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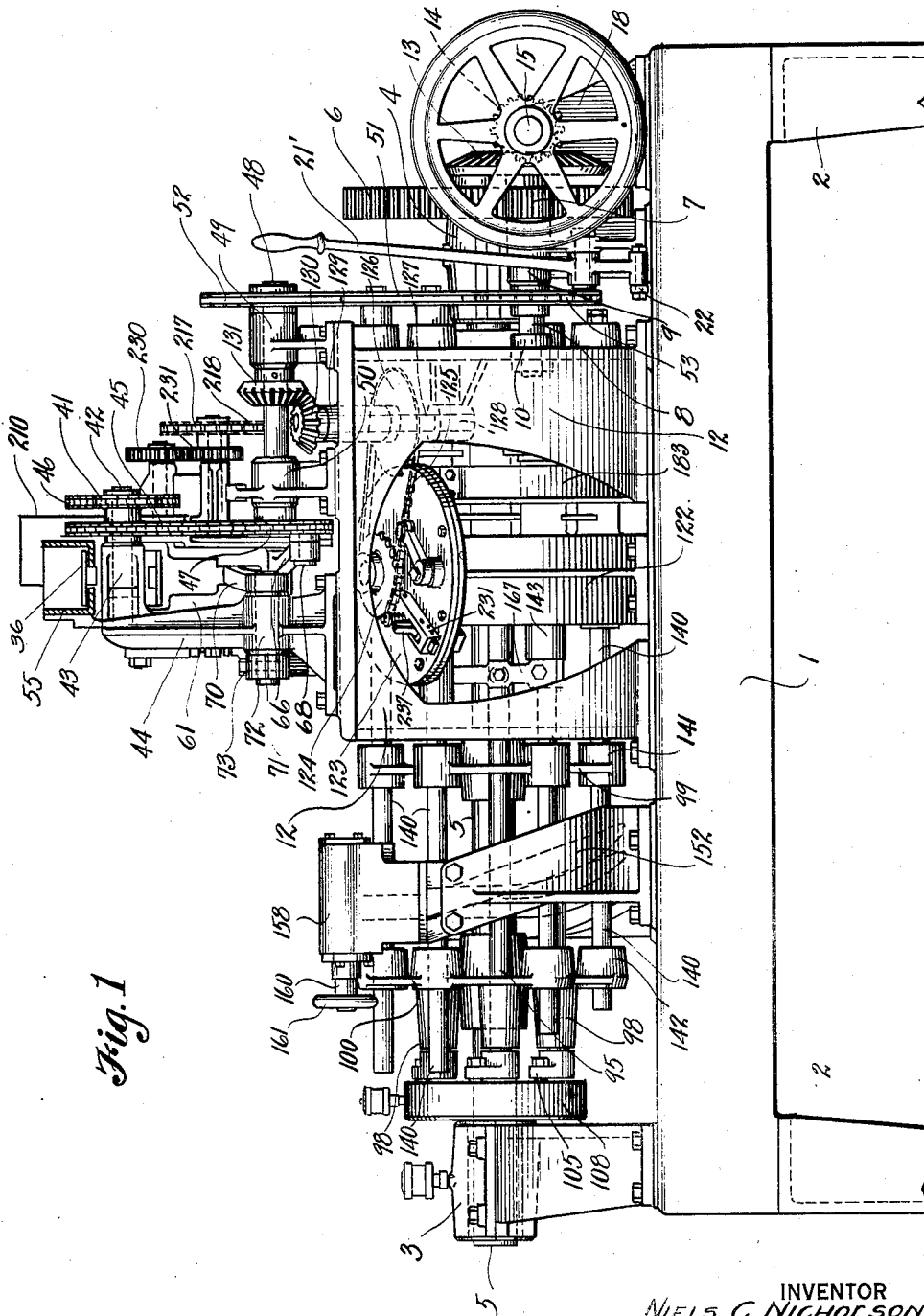
N. C. NICHOLSON

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CAN FILLING MACHINE

Filed June 18, 1928

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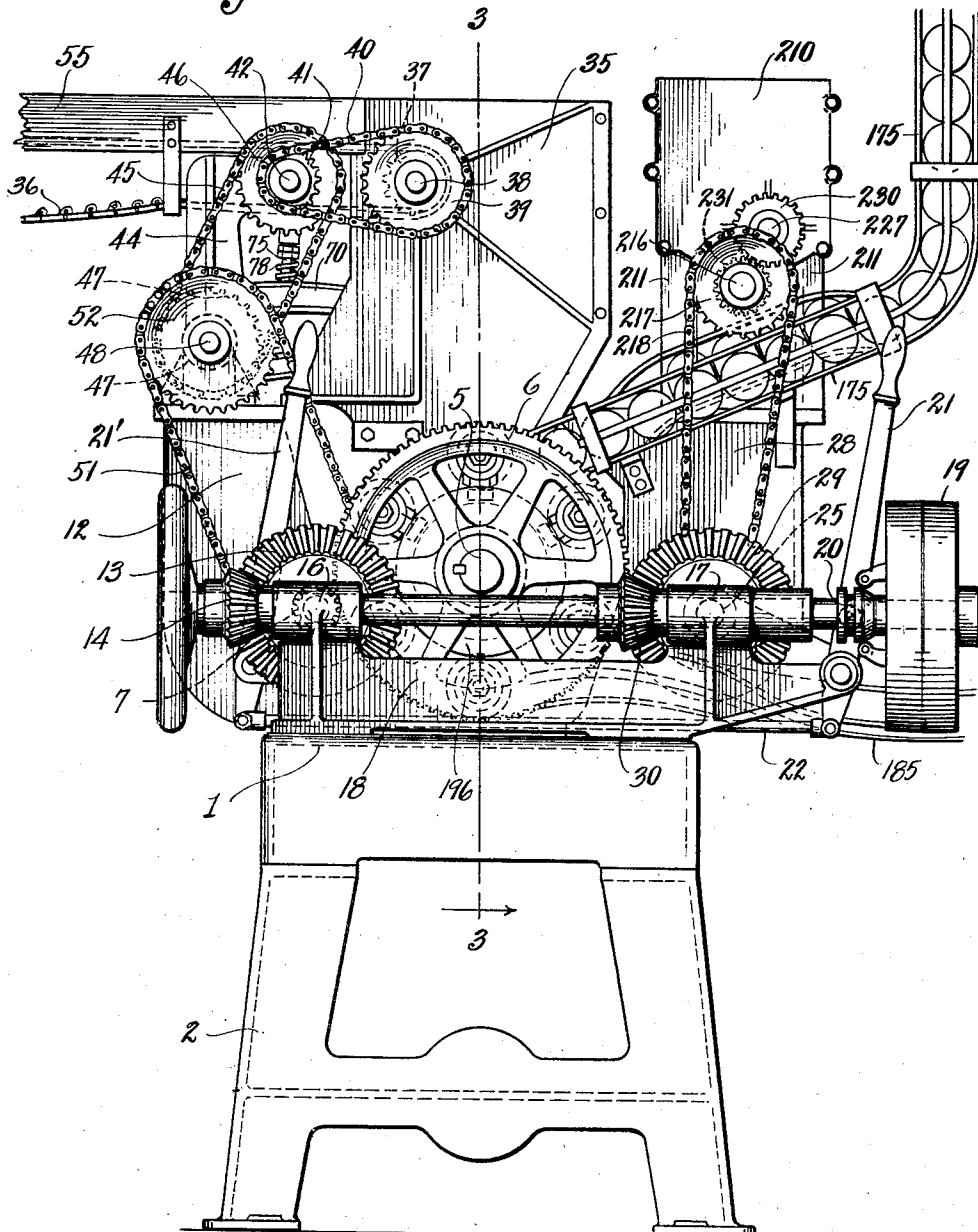
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Fig. 2



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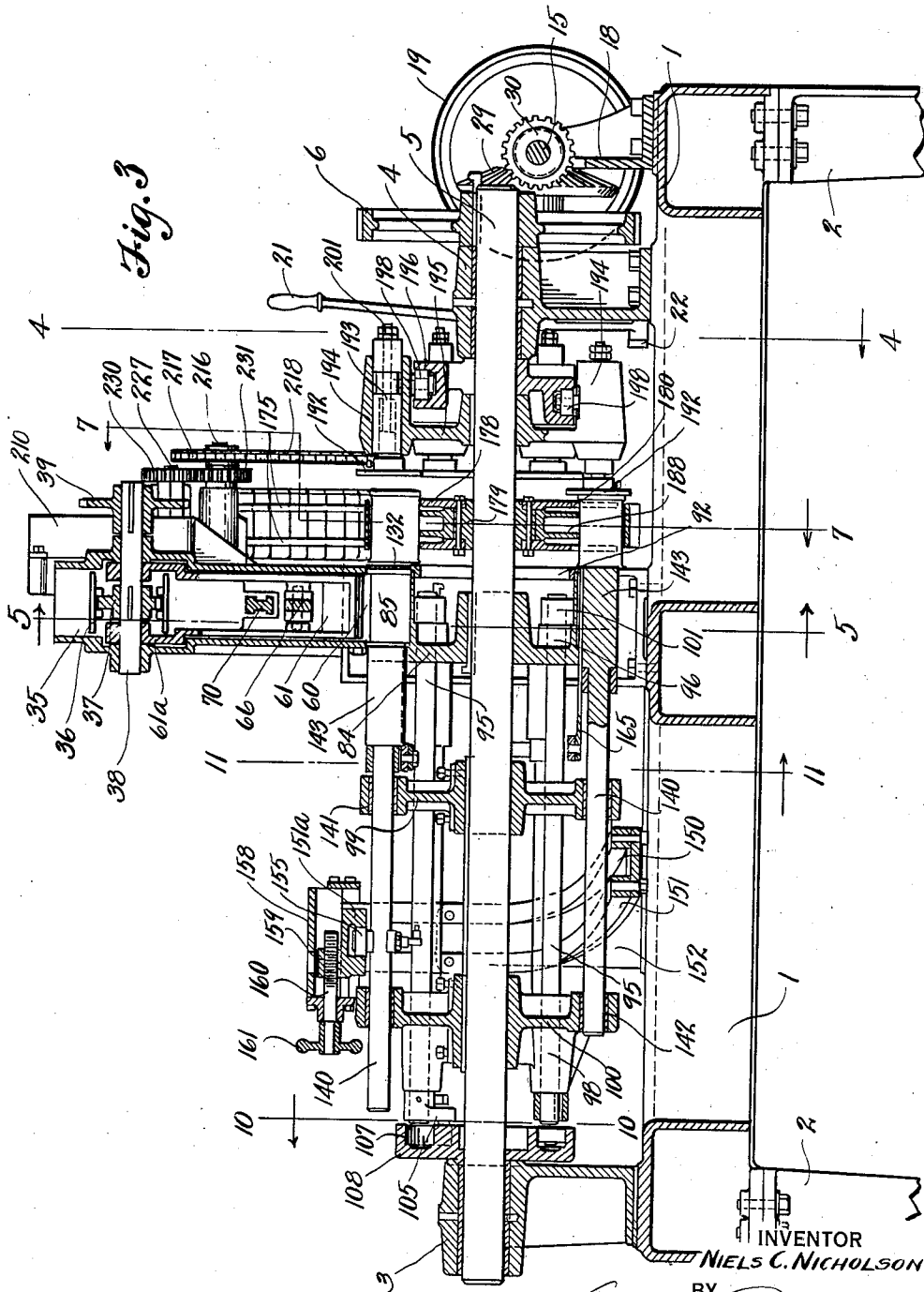
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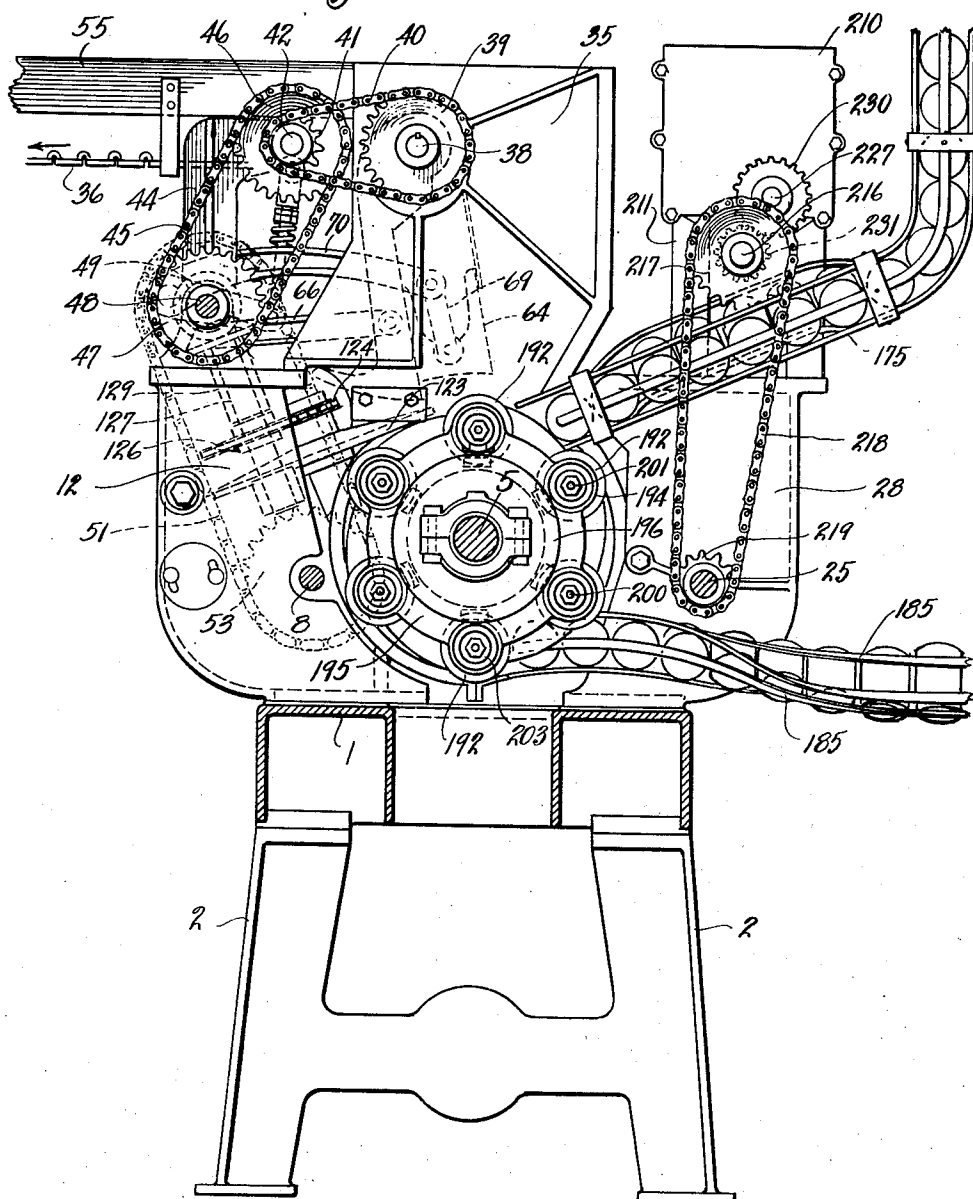
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Fig. 4



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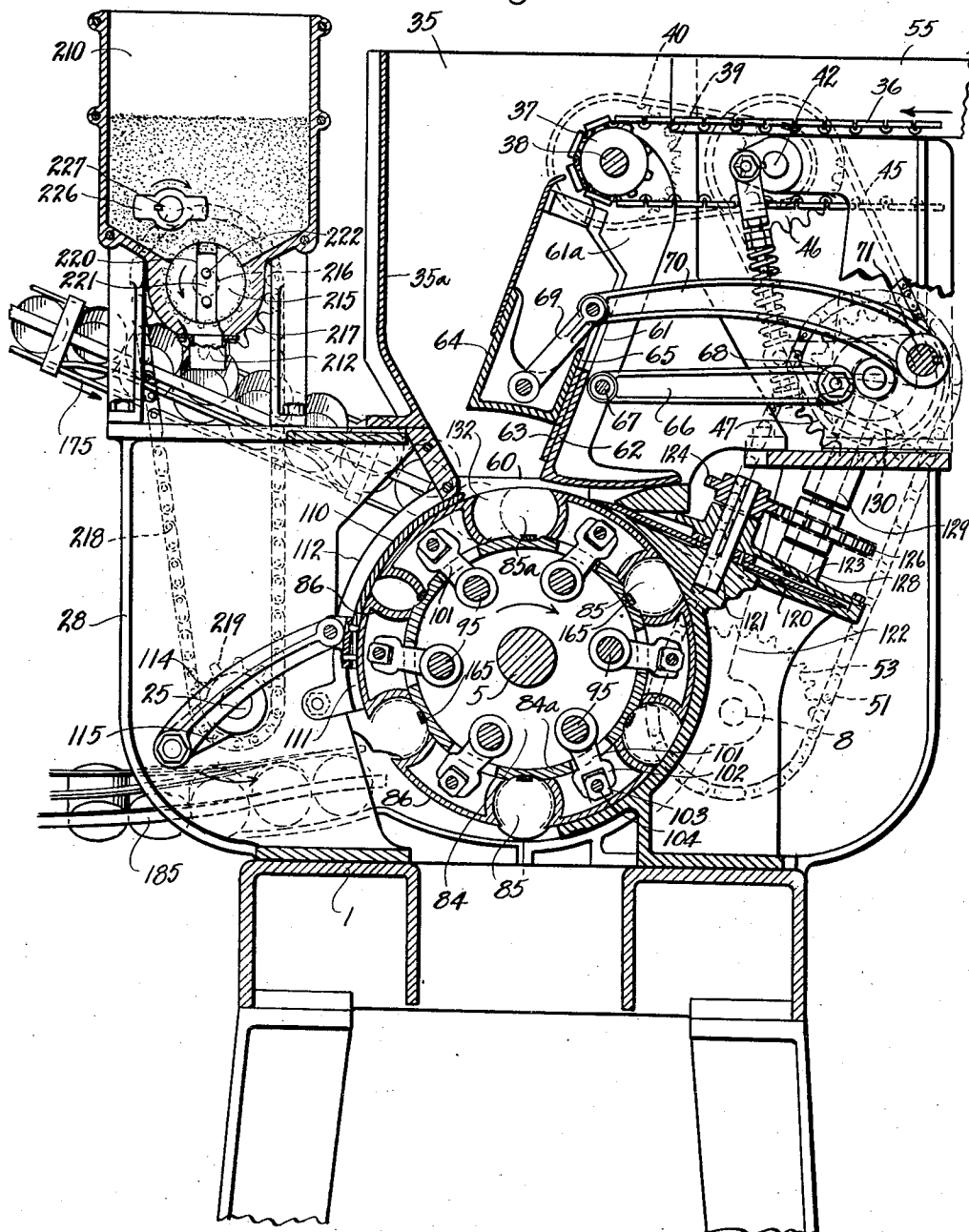
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Fig. 5



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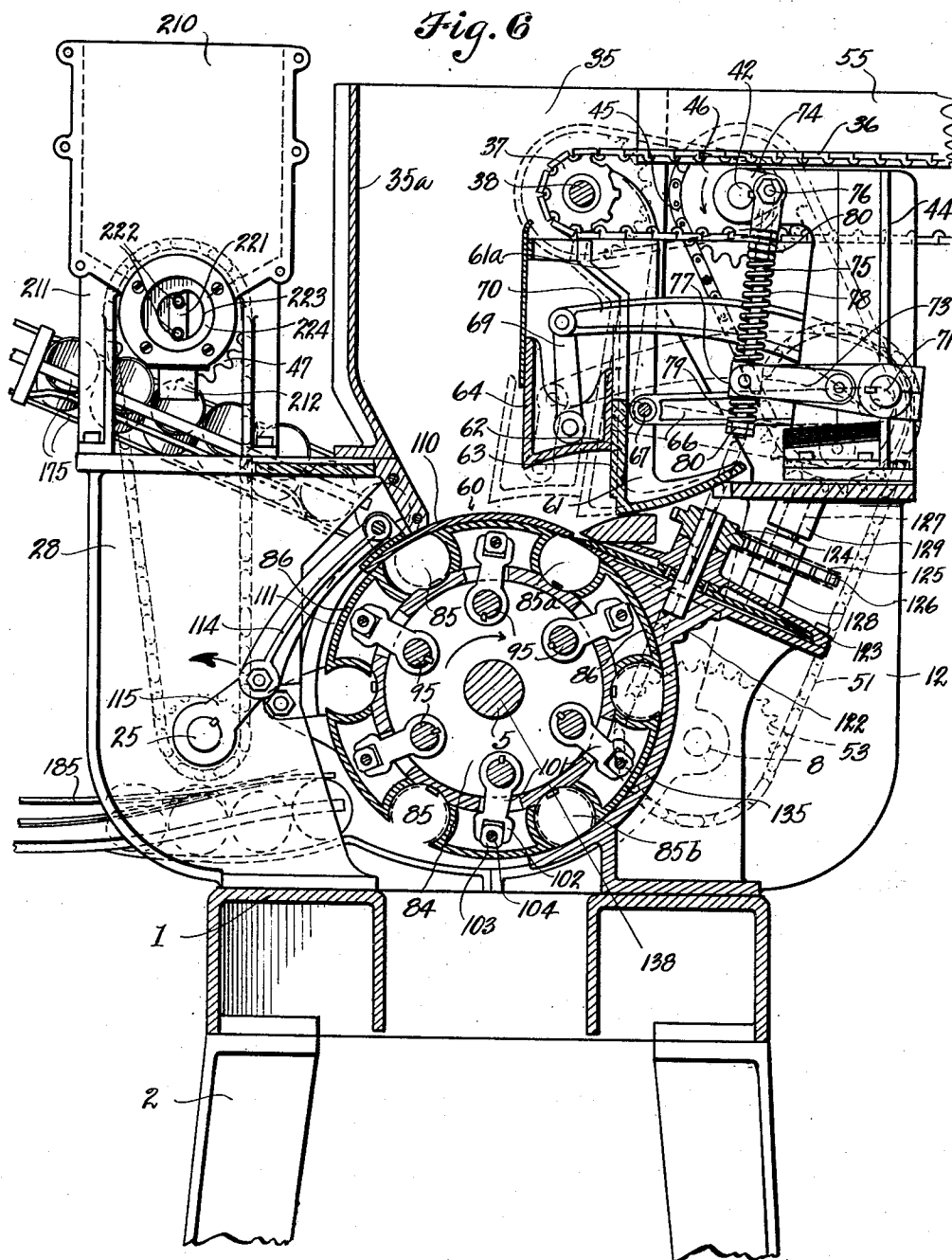
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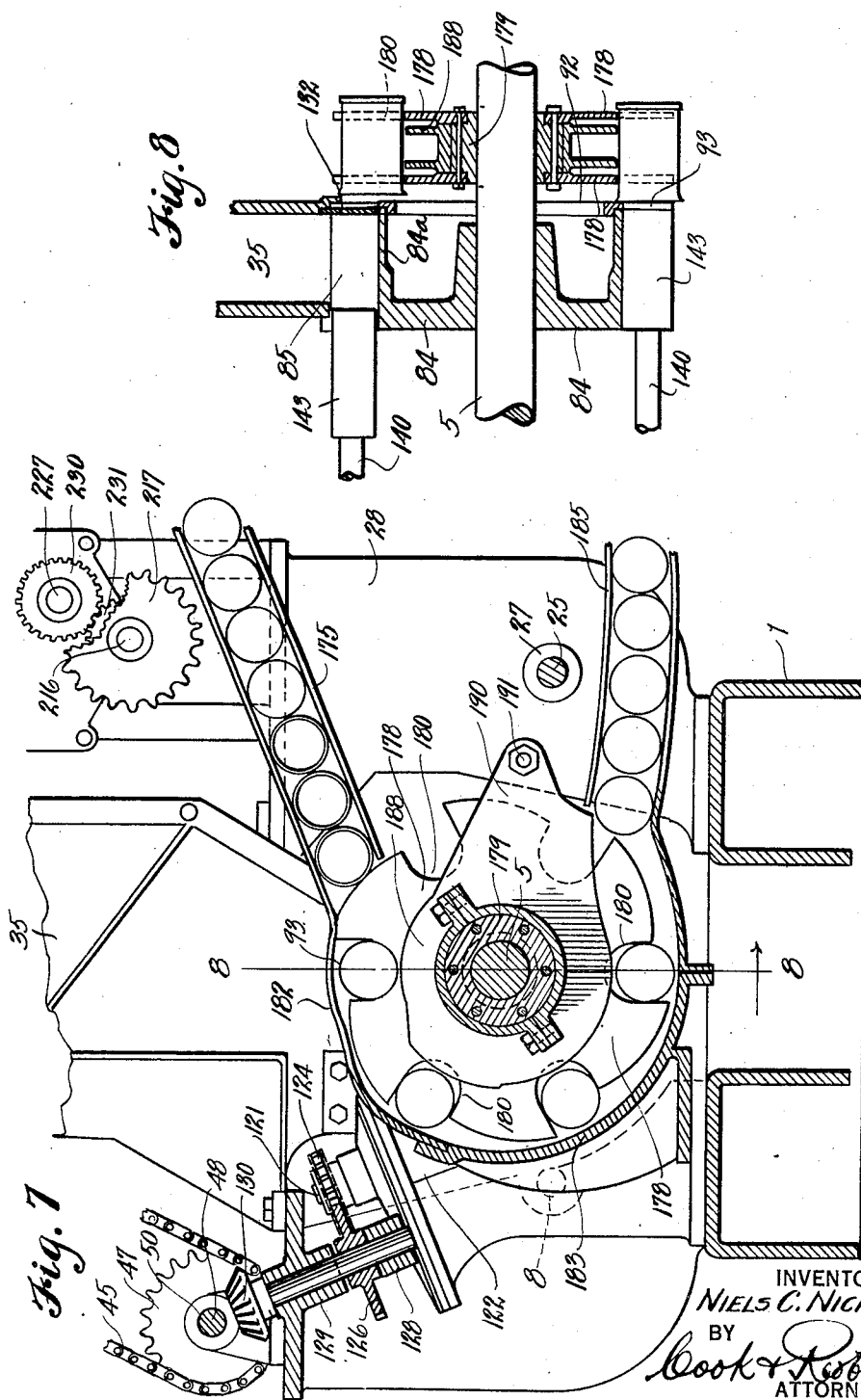
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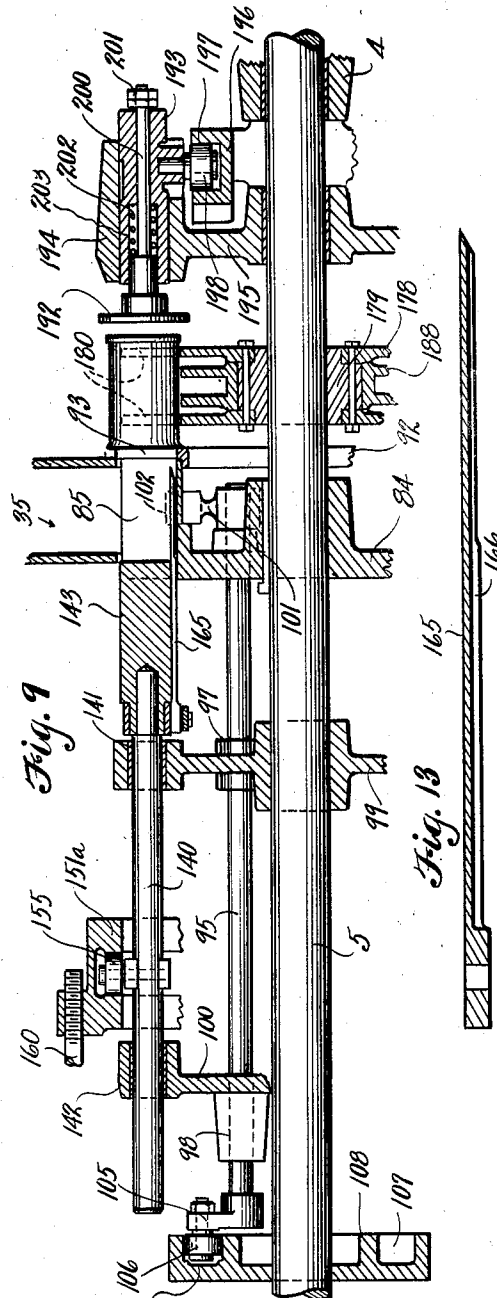
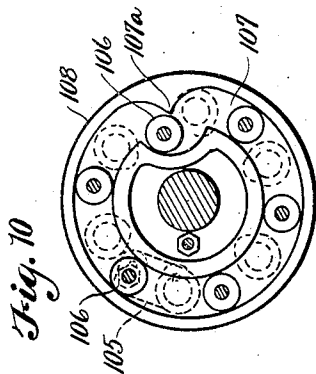
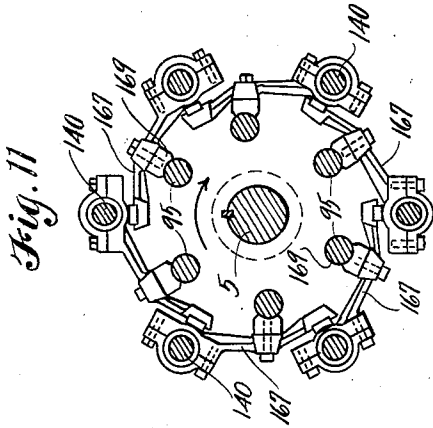
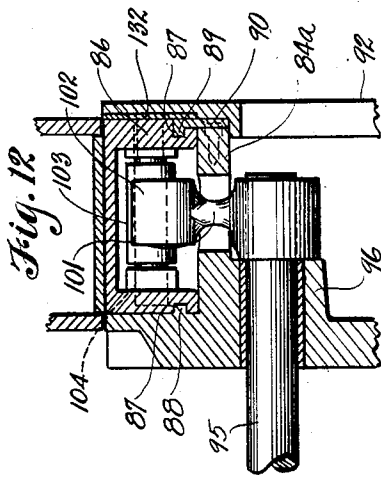
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CAN FILLING MACHINE

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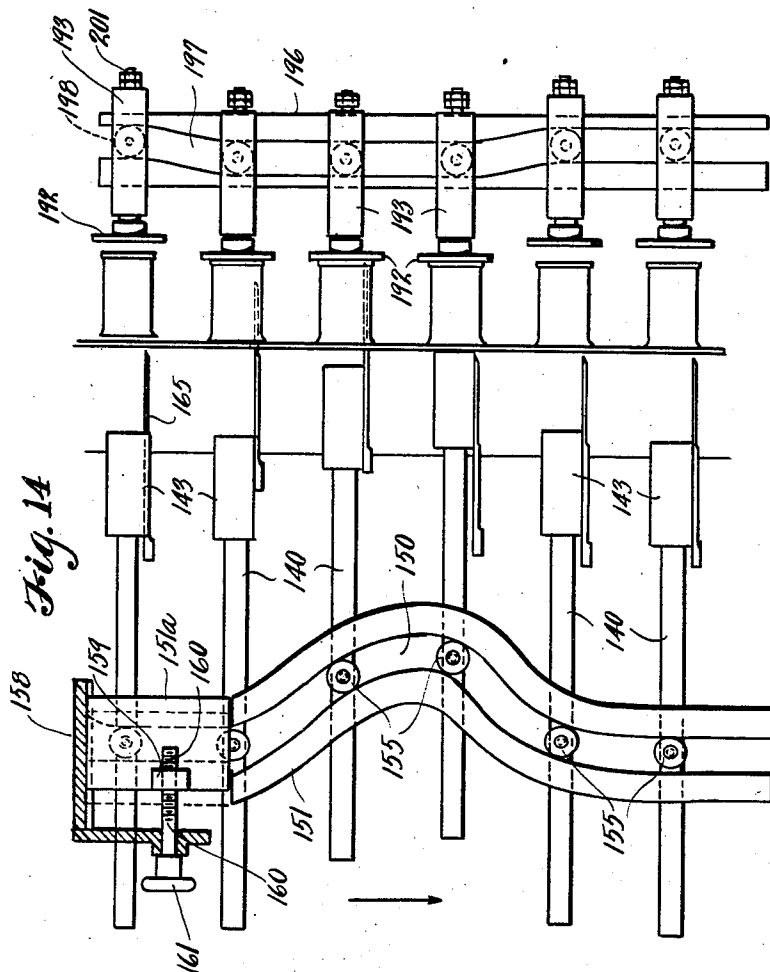
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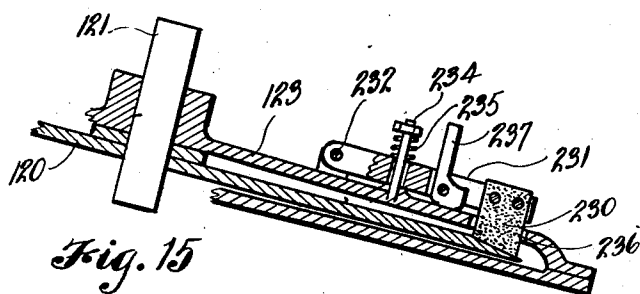
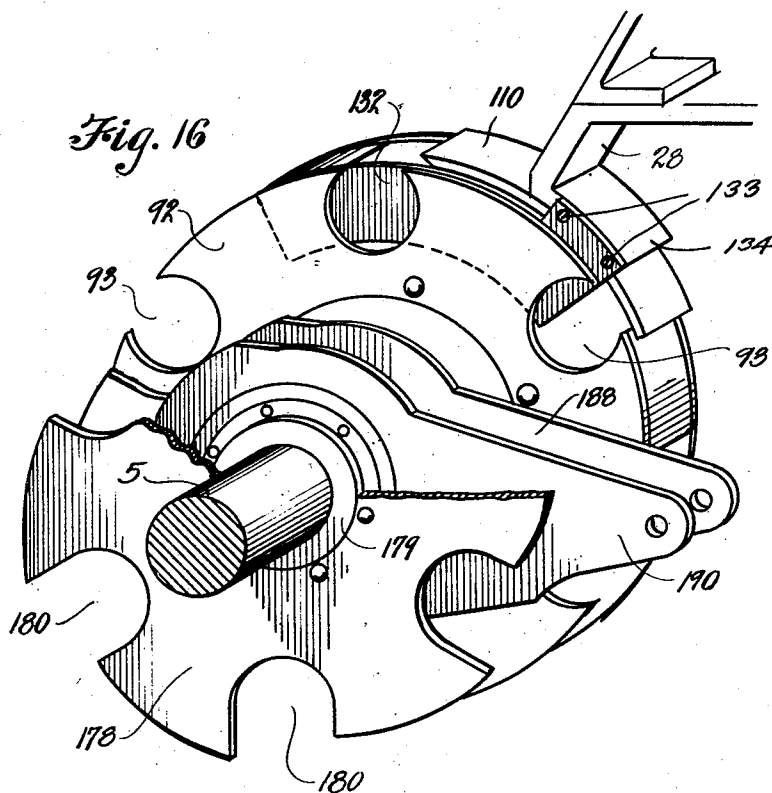
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UNITED STATES PATENT OFFICE

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CAN FILLING MACHINE

Application filed June 13, 1928. Serial No. 286,131.

This invention relates to machines designed for filling or packing cans with salmon or other fish and the principal object of the invention is to provide a machine for this purpose that is entirely automatic in its operation, which is capable of satisfactory high speed operation and which will fill all cans with equal amounts without waste.

More specifically stated, the present invention resides in the provision of a can filling machine of the above character comprising a hopper with means for delivering thereinto the fish to be canned, a revolving turret containing a plurality of measuring pockets or boxes, mechanism for filling the pockets with fish as they revolve with the turret across the discharge outlet of the hopper, means for pushing the measured quantities of fish from the pockets into the cans and means associated with the turret for automatically taking up the cans to be filled, for holding them in registration with the pockets for filling and for delivering them, after being filled, from the machine.

It is also an object of the invention to provide measuring pockets that will contain the exact amount of fish required and whereby the charges received will be molded to suit the cans, also, to provide discharge means in the nature of reciprocally operating plungers whereby these measured amounts are pushed into the cans as the latter are held in registration with the discharge ends of the pockets.

Another object of the invention is to provide means for trimming the surplus or overflow of fish from the measuring pockets and for then closing or covering their receiving sides during the intervals in which the plungers are pushing the compressed charges into the cans.

Another object of this invention is to make possible a higher speed of canning by causing the filling hopper outlet to advance with each of the measuring pockets through an extended filling arc, thereby to prolong the filling period for each pocket.

Other objects of the invention reside in the various details of construction and combination of parts of the can delivery and dis-

charge means, the fish feeding and packing mechanisms and in the various connecting mechanisms whereby all parts are synchronized to properly carry out the function of the machine.

In accomplishing the various objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a can filling machine constructed in accordance with details of the present invention.

Figure 2 is an end elevation of the same.

Figure 3 is a vertical section taken lengthwise of the machine on line 3—3 in Figure 2.

Figure 4 is a vertical section taken transversely of the machine substantially on the line 4—4 in Figure 3.

Figure 5 is an enlarged, cross sectional detail through the salter, feed hopper and measuring pockets of the filling turret; the section being taken on line 5—5 in Figure 3.

Figure 6 is a similar view showing the same parts in a position farther advanced.

Figure 7 is an enlarged, sectional detail taken transversely of the machine on the line 7—7 in Figure 3.

Figure 8 is a cross section taken on line 8—8 in Figure 7.

Figure 9 is a longitudinal section, showing one of the measuring pockets and can filling units of the turret.

Figure 10 is a cross section taken on line 10—10 in Figure 3, illustrating the cam whereby the walls of the measuring pockets are caused to be opened apart and closed together.

Figure 11 is a cross section on line 11—11 in Figure 3, showing the operating mechanisms for the vent slides.

Figure 12 is a sectional detail showing the mounting and actuating means for one of the measuring pocket slides.

Figure 13 is an enlarged sectional detail of a can venting slide.

Figure 14 is a development of the plunger actuating cam; the plungers, cans, retaining pads and their cam, in their relative positions during a revolution of the turret.

Figure 15 is a sectional detail of the disk sharpening means.

Figure 16 is a perspective view of a part of the turret showing the can supporting and
5 carrying means.

Referring more in detail to the drawings—

1 designates the bed plate, or base of the machine on which the various mechanisms for the can filling operation are mounted; 10 this bed being supported at a convenient working height by means of legs 2 secured to its opposite ends. Fixed to the base, centrally at opposite ends, are bearings 3 and 4 within which the opposite end portions of a 15 horizontally disposed shaft 5 are revolubly mounted; this shaft being the axial and main driving shaft of a turret mechanism presently described, which carries the measuring pockets, plungers and other devices associated with the filling apparatus. At one end, 20 the shaft 5 has a gear 6 keyed thereon and this meshes with a driving pinion 7 as shown in Figures 1 and 2, which is fixed on a short shaft 8 that extends parallel with the shaft 5 at one side of the machine and which is 25 revolubly supported in a fixed bearing 9, that is formed as an integral part of the casting containing the bearing 4, and in a bearing 10 formed in a vertical web portion of a large 30 bracket 12 that is erected on that side of the base. At the forward end of the shaft 8, is a beveled gear 13 by means of which this shaft is driven and which meshes with a beveled driving pinion 14 on a transversely 35 mounted shaft 15 revolubly contained in bearings 16 and 17 provided at the opposite ends of a supporting casting 18 that is fixed across the end of the base frame. The shaft 15 is the main drive shaft of the machine and it 40 has a driving pulley 19 at one end and this may be locked to or released from the shaft by the shifting of a clutch device of any suitable character, which is here designated at 20. The clutch is shown as being operatively 45 connected with pivotally mounted shifting levers 21 and 21' located at opposite sides of the machine and connected at their lower ends by a link 22 so as to permit starting and stopping of the machine from either side. 50 At the side of the machine opposite that on which the shaft 8 is mounted, is a longitudinally directed shaft 25 from which the salter is driven, as will hereinafter be described; this shaft being supported at its forward end in a bearing 26, also integral with 55 the transversely disposed casting containing the bearing 4, and at its rearward end, in a bearing 27 that is formed in a side web of a large bracket 28 erected on the base frame directly opposite the bracket 12. The shaft 60 25 is also driven from the shaft 15 in the same direction and at the same speed as the shaft 8, by means of a beveled gear 29 that is keyed to its forward end in mesh with a 65 beveled pinion 30 keyed on the shaft 15.

Supported above the turret mechanism from the inner edges of the flat upper end portion of the brackets 12 and 28, is a hopper 35 into which the fish to be canned is delivered by a link belt conveyer 36 that extends 70 within the hopper about a driving sprocket 37 fixed on a cross shaft 38 through the upper portion of the hopper. This shaft is equipped at its outer end with a driving sprocket 39 connected by a sprocket chain 75 belt 40 with a smaller sprocket wheel 41 fixed on a crank shaft 42 that is revolubly carried in a bearing 43 at the upper end of a standard, or bracket, 44 fixed rigidly on the top of the 80 bracket 12. This latter shaft 42 is, in turn, driven by a sprocket chain belt 45 which operates about sprocket wheels 46 and 47 fixed, respectively, on the shaft 42 and a short shaft 48; this latter shaft being revolubly mounted in bearings 49 and 50 fixed 85 on top of the bracket 12, and is driven from the shaft 8 by a sprocket chain belt connection 51 that operates over sprocket wheels 52 and 53 that are fixed, respectively, on the 90 shafts 48 and 8 as is shown best in Figures 1 and 2.

The various driving connections above described, best shown in Figure 2, provide for 95 rotation of the shafts 8, 25, 42 and 48 in the same direction and at the same speed, and for rotation of the turret shaft 5, for reasons presently apparent, at one-sixth this speed. It also provides for movement of the conveyer at proper speed and direction for 100 delivering fish to the hopper. As shown in Figures 1 and 2, the incoming, or top, run of the conveyor belt operates within a guide trough 55 and the fish to be canned are cut up in pieces of convenient size and are 105 thrown into this trough and carried by the belt to the hopper.

At the bottom of the hopper 35, is a restricted discharge opening 60 through which the pieces of fish are delivered into the measuring pockets, or boxes of the turret, presently described, as they are brought successively, by rotation of the turret, into registration with the discharge opening and the fish is packed into these measuring pockets 110 by the combined action of reciprocating and oscillating packers, shown in Figures 5 and 6, wherein 61 designates a frame having opposite side flanges 61a pivotally mounted at their upper ends on the cross shaft 38 at opposite sides of the conveyor driving sprocket 115 37. This frame also has a flat face plate 62 provided centrally along its lower portion with a vertically directed, dove-tailed rib 63, and slidably fixed on this face plate is a packer head 64 provided with a groove 120 65 for receiving the rib as a means of holding the parts in connected relation without interfering with reciprocal action of the head. The packer head operates in a vertical direction after the fashion of a piston, while the 130

frame 61 is being oscillated outwardly and inwardly in a horizontal direction; the means for producing this action consisting of a link 66 which, at one end, is pivotally attached to the frame by a pivot pin 67 and, at its other end, is attached eccentrically by a pivot bolt 68 to the inner face of the sprocket wheel 47. The vertical, reciprocal action of the packer head is synchronized with the horizontal, swinging movement of the frame 61 by pivotal connection, through a short link 69, with the outer end of a rocker arm 70 that is fixed on a horizontal stub shaft 71 carried in a bearing 72 formed in the base portion of the bracket 44. The shaft 71 also has an arm 73 fixed thereto at its outer end (see Fig. 6) and this arm is connected to a revolving crank 74 on the end of the shaft 42; the connecting means consisting of a rod 75 which at its upper end has pivotal connection, as at 76, with the crank and at its lower end is slidable through a block 77 pivotally mounted in the end of the arm 73 with compression springs 78 and 79 mounted about the rod and bearing against opposite faces of the block and against tensioning nuts 80 that are threaded onto the rod, thereby providing a yieldable connection.

The arrangement of the packer head and its supporting bracket permits them to serve in the capacity of a side wall for the hopper, opposite the side wall 35a, designated in Figures 5 and 6, and the connection of these parts with the rocker arm 70 and with the sprocket 47 provides that the path of movement of the piston will be substantially that of a circle and its action is to feed the fish delivered into the hopper downwardly through the discharge opening 60 at the base.

Keyed on the shaft 5 is the turret 84 and this is provided about its periphery with six equally spaced pockets 85 which are brought, successively by rotation of the turret, into registration with the discharge opening at the base of the hopper. The movement of the turret is so timed with action of the packer head 64 that with each downward movement of the packer, a pocket is passed beneath the hopper outlet and is filled with fish incident to this action of the packer.

To facilitate high speed operation of the machine the filling periods for each of the pockets has been considerably extended by making provision for the hopper outlet to travel along with each pocket through an extended filling arc. It will be understood that should the hopper outlet remain as shown in Fig. 5, the time for filling each pocket would be the time required for the pockets to pass across the outlet. In a high speed machine of the present character, such a short period would be entirely inadequate. Therefore, I have made possible the extending of this period through a longer arc of travel of the pocket by causing the hopper

outlet to advance along with each of the pockets as they successively move across the filling arc which extends from the left hand edge of the hopper outlet as seen in Fig. 5, to the cut off disk, presently described; this distance being substantially three times the width of the pocket. This advancing movement of the outlet is the result of the oscillating action imparted to the swinging wall 62, and this movement is so synchronized with the rotation of the turret that the wall advances with each pocket closely in advance thereof so as to serve as a guide wall whereby the fish forced downwardly by the packer 64 are directed into the pocket.

The turret head 84 is of circular form and is provided with an encircling guideway within which blocks 86 are slidably fitted for movement in a circumferential direction. As shown best in Figure 12, each block is provided in its opposite side walls with arcuate grooves 87 and those, at one side, slidably receive an arcuate rib 88 projecting from that side surface of the guideway and those, at the other side, receive the inturned edge flange 89 of a retaining ring 90 that is fixed to the extended flange 84a of the turret which forms the base of the guideway in which the blocks operate. Then, overlying the retaining ring 90 and fixed securely to the turret, is a ring-like flange 92 against which the open ends of the cans are held when in position for filling, as presently described, and in which there are circular openings 93 alined axially with the pockets through which the charges of fish are delivered into the cans.

The outer surface of each of the blocks 86 is smoothly formed and is radially curved and all are flush with the peripheral edge of the turret head. Also, the end surfaces of the blocks are concave and together with the base portion of the guide within which they are fitted, provide pockets of cylindrical form conforming substantially to the diameter of the cans to be filled, and which are open along their outer sides so that they may receive the charges from the hopper outlet 60.

During the rotative movement of the turret, the pockets 85 are caused, as they approach and come into registration with the hopper outlet, to be opened beyond their normal cylindrical form to receive the charge of fish and are then contracted so as to compress the charge into its cylindrical form for delivery into a can. This opening and closing action is effected by shifting of the blocks 86 from and toward each other and for this purpose I have provided rocker shafts 95 which extend parallel with shaft 5 and are rotatably contained in bearings 96 formed in the turret body and in bearings 97 and 98 provided, respectively, in frames 99 and 100 that are keyed on the shaft 5 at spaced intervals from the turret head, as shown in Figure 3. At their ends which terminate

within the turret, these shafts are equipped with short arms 101 with yokes 102 at their outer ends which slidably embrace blocks 103 pivotally mounted on pins 104 extended through the blocks 86, and at their other ends they are provided with arms 105 carrying rollers 106 which are adapted to follow within a cam groove 107 in a disk 108 that is fixed about the shaft 5 to the inner face of the bearing 3. This cam groove, as shown in Figure 10, is of unform curvature throughout most of its extent but at one point is provided with a sharp offset as at 107a which, as each cam roller 106 passes there-through, causes their shafts 95 to be rotated slightly in one direction and then back to thereby shift the particular block 86 with which the rotated shaft is connected, away from the preceding block to open the pocket between them to its full capacity and then to again move them together to form the cylindrical pocket. This action is so timed that each pocket is open to its full capacity as it comes into registration with the hopper outlet to receive its charge of fish and is closed again by the time it passes from the outlet. In Figure 5, the pocket 85a is shown to be fully open as it reaches the hopper outlet and in Figure 6 this same pocket, after being filled, is shown in closed position. During the final closing movement of each pocket the entrance thereto is covered so that the charge intaken may be tightly compressed without any part being squeezed from the pocket. For covering the pockets during this compression of the charge, I have provided an arcuate, slide plate 110 overlying the outer surfaces of blocks 86 and slidable in grooves 111 provided in guides 112 fixed to the frame, as shown in Figs. 5 and 6, so that it may be reciprocally actuated across the opening 60. The slide is connected pivotally at its outer end to a link 114 which, in turn, connects pivotally to a crank arm 115 keyed on the end of shaft 25 so that rotation of shaft 25 effects this above movement, the action of which is illustrated in Figures 5 and 6 which, respectively, show pocket 85a fully open for receiving its charge, and then fully closed and covered by plate 110. Should there be any surplus or overflow projecting from a pocket when it is fully closed and when it reaches the position of pocket 85a in Figure 6, this overflow is trimmed off and delivered back into the hopper by the following inward swing of the frame 61. This trimming of the surplus is done by the sharpened peripheral edge of a revolving disk 120 fixed on a short drive shaft 121 mounted in bearings provided in a supporting bracket 122 and a cover plate 123 fixed to the bracket to overlie the disk. On the upper end of shaft 121 is a sprocket wheel 124 and a sprocket chain belt 125 operates about this and a sprocket wheel 126 on a shaft 127

carried in bearings 128—129 in the bracket 12. On the upper end of shaft 127, is a beveled driving gear 130 meshing with a beveled gear 131 keyed on shaft 48. The cutter disk lies in a plane that is tangent to the periphery of the turret and its cutting edge slightly underlaps the end of the slide 110 when the latter is in its farthest advanced position and this provides that any overflow from the covered pocket will be smoothly and completely severed.

In order that the charges of fish delivered into the pockets 85 in passing the outlet 60 of the hopper will not be squeezed from the outlet ends of the pockets, due to the contraction of the pocket, before the pockets have passed the trimming disk and come properly into position relative to the cans to be filled, I have fixed a plate 132 just within the flange plate 92, as shown in Figures 8, 12 and 16. The flange 92 is provided with the openings 93 that are alined with the pockets and through which the charges of fish are pushed into the cans but the plate 132 is fixed against movement by bolts 133 extended through one end thereof into the lower end portion of a side wall 134 of the hopper, as shown in Figure 16 and it extends across that interval through which the pockets pass during their filling period.

In order that the compressed charges contained within the pockets will be retained after the pockets have advanced past the trimming disk, I have provided the bracket 122 with an arcuate flange 135 which closely overlies the face of the turret along one side, as shown in Figures 1, 5 and 6.

The compressed charges of fish are delivered or pushed from the pockets into the cans by a reciprocal action of plungers which operate during the interval that the pockets travel from a position immediately past the trimming disk to a position closely approaching a point directly below the shaft 5, or to the radial line 138 in Figure 6. The cans are, during this filling operation, pressed tightly against the outer face of plate 92 with their open ends enclosing the openings 93. The action of the plungers and their actuating means is best shown in Figures 3, 9 and 14 wherein 140 designates the plunger shafts which are slidably contained in guide bearings 141 and 142 formed, respectively, in the frames 99 and 100. These shafts are axially alined with the pockets in the turret and have plunger heads 143 of piston like form at their forward ends adapted to be projected inwardly through the pockets to push the compressed charges into the cans. These pistons are of substantially the same diameter as the pockets so as to fit snugly therein and, when in retracted position, they serve as end closures for the pockets.

For effecting the reciprocal action of the plungers, I provide a cam slot 150 in a cam

151 which encircles the revolving frames and rods and which is fixedly mounted on the base 1 by a supporting bracket 152. Each plunger shaft is equipped with a roller 155 adapted to follow in the cam slot as the turret revolves and this effects the inward and outward action of its plunger. The cam is so developed that each plunger starts on its inward travel just as the pocket passes the trimming disk and advances gradually so as to arrive at its inward limit of travel as the pocket reaches the position of pocket 85b, or near the radial line 138 in Figure 6. Then the plunger is quickly withdrawn so as to be clear of the pocket to permit the required shifting of the next forward block 86 as previously described, for opening the pocket to receive its charge. The development of this cam and the piston action is clearly shown in Fig. 14.

As a feature of construction whereby the plungers may be withdrawn from the pockets 85 to a farther or lesser extent in order to permit the intaking of a greater or lesser charge of fish, I have provided an adjustable section 151a in the cam which may be shifted as is necessary to produce the above result. This cam section 151a is slidably mounted in a guide 158 fixed on top of the cam and has an upwardly projecting boss 159 through which a screw 160 is extended. The screw is fixed against longitudinal shifting in the guide and has a hand wheel 161 whereby it may be rotated to effect the desired adjustment of the cam action. It will be apparent, by reference to Figure 14, that shifting of the block 151a to the left will cause a farther withdrawal of the plungers from their pockets as they pass through the filling interval, and this will give the pockets added capacity.

For the purpose of venting the cans during the filling process, I have provided for each pocket a venting slide 165 which, as shown best in Figure 9, are contained in longitudinally recessed portions in the bottom sides of the corresponding pistons. Each of these slides consists of a thin chisel-like blade that is projected into the can just ahead of the charge of fish and it is provided with a longitudinal air vent 166 (see Fig. 13) through which air may be exhausted from the can as the charge of fish is inserted. In order that these venting slides will be caused to enter the cans ahead of the plungers, each is connected at its outer end to a bracket or arm 167 which is fixed to the next advanced plunger actuating rod as shown in Figure 11. This provides that, as each plunger is actuated inwardly to press a charge of fish into a can, the vent slide for the following pocket is advanced into its can. The relative positions of the venting slides and the plungers is illustrated best in the development shown by Figure 14. As a feature of construction, the arms 167 have bearing blocks 169 fixed there-

to for sliding contact with the shafts 95 as a means of supporting the parts in proper position.

The cans to be filled are delivered by gravity feed through a guide chute 175 to a point adjacent the face of the turret; the cans being delivered in a horizontal position with their open ends closely adjacent the circular flange 92 that is fixed to the turret end. The cans are automatically taken up from the chute one at a time by the action of a pair of feed disks 178 that are fixed in spaced relation, as shown in Figure 8, on a hub 179 that is keyed on shaft 5. These disks have peripheral recesses 180 formed therein in alinement, into which cans may drop from the chute as each pair of recesses are brought past the end of the chute. These recesses also are alined with the measuring pockets in the turret and with the openings 93 in ring flange 92 so that the cans will be automatically positioned for receiving the charges from the pockets under action of the inwardly moving plungers. During travel of the cans with the turret, they are held in place by an overlying guide plate 182 terminating at the top of a continuing bracket 183 that is fixed to the base 1, as shown in Figure 7, and which serves to guide the filled cans into a discharge chute 185 through which they are delivered from the machine; this chute, as shown, in Figure 4, being twisted to bring the cans to upright position as soon as they pass from the machine.

Since it is required that the cans on entering the machine and while being brought into position for filling, be permitted to drop inwardly a short distance toward the shaft 5 so as to be clear of the trimming disk when passing beneath the latter, the recesses 180 are cut a little deeper than otherwise would be necessary. Then, as soon as the cans have passed the cutter disk they are moved outwardly to proper position; this being done by a cam 188 that is fixed about the hub 179 and on which the cans ride. This cam has a laterally projecting arm 190 fixed to the bracket 28 by a bolt 191 and this connection prevents the cam from rotating with the hub. The arm 190 also serves as a guide whereby the filled cans are delivered into the discharge chute.

During the can filling operation it is necessary that the cans be pressed and held tightly against the plate 92 with their open ends enclosing the openings 93 in the latter, and for this holding purpose, I have provided the pressing pads 192 which are carried by slides 193 mounted in guide bearings 194 in a frame 195 keyed on shaft 5. These pads and their slides are alined with the can pockets and are actuated inwardly and outwardly by a cam 196 that is fixed to the inner face of bearing 4. This cam has an encircling slot 197 in which rollers 198 fixed pivotally

to the slides are adapted to follow and the slot is so formed as to cause the slide to advance inwardly to move the pads against the can ends just prior to inward advance movement of the plungers. The cans are in this way held tight against plate 92 during the filling process. Then, as the cans approach the discharge position, the pads are withdrawn to free the cans.

In order to compensate for any slight variation in length of cans, the pads are mounted on supporting shafts 200 that are longitudinally movable in the slides. These shafts have nuts 201 on their inner ends whereby their outward movement with respect to their respective slides is limited, and coiled springs 202 are contained within recesses 203 in slides to bear against the bases of the pads to urge them tightly against the can ends.

Since it is desirable, in the canning of fish that each can receive a certain quantity of salt prior to receiving its charge of fish, I have provided the salt measuring and dispensing device which, as shown best in Figures 2, 5 and 6, comprises a container 210 supported by legs 211 on top of the bracket 28. At the base of the container is a discharge spout 212 positioned to deliver the measured quantities of salt into the cans as they pass by it through the chute leading to the machines. To make delivery of the salt into the cans easier, the chute is formed at this point in such manner as to tilt the cans upwardly toward the spout 212.

The means for measuring and dispensing the salt consists of a disk 215 rotatably fitted in the bottom of the housing and provided with a shaft 216 that extends outwardly from the housing where it is equipped with a sprocket wheel 217 over which a sprocket chain belt 218 operates; the chain being driven by a sprocket wheel 219 on the shaft 25. Formed diametrically of the disk 215 is a channel 220 in which a slide 221 is fitted; this slide being of lesser length than the channel, as is shown in Figure 5, and it has two pins 222—222 extending therefrom into a cam opening 223 in a plate 224 fixed to the casing and the action is to produce a back and forth sliding action of the slide as the disk revolves, so that a certain measured amount of salt will be taken into the upper end of the channel when the parts are in position as in Figure 5; then, when this end of the channel has been rotated to a position over the discharge spout, the slide will be actuated downwardly to discharge it, and by this movement open the upper end of the channel to receive another charge.

I also provide a packer plate 226 on a rotating shaft 227 above the disk. This plate acting to stir up the salt and pack it into the upper end of the channel. The shaft 227 extends through the wall of the container and

is driven by a gear 230 at its outer end meshing with a gear 231 on the shaft 216.

In Figure 15 I have shown a means for sharpening the trimming disk so that the latter may be kept in proper condition, without necessitating its removal from the machine. This means consists of an abrasive stone 230 fixed to one end of a lever 231 that is pivotally attached at its other end, as at 232, to the cover plate 123 of the disk housing. A post 234 is fixed in the cover and extends upwardly through an opening 235 in the lever and has a spring about its upper end portion that bears downwardly on the lever to press the stone into contact with the disk edge to sharpen it; the stone projecting through an opening 236 in the cover plate. When it is not desired to sharpen the disk, the stone is held away from it by a cam lever 237 pivoted to the lever.

Assuming the machine to be so constructed, the operation is as follows: Fish to be canned are cut in pieces of suitable size and are placed on the conveyer belt 36 whereby the pieces are delivered into the hopper 35, wherein action of the reciprocating and oscillating packer 64 forces the pieces into the pockets 85 of the rotating turret as the latter are brought successively into registration with the discharge opening 60 of the hopper.

The cans to be filled are automatically taken up from the chute 175 by the feed plate 178 and are held in registration with the discharge ends of the measuring pockets as they revolve with the turret.

Immediately after a pocket 85 has received a charge of fish, one of the blocks 86 which forms a side wall of the pocket, is actuated toward the opposite wall and the charge is compressed into cylindrical form. The trimming disk 120 cuts off any overflow or surplus from the pocket, and the plunger 143, corresponding to that pocket, then moves inwardly to advance the charge into its can. The can, after retraction of the plunger, is then discharged into the delivery chute 185 and delivered from the machine in an upright position.

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

1. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with measuring pockets adapted to pass successively in registration with said opening and to be charged with material from the hopper; said hopper comprising a wall adapted to move closely in advance of each pocket as it passes across the hopper opening and a packer adapted to move with the said wall toward the pockets for filling them.

2. In a canning machine, a material supply hopper having a discharge opening, a turret provided with measuring pockets

adapted to pass successively in registration with said opening to be charged with material from the hopper, said hopper having a wall adapted to be moved in advance of each pocket as it passes across the hopper opening and a reciprocating packer adapted to move with the said wall toward the pockets for filling them and a yieldable means for actuating the reciprocating packer toward the pockets.

3. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with measuring pockets adapted to pass successively in registration with said opening to receive material from the hopper, a cutter operable to trim surplus material from the filled pockets and packer members operable to feed material from the hopper into the pockets and to return the surplus material trimmed from filled pockets to position for delivery to following pockets.

4. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with measuring pockets adapted to pass successively across said opening and to be charged with material from the hopper, a trimmer operable to remove surplus material from the filled pockets, a wall associated with the hopper adapted to move in advance of each pocket as it is filled, then to move in a reversed direction to take up the surplus trimmed from the pocket and a reciprocally moving packer mounted on the inside face of the wall and adapted to move toward the pockets for the feeding of material thereinto and to move upwardly during reverse travel of the wall.

5. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with measuring pockets adapted to pass successively across the said opening, means for delivering material from the hopper into the pockets, a slide plate operable across said hopper discharge opening and a cutter co-acting with said slide plate when it is in extended position to effect the trimming off of any surplus of material projecting from the pockets.

6. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with measuring pockets adapted to pass successively across said opening to be charged with material from the hopper, means for contracting the pockets to compress the material therein, means for ejecting the compressed charges into cans, and a housing adapted to cover the entrance of each pocket while its charge is being ejected.

7. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with measuring pockets adapted to pass successively across said opening to be charged with material from

the hopper, means for contracting the pockets while passing across the hopper opening to compress the charges received, a trimming disk for removing surplus from the filled pockets and a slide plate operable across the hopper opening to cooperate with the trimmer disk in removing the surplus.

8. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with measuring pockets adapted to pass successively across said opening to be charged with material from the hopper, an oscillating wall associated with the hopper adapted to swing closely in advance of each pocket as it receives its charge, a reciprocating wall movable with the oscillating packer and toward each pocket to deliver the material thereinto, a trimming disk for removing surplus material from the filled pockets, means for contracting the pockets to compress the material therein, means for ejecting the compressed charges from the pockets and means for covering the entrance to the pockets as their charges are compressed and ejected.

9. In a canning machine, a material supply hopper having a discharge opening, a rotating turret, a plurality of spaced blocks movably fixed in the periphery of the turret and providing pockets between the adjacent ends of the blocks, said pockets being adapted to successively pass the discharge opening of the hopper to receive material therefrom, a fixed cam, and means connecting each of said blocks with the cam whereby each block will be slightly advanced relative to blocks adjacent thereto following the filling of the pocket forwardly thereof to compress the charge received in that pocket and whereby the pocket next following will be expanded to receive a charge.

10. In a canning machine, a material supply hopper having a discharge opening, a rotating turret having peripheral pockets adapted to pass successively in registration with the hopper opening to be filled with material therefrom, means movable with the turret for supporting cans in position to receive material from the pockets, a plunger reciprocally contained in each pocket, a cam operable to successively actuate the plungers to eject the charges into the cans and a can venting slide associated with each pocket and having operative connection with the plunger of a pocket farther advanced in the turret so that the slides will be advanced into their respective cans in advance of the reception of the charge of material.

11. In a canning machine, a material supply hopper having a discharge opening, a rotating turret, a plurality of molding blocks adjustably attached to the periphery of the turret and providing intermediate measuring pockets between the ends of the blocks adapted to pass successively in registration with

the hopper opening to be filled with material therefrom, rock shafts movable with the turret and operatively connected with each block, a fixed cam coaxial of the turret, and having connection with said shafts to so adjust said blocks as to expand the pockets to receive material therein and to then contract the pockets to compress the material, the movement of each block which expands the pocket next following it being that which contracts the pocket next forwardly thereof, means movable with the turret for supporting cans in registration with the ends of the pockets, plungers reciprocally contained in said pockets, and a fixed cam coaxial of the turret and adapted to successively actuate the plungers to eject the compressed charges from the pockets into said cans.

12. A canning machine of the character described comprising a material supply hopper having a discharge opening at the base, a turret supported rotatably by a horizontal shaft and having peripheral pockets adapted to pass successively in registration with the hopper opening to receive material therefrom, packer mechanism for feeding material from the hopper into the pockets, means for trimming surplus material from the filled pockets, a cut-off slide plate operable across the hopper opening, a drive shaft for the packer mechanism, a drive shaft for the slide plate, and a main drive shaft for rotating the turret and connected with the packer shaft and slide plate shaft to synchronize their actions with respect to movement of the turret.

13. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with pockets adapted to pass successively across the said opening to be filled with material from the hopper, a knife at one edge of the discharge opening beneath which the pockets pass and by which surplus material is trimmed from the pockets and retained within the hopper for subsequent delivery into one of the pockets.

14. In a canning machine, a supply hopper, a rotating turret, mold blocks arranged about the turret and movable relative to each other and providing pockets between successive blocks adapted to pass the hopper outlet successively to receive material therefrom, and means operable incident to rotation of the turret for successively moving the blocks to thereby expand the pocket between the block advanced and the one next following preparatory to receiving material from the hopper and to thereby contract the pocket between the block advanced and the block preceding it to compress the charge previously received in that pocket.

15. In a canning machine of the character described, a hopper, a rotating turret provided with pockets adapted to successively pass across the hopper outlet for filling, and

a packer operating in the hopper and movable in a direction with the turret and toward the pockets as they successively pass the hopper outlet.

16. In a canning machine, a supply hopper having a discharge opening, a turret provided with pockets adapted to pass the said opening successively to be charged with material from the hopper, a packer within the hopper for delivering material under pressure into the pockets and means for actuating the packer including an element that is yieldable at a predetermined pressure.

17. In a canning machine, a material supply hopper having a discharge opening, a turret provided with pockets adapted to pass said opening successively to receive material from the hopper, a reciprocating packer operable within the hopper to forcibly deliver material therefrom into the pockets and means for reciprocating the packer including a rocker arm and a pitman connected to the arm through the medium of elements that are yieldable at a predetermined pressure.

18. In a canning machine, a material supply hopper, a turret provided with measuring pockets adapted to pass successively across the hopper outlet to be charged with material from the hopper; said hopper comprising a swingingly supported wall, means for causing said wall to move outwardly closely in advance of each pocket as it passes across the hopper outlet for filling, a reciprocating packer mounted on the said wall, means for actuating the packer downwardly as the wall swings outwardly and for actuating it upwardly as the wall swings inwardly.

19. In a canning machine, a supply hopper having a discharge opening, a turret provided with measuring pockets adapted to pass the hopper opening successively to be filled with material therefrom; said hopper comprising at one side a swingingly supported wall, means for causing said wall to swing outwardly closely in advance of the pockets as they pass the hopper outlet for filling and for swinging the wall inwardly after each pocket is filled, a reciprocating packer mounted on the inner face of said swinging wall, means connected with the packer and synchronized with the swinging wall whereby the packer is actuated upwardly as the wall swings inwardly and is actuated downwardly as the wall swings outwardly; said packer actuating mechanism including an element that is yieldable at a predetermined pressure opposing the packer.

20. In a canning machine, a supply hopper having a discharge opening, a turret provided with measuring pockets adapted to pass the hopper opening successively to be filled with material therefrom; said hopper comprising at one side a swingingly supported wall, means for causing said wall to swing outwardly closely in advance of the pockets as

they pass the hopper outlet for filling and for swinging the wall inwardly after the pocket is filled, a reciprocating packer mounted on the inner face of said swinging wall, means
 5 connected with the packer and synchronized with the swinging wall whereby the packer is actuated upwardly as the wall swings inwardly and is actuated downwardly as the wall swings outwardly; said packer actuating mechanism including an element that is
 10 yieldable at a predetermined pressure opposing the packer, a trimming knife at one side of the hopper outlet and a slide plate adapted to coact therewith for the trimming of surplus material from the filled pocket at the
 15 time when the material is under compression by the packer.

21. In a canning machine, a material supply hopper having a discharge opening, a rotating turret provided with pockets adapted
 20 to pass successively across the opening, means for delivering material from the hopper into the pockets, a revolving cutter at one side of the hopper outlet and a slide plate adapted to move upon the turret across the hopper opening and into overlapping relation with the
 25 cutter for trimming surplus material from each pocket as it is filled.

22. A device as in claim 21 wherein the cutter comprises a revolvably driven disk with a beveled peripheral cutting edge and the said slide plate is provided at its forward end with a beveled edge adapted to overlap the
 30 beveled edge of the cutter for trimming surplus material from the pockets.

23. In a canning machine, a supply hopper having a discharge opening, a rotating turret provided with pockets adapted to pass
 35 successively across the said opening, means for delivering material under pressure from the hopper into the pockets, a cutting blade at one side of the hopper opening, a slide plate, and means for actuating the slide plate into
 40 cooperative relation with the cutter to trim surplus material from the filled pockets at the time the filled pocket passes beneath the cutting blade.

24. In a canning machine, a supply hopper, a rotating turret having peripheral pockets
 45 adapted successively to receive material from the hopper, means for supporting cans to receive material ejected from the pockets, devices associated with each pocket for ejecting material therefrom into a can, means for successively actuating the ejecting devices and a
 50 can venting slide associated with each pocket and having operative connection with the ejecting device of a pocket farther advanced in the turret whereby functional movement
 55 of the said ejecting device advances the venting slide into its can prior to the reception of material within the can.

25. In a can filling machine, a rotating turret having a plurality of measuring pockets,
 60 a hopper having an outlet across which the

pockets successively pass for filling, and means for causing the hopper outlet to elongate in the direction of travel of the pockets as they pass thereacross to prolong the period
 70 for filling.

26. In a can filling machine, a rotating turret having a plurality of measuring pockets, a hopper having an outlet across which the pockets successively pass for filling
 75 from the hopper, means for causing the hopper outlet to elongate in the direction of and in accordance with travel of the pockets as they pass thereacross, and a packer operable within the hopper to deliver material into the
 80 pockets.

27. In a can filling machine, a rotating turret having a plurality of measuring pockets, a hopper having a discharge outlet across which said pockets successively pass for filling, means for causing the outlet of the
 85 hopper to elongate in accordance with travel of each pocket thereacross to maintain communication through an extended filling arc, and means for trimming surplus material from the filled pockets.

28. In a can filling machine, a rotating turret having a plurality of measuring pockets, a hopper adjacent the turret having a discharge outlet across which the pockets pass in succession for filling, means for causing the outlet
 90 of the hopper to elongate in accordance with travel of each pocket thereacross to maintain communication through an extended filling arc, a packer operable in the hopper for delivery of material into the pockets, and means for trimming surplus material from the filled pockets.

29. In a can filling machine, a rotating turret having a plurality of measuring pockets, a material supply hopper having a discharge
 105 outlet across which the pockets successively pass for filling, means for causing the outlet of the hopper to elongate in accordance with travel of each pocket thereacross to maintain communication through an extended filling arc, a packer reciprocable within the hopper and movable therewith toward each pocket during the filling period, and a knife operable to trim surplus material from the filled pockets.

30. In a can filling machine, a rotating turret having a plurality of measuring pockets, mechanical means operable to forcibly supply the measuring pockets in succession with a food product, and means for causing the supply means to advance in timing with each pocket through an extended filling arc.

31. In a can filling machine, a rotating turret having a plurality of measuring pockets, means for supplying the measuring pockets
 125 with a food product, means for causing the supply means to advance in timing with each pocket through an extended filling arc, and trimming means against which the food product is moved by the traveling pocket and the
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traveling supply means for trimming surplus food product from the filled pocket.

32. In a canning machine, a rotating turret, a row of mold blocks encircling the turret and movable relative to each other and providing pockets between successive blocks, means operable incident to the rotation of the turret for successively moving the blocks to thereby expand the pocket between the block advanced and the one next following, and to contact the pocket between the block advanced and the block preceding.

Signed at Seattle, Washington this 25th day of May 1928.

NIELS C. NICHOLSON.

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