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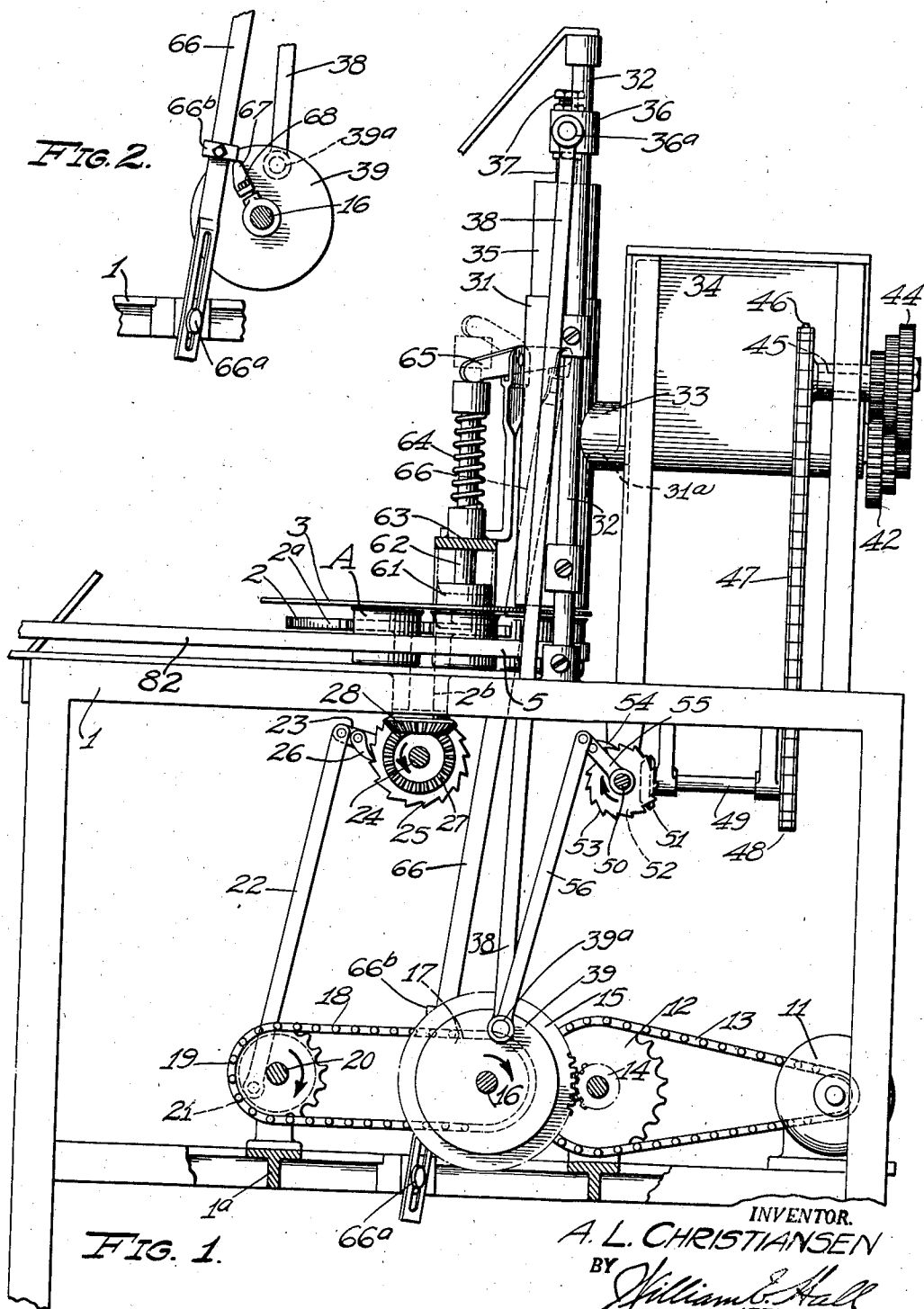
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2,274,606

CAN PACKING MACHINE

Filed Jan. 17, 1939

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

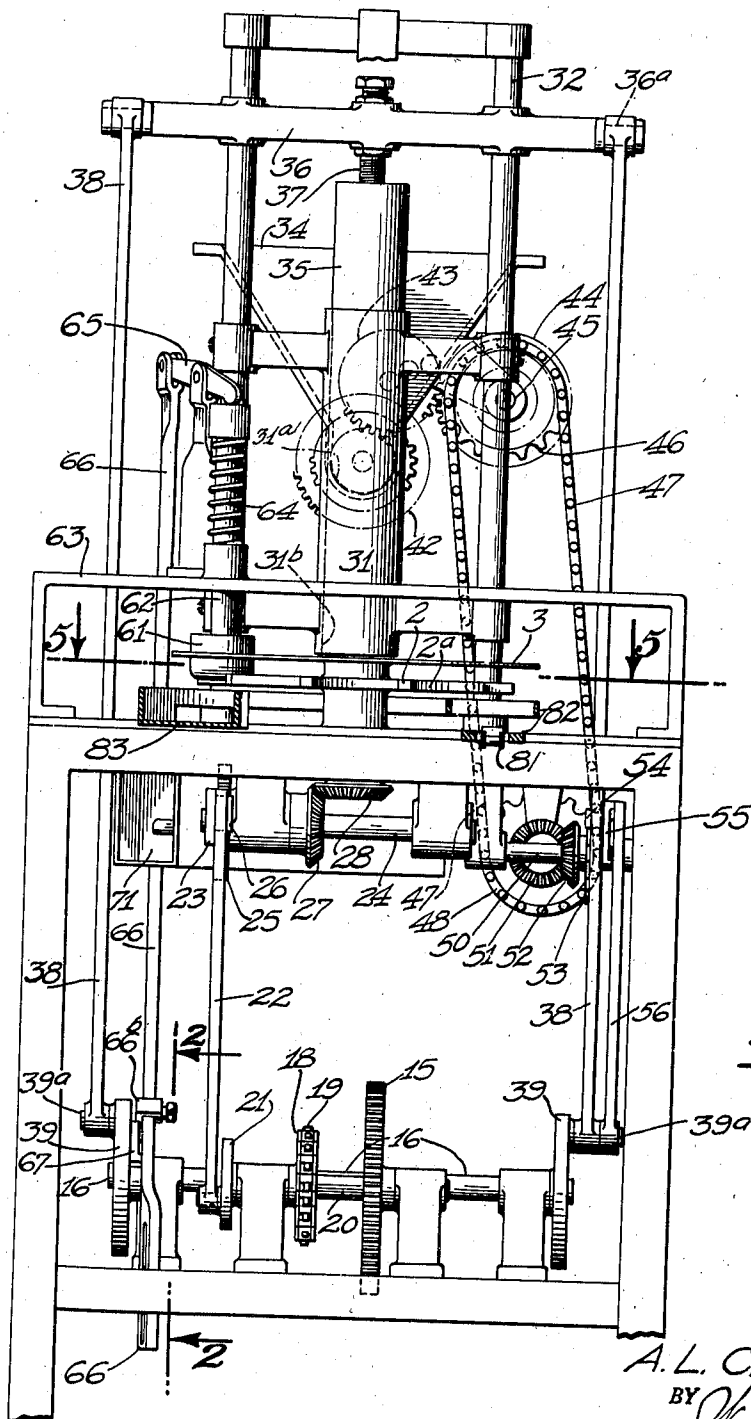


Fig. 3.

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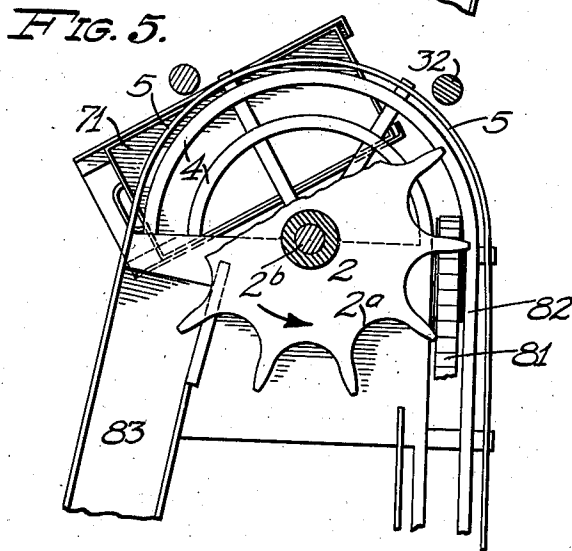
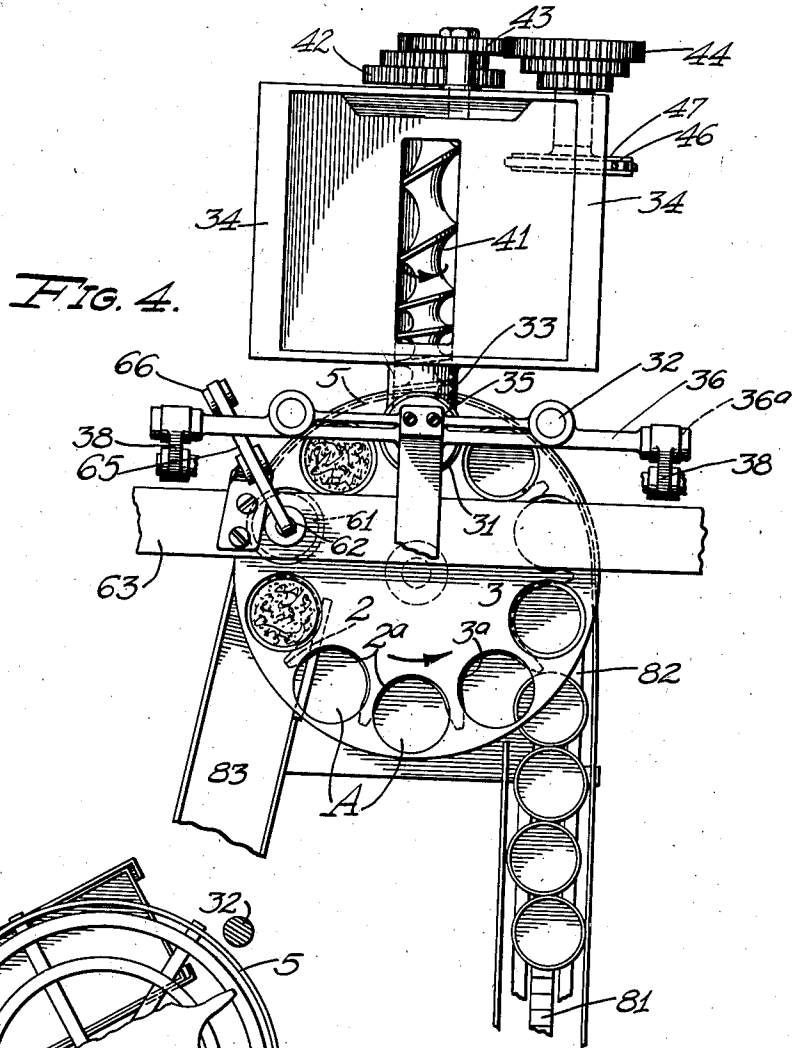
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CAN PACKING MACHINE

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UNITED STATES PATENT OFFICE

2,274,606

CAN PACKING MACHINE

Andrew L. Christiansen, Willowbrook, Calif.

Application January 17, 1939, Serial No. 251,359

5 Claims. (Cl. 226-101)

My present invention relates to can packing machines for packing flaked fish and similar products into cans.

One of the principal objects of this invention is to provide a can packing machine of this class which may be closely regulated for maintaining a desired uniformity in the amount of fish or other products packed into a can.

Another object of this invention is to provide simple means of varying the quantities of fish or other products to be packed into cans.

Another object also is to provide a packing machine of this class whereby the product to be packed is compressed before and while it is placed into the ultimate container or can.

A further object of this invention is to provide a machine of this class for rapidly packing cans, and also packing them with a minimum of waste.

An object also of this invention is to provide a novel, simple, and economical method of packing cans.

With these and other objects in view as will appear hereinafter, I have devised a can packing machine having certain novel features of construction, combination, and arrangement of parts and portions, for packing flaked fish or other products, as will be hereinafter described in detail, and particularly set forth in the appended claims, reference being had to the accompanying drawings, and to the characters of reference thereon, which form a part of this application, in which:

Fig. 1 is a side elevational view of my can packing machine in one form of construction, portions being broken away to facilitate the illustration;

Fig. 2 is a transverse sectional view taken at 2-2 of Fig. 3;

Fig. 3 is a fragmentary front elevational view thereof;

Fig. 4 is a fragmentary plan view thereof; and,

Fig. 5 is a fragmentary sectional view in plan, taken at 4-4 of Fig. 2.

My can packing machine may be mounted upon a unitary frame 1. On top of the frame is mounted a can turntable which consists of a star feed wheel 2, having can receiving recesses 2^a, and thereabove a perforated cutter disc 3, having openings 3^a spaced equally from each other and arranged circularly about the axis of the revolution of the turntable. These openings are axially aligned with the recesses 2^a. Below the turntable, and at least at the rear portion thereof, is a can support consisting of an open track 4 on which the cans are carried by the feed wheel.

Above the track and outwardly from the feed wheel is a circular can guide 5, which retains the cans within said recesses and below and in line with said openings.

The turntable and other mechanisms of the machine are operated by a motor 11. This motor rotates a sprocket 12 by a chain 13. To the sprocket, and axially aligned therewith, is a gear 14 which meshes with a gear 15 mounted on a shaft 16. On the shaft is a sprocket 17 which operates, by a chain 18, a sprocket 19 mounted on a shaft 20. On this shaft is mounted a crank 21, which is connected by a link 22, to the end of a rocker arm 23, pivoted on a shaft 24. On one end of the shaft 24 is a ratchet 25 which is actuated by a pawl 26 pivotally mounted on the rocker arm. On the opposite end of the shaft 24 is mounted a bevel gear 27 which meshes with another bevel gear 28, which is connected to the lower end of the turntable consisting of the star feed wheel 2 and the cutter disc 3. By such operation the turntable is rotated intermittently.

In line with one of the perforations of the cutter disc, that is, when the turntable is at rest, and preferably at the rearmost perforation, is a compressing cylinder 31, which extends vertically above the cutter disc. This cylinder is supported in the manner stated by a suitable support, such as by supporting rods 32. The intermediate portion of this cylinder has an inlet opening 31^a at its rear side for receiving the product to be packed through a tube 33 from a hopper 34. The lower end of the cylinder is open and provides the discharge opening 31^b.

In the cylinder is reciprocally mounted a plunger 35 which is reciprocated by a crosshead 36 supported on and guided by the rods 32. An adjusting screw 37 connects the piston to the crosshead so that the position of the piston may be readily adjusted relative to the crosshead. From the ends of the crosshead beyond the rods 32, extends trunnions 38^a which are pivotally connected by links 38 to crank pins 39^a of cranks 39, which are mounted on the opposite ends of the shaft 16.

The hopper 34 is provided with a feed screw 41 at the lower portion and diverges upwardly to an open upper portion. This feed screw is preferably rotated intermittently, through gears 42, 43, and 44, by a shaft 45. This shaft has a sprocket 46 which is operated by a chain 47 from a sprocket 48. The latter sprocket is mounted on the shaft 49 which is connected to a shaft 50 through bevel gears 51 and 52. On the latter shaft is a ratchet 53 which is rotated by a pawl

54, mounted on a rocker arm 55, pivoted on the shaft 50. The free end of the arm is connected by a link 56 to the crank pin 39^a of one of the cranks. In this manner uniform rotation is transmitted intermittently to the feed screw.

The gears 42 and 44 may be two series of step gears which may be variously connected by an idler gear 43 for changing the speed of the feed screw. That is, the small gear of the series 42 may be connected with the large gear of the series 44 by the intermediate or idler gear 43, the hopper 34 being shown in Fig. 3 as provided with a series of holes for receiving the supporting stud for the gear 43 when meshing with pairs of gears of different diameters of the two series.

As the turntable carries an open top packing can below the discharge end of the cylinder 31, the turntable comes to rest. The piston, having receded above the opening 31^a and the cylinder having received a charge, of the product to be packed, from the hopper, will be forced downwardly, short of the lower discharge opening 31^b, compress the product in the cylinder, and force the compressed product into the open can below the cutter disc. The turntable is then rotated in the direction of the arrow, cutting off the compressed product in the can from that in the cylinder, by means of the cutting disc 3. The lower position of the plunger 35, at the end of its down stroke, is short of the discharge end of the cylinder 31 so as to permit a portion of the compressed product to remain in the cylinder for the following can. The limited low position of the plunger, as stated, permits the cutting operation of the cutting disc 33 without interference by the plunger 35. As the turntable is rotated and comes to rest, the can containing the severed compressed product, and preferably during the second period of rest, the can is brought in line with a secondary packing plunger 61. This plunger is carried at the lower end of a shaft 62 which is reciprocally mounted on a bracket 63. The plunger is held in a raised position, clear of the cutter disc by a spring 64 which is positioned between the bracket and the upper end of the shaft. This shaft is depressed, when the turntable is at rest, by one end of the rocker arm 65. This rocker arm is pivoted intermediate its ends and periodically forced upward at its other end by a rod 66 which is reciprocally mounted at its lower end in a bearing 66^a. On the rod is a stop 66^b which is adapted to be engaged by a cam 67 carried by one of the cranks 39, but at the side thereof opposite the crank pin 39^a. This cam 67 is radially adjustable, by means of a screw 68, on this crank so that the downward movement of the plunger 61 may be varied.

The open track 4 for the cans, permits the product which does not enter the can, or which may drop from the discharge end of the cylinder between the cans, or when no can is placed at the particular can receiving recess, to drop through the open bottom or track into a suitable receiver 71, which may be periodically emptied into the hopper, or into a means from which the product may be carried to the hopper.

The open empty cans may be fed to the turntable in any suitable manner, such as by means of a conveyor 81, or from the end of the conveyor through a trough 82 to the turntable. The cans may be discharged from the opposite sides of the turntable onto a conveyor or chute 83.

My machine, as described above, has been designed particularly for packing fish, such as tuna

flakes. Difficulty has heretofore been encountered, when attempting to pack fish flakes in securing uniformity of weight of the fish in consecutive cans. I have solved this difficulty by compressing the fish flakes to a certain density so that they may be handled as a solid, and then cutting off a portion of the compressed fish flakes after they are placed in a can, and then subsequently further pressing the compressed product into the can below the opening, so that a suitable oil, liquid, or flavoring, may be added above the product compressed in the can.

Though I have shown and described a particular construction, combination, and arrangement of my machine, and a particular method of packing fish flakes or other products into a can, I do not wish to be limited to the same, but desire to include in the scope of my invention, the construction, combination, arrangement, and method, substantially as set forth in the appended claims.

I claim:

1. In a machine of the class described, a cylinder having a discharge opening at one end and an inlet opening spaced backwardly from said end, a product feeding means communicating with the inlet opening of the cylinder, a plunger reciprocally mounted in the cylinder and movable therein from the inlet opening toward the discharge opening, and a conveyor spaced from the discharge end of the cylinder for moving cans in spaced order past the discharge opening, said conveyor having cutting means for cutting off the portion of the product protruding through the discharge opening, as the cutting means is moved by the conveyor.

2. In a machine of the class described, a cylinder having a discharge opening at one end and an inlet opening spaced backwardly from said end, a product feeding means communicating with the inlet opening of the cylinder, a plunger reciprocally mounted in the cylinder and movable therein for forcing a product from the inlet opening toward the discharge opening, and an intermittent conveyor for depositing open cans at the discharge opening of the cylinder, said plunger movable toward the discharge end of the cylinder for depositing a portion of the product into the can while the conveyor is at rest, said conveyor carrying cutting means immediately adjacent the discharge opening and movable with the conveyor across said discharge opening after the compressing stroke of the plunger.

3. In a machine of the class described, a cylinder having a discharge opening at one end and an inlet opening spaced backwardly from said end, a product feeding means communicating with the inlet opening of the cylinder, a plunger reciprocally mounted in the cylinder and movable therein from the inlet opening toward the discharge opening, a conveyor spaced from the discharge end of the cylinder for moving cans in spaced order past the discharge opening, said conveyor having cutting means for cutting off the portion of the product protruding through the discharge opening, as the cutting means is moved by the conveyor, and means synchronized with the conveyor for pressing the product into the can below the opening thereof after being removed from the discharge opening of the cylinder by the conveyor.

4. In a machine of the class described, a cylinder having a discharge opening at one end and an inlet opening spaced backwardly from said

end, a product feeding means communicating with the inlet opening of the cylinder, a plunger reciprocally mounted in the cylinder and movable therein from the inlet opening toward the discharge opening but terminating short of the latter opening, for compressing and forming in the cylinder the product to be packed and forcing said compressed product therefrom, means at the discharge opening for supporting an open packing can, and means at the discharge end of the cylinder for cutting off the portion of the compressed product extending through and beyond the discharge opening.

5. In a machine of the class described, a cylinder having a discharge opening at one end and an inlet opening spaced backwardly from said end, a product feeding means communicating

with the inlet opening of the cylinder, a plunger reciprocally mounted in the cylinder and movable therein from the inlet opening toward the discharge opening but terminating short of the latter opening, for initially compressing and forming in the cylinder the product to be packed and forcing said compressed product therefrom, means at the discharge opening for supporting an open packing can, means at the discharge end of the cylinder for cutting off the product extending through and beyond the discharge opening, and means for subsequently pressing the whole of the upper portion of the product into the can below the upper rim thereof after being placed therein by the plunger and cut off.

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