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APPARATUS FOR ASSEMBLING MULTIPLE CAN PACKAGES

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This invention is directed to an apparatus for assembling a multiple can package from a plurality of cans, each having beads or rims on at least one end thereof, and a plastic clip having peripheral portions engageable with the beads or rims of the cans. The cans are of conventional construction and are known as "tin cans."

This apparatus permits application of the plastic clip, or conversely, application of the can beads into the clip, by a vertical movement of the clip toward the cans or a vertical movement of the cans toward the clip. My apparatus is particularly designed to effect this relative movement between the can beads to permit the beads to be transversely repositioned relative to the clip for proper attachment of the clip to the beads.

My apparatus is unique in that it permits attachment of the plastic clip to the can beads with a minimum stressing of the clip. It is important in assembling the multiple can package that the plastic clip be stressed as little as possible to insure that the plastic will maintain its maximum holding power on the can beads.

My invention is also particularly designed to achieve maximum output per unit time thereby minimizing packaging costs.

In the drawings I have shown a present preferred embodiment of my invention in which:

FIGURE 1 is a side elevation view of my invention;

FIGURE 2 is a front elevation view of my invention;

FIGURE 3 is a view taken on line 3—3 of FIGURE 2;

FIGURE 4 is a cross section taken on line 4—4 of FIGURE 2; and,

FIGURE 5 is a cross section taken on line 5—5 of FIGURE 2, with parts removed for clarity.

The present invention is directed to an apparatus for assembling multiple can packages, each package being formed from a plurality of cans which have a bead or rim on at least one end thereof, and a plastic clip having peripheral portions engageable with the bead or rim. The apparatus, in its preferred form, has a rigid C-shaped stand consisting of a lower leg, an upper leg, and a joining leg with the open side of the C facing outward. A first rigid horizontally extending plate is affixed to the inside face of the lower leg and a second rigid horizontally extending plate is positioned on the first plate. The second plate has a central polygonal opening which slidably receives a third horizontally extending plate which is affixed to the first plate. The third plate is of a size sufficient to hold one of the plastic clips for attachment to the cans to form a package. The third plate has holding means to releasably secure one of the plastic clips on the third plate and the plastic clip is elevated above the second plate when the clip is being attached to the cans. The top surface of the second plate is sufficiently large to accommodate a plurality of cans to form a package and portions of the can beads extend over the central opening in the second plate.

A fourth rigid horizontally extending plate is positioned immediately below the lower face of the upper leg of the stand and has means for holding a second plastic clip in a horizontal position on the central portion of the plate. Preferably the fourth plate is affixed to power means to move the plate vertically relative to the top stand leg, such that the fourth plate can be moved toward and away from the first, second, and third plates. The plastic clip releasably connected to the fourth plate is positioned im-

mediately above the beads of the top ends of the cans so that the peripheral portion of the clip can be engaged with the rims or beads of the cans to releasably connect the cans together to form a package.

Referring specifically to the drawings, the assembling apparatus includes a C-shaped stand 10 having a vertical leg 11, an upper leg 12, and a lower leg 13. The legs consist of two spaced rigid metal plates integrally joined by a base plate 14. A cross plate 15 is welded horizontally to the top edges of the leg 13. A larger secondary plate 16 is bolted to and located immediately above plate 15. A clip holder plate 17 is mounted centrally on the top face of the plate 16. Clip holder knobs 18, shaped like truncated cones, are affixed to the top surface of the plate 17 by screws 19 or the like. The screws 19 pass through the plate 17 and are threaded into threaded openings in the plate 16 to form an integral unit between the buttons 18, plate 17 and plate 16.

A top plate 20, having a flat bed and a peripheral up-standing rim 21, has a central opening 22 which receives the plate 17. The plate 17 has a periphery slightly smaller than the opening 22 and therefore is freely movable in the opening. The four corners of the top plate are threaded at 23 and receive a threaded bolt 24, the shank of which passes through an opening 25 in the stationary plate 16. The bolt is headed at 26 below the plate 17. A spring 27 is coiled around the shank of the bolt 24 between the plate 16 and plate 20. Thus the plate 20 is free to move vertically relative to the plates 16 and 17 such that the top flat bed of the plate 20 is depressible to about the top surface level of the plate 17. The normal undepressed position of the plate 20 is shown in FIGURE 2. The springs 27 normally maintain the plate 20 in the position shown in FIGURE 2.

A plate 30, consisting of a flat lower surface 31 and a peripheral rim 32, is positioned below leg 12 of the stand. A pair of spaced clip holder knobs 33 are attached to the central portion of the flat surface 31 by screws or the like 34. The top side of the plate is affixed by a screw 35 to a vertically extending steel rack 36 having teeth 37 on one vertical surface thereof. The rack 36 is slidably mounted between the side plates forming leg 12, as shown in FIGURE 4, and maintained in a vertically movable position by a cover plate 38 bolted rigidly to the side plates by bolts 39.

A pair of transversely aligned openings 40 in plates 12 are provided adjacent the gear teeth 37 of the rack and receive a central shaft 41 which has a handle 42 affixed to its outer end by a set screw 43. The shaft 41 is rotatably disposed within a cylinder sleeve 44 welded to the outside face of plate 12 as shown in FIGURE 4. The shaft 41 has a shoulder at 45 disposed against the inner edge of the sleeve 44 to stabilize the shaft. Portions 46 of shaft 41 are hobbled out to form a circular gear, as shown in FIGURE 5, which match the gear teeth 37 on the rack 36. A bearing 47 is fitted in the opening 41 on a reduced portion 48 of the shaft and a threaded bolt 50 connects the return spring to the portion 48 of the shaft.

Thus upon rotation of the handle 42, the shaft 44 is rotated which in turn rotates the gear portion 46 and moves the rack 37 up or down as desired. The Delta return spring 49 is constructed to return the rack to an upward position (as shown in FIGURES 1 and 2) upon release of the handle 42.

I have provided a stop plate 51 on the upper end of the rack 36 and it is attached by a threaded bolt 52. I have also provided an adjustable stop plate 53, attached to the rack by a threaded bolt 54, to limit the upward movement of the rack. This adjustment plate can be changed to accommodate various sizes of cans to be clipped with this invention.

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In operation, the six conventional cans are positioned on the plate 20 in two rows of three cans each. The openings between the cans are disposed immediately above the knobs 18 and below the knobs 33. Prior to positioning the cans on the plate 20, a plastic clip is positioned on the knobs 18 with the rim engaging portions directed upwardly and a plastic clip is positioned on the knobs 33 with the rim engaging portion directed downwardly. The knobs 18 and 33 hold the plastic clip in proper position by a wedging action in the central openings in the clip. This clip is more adequately described in my prior applications Serial Nos. 100,618, now abandoned, and 174,655. The handle 42 is then grasped and rotated bringing the plate 30 downwardly until the plastic clip engages the top rim of the cans thereby forcing the plate 20 downwardly against the biasing action of the spring 27 until the clip positioned in the knobs 18 is in engagement with the bottom rim of the cans. Further rotation of handle 42 and downward movement of the rack 36 and its associated plate 30 causes the rim engaging portions of the clips to snap onto the upper and lower rims of the cans and form a multiple can package.

While I have described the present preferred embodiment of my invention, it may be otherwise embodied within the scope of the following claims.

I claim:

1. An apparatus for assembling a multiple can package by uniting a plastic clip with a plurality of cans, each having a rim at one end thereof; said plastic clip having a body portion and depending portions engageable with said can rims, comprising: a rigid stand having an upper horizontal leg and a lower horizontal leg, a first horizontally extending plate affixed to the top side of said lower leg, a second horizontally extending movable plate positioned immediately above said first plate, biasing means operatively related between said first and second plates to normally maintain said second plate spaced

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from said first plate, a polygonal opening in the central portion of said second plate, a third plate integral with the first plate and freely received within said polygonal opening, holding means on said third plate to releasably maintain one of said plastic clips on said third plate, said depending portion of the plastic clip being above said second plate when said first and second plates are spaced from each other; an area being provided on the top face of said second plate to accommodate said plurality of cans to form said package, portion of said can rims being positioned over said clip on said third plate when the cans are located in said area on the second plate; a fourth rigid horizontally extending plate positioned immediately below the lower face of said upper leg, holding means affixed to the underside of said fourth plate to releasably maintain one of said plastic clips on said fourth plate; and power means operatively related to said upper leg to move said fourth plate toward and away from said first and second plates.

2. An apparatus according to claim 1 wherein said power means include a gear rotatably mounted on a horizontal axis in said upper leg, and a pinion affixed to said fourth plate and extending vertically through said upper leg in engagement with said gear whereby rotation of the gear moves the pinion and fourth plate vertically relative to said first and second plates.

3. An apparatus according to claim 1 wherein said plastic clips have a central opening therethrough, and said holding means include a truncated cone slidably received in each of said openings to releasably hold said clips on the respective plates.

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