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B. ROGGE

3,474,932

PLUG FEEDING DEVICE

Filed Nov. 1, 1967

Fig. 1

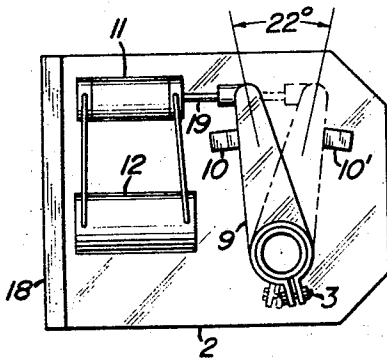


Fig. 3

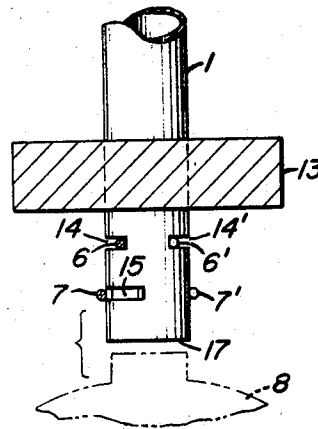


Fig. 2

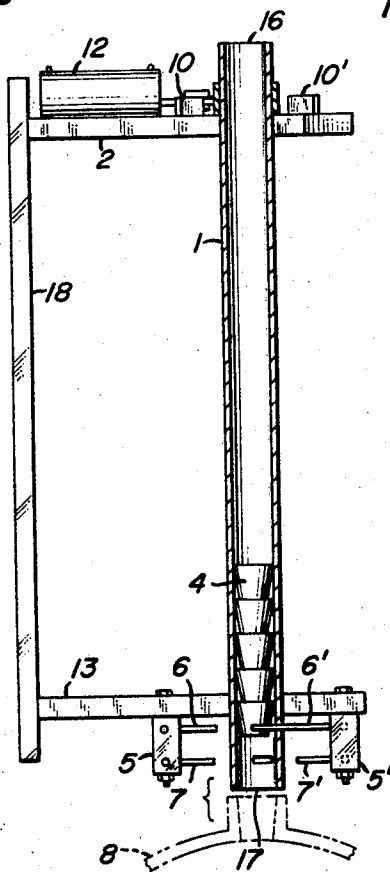


Fig. 4

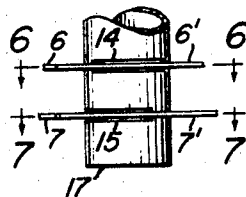


Fig. 5

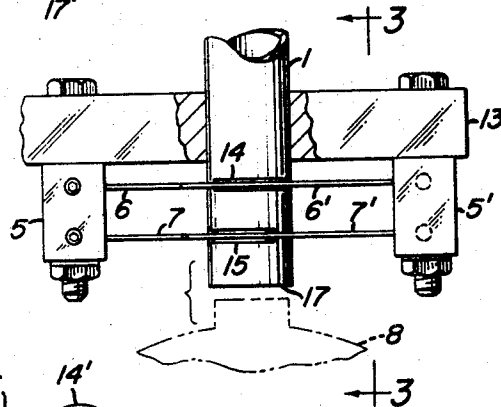


Fig. 6

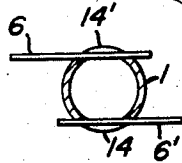
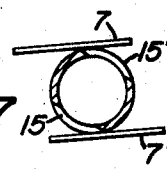


Fig. 7



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3,474,932

PLUG FEEDING DEVICE

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1 Claim

ABSTRACT OF THE DISCLOSURE

A feeding device comprising a magazine to hold articles to be fed, said magazine being rotary, means to rotate said magazine, slotted means within said magazine, wire means within said slots to control the feed of the article being fed, means to rotate the magazine and stop means to control the degree of rotation of said magazine.

The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

My invention relates to a feeding device for feeding articles to an end use for which the articles are not to be contaminated or manually handled in any manner.

The invention resulted from a problem presented in an assembly operation wherein aluminum plugs were inserted in containers and subsequently welded. In this operation, the plugs on insertion could not be contaminated, such as by deposits thereon by an operator's hands if inserted manually, because leak tight containers are required, and contamination led to bad welds and leaky containers. Further, the assembly operation was carried out in a toxic atmosphere, and it was desired to remove the operator from the atmosphere and enhance the safety of the operation. Also, it was sought to automate the operation as much as possible and decrease the skill required of the operators.

A principal object of my invention is to provide a simple and inexpensive device by means of which tapered aluminum plugs may be automatically fed to a container which is to be sealed off by means of welding. As discussed above, the prior assembly means proved to be unsuitable because the plugs were contaminated which prevented good welds and led to leaky containers. Utilizing my device, the plugs are chemically cleaned prior to insertion in the feeding device, and my invention avoids any need of the plugs being touched by hand or coming in contact with any other matter.

Another object of this invention is to decrease the skill and effort that is required on the part of operators and maintenance men and to enhance the safety of those workers through their removal from the hazardous toxic atmosphere necessary to the operation.

A further object of this invention is to dispense tapered plugs at controlled intervals in conjunction with a conveyor that automatically transports containers to the plug feeding station and releases one plug at a time.

Other objects of my invention will be obvious or will appear from the description of the invention hereinafter set forth.

FIGURE 1 is a view showing the rotation of the magazine component of my invention through utilization of camming action induced by air cylinder-solenoid valve means and stop means.

FIGURE 2 is a sectional view showing a feed supply of articles in the magazine being retained in the supply position by the upper wire means.

FIGURE 3 is a view showing the magazine in a position of rotation wherein the upper set of wires falls with-

in the upper slots and prevents the article supply column from falling and the lower set of wires are cammed out of the lower set of slots to permit an article to be released from the feeding mechanism.

FIGURE 4 is a view showing the offset arrangement of the upper in respect to the lower set of slots in the magazine.

FIGURE 5 is a view showing the mounting of the upper and lower set of wires and extension thereof into the upper and lower sets of slots.

FIGURE 6 is a sectional view taken along line 6—6 of FIGURE 4 to show the location of the upper set of wires within the upper set of slots when the magazine is in the position of rotation as illustrated in FIGURE 3.

FIGURE 7 is a sectional view taken along line 7—7 of FIGURE 4 to show the lower set of wires cammed out of the lower set of slots when the magazine is in the position of rotation as illustrated in FIGURE 3.

My invention, as illustrated in FIGURES 1 to 7, will now be described in detail as follows:

Character 1 designates a tubular magazine or receiver which is preferably mounted vertically in any suitable manner such as being supported by brackets 2 and 13 rigidly fixed to mount 18 which in turn is mounted on the production line by any suitable means, such as bolted to a conveyor support. The tapered plugs 4 are introduced at the upper feed end 16 of the magazine 1 after being chemically cleaned and by any known, conventional mechanical filling means, and the lower end 17 is the discharge end which is located over container 8 or such other end use for which the feeding device is utilized. The lower end of the magazine is slotted in four places, structures 14—14' and 15—15', as shown in FIGURES 3—7 to receive flexible steel wires 6—6' and 7—7'. Wires 6—6' and 7—7' are tightly assembled to support block 5—5', bolted to support bracket 13. The two top wires 6—6', as shown in FIGURES 2 and 3, fully engage in slot 14—14' of magazine 1. When so engaged, the wires 6—6' grip the tapered plugs on both sides at a point contact and away from the plug large diameter end where the welding by fusion of parent metal takes place. When upper wires 6—6' are in slots 14—14', lower wires 7—7' as shown in FIGURE 7 are cammed completely out of slots 15—15', thus releasing the plug to the end use, such as container 8. On forward stroke, wires 6—6' are cammed out of slots 14—14' while wires 7—7' drop into slots 15—15' which releases a plug from the magazine to be held by lower wires 7—7'. On reverse stroke, wires 6—6' fall back into slots 14—14' to engage another article while wires 7—7' are cammed out of slots 15—15' to release and dispense the first article. This action, in addition to being the mechanism for feed, also keeps the plug centered so that the feed is normal to a plane at a right angle to discharge end 17. The forward and reverse strokes are repeated in a cyclic manner to meet the production demands. The camming and releasing action is accomplished by air cylinder 11 connected to lever 9 by connection means 19, the air cylinder being controlled by solenoid valve 12 which is energized by a signal from the main control panel of the entire assembly system, not shown in the drawing. Air cylinder 11 actuates lever 9, as seen in FIGURE 1, the lever being clamped securely to magazine 1 by clamping means 3. Stops 10—10' prevent excessive movement and provide for a controlled rotation of 22 degrees necessary for proper camming and to prevent wires 6—6' and 7—7' from leaving the slots 14—14' and 15—15' respectively. Slots 14—14' and 15—15' are slightly wider than the diameter of wires 6—6' and 7—7'.

It is obvious that other modifications can be made of and other utilities found for my invention.

I claim:

1. A feeding device comprising support brackets; magazine means having feed and discharge ends mounted on said support brackets; first slot means notched in the magazine means and located near the discharge end of said magazine means; second slot means located in the same manner as said first slot means but below said first slot means and at an angle less than 180° to said first slot means; first wire means fixedly mounted under tension at the ends thereof and arranged normal to the vertical center line of said magazine, said first wire means being adapted to be received in said first slot means and adapted to be cammed out of said first slot means; second wire means arranged the same as said first wire means relative to said second slot means whereby a first wire means is within said first slot means while a second wire means is cammed out of said second slot means; a lever means fixedly mounted near the feed end of said magazine means

to provide rotation of said magazine means and induce said camming action; an air cylinder means controlled by a solenoid valve for activating said lever; means connecting said activating means to said lever; and stop means to limit the angular movement of said lever.

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