Sept. 4, 1934. H. L. GUENTHER 1,972,841

CAN PACKING DEVICE

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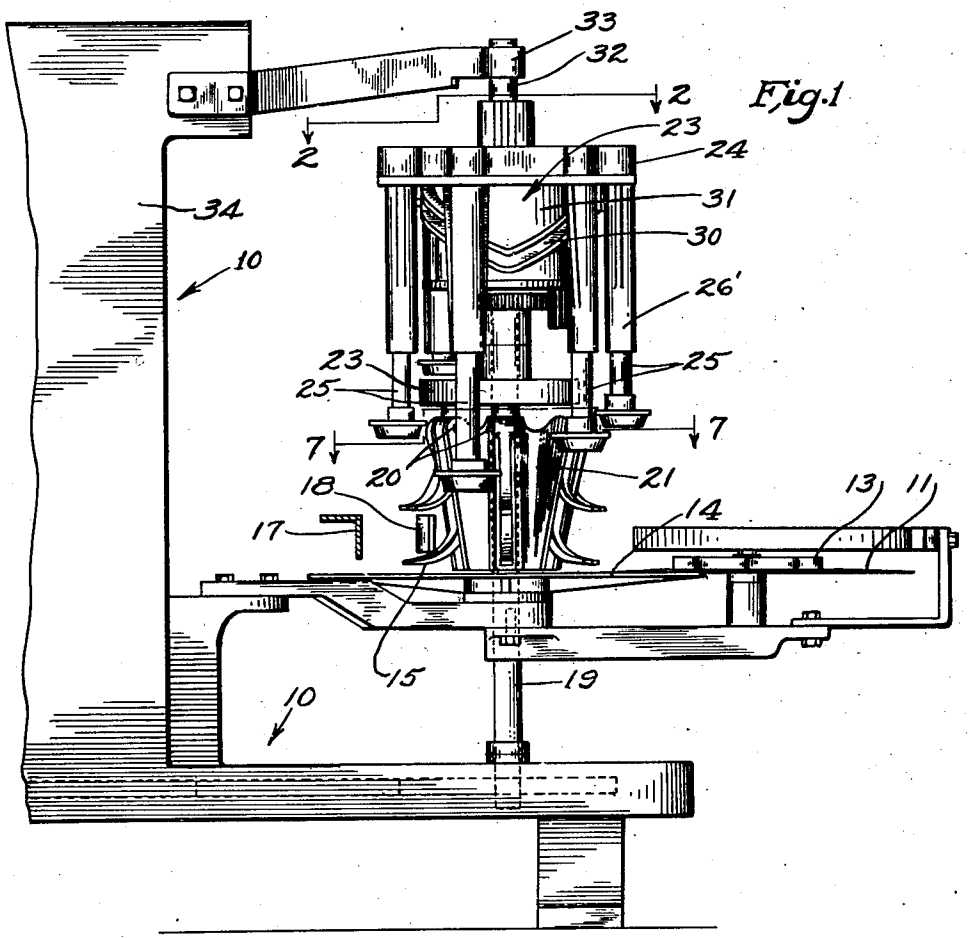


Fig. 1

Fig. 2

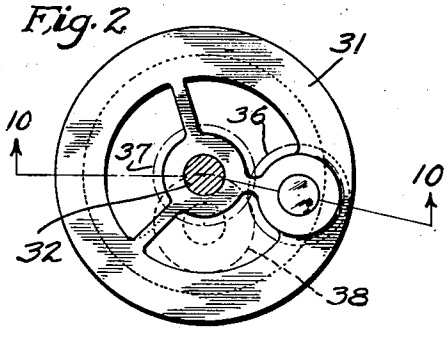
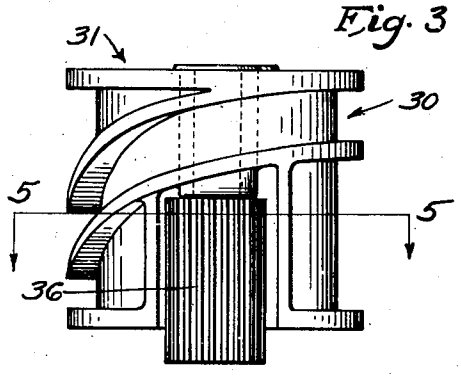


Fig. 3



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Fig. 4

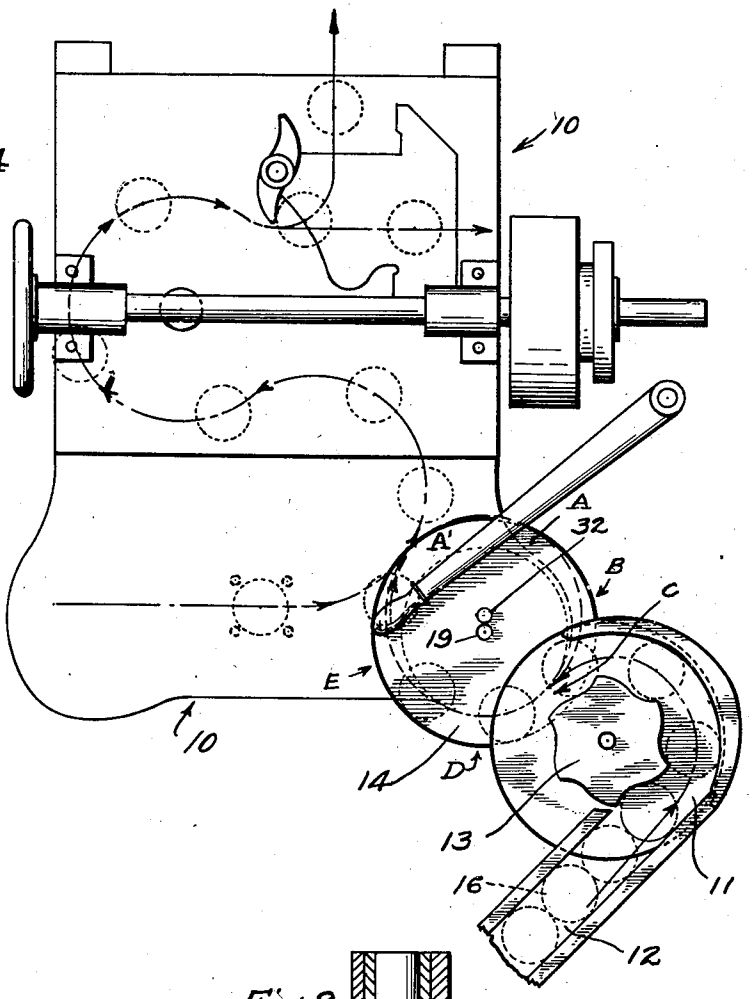


Fig. 5

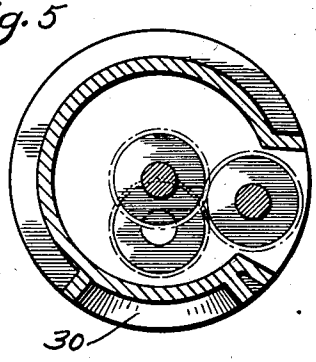
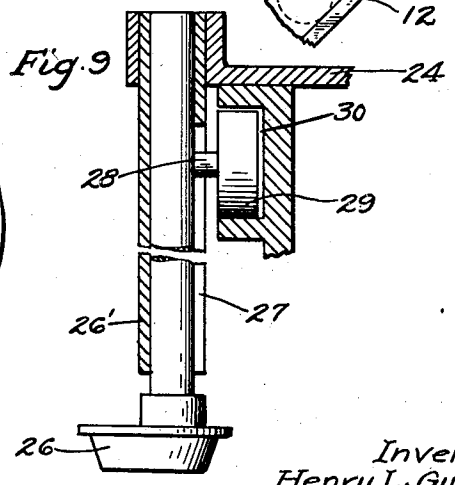


Fig. 9



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CAN PACKING DEVICE

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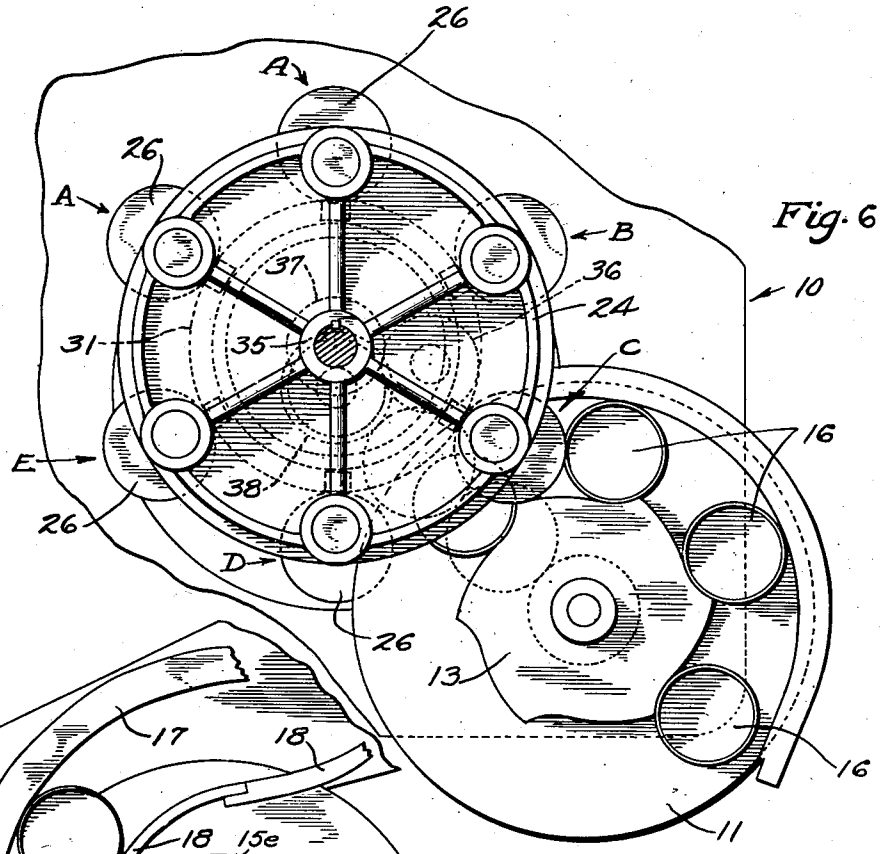


Fig. 6

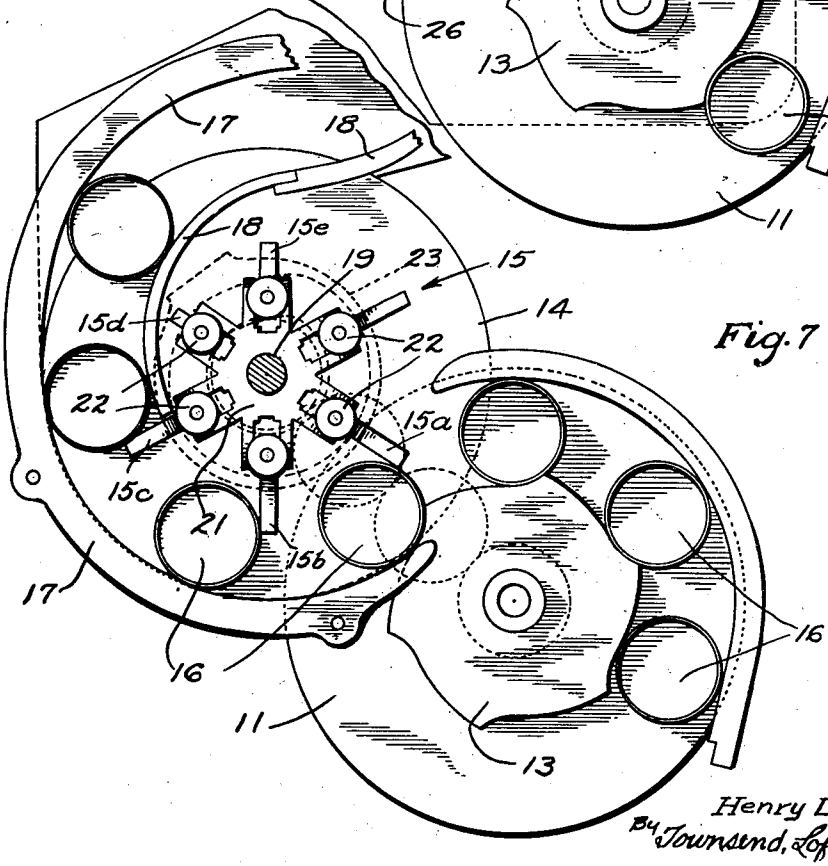


Fig. 7

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CAN PACKING DEVICE

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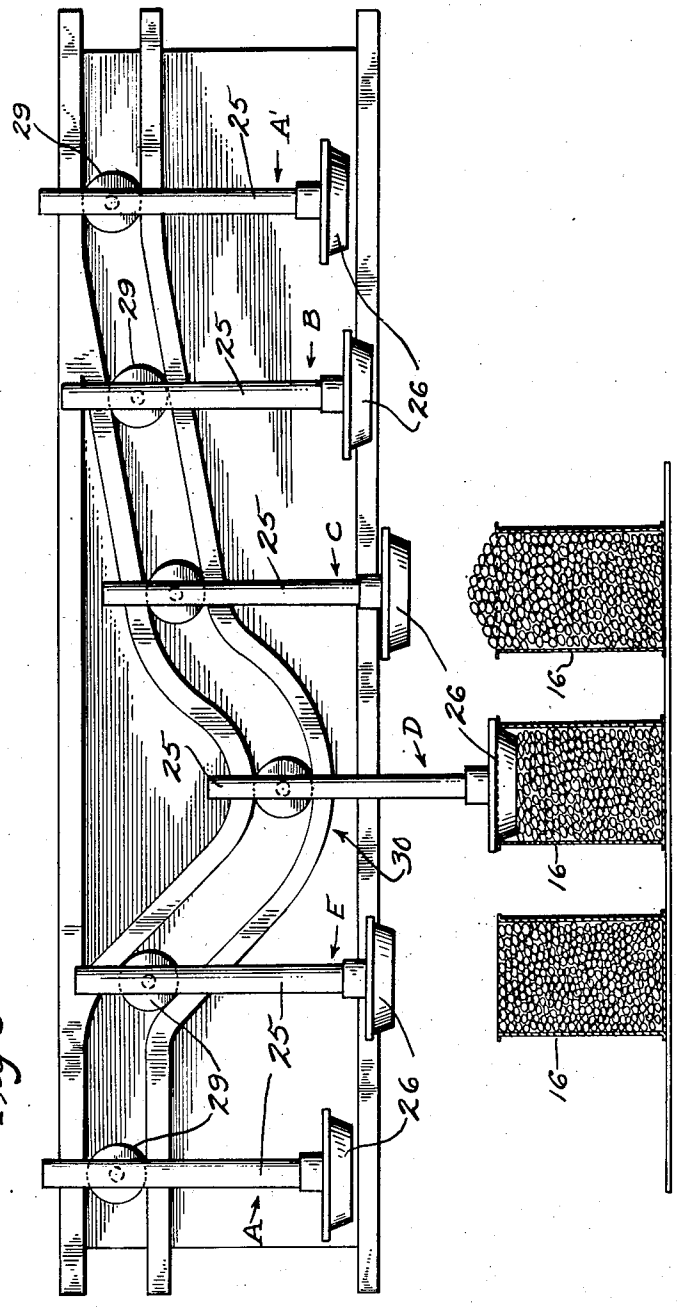


Fig. 8

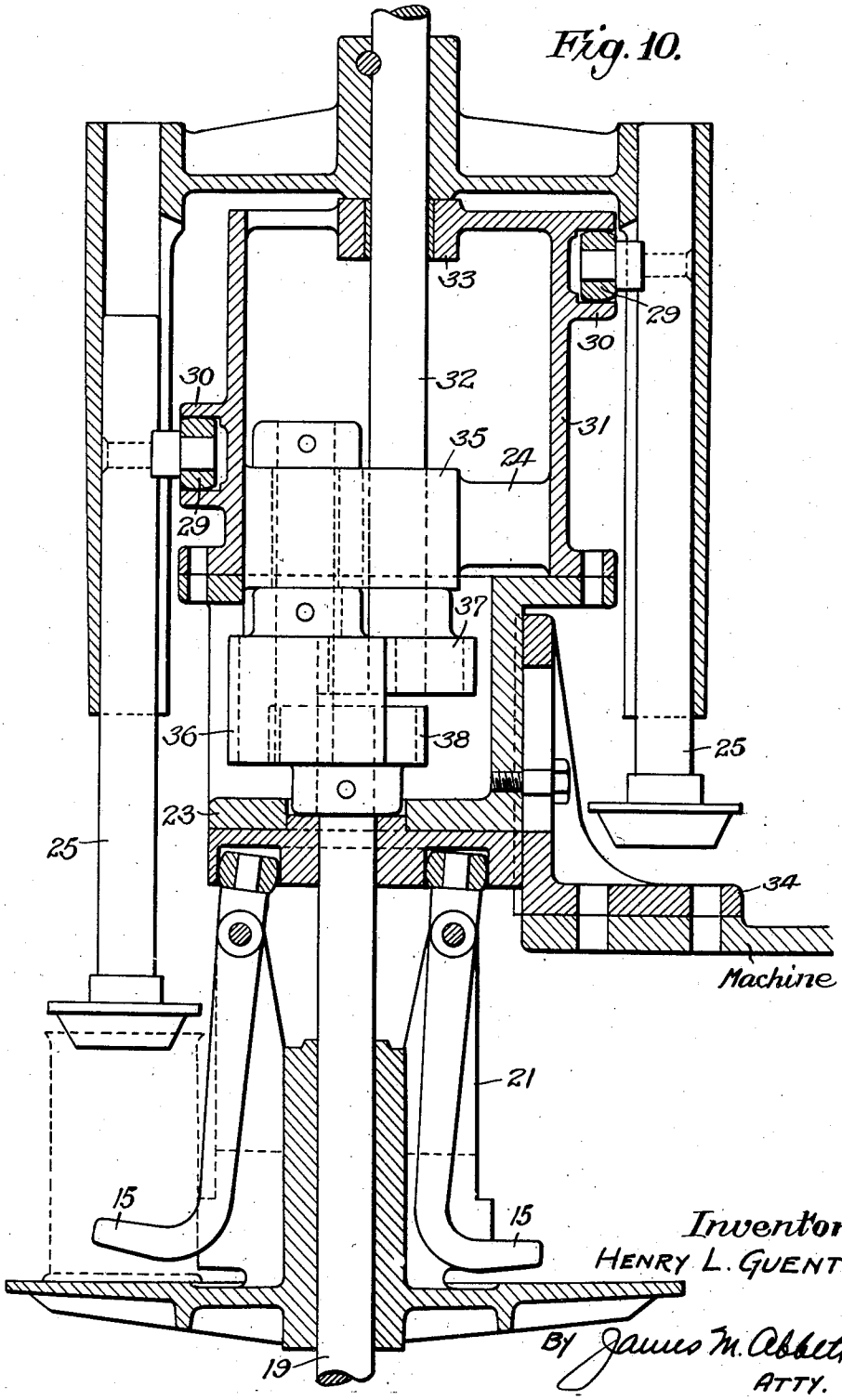
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Fig. 10.



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UNITED STATES PATENT OFFICE

1,972,841

CAN PACKING DEVICE

Henry L. Guenther, Los Angeles, Calif.

Application March 5, 1930, Serial No. 433,341

3 Claims. (Cl. 226—71)

This invention relates to can closing machinery and particularly pertains to can packing means.

In the canning of fruits, vegetabls, and other commodities which are placed within sanitary cans, it is the common practice in many instances to fill the cans to a point of overflowing, and when solid objects are canned, such as various fruits, tomatoes, and the like, the articles project above the mouth of the cans, and it is necessary to pack this material within the can before applying a cap in a proper manner thereto and before the cap and the can are double seamed together.

It is the principal object of the present invention to provide a can packing mechanism which will act in combination with continuously operating double seaming machines, and by which the material projecting above the mouth of the can will be forced downwardly into the can so that it may properly receive a cap.

In certain types of double seaming machines the seaming unit operates the can at a relatively high rate of lineal speed as compared with the speed of travel of the flow of cans entering the machine, and it is necessary to interpose can timing and accelerating means between the normal flow of cans and the double seaming unit, whereby the cans and their contents will not be objectionably disturbed as they are moved to a speed agreeing with that of the double seaming unit, and whereby it will insure that the contents of the can will not be spilled therefrom. It is a particular object of the present invention to provide can packing means which will act upon the cans during the period of their acceleration and which will move with the cans while packing the material therein.

The present invention contemplates the provision of a rotary unit having can packing members traveling along a circular path of travel which is coincident with a path of travel of a can during a portion of its travel from the run of cans to the double seaming unit, and during which time the packing members are given a vertical reciprocating movement to move downwardly toward and to register with the mouth of the can, and to move away therefrom after having packed the contents of the material within the can.

The invention is illustrated by way of example in the accompanying drawings, in which:

Figure 1 is a view in end elevation showing the can timing and accelerating means, together with the can packing unit.

Fig. 2 is a view in plan as seen on the line 2—2 of Fig. 1, showing the body structure of the can packing device.

Fig. 3 is a view in side elevation showing the body structure of the packing device with parts removed to more clearly disclose the cam and the position of a driving gear with relation thereto.

Fig. 4 is a view in plan indicating the general path of travel of the can and the particular area in which the can capping device operates.

Fig. 5 is a view in transverse section through the body structure as seen on the line 5—5 of Fig. 3.

Fig. 6 is an enlarged fragmentary view in plan showing the relation of the packing device to the path of travel of the cans.

Fig. 7 is a view in transverse section through the can timing and accelerating device as seen on the line 7—7 of Fig. 1.

Fig. 8 is a diagrammatic view showing the developed length of the cam and the packing device, and the position of the can packers at points therealong.

Fig. 9 is a view in vertical section through one of the packing units showing its reciprocating mounting and its operatve cam connection.

Fig. 10 is a view in vertical section and elevation showing the driving relation between the spider of the accelerating fingers and the spider of the packing plungers.

Referring more particularly to the drawings, 10 indicates the base structure of a can double seaming machine here shown as having an initial can timing disc 11 on to which cans may be delivered from a can runway 12 and where said cans may be spaced equidistance apart by a star wheel 13. The star wheel and the disc advance the cans along the path of travel as shown in Fig. 4 of the drawings, and deposit them upon a second disc 14 where the cans are positively engaged by can accelerating fingers 15. It is understood that the can timing and accelerating mechanism is not involved in the present invention, but that the invention is more particularly concerned with means for packing material within the cans during their travel through the machine, and as acted upon by the can timing star wheel 13, and the can accelerating fingers 15.

In order to obtain an accelerating motion to the cans, which are generally indicated at 16, the radial length of the accelerating fingers 15 are increased as the cans are advanced between guide rails 17 and 18, and are delivered into the machine and to a point where they may be engaged by the seaming mechanism. Attention is directed to the fact that the rails 17 and 18 form a path of travel for the cans which is eccentric to the vertical axis of shaft 19 and around

which axis the accelerating fingers 15 move. The individual fingers 15 are mounted upon pivots 20 carried by a spider 21. The upper ends of the arms are fitted with rollers 22 moving in a cam member 23 by which the fingers 15 are caused to swing outwardly from the point where they engage the cans received from the disc 11, to a point where the cans are moved out of contact with the arms and into operative position relative to the seaming head between the can tracks 17 and 18.

The present invention is concerned with packing means acting upon the material within the cans during the portion of travel of the cans, at which time they are engaged by the accelerating fingers 15 and are advanced along and over the feed disc 14. This structure includes a body member formed at its upper end with a bearing spider 24 shown in Fig. 6 of the drawings, as providing vertical bearings for spindles 25 of packing discs 26. In the drawing itself all of these spindles are shown. It will however be understood that the number of spindles is entirely dependent upon the relative speed of motion of the parts and the timing of the cans. The bearings 24 have lower extension sleeves 26' providing a rigid guide within which these spindles 25 may reciprocate. The extensions 26' are longitudinally slotted as indicated at 27 in Fig. 9 to accommodate a horizontally extending pin 28 which projects inwardly and carries a cam roller 29. The cam rollers 29 of the various spindles 25 extend into and are intended to move along a peripheral cam groove 30 which circumscribes a fixed cam barrel 31.

A vertical shaft 32 is provided and is secured rotatably at its upper end within a bearing arm 33 fastened to the upright portion 34 of the body of the double seaming machine. This shaft extends downwardly through the hub 35 of the bearing spider 24 and is keyed thereto. Mounted in fixed relation to the machine by a bracket 50 which holds the cam 23 is the barrel cam 31, which carries a pinion 36 in mesh with a gear 37 keyed to the lower end of the shaft 32, and also in mesh with a gear 38 keyed to the upper end of shaft 19, upon which the spider 21 of the can accelerating fingers 15 is secured. By this arrangement driving rotation may be transmitted from the shaft 19 to the shaft 32, even though these shafts are not in longitudinal alignment and drive their respective spiders 21 and 24 around eccentric axes.

The cam groove 30 of the barrel cam 31 is shown with particularity in Fig. 8 of the drawings, where it will be seen that the cam rollers 29 pass from the right along a gradually downwardly inclined path from station A through station B, to station C, after which the roller registers with a rapidly declining path of the cam to station D. At station D the roller gradually rises along the cam way through station E and to the return station A'.

As the cans advance to station D from station C and depart from station D toward station E, the cans 16 and the packing element 26 will be in vertical alignment and traveling along coincident paths of travel. At the station D the packing element will be projecting into the mouth of the can and in register therewith to force the material into the can and to pack it preparatory to final sealing.

In operation of the present invention, cans are delivered to the machine along the runway 12 and on to the disc 11, after which the cans are conveyed by the disc in the direction of the arrows and dotted line path of travel which is carried through the machine. While the cans are upon the disc 11 the star wheel 13 will act to separate the cans and to cause them to get into step with the double seaming mechanism, so that they will move in synchronism through the machine. A can 16 will thus be carried forwardly through the machine to a point in advance of one of the accelerating feed fingers 15. This finger will move into a position of engagement against the back of the can, as indicated at 15*a*, and the can will be advanced as the finger swings outwardly to the successive positions 15*b*, 15*c* and 15*d*. Thus the length of the lever arm formed by the accelerating fingers will be increased, and due to the fact that the eccentricity of the guide 18 which increases the distance between shaft 19 and the cans, and that the arms are moving at a constant rate of speed around their axis while the cans are traveling along the eccentric path formed by the guides 17 and 18, the cans will of necessity be accelerated in their rate of speed. As the cans move to the substantial position in front of accelerating finger 15 as indicated at position 15*b*, it will be with its vertical axis coincident with the vertical axis of the packer disc 26 and at the station D of the packing cam 30.

In Fig. 6 it will be seen that the packing discs 26 are eccentric with relation to the axis of their spindles. This permits the cam, drum, and bearing spider to be compactly designed without materially overhanging the path of travel of the cans. It will be evident that as the can reaches the station D, the packing disc 26 will have moved downwardly into the mouth of the can, and that after the packing station D has been passed the packing disc 26 will recede from the mouth of the can. Due to the relative diameters of the parts and their timing, the packing discs 26 and the cans moved by the accelerated fingers 15, will be pursuing coincident paths of travel, making it possible for the packing disc to pack the fruit within the cans without disturbing the cans or their contents, and without interrupting or in anywise slowing down the predetermined rate of speed of the machine.

It will thus be seen that the structure here disclosed provides means readily assembled in connection with a can accelerating feed mechanism and by which means cans may be packed as they proceed to a double seaming machine.

While I have shown the preferred form of my invention as now known to me, it will be understood that various changes might be made in the combination, construction and arrangement of parts without departing from the spirit of the invention as claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. A can packing device comprising means for feeding the cans thereto, including a timing disc by which the cans are arranged in spaced relation to each other and delivered to a volute track along which they travel, positive can feed means disposed concentric to said volute path of travel for a portion of the travel of the can, outwardly swinging feed arms formed as a part of said positive feed means and adapted to move in the rear of and follow the can as it is moved along the volute path of travel, a fixed cam concentric with said axis of rotation adapted to swing said arms as they travel therearound, a can packer disposed above said fixed feed means and concentric thereto, said packer including a

plurality of packing discs one of which at a predetermined time is adapted to be moved into the mouth of a can while it is traveling upon the concentric portion of its volute path, a spindle for each of said discs, a spider structure mounted above said fixed cam and having depending bearings within which said spindles reciprocate, a fixed drum around which the spider moves, said drum being intermediate the spider and the said fixed cam and concentric with said depending bearings and having a cam groove for producing reciprocation of said spindles, and driving means simultaneously rotating the spider with relation to the drum, and positive can feed means with relation to its cam.

2. A can packing device comprising means for feeding the cans thereto, including a timing disc by which the cans are arranged in spaced relation to each other and delivered to a volute track along which they travel, positive can feed means disposed concentric to said volute path of travel for a portion of the travel of the can, outwardly swinging feed arms formed as a part of said positive feed means and adapted to move in the rear of and follow the can as it is moved along the volute path of travel, a fixed cam concentric with said axis of rotation adapted to swing said arms as they travel therearound, a can packer disposed above said fixed feed means and concentric thereto, said packer including a plurality of packing discs one of which at a predetermined time is adapted to be moved into the mouth of a can while it is traveling upon the concentric portion of its volute path, a spindle for each of said discs, a spider structure having bearings within which said spindles reciprocate, a stationary drum around which the spider moves, said drum having a cam groove for producing reciprocation of said spindles, driving means for rotating the spider, and positive can feed means with relation to its cam, and gearing interposed between the drum and the driving means whereby the height of the spider structure may be varied to accommodate cans of various heights.

3. A can packing device comprising means for feeding the cans thereto, including upper and lower spiders provided with reciprocatory spindles and fingers respectively, a stationary drum provided with a cam groove arranged intermediate of the said spiders and around which the upper spider moves, the lower spider having its fingers pivotally mounted thereon for feeding the cans, the upper spider being provided with depending bearings in which said spindles having packing discs at their lower ends are mounted, the said depending bearings and the spindles being concentric with the said drum, the said spindles having portions engaging in the cam groove of the said drum, and means for operating the said spiders which in turn causes operation of the said fingers and said reciprocatory spindles carrying the packing discs to feed and pack the cans.

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