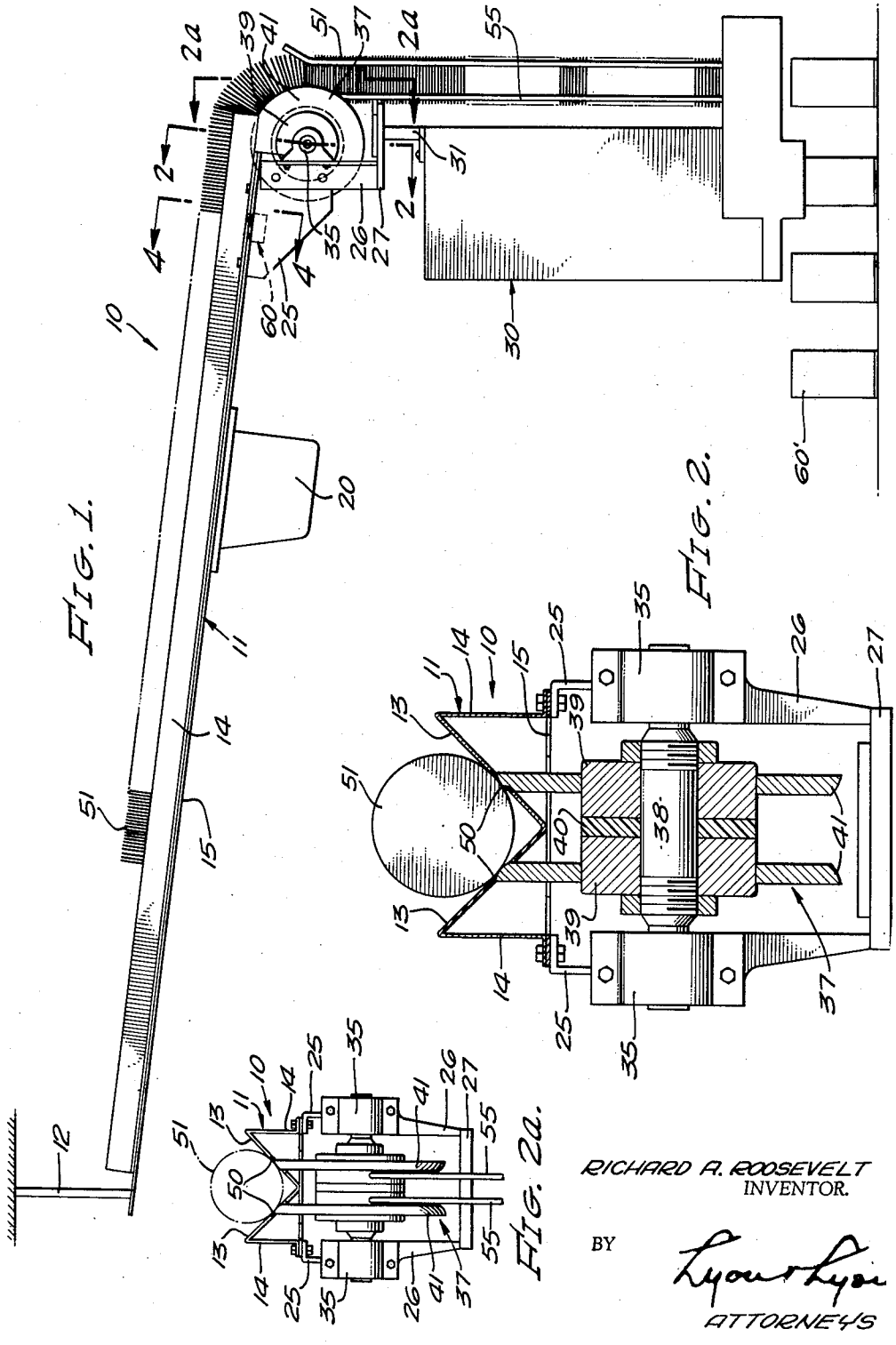
Jan. 5, 1965 R. A. ROOSEVELT 3,164,269

CAN END FEEDER

Filed Oct. 24, 1960 2 Sheets-Sheet 1



RICHARD A. ROOSEVELT
INVENTOR.

BY Lyon & Lyon
ATTORNEYS

Jan. 5, 1965 R. A. ROOSEVELT 3,164,269

CAN END FEEDER

Filed Oct. 24, 1960 2 Sheets-Sheet 2

FIG. 3.

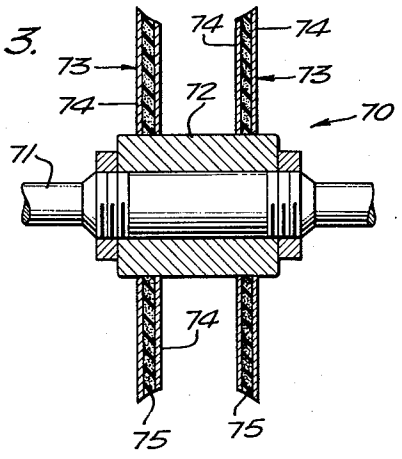
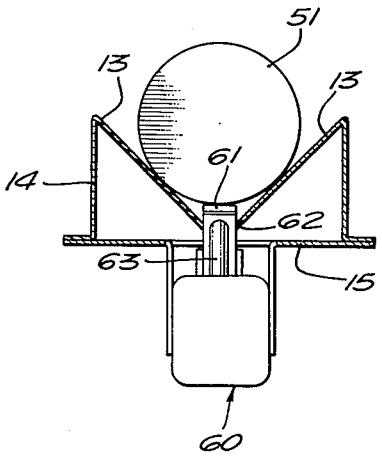


FIG. 4.



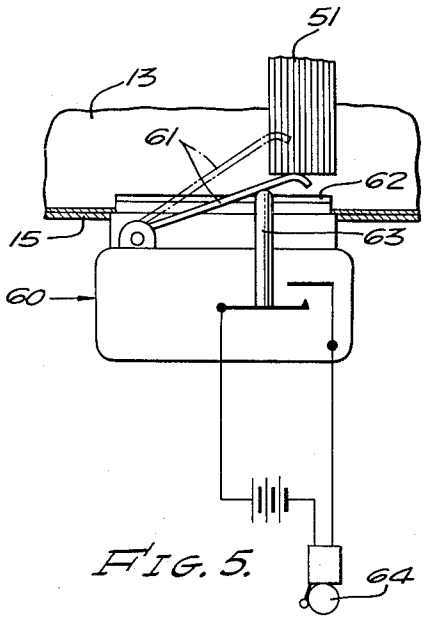


FIG. 7.

FIG. 5.

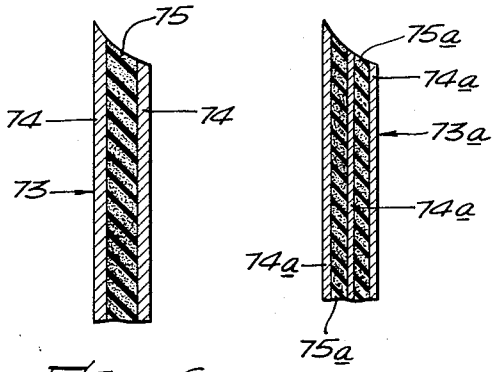


FIG. 6.

RICHARD A. ROOSEVELT
INVENTOR.

BY Lyon & Lyon

ATTORNEYS

United States Patent Office 3,164,269 Patented Jan. 5, 1965

3,164,269

CAN END FEEDER

Richard A. Roosevelt, La Mirada, Calif.
(4909 E. Florence Ave., Bell, Calif.)

Filed Oct. 24, 1960, Ser. No. 64,580
6 Claims. (Cl. 214—6)

This invention relates to conveying and feeding apparatus and has particular reference to apparatus for feeding can ends to or from various machines adapted to perform one or more operations upon the can ends.

A primary object of the present invention is to provide a novel feeder apparatus for can ends.

A further object of the present invention is to provide a novel feed mechanism for can ends which is adapted to be used in conjunction with all types of can closer, seamer and liner machines for the storage and continuous feeding of can ends from or to such machines.

A further object of the present invention is to provide a novel magnetic flanged wheel and such a wheel combined with a feed and/or storage trough, the combination being readily adaptable to be used as a can end down-stack or up-stack feeder.

Other objects and advantages of this invention it is believed will be readily apparent from the following detailed description of preferred embodiments thereof when read in connection with the accompanying drawings.

In the drawings:

FIGURE 1 is a side elevation of a can end down-stacker feed embodying the present invention.

FIGURE 2 is a sectional elevation taken substantially on the line 2—2 of FIGURE 1.

FIGURE 2*a* is a sectional elevation taken substantially on the line 2*a* of FIGURE 1.

FIGURE 3 is an axial section of a modified magnetic flanged wheel in accordance with the present invention.

FIGURE 4 is a sectional elevation taken substantially on the line 4—4 of FIGURE 1.

FIGURE 5 is a fragmentary diagrammatic view illustrating the mechanism and operation of the starvation switch.

FIGURE 6 is a fragmentary sectional view illustrating one of the magnetic flanges of FIGURE 3.

FIGURE 7 is a view similar to FIGURE 6 but illustrating a modified form of magnetic flange.

Referring now to the drawings, a preferred form of down-stacker feed for the storage and feeding of can ends to a can closing machine is generally indicated **10** and comprises a generally V-shaped trough assembly **11** inclined at a slight angle from the horizontal toward the forward end thereof and adjustably supported at the rearward end thereof, such as by a bracket arm **12**. The trough assembly is preferably formed of sheet metal and in addition to the V-shaped walls **13** is provided with vertical flanged sidewalls **14** secured to a bottom panel **15** extending between the sidewalls. Secured to the underside of the trough assembly is an electric vibrator mechanism **20** of conventional construction.

Secured to each side of the trough assembly at the forward end thereof is one of a pair of bracket members **25**, to each of which is bolted a generally vertical bearing support arm **26**. The arms are connected together at the bottom thereof by means of a base plate **27** which in turn is supported on the can closing machine **30** by means of a bracket **31**.

A bearing assembly **35** is secured to each arm **26** and journaled in the bearing assemblies is a magnetic flanged wheel **37** including a shaft **38** of magnetic material on which is rotatably carried a pair of magnetized wheel members **39** separated by a member **40** of insulating material. Carried on each of the wheel members **39** is a

flange **41** of magnetic material, each flange being magnetized by induction from the wheel members **39**. The flanges extend into longitudinal slots **50** provided in the walls **13** of the trough assembly so as to be in a position to be contacted by the can ends **51** as they move along the trough assembly.

Means are provided for stripping the can ends from the flanged magnetic wheel and as shown, these means include a pair of rod members **55** secured to the base plate **27**, the rods extending vertically upwardly between the flanges **41**, terminating just short of a horizontal plane through the axis of the shaft **38**. The rod members are preferably adjustable to vary the spacing therebetween so as to be accommodated to variations in spacing between the flanges which will be occasioned by operation upon different sizes of can ends.

Means are provided for indicating when the supply of can ends in the trough assembly becomes low. As shown in the drawings these means may include the starvation switch member generally indicated **60**, which is secured to the underside of the trough assembly near the magnetic wheel. The switch mechanism includes a spring loaded feeler **61** extending upwardly into the trough through a slot **62** therein into contact with the bottom edges of the can ends **51**, the underside of the feeler contacting the switch member **63** and holding the switch open. Upon movement of the last can end past the feeler, it is released, permitting it to move to the phantom line position of FIGURE 5 and in turn releasing the switch to close it and actuate the alarm bell **64** thus warning the operator that the trough should be refilled. Although not shown in the drawings, a counting device may be included on the trough assembly to totalize the can ends fed therefrom.

In operation of the apparatus thus described, the operator loads the can ends from the entry of the closing machine, over the magnetic flanged wheel to within 4" to 5" from the rear of the trough assembly. The apparatus is then started up, to close the cans **60'** with the can ends **51**, and the can ends are fed into the closing machine, the vibrator smoothly propelling the can ends down the trough. As the can ends reach the magnetic flange wheel they are smoothly carried around the periphery thereof, magnetically fanned and opened to reduce the weight of the ends on the closing machine and they are then stripped off the magnetic wheel by the stripper rods **55** and deposited upon the stack into the entry of the closing machine.

The apparatus described above is readily adapted to be used as an up-stacker feeder for use in conjunction with can end liners and like mechanisms, merely by removing the vibrator mechanism and by positioning the trough horizontally. In such use the upwardly moving stack of can ends contacts the magnetic wheel first which fans out the can ends to permit the freshly-lined ends to dry, whereupon continued upward movement of the vertical stack causes the wheel to continue to turn and to deposit the can ends upon the trough wherein they are accumulated and stored.

A modified form of magnetic flanged wheel is illustrated in FIGURE 3. The wheel **70** shown therein is generally similar to the wheel **37**, having a shaft **71** carrying a non-magnetic sleeve **72**. Carried on the sleeve is a pair of spaced magnetic flanges **73**, each flange being formed of an inner and outer face plate **74** of a magnetic material, between which is interposed a core **75** of so-called magnetic rubber, which comprises a rubber or plastic material containing a filler of magnetized metal particles. Preferably, the peripheries of the flanges are curved as shown in FIGURE 6 to receive the can ends.

The modification illustrated in FIGURE 7 is the same as that of FIGURE 6 except that the flanges **73***a* are of

a multiple pole design, comprising at least three plates 74*a* and at least two magnetic rubber cores 75*a*.

It will be understood that the magnetic flanges may be adjustable inwardly and outwardly to accommodate different sizes of can ends, and for the larger sizes it may be desirable to utilize, in addition to the two main flanges, a third flange, centrally positioned and of somewhat smaller diameter than the main flanges. Similarly it will be understood that the V-shaped trough can be made adjustable to accomodate all sizes of can ends.

The apparatus of the present invention fills a hitherto unsatisified need in industry. When used in conjunction with can seamers, closers, liners and the like it reduces the number of operators required to feed such equipment. Where single closing machines or liners are utilized, the operator's time to feed small quantities of can ends constantly is virtually eliminated due to the continued smooth and accurate supply of ends to the machine. In many installations where multiple closers or liners are utilized, only a single operator is required to service from two to six machines, depending upon the physical layout of the can end handling equipment. The magnetic flanged wheel accomplishes a smooth positive transfer of can ends from the horizontal plane to the vertical plane, when used in the down-stacker, and from the vertical to the horizontal plane when used in the up-stacker. The "fanning" of the can ends by the magnetic wheel is an important feature in that it serves to reduce the weight of the vertical stack upon the closing machine or other equipment, when used in a down-stacker, and it serves to permit the can ends to dry when used in an up-stacker in conjunction with a can end liner. It will be seen that no power is required to drive the magnetic wheel as the weight of the can ends and the vibration feed automatically selects the proper speed of rotation of the wheel in relation to the speed of the seamer or closer. In the case of the up-stacker use, the speed of rotation of the wheel is governed by the speed of up-feed from the liner or other equipment.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details set forth, but my invention is of the full scope of the appended claims.

I claim:

1. A magnetic wheel for use in a feeding apparatus for can ends, said wheel comprising a shaft and at least two spaced flanges carried on said shaft for rotation therewith, said flanges containing a core of magnetic rubber, the outer ends of said flanges being inwardly bevelled to contact separated edge portions of a can end, and at least the outer ends of said flanges being spaced apart in the air a sufficient distance to receive a substantial portion of the circumference of a can end therebetween.

2. The article of claim 1, wherein each flange comprises a pair of face plates of magnetic material having said core interposed therebetween, and wherein said flanges are carried on a non-magnetic sleeve secured to said shaft.

3. In a feeding apparatus, a trough adapted to receive can ends, said trough being generally V-shaped in cross-section, the trough being disposed at a slight angle to the horizontal, and a magnetic flanged wheel operably connected to said trough at one end thereof, said wheel having an axis disposed transversely of said trough, the flanges of said wheel being magnetized and spaced to receive can ends for transfer thereof to or from said trough.

4. The apparatus of claim 3 wherein said flanges contain a core of magnetic rubber.

5. The apparatus of claim 3 wherein said wheel comprises a shaft, said flanges are carried in a non-magnetic sleeve carried on said shaft and wherein each flange comprises a pair of face plates of magnetic material having a core of magnetic rubber interposed therebetween.

6. In a feed apparatus, a trough adapted to receive can ends, said trough being disposed at an angle to the horizontal, a magnetic flanged wheel operably connected to said trough at the lower end thereof, said wheel comprising a shaft, said flanges being carried in a non-magnetic sleeve carried on said shaft, each flange comprising a pair of face plates of magnetic material having a core of magnetic rubber interposed therebetween, the outer ends of said flanges being inwardly bevelled to contact separated edge portions of a can end, with at least the outer ends of said flanges being spaced apart in the air a sufficient distance to receive a substantial portion of the circumference of a can end therebetween, and a pair of stripper rods extending vertically upwardly from a point outside of said wheel into the space between said flanges short of a horizontal plane through the axis of said wheel.

References Cited in the file of this patent

UNITED STATES PATENTS

2,588,085	Clouse	Mar. 4, 1952
2,743,001	Nordquist	Apr. 24, 1956
2,862,601	Littwin	Dec. 2, 1958