

Sept. 14, 1937.

R. E. J. NORDQUIST ET AL

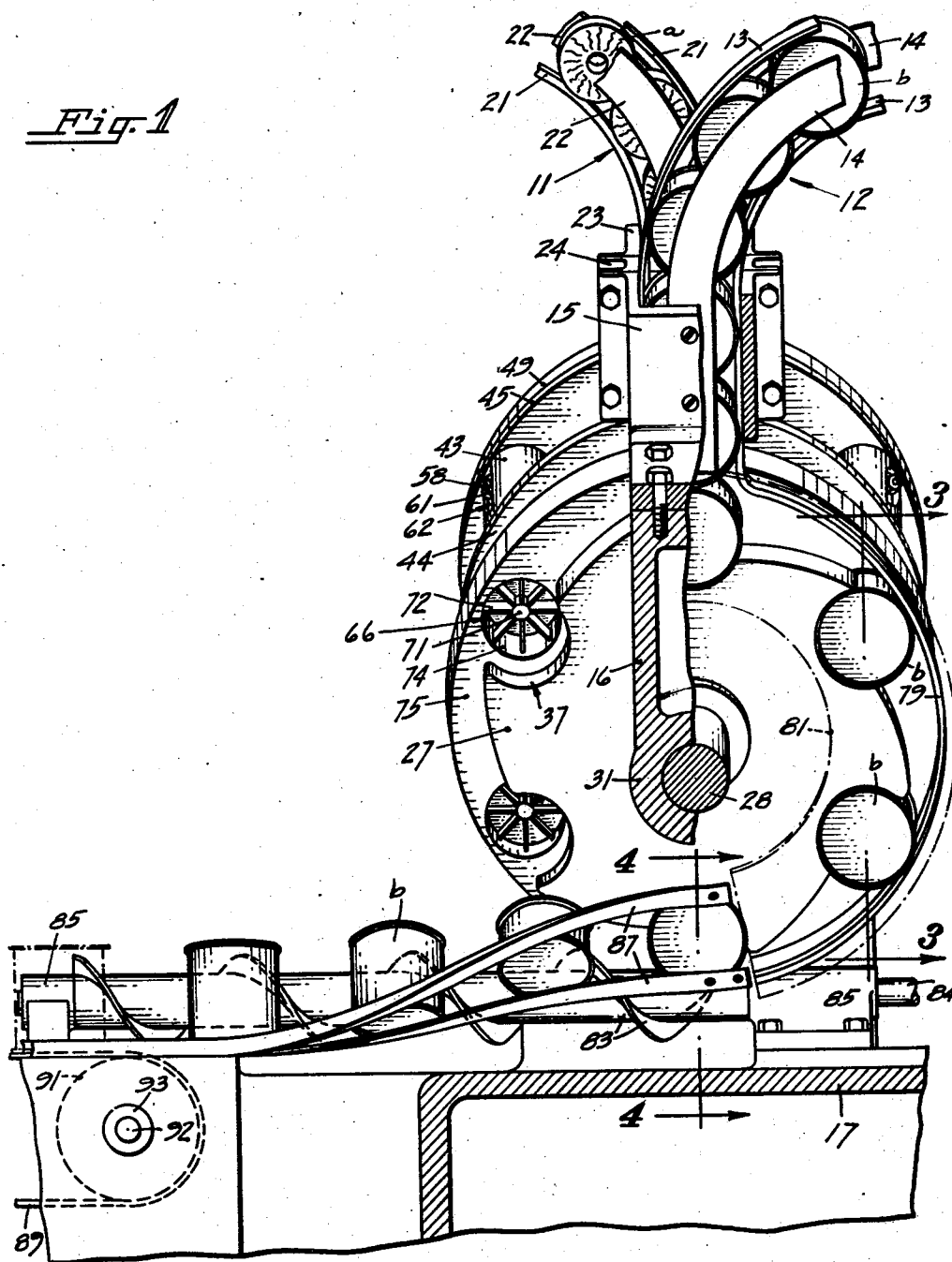
2,092,773

PACKING MACHINE

Filed Aug. 8, 1935

3 Sheets-Sheet 1

Fig. 1



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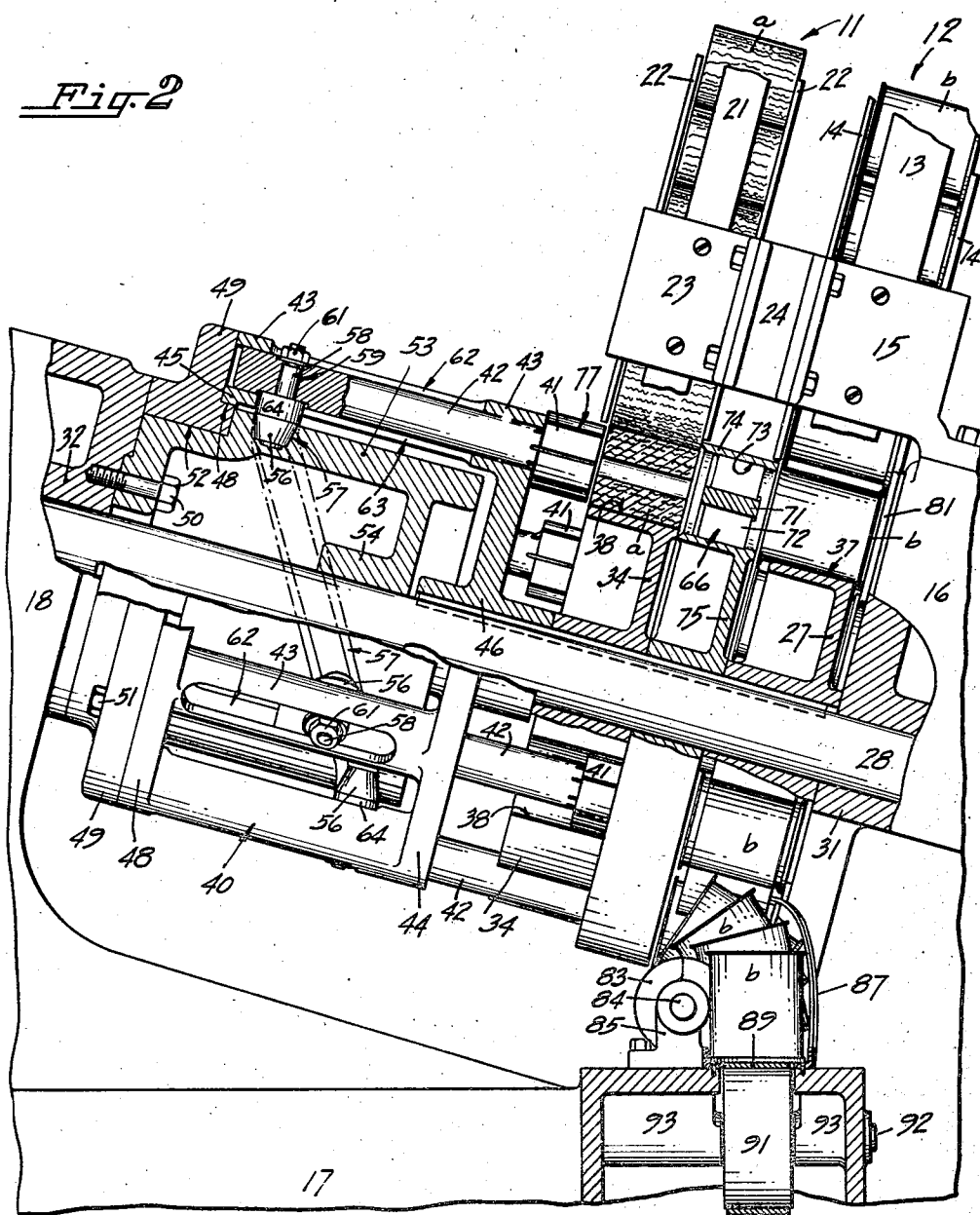
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3 Sheets-Sheet 2

Fig. 2



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3 Sheets-Sheet 3

Fig. 3

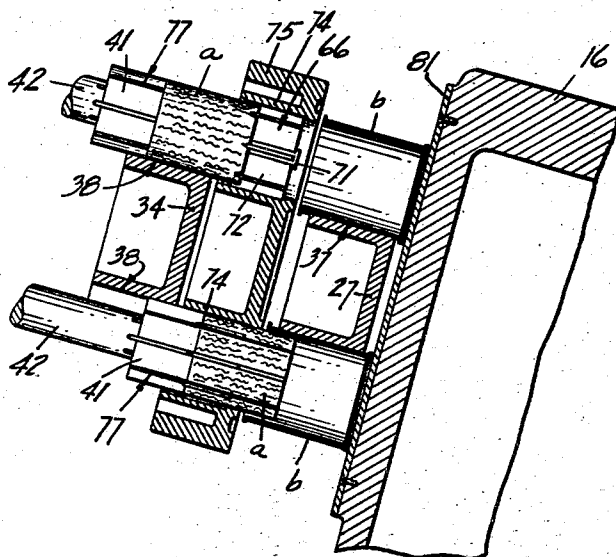


Fig. 4

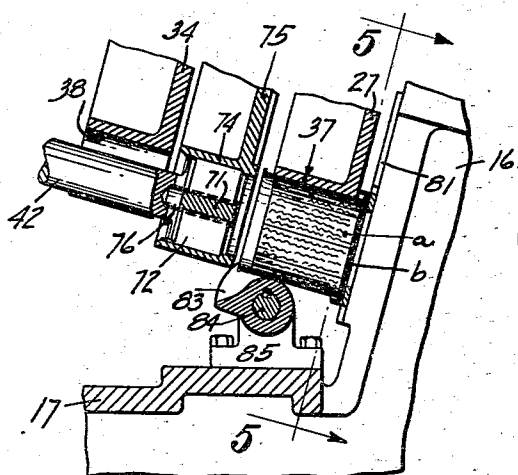
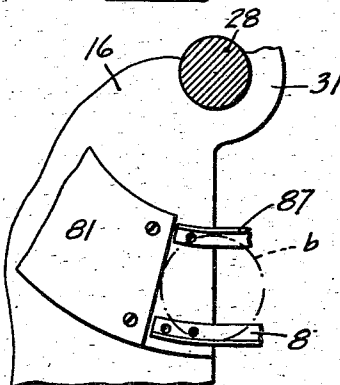


Fig. 5



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PACKING MACHINE

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7 Claims. (Cl. 226-2)

The present invention relates to a machine for packing severable solid or substantially solid products and has particular reference to devices for cutting the product into predetermined shapes of smaller dimension and for inserting the cut parts in an assembled unit of the original shape of the uncut product into cans or containers.

An object of the invention is the provision of a novel machine for packing solid or substantially solid products into containers, wherein prepared unsevered units of the product of a size and shape corresponding to the size and shape of the container into which they are to be packed are received and are cut into a plurality of individual portions simultaneously with the filling or insertion of the units into the containers.

Another object is the provision of such an improved machine wherein empty bottomed cans and product units are fed into it in a continuous procession in parallel relationship, the product units being inserted into the cans and cut into smaller portions simultaneous with their insertion, the filled cans being discharged in timed order ready for sealing.

Another object is the provision of such a machine wherein the product units and empty bottomed cans are carried in axial alignment and in an inclined position in parallel conveyors, the units being cut and inserted into the cans and the filled cans being rotated into an upright position and simultaneously properly spaced or timed as they are discharged from the machine, all of said devices being arranged in synchronism and compactness to obtain maximum production with a minimum of required floor space.

Still another object of the invention is the provision of a high speed automatic machine of comparatively simple construction especially adapted for carrying out a new method of cutting pineapple cylinders into longitudinal segmental instead of lateral or ringlike portions and simultaneous with the cutting inserting them in an assembled unit identical in shape with the original uncut cylinder into containers, thereby saving time and making it unnecessary to handle the cut portions again or in another machine.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is an end view of a machine embodying the instant invention, parts being broken away;

Fig. 2 is a side elevation of the machine shown in Fig. 1, with parts broken away and shown in section;

Figs. 3 and 4 are fragmentary sectional views

taken substantially along the lines 3-3 and 4-4, respectively, in Fig. 1; and

Fig. 5 is a fragmentary sectional view taken substantially along the line 5-5 in Fig. 4.

A preferred embodiment of the invention is illustrated in the drawings in a machine especially adapted for the packing of pineapples into cans. The fruit is preferably received in the machine in prepared units *a* having its central core removed, its body pared or trimmed into a cylindrical shape and its ends trimmed off flat so that it will readily fit into and substantially fill a cylindrical can. The preparing of the fruit units for packing forms no part of the instant invention and is performed in any suitable manner before they enter the machine.

The fruit cylinder or unit is carried through the machine in time with and in axial alignment with the open end of an empty can *b* into which it is to be packed, a spider shaped or radial cutter element being interposed therebetween. During its travel the fruit unit is pushed endwise, or along its longitudinal axis, through the cutter and into the can on the opposite side thereof. This action cuts or divides the fruit unit into a plurality of longitudinal segmental strips or fingers while at the same time inserting them into the can. Thus the unit is rapidly and efficiently cut and simultaneously inserted into the can as a uniformly divided whole unit, occupying no more space in the can than the original uncut unit and having the additional feature of ready removal of individual portions of the unit as required.

The fruit cylinders *a* and empty cans *b* simultaneously enter the machine from any suitable separate sources of supply by way of curved and inclined runways generally indicated by the characters 11, 12, respectively (Figs. 1 and 2).

The can runway 12 comprises top and bottom plates 13 on which the cans roll in a continuous procession and side guide plates 14, which retain them in longitudinal alignment. The machine end of these plates are secured to the inside walls of a four sided hollow bracket 15 which is bolted to the top of a housing 16 formed as a part of a main frame 17.

The housing 16 and a similar housing 18 spaced apart and opposite therefrom and also formed on the main frame 17 supports most of the moving machine parts. These housings extend up from the top of the frame at a slight angle from the vertical so as to impart a degree of angularity to the machine parts carried thereby and to the fruit units and cans for inserting the former into the latter as will be explained as the description proceeds.

The fruit cylinder runway 11 is similar to the can runway 12 and comprises top and bottom plates 21 on which the fruit cylinders roll in a

continuous procession and side guide plates 22 for retaining them in line. The machine end of these plates is secured to the inside walls of a four sided hollow bracket 23 which is bolted to a side of a spacer block 24. This block is in turn bolted to a side of the bracket 15.

The lower or machine end of the can runway 12 terminates directly above a can feed turret 27 (Figs. 1 and 2) which is keyed to a main driving shaft 28 disposed at an angle from the horizontal and journaled in bearings 31, 32 formed in the opposed housings 16, 18 respectively. This shaft is continuously rotated in any suitable manner.

Similarly, the lower end of the fruit cylinder runway 11 terminates directly above a fruit unit feed turret 34 (Fig. 2) which is keyed to the driving shaft 28 adjacent the can feed turret 27, but is spaced apart from the latter. Thus the turrets rotate together in unison.

The machine end of the runways 12, 11 serve as magazines for holding the cans and fruit cylinders in stack formation with the lowermost can and fruit unit resting on the peripheries of the respective turrets and are thus individually removed from the magazines by the turrets. For this purpose the can feed turret 27 is formed with a plurality of radially spaced can pockets 37, and similarly, the fruit unit feed turret is provided with an equal number of radially spaced pockets 38, which are in direct axial alignment with the can pockets.

Rotation of the spaced parallel and concentric turrets 27, 34 causes their respective pockets to receive or pick off the lowermost can and its corresponding fruit unit. The pocketed fruit unit is now directly in front of and in axial alignment with the open mouth of the can into which it is to be packed.

As the can and fruit unit are carried around the axis of the turrets, a plunger head 41 is moved into engagement with the flat end of the fruit unit and pushes it toward the can. There are a plurality of these plunger heads, one for each pocket in the fruit unit turret 34, and positioned in axial alignment with each pocket.

Each plunger head 41 is formed on the forward reduced diameter end of a stem 42 which is carried in a sleeve bearing 43. The several sleeve bearings integrally connect with an annular disc 44 and an annular ring 45 which disc and ring together constitute a rotatable frame 40. One end of the frame 40 is supported by the disc 44, which at its center is provided with a hub 46. The hub is keyed to the drive shaft 28 adjacent the fruit unit turret 34 and is rotated therewith.

The other end of the frame 40 is supported by the ring 45 which rests on an annular seat or shoulder 48 formed in a collar 49. The ring is bolted to this collar by bolts 51. The collar rotates in an annular seat 52 formed adjacent one end of and in the periphery of a stationary substantially horizontally disposed barrel cam 53. One end flange of the cam is bolted as at 50 to the inner face of the housing 18. Its other end is formed with a bearing 54 which surrounds the drive shaft 28 and which serves to steady the shaft intermediate its bearings 31, 32. It is this cam which moves the plunger head 41 into engagement with the fruit unit as mentioned above.

Movement of the plunger head 41 is effected by a tapered cam roller 55 which operates in a suitable cam groove 57 formed in the barrel cam 53. The roller is mounted on one end of a shouldered stud 58 which is carried in a bore 59 formed in the plunger stem 42 and is held in place by a

nut 61. A slot 62 formed in the top of the sleeve bearing 43 provides clearance for the travel of this nut with the roller. In a diametrically opposite side of the sleeve bearing a similar slot 63 confines and guides a cylindrical roller 64 mounted on the stud 58 above the cam roller in order to prevent the plunger stem from rotating in its bearing.

Forward movement of the plunger head 41 into engagement with a fruit unit pocketed in its turret 34 pushes the fruit cylinder endwise or axially out of the pocket 38 as shown in Fig. 3 and against a spider shaped or radial cutter element generally indicated by the character 66. The cutter is disposed in axial alignment in front of the open end of the can b, in the space between the parallel turrets and it is this cutter which cuts the fruit cylinder into longitudinal segments or fingers as it is inserted into the can.

There are a plurality of these cutters 66, one for each can pocket of the can turret 27. Each cutter comprises a central cylindrical core 71 (Figs. 1 and 2) into the sides of which the inner edges of a plurality of radial cutting blades 72 are preferably welded or otherwise permanently secured in place and uniformly spaced apart. The outer edges of these cutting blades are similarly secured in grooves 73 formed in the inner wall of an annular ring 74 which defines a circular opening of sufficient diameter to permit passage of the fruit unit and which is formed in a cutter carrier disc or frame 75. The disc 75 is interposed between the parallel turrets 27, 34 and is keyed to the drive shaft 28 so that cutter disc and the turrets rotate in unison.

The plunger head 41 (Fig. 3) pushing against the fruit unit a forces it through the cutter 66 and fully seats the cut unit into the waiting can where it is received as a radially cut cylindrical unit. In this travel the core of the fruit cylinder passes over the cutter core 71 without impeding its movement. For this purpose the plunger head 41 is provided with a center bore 76 (Fig. 4) which provides clearance for the cutter core 71. The plunger head is further provided with radial slots 77 (Figs. 2 and 3) which align with the radial cutter blades 72 to provide clearance therefor so that the head will pass the cutter with the fruit cylinder to insure full seating or insertion of the latter into the can.

The cutting of the fruit unit and its insertion into the can is effected during approximately one half revolution of the turrets, or in other words during the clockwise travel of the cans and units from the time they are picked up from the runways until they reach a diametrically opposite point at the bottom of the turrets. During this travel the can is held in its turret pocket by a guide rail 79 (Fig. 1) which curves around the can turret adjacent its periphery. This guide rail is an extension of the bottom runway plate 13. The can is held endwise in its pocket by a curved plate 81 which is secured to the inner face of the housing 16 (Figs. 3 and 4 and indicated in dot and dash lines in Fig. 1).

At the bottom of the turrets, the guide rail 79 and plate 81 terminates and the filled can is here delivered from its turret pocket 37 into a can timing and uprighting mechanism. The filled can, still in an inclined position, is delivered on top of a horizontal helical timing screw 83 (Figs. 1, 2 and 4) which engages the side of the can body adjacent its open end. The screw is keyed to a horizontal shaft 84, journaled at its ends in bearings 85 which are bolted to the top of the

main frame 17. This shaft is continuously rotated by any suitable means in time with the other moving parts of the machine.

The closed bottom end of the can *b* when delivered into the timing mechanism is supported by a pair of parallel right angle guide rails 87, one end of which is secured to the housing 16 adjacent the terminal end of the guide plate 81. These rails form a can supporting extension of the plate 81. The guide rails extend the full length of the timing screw adjacent thereto and are bent in substantially a quarter twist, straightening out in a horizontal position at the end of the screw. By this construction a can delivered onto the screw is carried away from its position as received from the turret pocket into an upright position resting on its closed bottom.

By the time the can reaches the end of the timing screw it is in full upright position and may then be delivered onto a continuously moving endless discharge belt 89 (Figs. 1 and 2) which conveys it to any suitable place of deposit, or otherwise disposed of. The machine end of the belt 89 operates over an idler pulley 91 which is mounted on a short shaft 92 carried in bearings 93 formed in the main frame 17. The belt is moved in any suitable manner to convey the filled cans away from the machine in the timed relation in which they are received from the timing screw.

It should be readily understood that while the preferred embodiment of the invention herein described and disclosed is especially adapted for the packaging of pineapple the principle of the invention has ready application to a variety of other machines and other products, and the appended claims have been drawn with this broader scope in mind but also mindful of the prior art.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

We claim:

1. A machine for packing solid or substantially solid products, in combination, a rotatable support for an empty open end shipping container, rotatable means for supporting the product to be packed therein adjacent its open end, cutting elements disposed between said product and the said container, and instrumentalities for transferring said product from its supporting means through said cutting elements and into the container, whereby the product is cut into divisions simultaneously with its insertion into the shipping container.

2. A machine for packing solid or substantially solid products, in combination, a rotatable container turret having a pocket for receiving an empty open end container, a product turret rotatable in time with said container turret and having a pocket for carrying a unit of the product in axial alignment with the container adjacent its open end, cutting elements disposed between said turrets, and instrumentalities for transferring the product unit from its pocket through said cutting elements and into the container for cutting it into divisions as it is inserted into the container.

3. A machine for packing solid or substantially solid products, in combination, a rotatable container turret having a pocket for receiving an empty open end container, a product turret rotatable with said container turret and having a pocket for carrying a unit of the product in axial alignment with the container adjacent its open end, cutting elements disposed between said turrets and movable in unison with them, and instrumentalities located in axial alignment with said turret pockets and with said cutting elements and movable in unison therewith for pushing the product unit endwise from its pocket through said cutting elements and into the container for cutting the product unit longitudinally simultaneously with its insertion into the container.

4. A machine for packing solid or substantially solid products, in combination, a conveyor for an empty open end container, a conveyor parallel with said first conveyor for feeding a unit of the product to be packed in said container in alignment therewith, cutting elements disposed between said conveyors, transfer instrumentalities for the product unit, for moving the product unit through said cutting elements and thence into the container for dividing the product unit into separate portions while it is being inserted into the container.

5. A machine for packing solid or substantially solid products, in combination, means for supporting an empty open end container at an angle to its upright position, means for supporting a unit of the product to be packed in said container adjacent its open end, cutting elements adjacent said supported product unit, instrumentalities for moving the product unit from its support into the container the while said product is divided by said cutting elements into separate portions, and means for moving the filled container into upright position.

6. A machine for packing solid or substantially solid products, in combination, means for supporting an empty open end container at an angle to its upright position, means for supporting a unit of the product to be packed therein adjacent its open end, cutting elements disposed between the supported product unit and the container, instrumentalities for moving the product unit from its support through said cutting elements and into the container for dividing the product unit into separate portions while it is being packed therein, and means for moving the filled container into upright position and for simultaneously timing its movement for discharge.

7. A machine for packing solid or substantially solid products, in combination, a container magazine for empty open end containers, a product magazine for units of the product to be filled into the containers, a pair of rotatable turrets having axially aligned pockets for receiving a container from its magazine and a unit of the product from its magazine and for holding the latter in axial alignment with the container adjacent its open end, cutting elements disposed between said turrets and movable therewith, and instrumentalities movable in unison with said turret pockets and said cutting elements and located in axial alignment therewith for pushing said product unit endwise through said cutting elements into said container, the while dividing said unit into longitudinal portions.

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