

July 1, 1958

C. W. OSMOND

2,840,963

LID PLACING DEVICE

Filed March 21, 1957

3 Sheets-Sheet 1

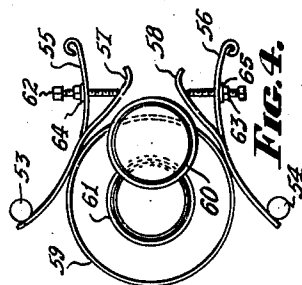


Fig. 4.

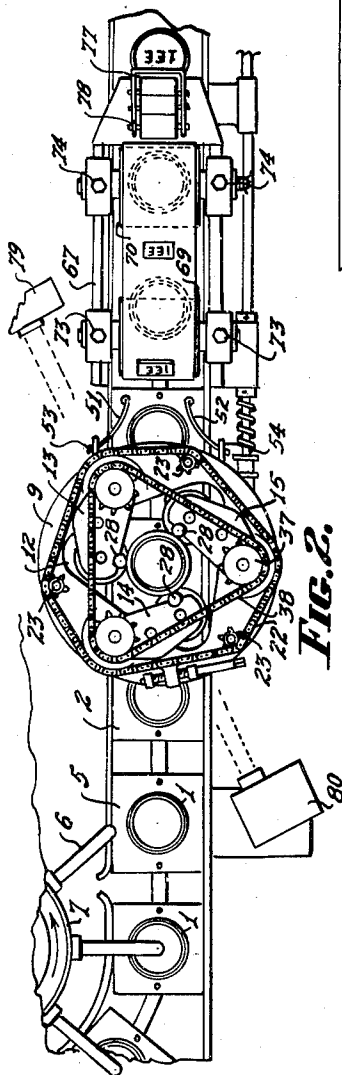


Fig. 2.

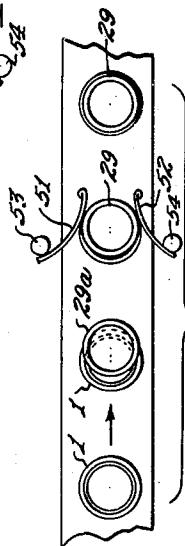
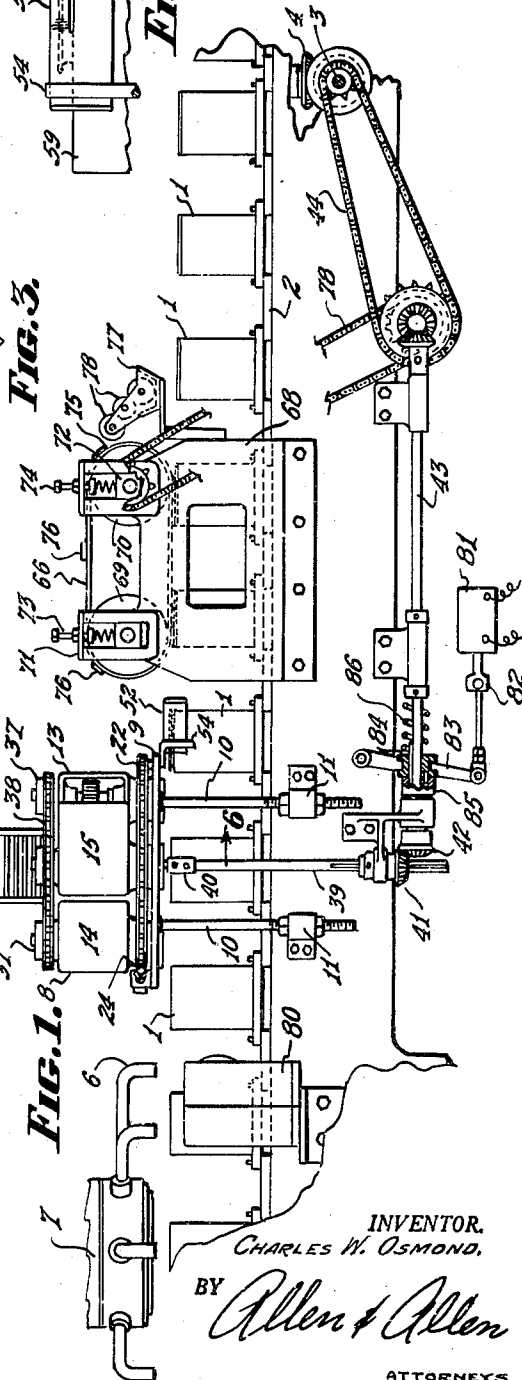


Fig. 3.

Fig. 1.

Fig. 5.



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3 Sheets-Sheet 2

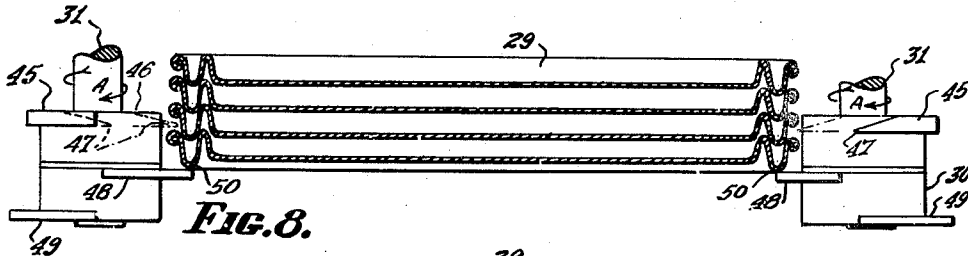


Fig. 8.

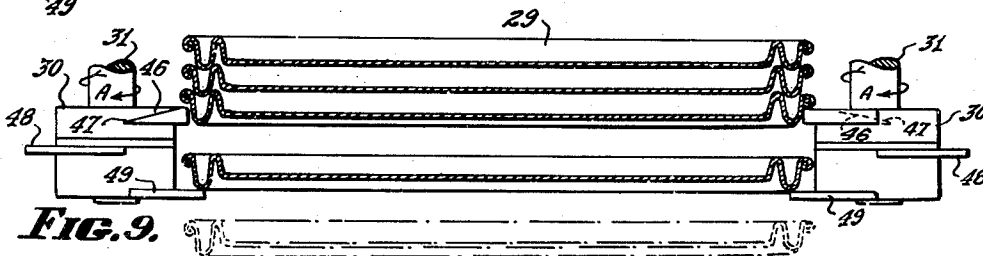


Fig. 9.

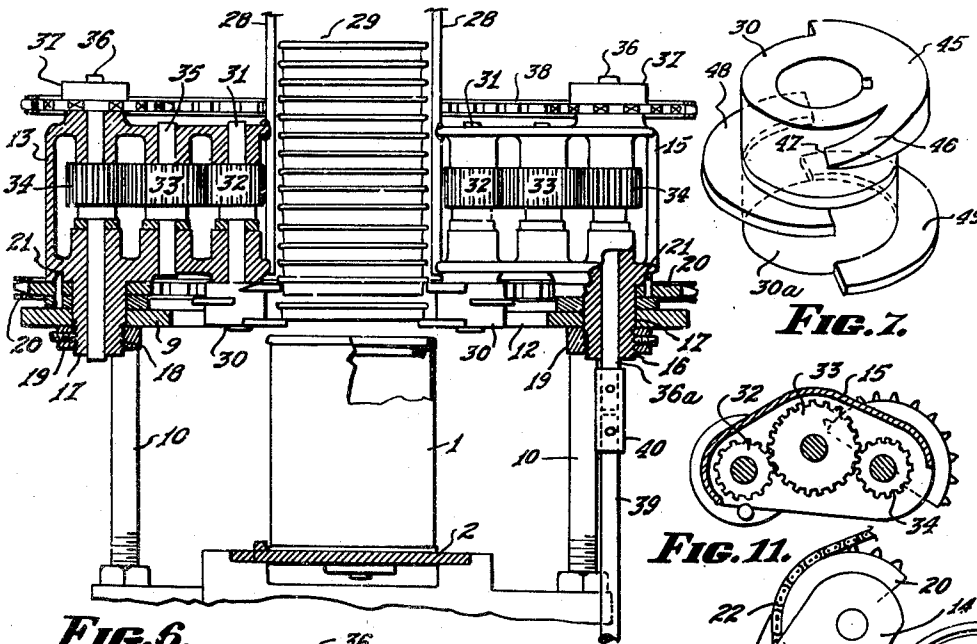


Fig. 6.

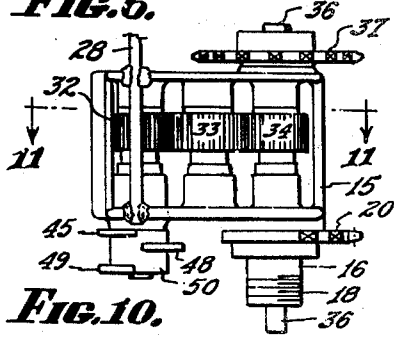


Fig. 10.

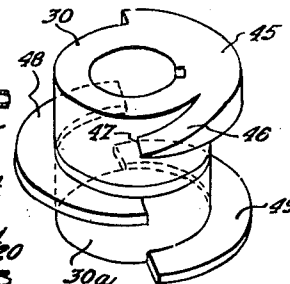


Fig. 7.

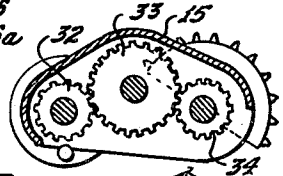


Fig. 11.

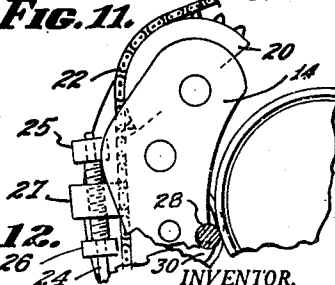


Fig. 12.



Fig. 13.

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3 Sheets-Sheet 3

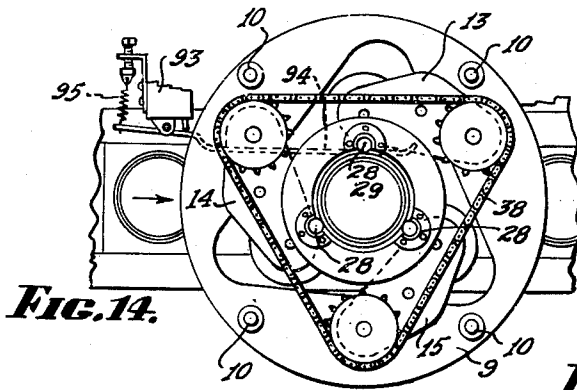


FIG. 14.

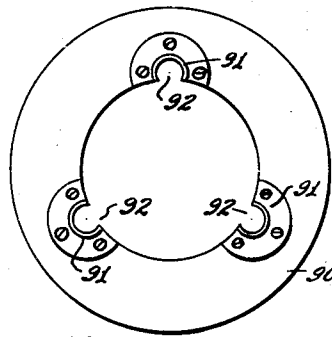


FIG. 16.

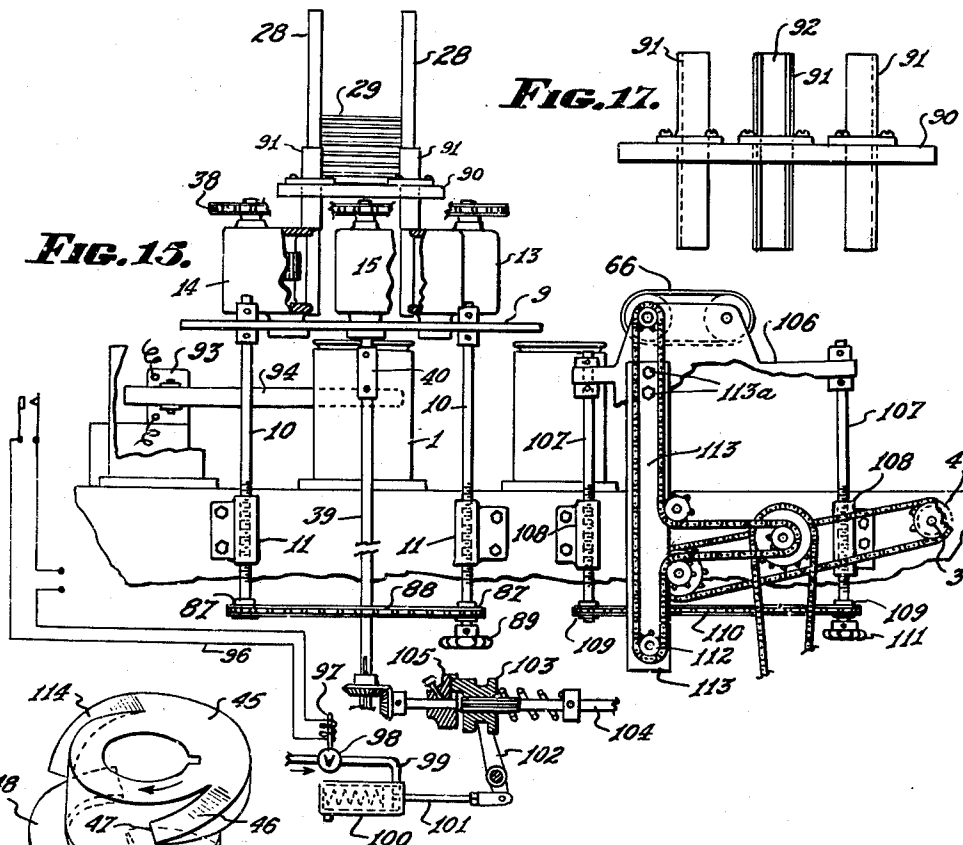


FIG. 17.

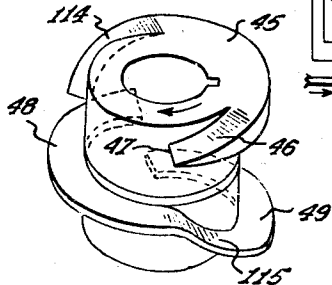


FIG. 18.

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1

2,840,963

LID PLACING DEVICE

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Application March 21, 1957, Serial No. 647,685

23 Claims. (Cl. 53—73)

My invention relates to a device for placing lids on cans and more particularly to a device which will automatically place lids on a continuously moving supply of cans.

It is a principal object of my invention to provide a lid placing device which will automatically feed the lids from a stack and deposit them on the cans to be covered as the cans are being moved in a path of travel, the placement of the lids occurring in timed relation to the movement of the cans.

A further object of my invention is the provision of a lid placing device capable of positively separating the lowermost lid in the stack from the next adjacent lid in the event the lids have stuck together, as is often the case, particularly where the lids are of the friction-tight variety, such as paint can lids, the downwardly projecting annular flange of one lid sticking in the flange forming groove of the next adjacent lid.

Still a further object of my invention is the provision of a lid placing device which may be used in conjunction with a continuous filling line wherein containers may be fed directly from the filling instrumentality to the lid placer, the lid placer also incorporating pressure sealing means for positively sealing the lids to the cans and means for printing serial number or other printed indicia on the lids.

Yet a further object of my invention is the provision of lid placing mechanism of the character described which may be readily adjusted to accommodate lids of different sizes, thereby permitting the user to readily shift from the capping of one size can to another by relatively simple adjustment of the equipment.

The foregoing, together with other objects of my invention which will appear hereinafter or which will be apparent to the skilled worker in the art upon reading these specifications, I accomplish by those constructions and arrangements of parts of which I shall now describe certain exemplary embodiments.

Reference is now made to the accompanying drawings wherein:

Figure 1 is a side elevational view of a lid placing and sealing device in accordance with my invention, the device illustrated forming a part of a continuous container filling and capping operation.

Figure 2 is a somewhat fragmentary plan view of the device of Figure 1.

Figure 3 is a schematic plan view illustrating cap engaging and centering sweeps.

Figure 4 is an enlarged plan view illustrating a modified form of cap engaging sweep.

Figure 5 is a fragmentary elevational view of the sweep device illustrated in Figure 4.

Figure 6 is an enlarged vertical sectional view taken along the line 6—6 of Figure 1 in which certain of the parts have been arbitrarily revolved from normal position for purpose of illustration.

2

Figure 7 is an enlarged perspective view of a lid separating and dropping cam.

Figure 8 is an enlarged vertical sectional view illustrating the operation of the lid separating and dropping cams.

Figure 9 is an elevational view similar to Figure 8 but illustrating the cams in an alternate position of use.

Figure 10 is a side elevational view of a portion of the lid placing mechanism.

Figure 11 is a sectional view taken along the line 11—11 of Figure 10.

Figure 12 is a fragmentary plan view illustrating the adjustment means for the lid dropping device.

Figure 13 is a schematic elevational view illustrating marking means which may be incorporated as a part of the lid sealing mechanism.

Figure 14 is a fragmentary plan view of a modified form of lid dropping mechanism incorporating a ring positioner for the guide rods.

Figure 15 is a side elevational view with parts broken away of the device of Figure 14, the view including a modified form of lid sealing means.

Figure 16 is a plan view of a ring positioner for use with the device of Figure 14.

Figure 17 is a side elevational view of the ring positioner.

Figure 18 is a perspective view of a modified form of operating cam.

Referring now to Figures 1 and 2 of the drawings, I have therein illustrated my invention as it would be utilized in conjunction with a continuous supply of cans fed from a filling section, the cans or containers 1 being moved along on a continuously moving conveyor 2 driven in any suitable manner, as by means of a drive shaft 3 acting through gear mechanism indicated generally at 4. It will be understood that where the lid placer forms part of a filling line, the conveyor may be continuous throughout the entire line or it may be a self-contained part of the lid placing section, in which event the cans will be fed from the preceding machine section by means of star wheels or the like, as will be readily understood by the skilled worker in the art. In the embodiment illustrated, the cans 1 are placed upon spaced apart conveyor platforms 5 which first transport the cans beneath the filling spouts 6 of a filling machine 7 by means of which the contents will be introduced into the cans, whereupon the cans are moved from the filling section beneath the lid placer, which is generally indicated at 8.

As best seen in Figures 1, 2 and 6, the lid placer comprises a supporting platform 9 overlying the path of travel of the advancing cans, the platform being supported by a plurality of vertically adjustable posts 10 mounted on brackets 11 fixed to the machine frame. The platform has an enlarged opening 12 therein which is preferably triangular in outline, as will be apparent from Figure 2, and the portions of the platform adjacent the sides of the triangular opening mount movable housings 13, 14 and 15 which project inwardly over the opening 12. As best seen in Figures 6 and 10, each of the housings is provided with a downwardly projecting boss 16 which passes through an opening 17 in the platform, thus mounting the housing for pivotal movement. In the embodiment illustrated, the lower ends of the bosses 16 are threaded, as at 18, so as to receive the threaded collars 19 which serve to secure the housings to the platform. The bosses 16 also mount sprocket segments 20 which overlie the platform and are fixed to the housings by means of pins 21.

The housings are connected together for joint movement by means of a chain 22 (Figures 1 and 2) which passes around the sprocket segments 20 and also around

3

idler sprockets 23 mounted on the platform. With this arrangement, it will be apparent that movement of the chain 22 in a counterclockwise direction will cause the housings to pivot inwardly over the opening 12, whereas movement of the chain in the opposite direction will cause them to pivot outwardly toward the sides of the opening. Adjusting movement of the chain may be effected (see Figure 12) by means of a threaded adjustment rod 24 journaled in lugs 25 and 26 fixed to the platform, the threaded portion of the adjustment rod passing through the threaded bore of a lug 27 secured to the chain.

A vertically projecting guide rod 28 is secured to each of the housings toward the free end thereof, the guide rods projecting upwardly and defining between them a lid receiving hopper in which a plurality of lids 29 may be stacked one upon the other. The lids are maintained in the hopper so formed by means of the multiple part cams 30 which are mounted on the lower ends of shafts 31 journaled in the housings. As will be explained more fully hereinafter, the multiple part cams act to separate the lowermost lid in the stack from the next adjacent lid and then drop the lowermost one on top of a can as it passes beneath the stack.

In order that the lids may be placed on the cans as the cans pass beneath the stack, the lids must be dropped in timed relation to the movement of the can carrying conveyor 2. Consequently the cams 30 which control the discharge of the lids must be rotated in timed relation to the movement of the conveyor, and to this end the shafts 31 which mount the multiple part cams are provided with gears 32 which are driven by intermediate gears 33 and driving gears 34, the gears 33 being mounted on shafts 35 journaled in the housings and the driving gears 34 being mounted on shafts 36 also journaled in the housings. The shafts 36 project upwardly beyond the housings where they mount sprockets 37, the sprockets being operatively connected by means of an endless chain 38. With this arrangement, all three of the multiple part cams may be driven in unison by driving only one of the shafts 36.

It will be noted that the lower ends of the shafts 36 extend downwardly through the bosses 17 and any one of the shafts, such as the shaft 36a (Figure 6), may be elongated and coupled to a driving shaft 39, as by means of a coupling 40. As seen in Figure 1, the driving shaft 39 is connected through bevel gears 41 and 42 to a shaft 43 which in turn is driven from the drive shaft 3 by means of chain drive means 44. The drive shaft 3 thus drives both the conveyor 2 and the multiple part cams 30.

As seen in Figure 7, the multiple part cams 30 each have a cylindrical body 30a mounting an upper semicircular cam part 45 having an inclined upper surface 46, the surface 46 being inclined upwardly from the leading edge 47 of the upper cam part. A second cam part 48 lies intermediate the ends of the cylindrical body 30a. The cam part 48 is also semicircular in configuration, although it lies in a horizontal plane and extends about the side of the cylindrical body 30a opposite the upper cam part. A third or lower semicircular cam part 49 is provided at the lower end of the cam body. It too is horizontally disposed and lies directly beneath the upper cam part 45 and hence on the side opposite the second cam part.

The operation of the multiple part cam will be best understood by reference to Figures 8 and 9. As seen therein the lids are stacked one upon the other and in the case of the double-tight lids illustrated which have annular friction flanges 50, the flanges tend to nest, thereby causing the lids to stick together. The multiple part cam will serve to both separate the lids and cause them to be dropped individually. While the cams are continuously moving, the initial stage in each cycle of rotation is shown in Figure 8 wherein it will be seen that the entire stack of lids 29 is supported on the intermediate

4

or second cam parts 48. As the cam parts rotate in the direction of the arrow A, the leading edges 47 of the upper cam parts 45 will enter between the marginal edges of the lowermost lid in the stack and the next adjacent lid, in the manner illustrated in dotted lines in Figure 8. Just as the leading edge 47 of the upper cam part engages the next to the lowermost lid, the intermediate cam part 48 will have passed beyond the annular flange of the lowermost lid and the lid will be free to drop downwardly unless it is stuck to the next adjacent lid. If the two lids are stuck together, they will be forcibly separated as the next to lowermost lid rides upwardly along the inclined faces 46 of the upper cam parts. Upward movement of the lowermost lid will be prevented since it will abut against the flat undersurfaces of upper cam parts 46. The two lids are thus positively separated. The freed lowermost lid will drop onto the lowermost cam parts 49 the leading edges of which are substantially coterminous with the trailing edges of the intermediate cam parts and hence will move into position to catch the lowermost lid as it is released by the intermediate cam parts. The lids thus assume the position illustrated in Figure 9. As the multiple part cams continue their rotation, the lower cam parts 49 will pass beyond the edges of the lowermost lid, whereupon the lowermost lid will drop free, as illustrated in dotted lines in Figure 9. It will be understood, of course, that the release of the lowermost lid will be timed to the movement of the advancing can so that the lid will drop directly onto a can moving therebeneath. Generally speaking, the lids will be deposited on the cans slightly off center in the direction of movement of the cans, i. e. with an edge of the lids projecting forwardly beyond the leading edge of the cans. This enables me to positively center the lids in the manner which will be described hereinafter. As to the remainder of the stack, since the uppermost cam parts 45 terminate substantially co-extensive with the lowermost cam parts 49, the stack will be released from the uppermost cam parts as the lowermost lid drops free. The entire stack will thus drop onto the intermediate cam parts 48 which will have now returned to the position of Figure 8, whereupon the cycle of operation will be repeated.

In order to assure that the lids placed on the cans are properly centered, I provide a pair of lid engaging and centering sweeps 51 and 52 mounted on arms 53 and 54 projecting downwardly from the platform 9. As best seen in Figure 3, the sweeps 51 and 52 are arranged to contact the lids which, as already indicated, are preferably dropped in a slightly advanced position, such as that seen at 29a in Figure 3. This lid, as the can advances on the conveyor, will be engaged by the sweeps and retained until it is centered on the can, whereupon the sweeps will release the lid. The lid is automatically released by the sweeps which are cammed open by the sides of the advancing cans. Thus, while the sweeps serve to retain the lids until they are centered, the gripping engagement of the lids by the sweeps will cease as the sweeps are expanded by the sides of the advancing cans, the maximum expansion of the sweeps occurring at the center line of the can where the diameter of the cans is slightly greater than the diameter of the lids. While the arrangement shown in Figures 1, 2 and 3 is suitable for wide mouth cans, such as conventional paint cans, a modified form of sweep may be employed where the lids are of a diameter substantially less than the diameter of the cans.

In Figures 4 and 5, I have illustrated an alternative form of sweeps comprising can contacting portions 55 and 56 and relatively adjustable lid contacting sweep portions 57 and 58. With this arrangement, the can contacting parts 55 and 56 will engage opposite sides of can 59, whereas the lid contacting portions 57 and 58 will project inwardly for contact with the lid 60 causing it to be retained and centered on the mouth 61 of the

5

moving can. As in the embodiment of Figure 3, the can contacting parts 55 and 56 will be moved outwardly by the advancing can and the lid will be released when it reaches dead-center, the sweep portions 57 and 58 being moved outwardly to a dead-center point at which their distance apart is just slightly greater than the diameter of the lid. Accurate adjustment of the lid contacting portions 57 and 58 may be obtained by means of adjustment screws 62 and 63 mounted on the lid contacting portions, as by means of supporting arms 64 and 65.

Immediately beyond the lid centering sweeps, I provide a lid sealer, indicated generally at 66, effective to exert pressure against the centered lids and press them into tight engagement with the cans. In the embodiment illustrated the sealer comprises a pair of supporting plates 67 and 68 extending lengthwise of the conveyor and secured to the machine frame, the plates mounting a pair of spaced apart pressure rollers 69 and 70 journaled in adjustable blocks, such as the blocks 71 and 72 (Figure 1). Adjustment means 73 and 74 are provided to vary the pressure of the rollers. It will be apparent that as each can and lid passes beneath the pressure rollers, pressure will be exerted against the lids forcing them into tight engagement with the cans.

The sealer may also incorporate a marking device so that suitable code or serial numbers may be printed on the can lids as they are sealed. To this end, I prefer to provide an endless belt 75 passing around the pressure rollers, the belt carrying spaced apart type blocks or the like 76 which will be brought into contact with the can lids. An ink reservoir 77 is positioned adjacent the printing belt, the reservoir being provided with transfer rollers 78 which will serve to transfer ink from the reservoir to the type blocks. In order that the type blocks will be moved in timed relation to the movement of the cans and hence contact the lids, the roller 70 is driven by a chain 78 operatively connected to the conveyor and cam driving mechanism (Figure 1). With this arrangement, the pressure rollers and the printing belt will move in unison and their speed of movement will be synchronized with the movement of the cans. Alternatively, as seen in Figure 13, the marking device may be in the form of a separate marker 76a fed from the reservoir 77. It will be understood that the marker 76a will be driven in timed relation to the sealer.

It is also within the spirit of my invention to provide a no can-no lid mechanism which will prevent the dispensing of the lids in the absence of a can on the underlying conveyor. To this end, I provide a photoelectric cell 79 (Figure 2) adapted to be energized by a light source 80 lying to the opposite side of the conveyor. The photoelectric cell will be connected to a solenoid 81 (Figure 1) the arrangement being such that the absence of a can on any one of the conveyor platforms as it passes beneath the lid placer will result in the arm 82 being actuated so as to move lever 83 in a clockwise direction. The lever 83 is connected to a clutch member 84 slidably keyed to the shaft 43. The movement of the lever 83 will result in disengaging the clutch member 84 from the coacting clutch member 85 operatively connected to the driving shaft 39 through the bevel gears 41 and 42. Disengagement of the clutch members results in the deactivation of the multiple part cams 30 and hence the lowermost lid in the stack will not be discharged. If a can is present on the next succeeding conveyor platform, the beam of light between the light source and the photoelectric cell will be broken by the approaching can, thereby deenergizing the solenoid and permitting the clutch to be reengaged under the influence of spring 86.

From the foregoing, it will be apparent that the mechanism provides positive and accurate means for placing the lids on the cans, centering them, and causing them to be sealed and marked. The mechanism may be readily adjusted to accommodate lids of different sizes simply

6

by turning the threaded adjustment member 44 which will move the housings in or out to the desired degree, thereby accommodating the multiple part cams to the dimensions of the lids being handled.

Modifications may, of course, be made in my invention without departing from the spirit of it, and I do not intend to be limited excepting as set forth in the claims which follow. For example, in Figures 14 and 15, I have illustrated a modified lid placing and sealing mechanism incorporating certain alternative features of construction. Thus, as best seen in Figure 15, the vertically adjustable posts 10 which mount platform 9 may be provided at their lower ends with sprockets 87 interconnected by chain 88 and arranged to be jointly adjusted by means of hand wheel 89.

In the embodiment of Figures 14 and 15, the positions of the movable housings 13, 14 and 15 are adjusted by means of an adjustment or positioning ring 90 having vertically disposed tubular sleeve portions 91 arranged to receive and position the vertically projecting guide rods 28 which define the lid receiving hopper for the lids 29. As best seen in Figure 16, the tubular sleeves 91 are cut away, as at 92, so as to permit direct contact between the guide rods and the lids throughout the full length of the guide rods. A different positioning ring will be provided for each size of lid to be used, and the operator may readily adjust the housings and guide rods by removing one ring and replacing it with another, the sleeves or bushings serving to accurately locate the housings and guide rods for any given size of lid.

A limit switch 93 may be utilized instead of a photoelectric cell to provide a no can-no lid control. As seen in Figures 14 and 15, the switch 93 is provided with an elongated actuating arm 94 adapted to be contacted by the advancing cans and biased inwardly into the path of the cans by means of a spring 95. As the cans approach the lid dropping station, the actuating arm 94 will be deflected outwardly against the tension of spring 95, thereby closing the switch 93. The switch 93 acts through circuit 96 (Figure 15) to energize solenoid 97 and open valve 98 so as to permit air under pressure to flow through conduit 99 into one end of cylinder 100. The piston in the cylinder is caused to move to the left, thereby moving piston rod 101 operatively connected to lever arm 102 which in turn is operatively connected to clutch member 103 which is slidably keyed to the shaft 104. The clutch member 103 is preferably in the form of a one tooth clutch adapted to engage coacting clutch member 105. With this arrangement, the actuation of the lid dropping mechanism will remain synchronized with the operating mechanism irrespective of the precise moment at which the clutch members are reengaged.

The modified device also contemplates the provision of an adjustable platform for the lid sealer 66. As seen in Figure 15, the lid sealer 66 is mounted on a platform 106 supported at its corners on vertically disposed rods 107 having threaded lower ends received in internally threaded brackets 108. At their lower ends the rods 107 carry sprockets 109 connected together by a chain 110 for joint movement by means of hand wheel 111, in much the same manner as the elevation of the platform 9 is controlled. The chain 78a which drives the sealer also passes over a lower sprocket 112 which is mounted in fixed relation to the sealer by means of a member 113 fixed to the platform 106 as by bolts 113a. Thus, should it be desired to readjust the sealer 66 to accommodate it to a different size of can, the hand wheel 111 would be turned so as to lower or to elevate the platform 106 as may be required. This will result in like movement of the member 113 and of the sprocket 112 whereby the required length of chain 78a is unchanged and individual adjustment means, with respect to the chain, are obviated.

I have also found that for certain sizes of lids, particularly lids of relatively small diameter, it is desirable to

use the modified form of multiple cam illustrated in Figure 18. As seen therein, the upper cam part 45 terminates at its trailing edge in a downwardly inclined surface 114. The surface 114 may extend downwardly into contact with the intermediate cam part 48 or it may terminate somewhat short thereof. Similarly, the trailing edge of the intermediate cam part 48 is provided with a downwardly inclined surface 115 directed toward the lower cam part 49. The inclined surfaces 114 and 115 permit the lids to effectively slide between the cam parts rather than drop, as is the case where the cam parts are constructed in the manner illustrated in Figure 7. It has been found advantageous, particularly with smaller diameter cans, to ease them from one cam part to the other rather than to permit them to drop freely from one cam part to the other.

It may be observed that the type of lids employed does not constitute a limitation on my invention and single, double and triple tight lids may be employed as well as lids of other types. Having, however, described my invention in certain exemplary embodiments, what I desire to secure and protect by Letters Patent is:

1. In a lid placing device, conveyor means for moving cans in a path of travel, platform means overlying the path of travel of said cans, an opening in said platform, a plurality of housings pivotally mounted on said platform and extending over the opening therein, lid dropping means mounted on each of said housings, said lid dropping means being adapted between them to support a stack of lids to be placed on the cans, and means for actuating said lid dropping means, whereby as said cans move therebeneath said lids will be caused to drop on the cans, and means for moving said conveyor in synchronism with the actuation of said lid dropping means.

2. In a lid placing device, conveyor means for moving cans in a path of travel, platform means overlying the path of travel of said cans, an opening in said platform, a plurality of pivotally mounted housings on said platform extending inwardly over said opening, cam means mounted on each of said housings on the portions thereof overlying said opening, said cam means being adapted between them to support a stack of lids to be placed on the cans, means for driving said cam means, whereby as said cam means are driven the lids in said stack will be caused to drop on the cans moving therebeneath, and means for driving said conveyor in synchronism with the driven movement of said cam means.

3. In a lid placing device, conveyor means for moving cans in a path of travel, platform means overlying the path of travel of said cans, an opening in said platform, a plurality of housings pivotally mounted to said platform and extending over said opening, adjustable means connecting said housings together for joint pivotal movement, cam means mounted on each of said housings so as to overlie said opening, said cam means between them being adapted to support a stack of lids to be placed on said cans, means for rotating said cam means, said cam means including cam parts effective to drop the lowermost lid from said cam means during each rotative cycle thereof, whereby as said cam means are rotated, the lids in said stack will be caused to drop onto the cans moving therebeneath, and means for driving said conveyor in synchronism with the rotation of said cam means.

4. In a lid placing device, conveyor means for moving cans in a path of travel, supporting means overlying the path of travel of said cans, a plurality of housings pivotally mounted on said supporting means, cam means mounted on each of said housings, said cam means being adapted between them to support a stack of lids to be placed on said cans, means for driving said cam means, said cam means including cam parts adapted to drop the lowermost lid in said stack on an underlying can as said cam means are driven through a predetermined cycle

of operation, and means for driving said conveyor in timed relation to the driven movement of said cam means.

5. The device claimed in claim 4 in combination with lid sealing means adapted to press the lids into tight contact with the cans subsequent to the placement of the lids on the cans.

6. The structure claimed in claim 5 including sweep means intermediate said lid placing means and said lid sealing means for centering said lids on said cans.

10 7. The structure claimed in claim 6 wherein said lid sealing means comprises roller means driven in timed relation to the movement of said conveyor.

8. The structure claimed in claim 7 wherein said lid sealing means includes printing means for applying printed
15 indicia to the lids of said cans.

9. In a lid placing device, a support, a plurality of housings adjustably mounted on said support, each of said housings comprising a rotary cam member and means for driving said cam member, said cam members being adapted between them to support a stack of lids, each of said cam members having a first cam part for initially supporting said stack of lids, a second cam part for separating the lowermost lid in the stack from the remainder of the stack, and a third cam part for receiving the lowermost lid in the stack subsequent to its separation from the remainder of the stack by said second cam part, said third cam part being adapted to discharge said lowermost lid therefrom as the remainder of said stack is returned from said second cam part to said first cam part.
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10. The device claimed in claim 9 wherein said cam means are adapted to be driven in unison and wherein said drive means are driven from a common source of power.
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11. In a lid placing device, a rotary cam means for supporting a stack of lids and for separating the lowermost lid from the stack and dropping it free from the stack, said cam means comprising a multiple part cam having a cylindrical body and substantially semi-circular upper, intermediate and lower cam parts.
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12. The structure claimed in claim 11 wherein said upper cam part has an upwardly inclined surface starting at the leading edge thereof, and wherein said intermediate and lower cam parts are flat.

45 13. The structure claimed in claim 12 wherein the leading and trailing edges of said cam parts are substantially coterminous in a vertical plane and wherein said upper and lower cam parts extend around one side of said cylindrical body and said intermediate cam part extends around the opposite side of said cylindrical body.
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14. The structure claimed in claim 12 wherein the trailing edges of the upper and intermediate cam parts terminate in downwardly inclined portions extending toward the cam part therebeneath.

55 15. In a lid placing device, a support, a plurality of housings pivotally mounted on said support, each of said housings including a first shaft mounting a multiple part cam, a second shaft, gear means interconnecting said shafts, and a sprocket secured to said second shaft, an endless chain interconnecting said sprockets for joint movement, and means for driving one of said shafts whereby said multiple part cams will be driven in unison.
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16. The structure claimed in claim 15 wherein said housings are pivotally mounted to said support by means of bosses extending through openings in said platform, and means for simultaneously adjusting said housings so that the lid separating cams are simultaneously moved toward or away from their common center.

17. In a lid placing device, a support, a plurality of housings pivotally mounted on said support, and means for adjusting said housings relative to each other, said means comprising a vertically disposed shaft projecting upwardly from each of said housings, and a positioning ring having a plurality of vertically disposed sleeves mounted thereon, said sleeves being of a size to be re-
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9

ceived by said shafts, whereby upon the fitting of said sleeves on said shafts, said housings will be positioned relative to each other in predetermined manner.

18. The device claimed in claim 17 wherein said sleeves are cut away as to their innermost surfaces, whereby to permit the corresponding surfaces of said shaft to project therebeyond, whereby a stack of lids positioned between said shafts may be in contact with said shafts throughout their entire length.

19. In a lid placing device wherein the cans with which the lids are to be associated are moved in a path of travel beneath said device, supporting means overlying the path of travel of said cans, means on said supporting means for retaining a stack of lids, said last named means including a plurality of multiple part cam means arranged to engage the lowermost end of said stack, means for driving said cam means in unison, said cam means including cam parts adapted to drop the lowermost lid in said stack on an underlying can as said cam means are driven through a predetermined cycle of rotation, said cam means including additional cam parts for supporting the remainder of the stack as the said lowermost lid is dropped therefrom.

20. The structure claimed in claim 19 including means for rendering said cam driving means inoperative in the event no can is present beneath said lid placing device.

21. In a lid placing device, conveyor means for moving

10

cans in a path of travel, supporting means overlying the path of travel of said cans, a plurality of housings pivotally mounted on said supporting means, cam means mounted on each of said housings, said cam means being adapted between them to support a stack of lids to be placed on said cans, means for driving said cam means, said cam means including cam parts adapted to drop the lowermost lid in said stack on an underlying can as said cam means are driven through a predetermined cycle of operation, means for driving said conveyor in timed relation to the driven movement of said cam means, and means for rendering said cam driving means inoperative in the event no can is present beneath said stack of lids.

22. The device claimed in claim 21 wherein said last named means comprises a photoelectric cell adapted, in the absence of a can beneath said stack of lids, to disengage a driving clutch for said cam driving means.

23. The device claimed in claim 21 wherein said last named means comprises a limit switch having an arm adapted to be contacted by the cans as they move beneath said stack of lids, said limit switch being operatively connected to mechanism effective to disengage a clutch for said cam driving means.

No references cited.