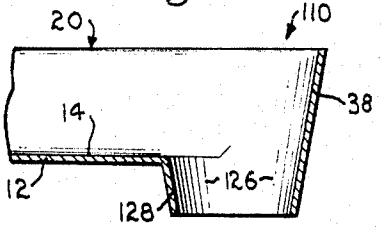


Fig. 7.



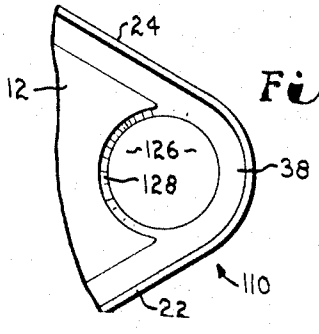


Fig. 6.

SORTING AND POURING TRAY

This invention relates to apparatus to facilitate sorting of objects and then pouring of the objects into a container.

In the workshop as well as in certain industrial applications, it is often necessary to sort different objects which have become intermixed and then to pour certain of the objects into a container. Also, it is often necessary to select certain objects from a mixture of objects, and then to pour the remaining objects back into their usual container. While elaborate and expensive sorting apparatus does exist, it is impractical to employ this apparatus in many applications. Although others have provided sorting trays to permit manual sorting of objects, such trays have amounted to no more than mere surfaces upon which to place the objects while they were being separated.

It is therefore an object of the present invention to provide tray apparatus having a sorting surface and which presents a depending lip that fits over the edge of a container to allow objects to be poured into the container with increased speed and without danger of spilling the objects.

An aim of this invention is also to provide tray apparatus which allows objects to be poured into a container with great accuracy because of the lip which depends from the surface of the apparatus, and which greatly facilitates sorting of objects on the surface because of an incline which causes lighter objects to gravitate to one end of the apparatus.

As a corollary to the above aim, an object of this invention is also to provide tray apparatus having a surface for sorting objects wherein the surface is supported by a tripod base which offers great stability and reduces the danger of tipping the apparatus and spilling objects from the surface.

Still another object of this invention is to provide tray apparatus for sorting objects and then depositing the objects in a container, which is adaptable to objects of widely varying size and configuration such as nuts and bolts, and B–Bs.

Still another one of the objectives of my invention is to provide tray apparatus for sorting objects and then depositing the objects in a container wherein the sorting surface has elongated converging edges and a sidewall along these edges permits elongated objects to travel along the sidewall and become oriented in parallel relationship thereto, whereby the objects will readily move through an opening located between the converging sidewalls and the opening will not become blocked with objects extending across it.

Still another object of the invention is to provide tray apparatus as above described wherein the sidewall structure is disposed at an angle extending outwardly from the sorting surface whereby a plurality of trays can be stacked one on top of the other.

In the drawings:

FIG. 1 is a perspective view of the tray apparatus of the present invention;

FIG. 2 is a front elevational view looking toward the outlet opening of the apparatus shown in FIG. 1;

FIGS. 3 is a side elevational view of the tray apparatus illustrating the manner in which the tray would be seated on a horizontal surface;

FIG. 4 is a fragmentary, enlarged, side elevational view illustrating how the apparatus is used to pour objects into a container;

FIG. 5 is a fragmentary, side elevational view of a modified form of the apparatus wherein a pouring shield is employed;

FIG. 6 is a fragmentary, bottom plan view of the modified form of the invention shown in FIG. 5; and

FIG. 7 is a fragmentary, vertical cross-sectional view of the modified form of the apparatus.

Referring initially to the embodiment of the invention which is shown in FIGS. 1–4, the tray apparatus is designated generally by the numeral **10** and includes a polygonally configured member **12** which presents a generally planar pouring and sorting surface **14.** Surface **14** is characterized by opposed converging side edges **16** and **18** which converge on one end of member **12.**

Enclosing surface **14** is a peripheral side wall structure designated generally by the numeral **20** which is integral with member **12** and extends above the horizontal plane of surface **14** to facilitate retention of objects located on the surface. As best illustrated in FIG. **2,** sidewall structure **20** is inclined away from surface **14** thus allowing a number of apparatuses **10** to be stacked one inside of the other. It will also be appreciated from viewing FIG. **2** that sidewall structure **20** is generally rounded as it merges into surface **14,** thereby eliminating right angle corners between the surface and the sidewalls which would obstruct movement of objects along the surface adjacent the sidewalls.

Extending upwardly from side edges **16** and **18** are converging segments **22** and **24** of structure **20.** The converging segments of sidewall structure **20** terminate in spaced relationship adjacent the end of member **12** to provide an outlet opening **26** from surface **14.** Segments **22** and **24** cooperate with surface **14** between edges **16** and **18** to define a pouring spout for directing objects to opening **26.**

Extending below the plane of member **12** at outlet opening **26** is an integral depending lip **28** which is adapted to be placed over the edge of a container such as **30** in the manner illustrated in FIG. **4.** Integral depending extensions **32** and **34** of segments **22** and **24** respectively extend along the edges of lip **28** to cooperate with the latter in presenting a funnel extending from opening **26.** As illustrated in FIG. **3,** when apparatus **10** is placed on a horizontal surface **36** pouring and sorting surface **14** will be inclined at an angle relative to the horizontal because of depending lip **28.** This facilitates sorting of objects placed on the surface since very light objects will have a tendency to gravitate to the lower end of the surface, while heavier objects will remain at the elevated end. Furthermore, it is to be noted that member **12** has its greatest width at the end opposite lip **28** and this end of greatest width presents a stable base when apparatus **10** is seated on surface **36.** There is, therefore, very little danger of apparatus **10** being tipped over and objects being spilled from surface **14** because of the stable "tripod effect" from lip **28** and the base end of member **12.**

After objects in the tray have been sorted on surface **14,** if it is desired to deposit certain of the objects in a container such as **30,** lip **28** is placed over the container opening as illustrated in FIG. **4,** and the entire apparatus **10** is tilted toward the lip to cause objects to gravitate into the container. Since lip **28** holds the tray in perfectly aligned relationship relative to the container opening, only one hand is required to hold apparatus **10** and a person's other hand may be utilized to retain

or remove any objects which were sorted from the objects being poured into the container. Subsequently, those objects which have been held back may be poured into a separate container. Manifestly, this completely eliminates the need in many instances to remove one group of sorted objects while the other group is poured into a container. Because of the longitudinally extending converging side edges **16** and **18**, and their adjacent wall segments **22** and **24**, large objects such as bolts on surface **14** will first gravitate toward segments **22** and **24** and will become aligned generally parallel to edges **16** and **18** as the objects gravitate toward opening **26**. This assures that the objects will pass through the opening and will not become lodged crosswise in the opening to block the same.

Referring now to the modified form of the invention which is designated generally by the numeral **110** in FIGS. **5–7**, it is seen that apparatus **110** includes a member **12** which presents a generally planar pouring and sorting surface **14** which is enclosed by sidewall structure designated generally by the numeral **20**. Apparatus **110** differs from the apparatus **10** described above in that an outlet opening **126** is provided in surface **14** at the end of member **12** toward which segments **22** and **24** converge. Also, extending below the plane of the member **12** is a depending lip **128** of generally arcuate configuration. Furthermore, segments **22** and **24** of sidewall structure **20** merge into a generally arcuate segment **38** which provides a shield immediately adjacent the outlet opening. Segment **38** also extends below the plane of member **12** and merges into lip **28** to cooperate with the lip in presenting a funnel extending below the outlet opening.

The modified form of the invention is particularly useful in sorting and pouring small objects with rounded surfaces, such as B–Bs, which tend to gravitate from the apparatus **110** with great speed. Because of the shield presented by segment **38** and the enclosed funnel beneath opening **126**, such objects are directed into a container without gravitating from the confines of the apparatus as the tray is tilted toward one end.

From the foregoing description it will be apparent that a greatly improved apparatus for the manual sorting and pouring of objects is provided.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. Tray apparatus for depositing objects in a container, said apparatus comprising:

a member presenting a generally planar pouring and sorting surface,

said member having a pair of opposed, linear longitudinally extending converging side edges; and

a lip depending from the member at the end of the latter where said edges converge,

said lip extending below the plane of the member to allow the lip to be placed over an edge of said container and presenting a support for holding said member at an inclined angle relative to the horizontal and away from said opening to facilitate sorting of objects on the surface without dumping objects from the surface,

said member including sidewall structure having a width at least equal to the length of said lip and cooperating with said surface while extending along said edges to define a spout contiguous to said lip,

said member presenting an opening extending from one side wall to the other to define an outlet from the surface communicating with the spout.

2. The invention of claim **1**, wherein said sidewall structure is inclined away from said enclosed surface, whereby to permit a plurality of said apparatuses to be stacked one inside the other.

3. The invention of claim **2**, wherein said sidewall structure is generally rounded as said structure meets said surface whereby to eliminate right-angle corners which would obstruct movement of objects along said surface

4. The invention of claim **1**, wherein said structure has a pair of ends terminating in spaced relationship on either side of said lip to present said opening.

5. The invention of claim **4**, wherein said structure includes an extension on either side of and contiguous to said lip to cooperate with the lip in presenting a funnel extending from said opening.

6. The invention of claim **1**, wherein said structure extends in uninterrupted relationship around said surface and the opening whereby a segment of said structure adjacent said opening provides a shield to facilitate direction of said objects through said opening.

7. The invention of claim **6**, wherein said segment extends below the plane of the member and merges into said lip to present a funnel extending from said opening.

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