United States Patent [19]

Huntington

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[54] **PRIMER ORIENTATION TRAY**

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[73] Assignee: **RCBS, Inc.,** Oroville, Calif.

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[52] **U.S. Cl.** **86/24**

[51] **Int. Cl.** **F42b 33/02**

[58] **Field of Search** 86/24; 102/45; 211/10; 132/87; 221/156

[56] **References Cited**

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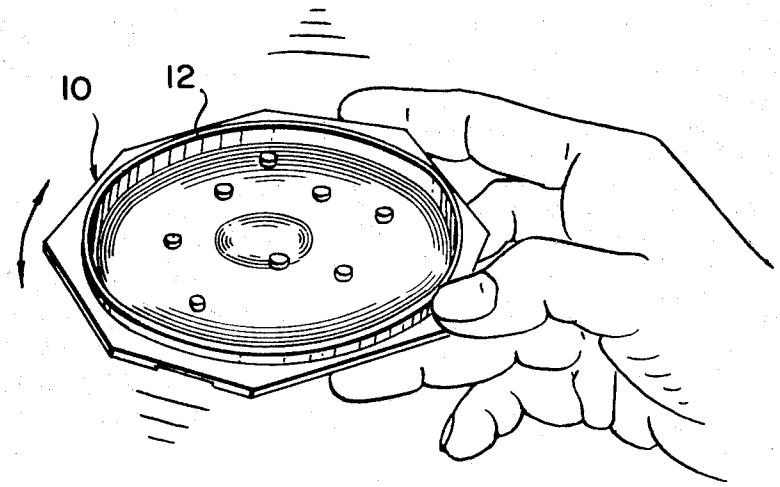
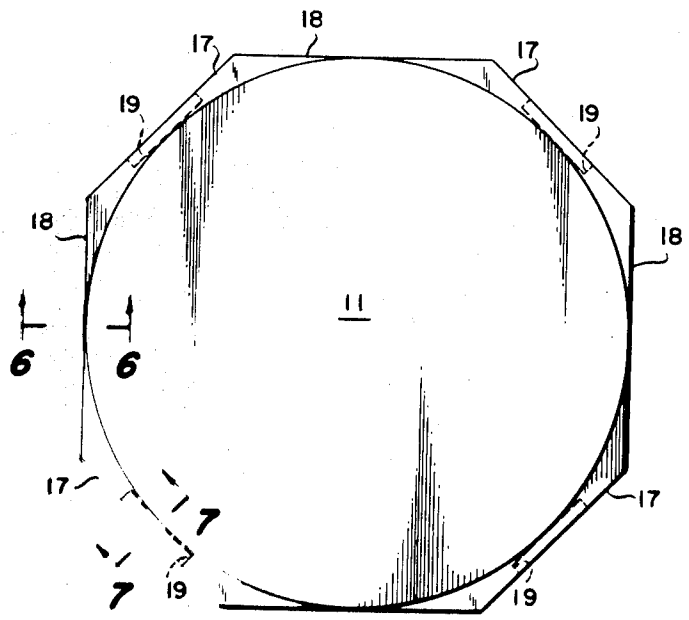
Attorney—Robert I. Dennison, Donald L. Dennison et al.

[57] **ABSTRACT**

A shallow tray having a thin, flat bottom plate in the shape of an octagon is formed on its top face with concentric ridges and grooves over an area circumscribed by a circular wall that constitutes a flange engageable by the complemental flange of a slip on circular cover. Primers loosely deposited in random attitudes on the ridge and groove area of the plate are agitated by shaking the tray, so that they will assume full anvil up positions. When the cover is applied and the tray turned upside down, the primers will be seated in full anvil down positions on the flat inner face of the inverted cover so that, when the inverted bottom plate is lifted from the cover, the primers may be picked up by a loading tube. When the cover is applied, certain pairs of opposed sides of the plate project radially beyond the cover flange and provide finger grips which may be grasped simultaneously with the cover flange so that the assembly of plate and cover may be lifted and handled as a unit without fear of their separation.

3 Claims, 8 Drawing Figures





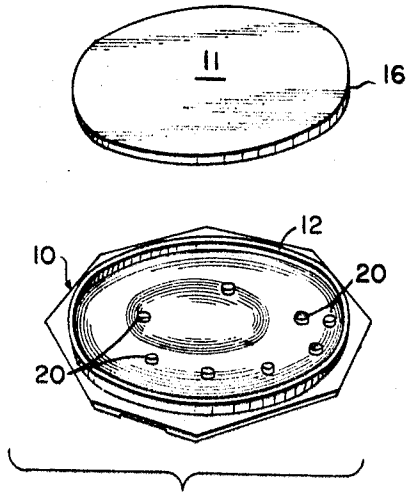


Fig. 1

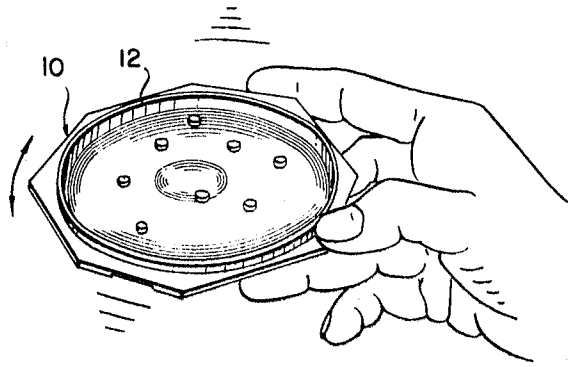


Fig. 2

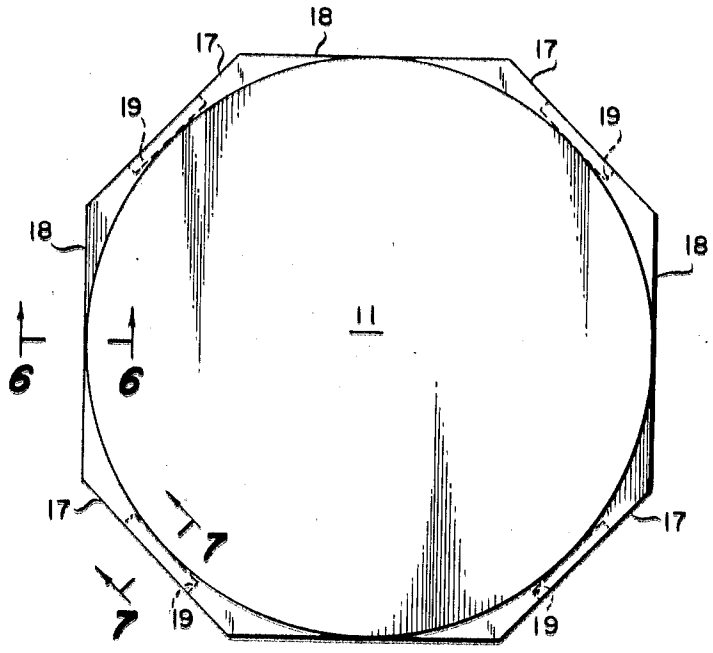


Fig. 3

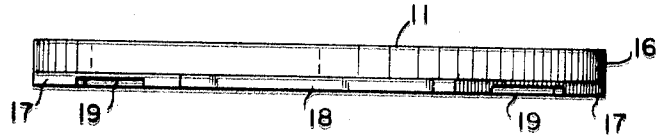


Fig. 4

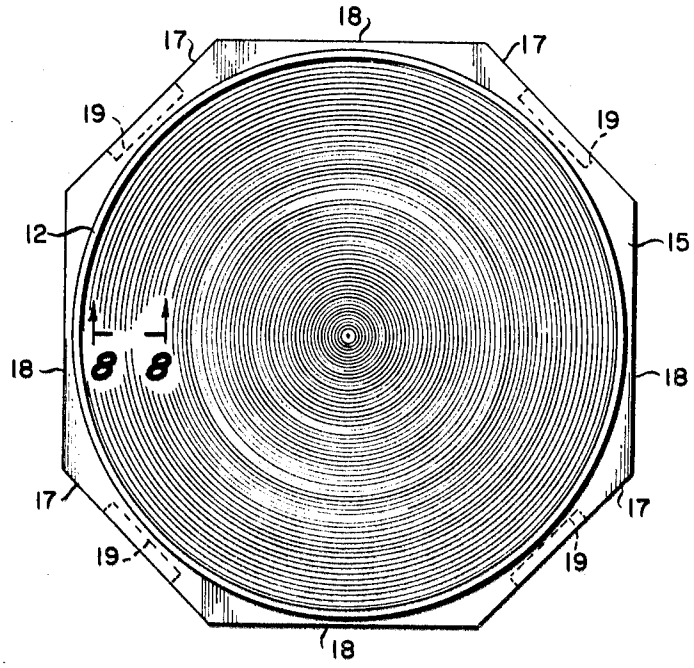


Fig. 5

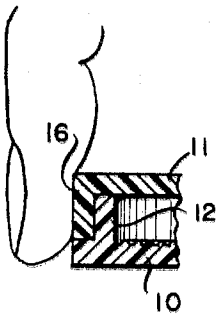


Fig. 6

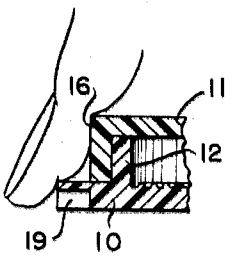


Fig. 7

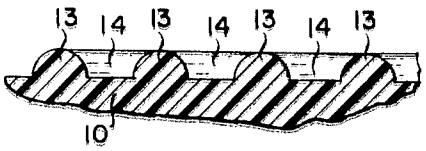


Fig. 8

PRIMER ORIENTATION TRAY

BACKGROUND

The field of the present invention is the art of ammunition reloading equipment. In particular, the invention relates to devices for handling primers, such as trays or other containers in which a large number of primers are initially positioned at random and subsequently agitated to assume uniform positions for either manual or feed tube pick up.

The prior art most pertinent to my invention is a known Primer Arranger receptacle constituting a circular, shallow tray with removable cover. The tray bottom is provided on its top face with a circular rim for engagement by a complemental circular edge flange on the cover. The top face of the tray, within the area circumscribed by the rim, is occupied by closely spaced, circular ridges spaced apart by circular grooves, all of which are concentric to each other and to the rim. When a plurality of primers is delivered at random on the top face of the tray, and with its cover removed, the tray is placed on a flat surface and shaken gently with a circular motion, whereupon the primers will assume uniform anvil up positions for easy manual pick up. When the cover is replaced on a tray on which the primers have been tumbled into anvil up position, the cover seats on the primer anvils and holds them against dislodgment. The closed tray may then be turned upside down, replaced on the flat surface, and when the bottom section is lifted off the cover, all the primers will be in uniform anvil down position and, thus, disposed for fast and easy pick up by the appropriate end of a loading tube.

Due to the necessarily shallow formation of the tray, it is not an easy matter to grip a loaded tray between the fingers and thumb of one hand and lift it vertically from a flat surface on which it rests, and to do this while at the same time holding the assembly closed against accidental separation of the tray and cover during the lifting and turning movements incident to turning the closed and loaded tray upside down. The natural tendency would be to grip a covered tray radially between the thumb and fingers of one hand and slide it horizontally over the edge of a work bench, table top, or the like, while at the same time gripping the tray assembly in the other hand with its thumb bearing against the top face of the cover and the fingers bearing against and supporting the bottom of the tray. This requires use of both hands, is time consuming, and not always possible, because most work benches, tables, and the like used in reloading operations are edged with raised rims as a precaution against dropping live ammunition, primers, and delicate parts of equipment onto the floor, which often is a hard cement surface.

This difficulty of lifting and turning is avoided in the aforesaid prior art tray by increasing its overall height beyond its effective depth. By "effective depth" is meant the axial vertical distance between the planar inner face of the cover and the horizontal plane occupied by the tops of the ridges on the top face of the bottom section of the tray when it is seated on a horizontal surface. Otherwise stated: The "effective depth" of any primer orientation tray is the vertical axial distance between the ends of a primer being handled when the primer is in either full anvil up or full anvil down position. This dimension cannot be shortened because the cover could not seat properly without dangerously

compressing the primer anvils, and it cannot be lengthened because the resultant clearance of the cover top above the primers would allow them to tumble and become randomly disarranged during upside down turning movement of the tray, The increase in overall height of the prior art tray is accomplished by radially enlarging the tray bottom to provide a seat for the depending peripheral flange of the cover and of equal external diameter, and by providing an axially extending rim flange depending from the bottom face of the tray in flush alignment with the cover flange and its seat flange. The effect of these flanges and seat combined in flush axial alignment is to establish the tray, when covered, as a pancake type cylinder having a wall surface of sufficient axial extent to enable the tray assembly to be gripped radially by the thumb and fingers of only one hand and lifted vertically while at the same time firmly holding the tray and cover together against separation. The height of the peripheral flange depending from the bottom face of the tray determines the overall axial extent of the wall of the cylinder formed by the tray when the cover is applied. In the aforesaid prior art tray, this extent is more than sufficient to permit firm frictional contact of the fingers and thumb of one hand simultaneously against the full axial extent of the cylindrical wall surface of the combined tray and cover, and although this arrangement is suited to persons with long, narrow fingers, it has disadvantages for persons with short, stubby fingers, because the tips of such fingers are not well suited to full contact with the shallow cylindrical wall surface of the tray body itself.

The necessity of maintaining the heretofore defined "effective depth" in primer orientation receptacles of the shaker type that are intended to be turned upside down before removal of the inverted primers, such as the tray of the aforesaid prior art and the tray of the present invention, poses a problem unique to this type of tray: which is, the problem of how effectively to grip simultaneously both the cover and tray body when the overall height of the assembly is only infinitely smaller than the effective height of the tray. The present invention solves this problem by providing the grips **17**, concerning which there is no teaching in the prior art.

SUMMARY OF THE INVENTION

The tray of this invention is similar to the aforesaid prior art tray in that it has the same arrangement of concentric ridges, grooves, and circumscribing circular wall flange on the top face of the tray body plate, and functions in the same manner of agitating and uniformly orienting primers initially disposed in random attitudes on the area circumscribed by the circular wall flange. However, although its effective depth is the same as the effective depth of the aforesaid prior art tray, it is lighter and more shallow than the prior art tray and uses a smaller quantity of plastic, so that it costs less to produce. Furthermore, unlike the prior art tray, its body is a thin plate having a contour that provides laterally projected finger and thumb engageable grips so arranged that a tray with cover applied may be lifted vertically from a horizontal surface by the fingers and thumb of one hand and be inverted or otherwise handled as a unit while so held, without fear of separation of the tray body and the cover.

DESCRIPTION OF DRAWINGS

FIG. 1 is an exploded perspective view of the tray and cover.

FIG. 2 is a perspective view of the tray in process of agitation.

FIG. 3 is a top plan view of the tray with cover thereon.

FIG. 4 is a side elevation of the assembled tray and cover.

FIG. 5 is a top plan view of the tray, with cover removed.

FIG. 6 is a fragmentary sectional detail view of a finger grip at a side 18 of the tray body plate.

FIG. 7 is a fragmentary sectional detail of a finger grip at a side 17 of the tray body plate.

FIG. 8 is a fragmentary sectional view taken on line 8 — 8 of FIG. 5.

DESCRIPTION OF PREFERRED EMBODIMENT

The present invention is a molded plastic receptacle comprising a tray body 10 and a removable cover 11. The tray body is a flat, polygonal plate, here shown as octagonal, having a planar bottom face and formed on its top face with a circular wall flange 12 circumscribing an area occupied entirely by closely spaced, circular ridges 13 separated by grooves 14, all said ridges, grooves, and the wall flange being concentric.

The tray body plate extends radially outward from the base of the wall flange 12 and provides a ledge 15, best shown in FIG. 5, on which the depending rim flange 16 of the cover seats when it is applied.

The wall flange 12 of the tray body and the rim flange 16 of the cover are of equal axial extent, as seen in FIGS. 6 and 7, and this distance is the effective depth of the tray; that is, the vertical axial distance between the planar bottom face of the cover 11 and the horizontal plane of the tops of the tray body ridges 13 is substantially equal to the axial height of a primer when it is in full anvil up or full anvil down position. In the tray of this invention, the tray body plate 10 is so thin that, as seen in FIG. 6, no part of a finger of thumb tip can grip the plate when one attempts to lift a covered tray, the cover simply pulls off its seat.

The salient feature of the present invention, which differentiates it from the aforesaid prior art tray, is the configuration of the body plate 10. It is constituted as a polygon having at least two opposite parallel sides 17 of shorter length than the other sides 18, said other sides 18 being tangential to the circular cover flange 16 when the cover is applied. Due to this arrangement, the portions of the plate ledge defined by the shorter sides 17 project appreciably from the base of the wall flange 12, as seen in FIG. 7 and provide grips that can be grasped and held by the fingers and thumb of one hand simultaneously with grasp of the cover, so that the tray and cover can be lifted and handled as a unit without fear of separation.

In order to facilitate the simultaneous gripping of both the tray plate and cover, the sides 17 of the plate are formed with undercut recesses 19 into which the fingernails of a person may be inserted to assure a more positive grip.

The tray of the present invention functions in the manner of the aforesaid prior art tray. A load of primers 20 in random attitudes is placed in the open tray and scattered over the orientation area of ridges and grooves circumscribed by the wall flange 12. The loaded tray is seated on a horizontal surface and gently shaken as indicated by the arrows in FIG. 2, whereupon the primers will assume full uniform anvil up positions. The cover is then applied, the assembled unit is gripped radially between the thumb and fingers of one hand with significant surfaces thereof simultaneously engaging both the cover and the tray sides 17 as shown in FIG. 7, the assembly as thus held is lifted vertically from the surface on which it is seated and is turned upside down and reseated on a horizontal surface. The primers will then be in uniform full anvil down position on the flat inner face of the cover, from which they may be picked up by a loading tube when the inverted tray body is lifted off the cover.

I claim:

1. A primer orientation tray comprising a flat polygonal base plate including a planar bottom face and a top face circumscribed by a concentric wall flange dimensioned to define the effective depth of said tray, a removable cover including a depending peripheral rim flange complemental to said concentric flange on said base plate, said polygonal base plate including at least a pair of oppositely disposed portions extending radially outwardly from said concentric wall flange beyond the peripheral rim flange of said cover, said polygonal base plate further including at least a pair of oppositely disposed portions terminating at a point coinciding with the external surface of said peripheral rim flange, said radial extensions constituting finger grips.

2. In the primer tray of claim 1, the polygonal plate being an octagon with four opposed sides of one length, and four opposed sides of a different length.

3. In the primer tray of claim 1, said finger grips each being undercut with a fingernail engageable recess.

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