

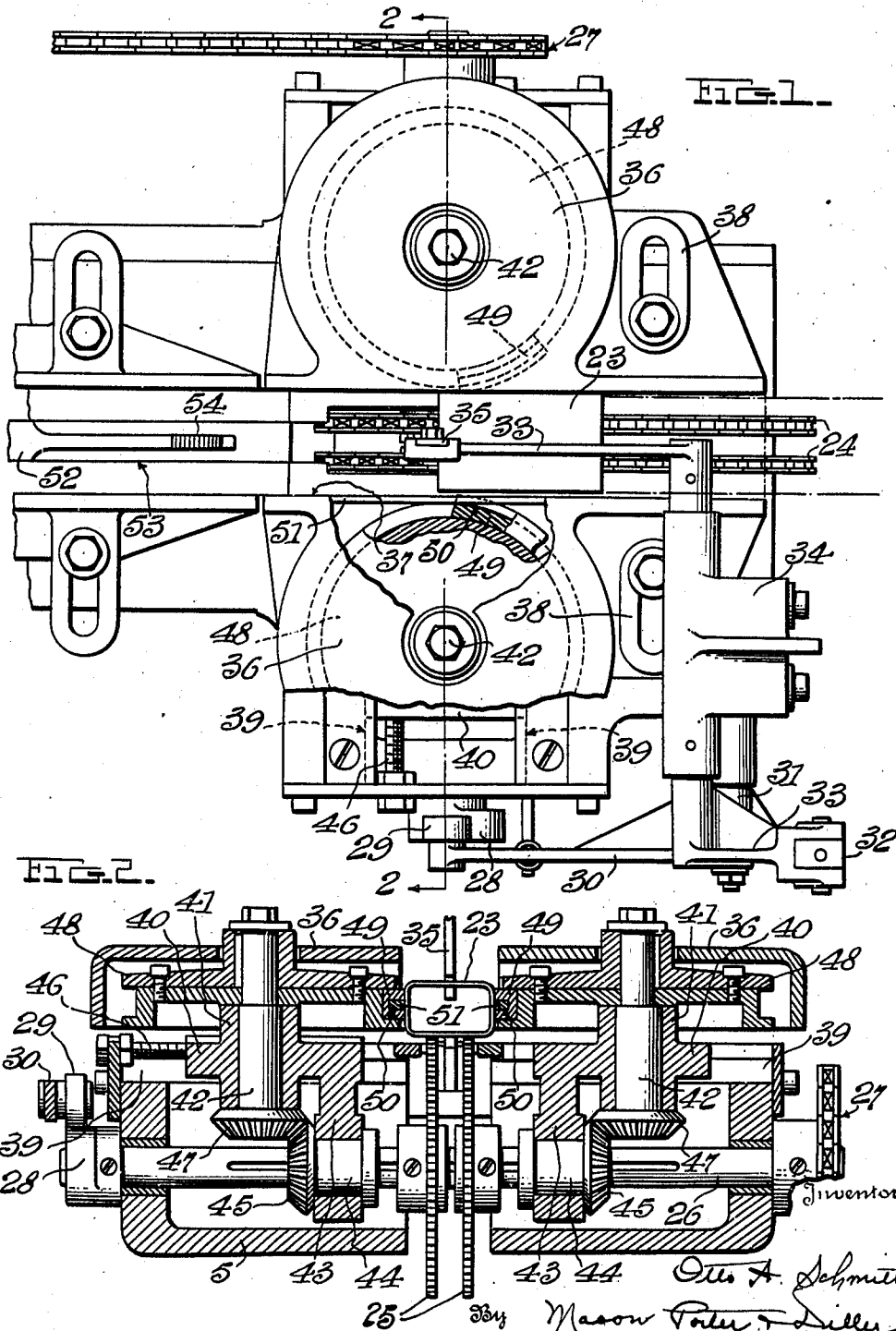
Oct. 26, 1943.

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CONTAINER BODY FEEDING MEANS
Original Filed Nov. 10, 1939

3 Sheets-Sheet 1



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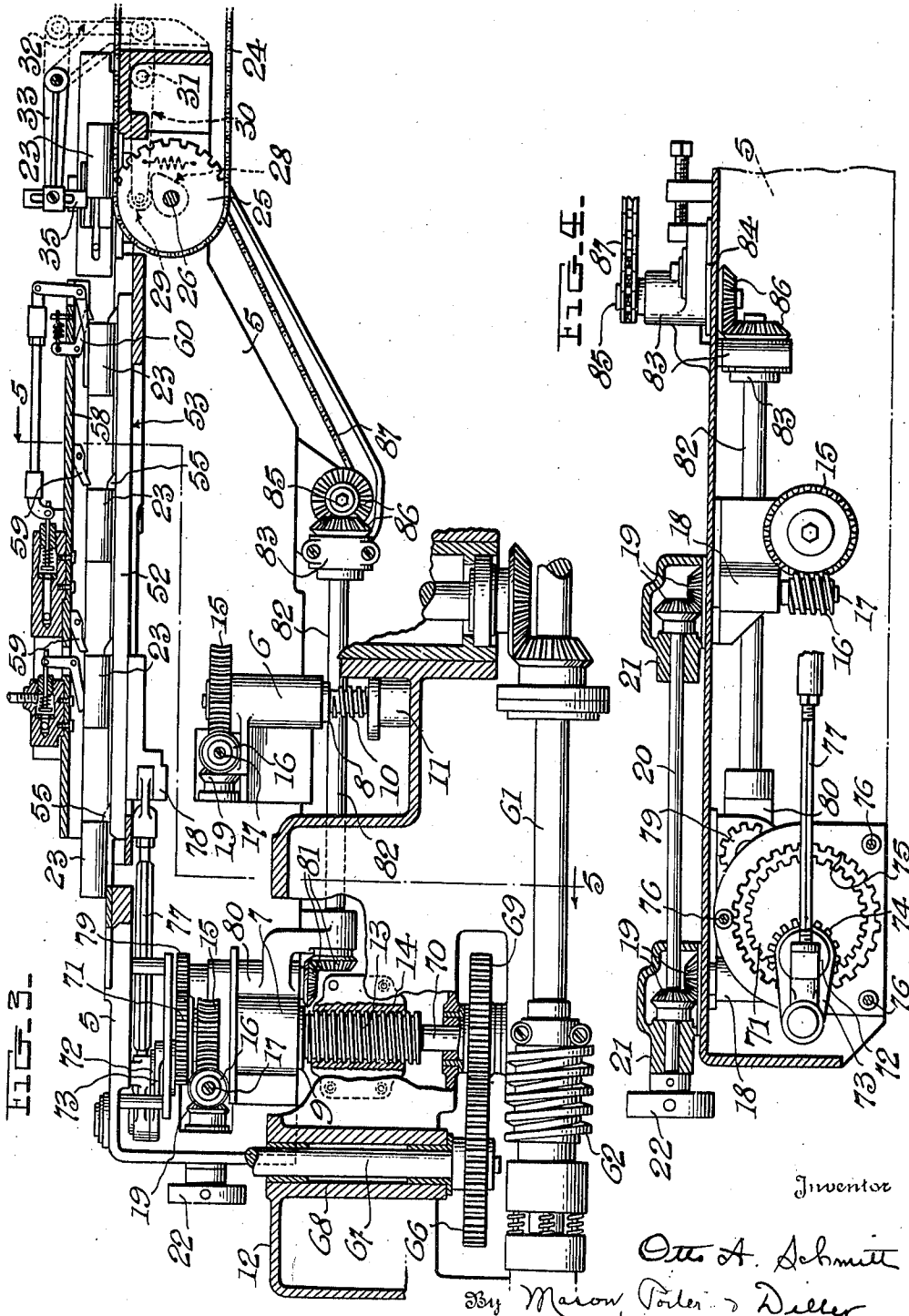
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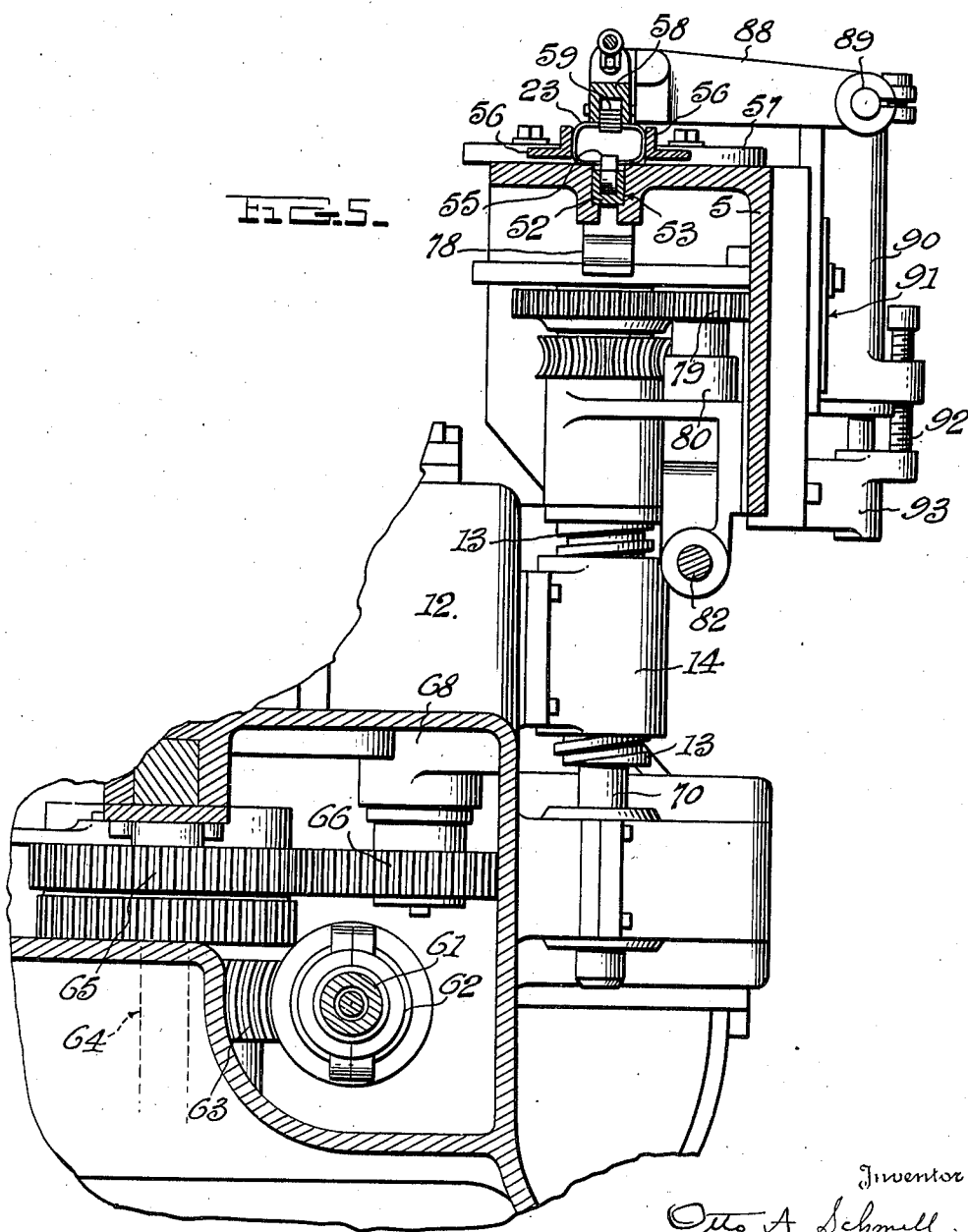
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Inventor

Otto A. Schmitt

By Mason, Porter & Diller

Attorney

UNITED STATES PATENT OFFICE

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CONTAINER BODY FEEDING MEANS

Otto A. Schmitt, Syracuse, N. Y., assignor to
Continental Can Company, Inc., New York,
N. Y., a corporation of New York

Original application October 10, 1940, Serial No.
360,669, which is a division of application Serial
No. 303,991, November 10, 1939, now Patent No.
2,323,939, July 13, 1943. Divided and this ap-
plication September 1, 1942, Serial No. 456,937

10 Claims. (Cl. 198—106)

The invention relates generally to the art of manufacturing containers of sheet metal, or of a combination of sheet metal and paper or similar non-metallic body and end closure elements, and primarily seeks to provide certain new and useful container body feeding equipments adaptable for use in container body and end closure assembling machines generally, and more particularly in the form of such machines disclosed in the co-pending application for U. S. Letters Patent Serial Number 303,991, now Patent No. 2,323,939, issued July 13, 1943. This case is a division of the co-pending application for U. S. Letters Patent filed by said Otto A. Schmitt on October 10, 1940, Serial Number 360,669 which is in turn a division of the before mentioned patent application.

An object of the invention is to provide, a can body feeding equipment of the character stated including a supporting table, means for feeding the can bodies in proper spaced relation along the table, and means for vertically adjusting the position of the table and feed means as a unit.

Another object of the invention is to provide a can body feeding equipment of the character stated in which there is included a top guard rail overlying the feeding means on the table, back check detents suspended from said rail, means for swingably mounting the rail on the table for movement of adjustment therewith, and means for vertically-adjustably mounting the rail and its swingable mounting on said table for movement of adjustment relative to said table.

Another object of the invention is to provide a can body feeding equipment of the character stated in which the feeding means includes a pair of rotary discs having opposed edge portions equipped with limited length body gripping and accelerating sectors thereon effective for individually feeding away can bodies presented in line thereto, and a reciprocable stop member for stopping can bodies in said line and positioning or timing them for accelerated feed away engagement by said sectors.

Another object of the invention is to provide a can body feeding equipment of the character stated in which there is included novel means for mounting and imparting rotation to said discs whereby the spaced relation of the discs can be readily varied without disrupting the driving connections therewith.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more fully understood by following

the detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a fragmentary plan view illustrating the mounting of the can body accelerating discs.

Figure 2 is a detail vertical cross section taken on the line 2—2 on Figure 1.

Figure 3 is a detail vertical longitudinal section through the container body feeding table.

Figure 4 is a horizontal section taken through the table illustrated in Figure 3, the section being taken through the axis of the table adjusting devices, and parts being shown in plan view.

Figure 5 is a detail vertical section taken on the line 5—5 on Figure 3.

The can body feed-in mechanism includes a table 5 having rigidly mounted, vertically disposed bearings 6 and 7 thereon. The vertical bearing members 6 and 7, respectively, surround a vertical shaft 8 and a vertical sleeve 9; the former including a threaded part 10 threadably received in a bearing 11 stationarily supported on a portion 12 of the main machine frame, and the latter including a threaded portion 13 threadably received in a bearing 14 stationarily mounted on said frame portion. A worm wheel 15 is secured to each of the elements 8 and 9, and each said worm wheel is engaged by a worm gear 16 mounted on a short cross shaft 17 rotatably supported in a bearing 18 and connected by a bevel pinion couple 19 with a manually operable adjuster shaft 20 rotatably supported in bearings 21 secured upon the table and equipped with a hand wheel 22. See Figures 3 and 4.

The rectangular container bodies or open-ended sleeves 23 are fed onto the table by laterally spaced feeder chains 24 which pass over driver sprockets 25 secured upon a cross shaft 26. This shaft is rotatably supported at the front end of the table and has a driver sprocket 27 affixed to one end thereof and a cam member 28 affixed to its other end. See Figures 1, 2 and 3. The rotating cam member 28 is adapted to alternately lift and lower a roller 29 and the end of the lever 30 to which said roller is affixed. The lever is spring-depressed and is pivoted intermediate its ends as at 31 on the table. The front end of the lever 30 is link-connected as at 32 with one arm of a bell crank lever 33 rockably supported in a bearing member 34 vertically-adjustably secured at the front end of the table, and the other arm of the bell crank lever carries a vertically adjustable stop member 35 adapted to be alternately projected into and removed from a posi-

tion for obstructing free movement of the container bodies 23 on the conveyor chains 24.

The vertical oscillations of the stop member 35 are so timed that each time this member is in its lowered position it will intercept temporarily and hold an inwardly traveling container body 23 in the space between two laterally spaced housings 36 in the manner illustrated in Figures 1 and 2 of the drawings. Each housing member includes spaced wall portions 37 forming lateral guides for the traveling can bodies and is adjustably supported as at 38 so that the spaced relation of the housings can be varied. Beneath the housings the table is equipped with a pair of laterally aligned slideways 39 in each of which a bearing block 40 is slidably mounted. Each block 40 includes a vertically disposed bearing portion 41 in which is rotatably mounted a shaft member 42, and a horizontally disposed bearing portion 43 in which is rotatably mounted a sleeve 44 equipped with a bevel pinion 45, said sleeves surrounding and being spline-connected to the cross shaft 26 hereinbefore referred to. Adjusting devices 46 are provided for moving the blocks 40 in the slideways 39, and by this means the spaced relation of the shafts 42 can be adjusted. A bevel pinion 47 is secured to the lower end of each shaft 42 and meshes with the bevel pinion 45 of the adjacent sleeve 44, and by this means the rotation of the shaft 26 is imparted to the spaced vertical shafts 42.

A feed wheel 48 for the cam bodies 23 is secured upon the upper end of each shaft 42, and each wheel carries a feeder segment 49 grooved at 50 to straddle the reduced rib 51 of the side guide wall portion 37 in the manner illustrated in Figure 2 of the drawings. Said feeder segments 49 cooperate in yieldably gripping and imparting accelerated feed movement to the can bodies in the manner illustrated in Figures 1 and 2 of the drawings. The can bodies 23 are fed into the machine in a continuous line by the chains 24, the line of cans being alternately intercepted and then released by the vertically oscillating stop member 35. Each time the stop 35 is moved up to release the can bodies the segments 49 engage the side walls of the foremost can body in the line and rapidly move it away from the line while the stop member is elevated and feeds it into the zone of influence of the other feeding devices of the table. Immediately after the feeder segments have thus separated the foremost can body from the remainder of the line, the stop member 35 will descend and again intercept the line of can bodies.

A feed bar 52 is reciprocally mounted in a receiving grooveway 53 formed in the table and carries a fixed feed finger 54 at its front end and equidistantly spaced series of spring-elevated feed fingers 55 throughout the remainder of its length. The feed bar is flanked at its respective sides with guide rails 56 which are adjustably supported as at 57 on the table so that their spaced relation can be altered. A guard rail 58 is disposed in spaced relation above the feed bar and carries a plurality of gravity depressed back check fingers 59 which function to hold can bodies in the positions to which they have been fed each time the feed bar is retracted for a new feeding stroke. The guard rail also includes a spring-depressed back check finger 60 disposed in co-operative relation above the fixed finger 54 and which is displaced by each can body as it is rap-

idly moved into the feed line by the rotating wheels 48.

The main shaft of the machine herein designated 61 has a worm gear 62 affixed thereon which meshes with a worm wheel 63 on a vertical shaft 64 having a spur gear 65 thereon.

The spur gear 65 meshes with a spur gear 66 on a shaft 67 rotatably supported in a vertically disposed bearing 68 in the frame 12 and the spur gear 66 meshes with a spur gear 69 secured upon a shaft 70 splined in the gear 69 and rotatable in and vertically movable with the screw sleeve 9 hereinbefore referred to. The shaft 70 carries a spur gear 71 at its upper end which includes an off-center crank pin 72 on which a crank member 73 and an integral or rigidly connected pinion 74 are rotatably mounted. The pinion 74 meshes with the internal ring gear 75 which is fixedly mounted as at 76 on the table. The crank member 73 is connected by an adjustable link 77 with a bracket member 78 secured to and depending from the feed bar 52.

The pinion 74 is so proportioned with relation to the ring gear within which it meshes that as it is rotated about within said ring gear the position of the crank member 73 will constantly be altered so that its pivotal connection with the link 77 will always move in a straight line centered on the feed bar slideway, and by this means the rotary motion of the vertically disposed shaft 70 is transmitted in the form of the desired straight line reciprocation to the feed bar 52.

The spur gear 71 meshes with a pinion 79 mounted on a shaft rotatable in a vertically disposed bearing 80 secured upon the table and connected by a bevel gear couple 81 with a shaft 82 having rotative bearing in a portion of the same bearing member 80 and in a bearing 83 secured as at 84 on the table. The bearing 83 also rotatably supports a short shaft 85 which is bevel gear coupled as at 86 with the shaft 82 and carries a driver sprocket which is chain-connected as at 87 with the shaft 26 hereinbefore referred to for the purpose of imparting rotation to the shaft 26. See Figures 1, 2, 3, and 4 of the drawings.

The guard rail 58 is supported on a bracket arm 88 which is pivotally mounted as at 89 on a standard 90 vertically-slidably secured as at 91 on the table in the manner illustrated in Figure 5 of the drawings. Vertical adjustment of the standard 90 may be effected through the medium of an adjuster screw 92 which is threaded through a lug portion of the standard and engages an abutment block 93 affixed to the table. It will be obvious by reference to Figure 5 that the can body guiding rails 56 can be adjusted laterally to accommodate can bodies of different sizes, and this adjustment can be accompanied by a vertical adjustment of the guard rail 58. The guard rail 58 may also be freely swung upwardly about its pivotal mounting 89.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of the invention.

I claim:

1. In a machine of the character described, a container body feed table comprising a table structure having slideways thereon, a reciprocable feed bar for moving bodies along the table in spaced relation, an infeed conveyor for feed-

ing bodies in line toward the feed bar, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering bodies from the conveyor to the feed bar, a reciprocable stop member for stopping bodies on the conveyor and timing them for proper feeding engagement by said sectors, and means for imparting movement to the feed bar and the conveyor and for displacing the stop member during each interval of body feeding effectiveness of said sectors.

2. In a machine of the character described, a container body feed table comprising a table structure having slideways thereon, a reciprocable feed bar for moving bodies along the table in spaced relation, an infeed conveyor for feeding bodies in line toward the feed bar, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering bodies from the conveyor to the feed bar, a reciprocable stop member for stopping bodies on the conveyor and timing them for proper feeding engagement by said sectors, means for imparting movement to the feed bar and the conveyor and for displacing the stop member during each interval of body feeding effectiveness of said sectors, and means for adjusting the spaced relation of the rotary disks.

3. In a machine of the character described, a container body feed table comprising a table structure having slideways thereon, a reciprocable feed bar for moving bodies along the table in spaced relation, an infeed conveyor for feeding bodies in line toward the feed bar, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering bodies from the conveyor to the feed bar, a reciprocable stop member for stopping bodies on the conveyor and timing them for proper feeding engagement by said sectors, means for imparting movement to the feed bar and the conveyor and for displacing the stop member during each interval of body feeding effectiveness of said sectors, a top guard rail overlying and vertically spaced from said slideways and supporting back check detents engageable by the container bodies, and means vertically-adjustably and swingably mounting said top guard rail.

4. In a machine of the character described, a container body feed table comprising a table structure having slideways thereon, a reciprocable feed bar for moving bodies along the table in spaced relation, a top guard rail overlying and vertically spaced from said slideways and supporting back check detents engageable by the container bodies, and means vertically-adjustably and swingably mounting said top guard rail.

5. In a machine of the character described, a container body feed table comprising a table structure having slideways thereon, a reciprocable feed bar for moving bodies along the table in spaced relation, an infeed conveyor for feeding bodies in line toward the feed bar, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering bodies from the conveyor to the feed bar, a reciprocable stop member for stopping bodies on the conveyor and timing them for proper feeding engagement by said sectors, means for imparting movement to the feed bar and the conveyor and for displacing the stop member during each interval of body feeding effectiveness of said sectors, and means for verti-

cally adjusting the position of the whole feed table.

6. In a machine of the character described, a container body feed table comprising a table structure having slideways thereon, a reciprocable feed bar for moving bodies along the table in spaced relation, an infeed conveyor for feeding bodies in line toward the feed bar, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering bodies from the conveyor to the feed bar, a reciprocable stop member for stopping bodies on the conveyor and timing them for proper feeding engagement by said sectors, means for imparting movement to the feed bar and the conveyor and for displacing the stop member during each interval of body feeding effectiveness of said sectors, means for vertically adjusting the position of the whole feed table, a top guard rail overlying and vertically spaced from said slideways and supporting back check detents engageable by the container bodies, and means for vertically-adjustably and swingably mounting said top guard rail on the table.

7. In a machine of the character described, a container body feed table comprising a table structure having slideways thereon, a reciprocable feed bar for moving bodies along the table in spaced relation, an infeed conveyor for feeding bodies toward the feed bar, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering bodies from the conveyor to the feed bar, a reciprocable stop member for stopping bodies on the conveyor and timing them for proper feeding engagement by said sectors, means for imparting movement to the feed bar and the conveyor and for displacing the stop member during each interval of body feeding effectiveness of said sectors, means for vertically adjusting the position of the whole feed table, and including a pair of vertical captive screws and a common means for simultaneously rotating both screws.

8. In a machine of the character described, can body receiving feedways, means for feeding can bodies in line toward said feedways, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering can bodies from said feeding means onto said feedways, a reciprocable stop member for stopping can bodies at the position of the disk and timing them for proper feeding engagement by said sectors, a transversely disposed driver shaft, a support, a rotary shaft secured to each disk, a bearing member rotatably supporting each disk shaft, means slidably supporting each bearing member on said support, and a driver sleeve rotatably supported on each bearing member and splined on the driver shaft and bevel gear coupled with the respective disk shaft, whereby rotation of the driver shaft will be transmitted to the disks and the spaced relation of the disks can be altered by sliding the bearing members toward or from each other on their slide mountings.

9. In a machine of the character described, can body receiving feedways, means for feeding can bodies in line toward said feedways, opposed rotary disks having limited length body gripping and accelerating sectors thereon effective for individually delivering can bodies from said feeding means onto said feedways, a reciprocable stop member for stopping can bodies at the position of the disks and timing them for proper feeding

engagement by said sectors, a transversely disposed driver shaft, a support, a rotary shaft secured to each disk, a bearing member rotatably supporting each disk shaft, means slidably supporting each bearing member on said support, and a driver sleeve rotatably supported on each bearing member and splined on the driver shaft and bevel gear coupled with the respective disk shaft, whereby rotation of the driver shaft will be transmitted to the disks and the spaced relation of the disks can be altered by sliding the bearing members toward or from each other on their slide mountings, said can body feeding means being mounted in part on said transverse driver shaft.

10. In a machine of the character described, a container body feed table having slideways thereon, a reciprocable feed bar for moving can bodies along the table, and means for imparting reciprocatory movement to the feed bar comprising a vertically disposed rotary driver shaft, a driv-

ing rotor on said shaft having a crank pin projecting off-center therefrom, a pinion freely-rotatably mounted on the crank pin, a crank arm secured to the pinion for rotation therewith, a stationarily mounted internal ring gear disposed concentrically with relation to the driver shaft and meshing with the pinion for imparting rotation to the pinion and crank as the driver shaft is rotated, means link connecting the crank in driving relation with the feed bar for imparting straight line movement to the latter, means for vertically adjusting the position of the whole feed table and including a pair of vertical captive screws and a common means for simultaneously rotating both screws, and means for imparting rotation to the vertical driver shaft including a spline connection with said driver shaft effective to permit vertical movement of adjustment of the driver shaft with the whole table.

OTTO A. SCHMITT.