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H. F. THORNSBERRY

2,852,044

CARTON FILLER

Filed Jan. 11, 1957

3 Sheets-Sheet 1

Fig. 1

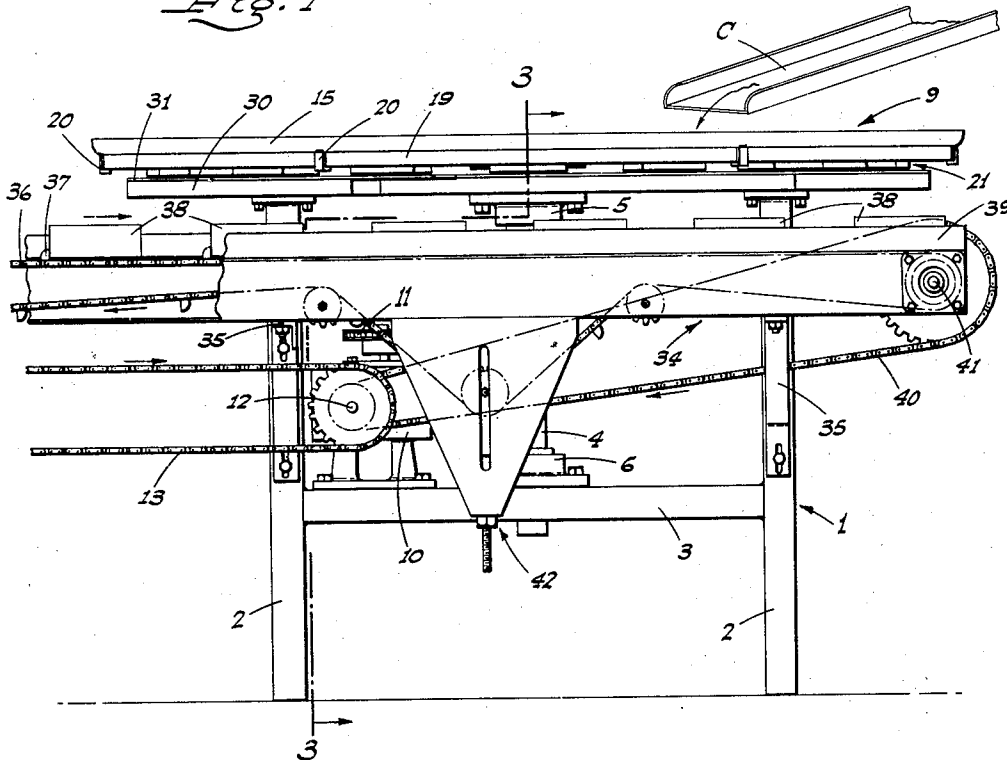
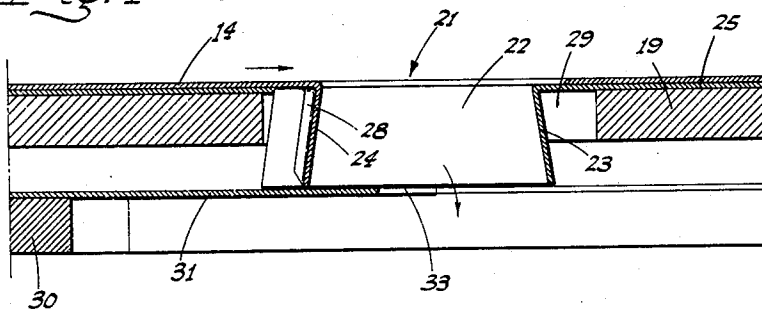


Fig. 4



INVENTOR.
Herman F. Thornsberry
BY *Webster & Webster*
ATTYS.

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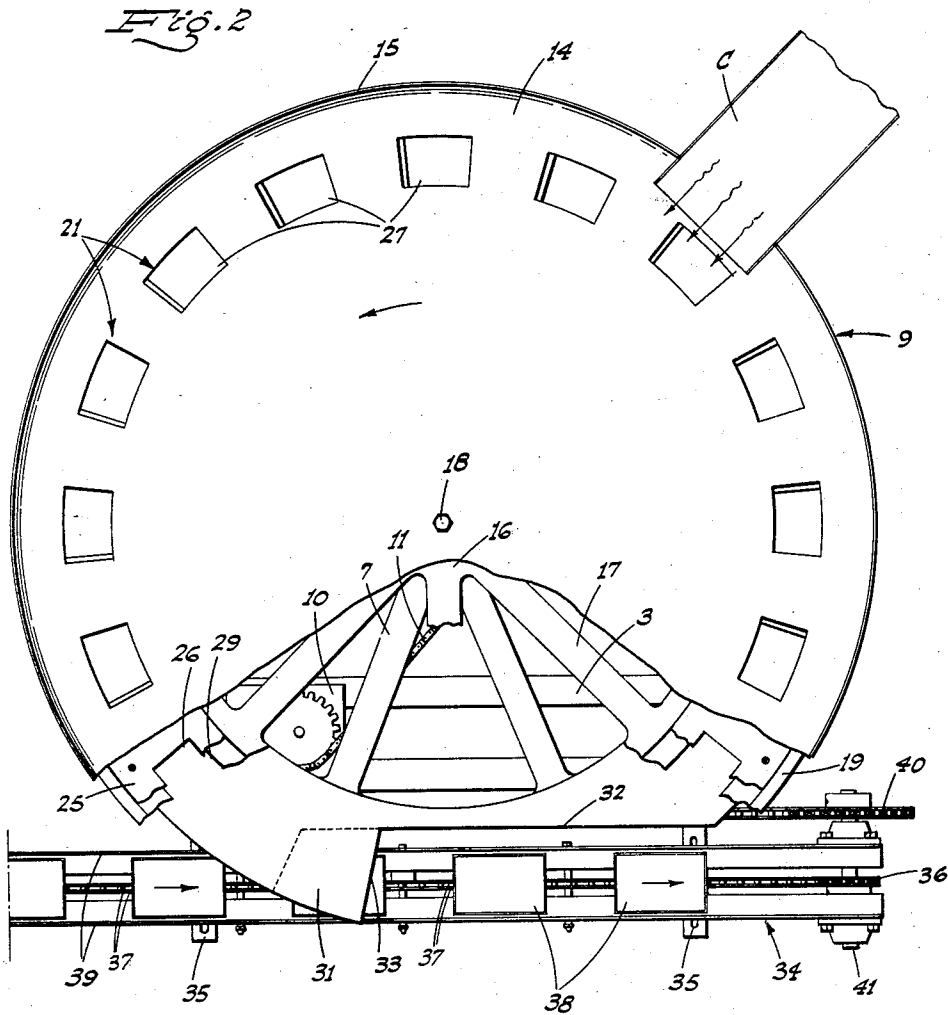
H. F. THORNSBERRY

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INVENTOR.
Herman F. Thornsberry
BY *Webster & Webster*
ATTYS.

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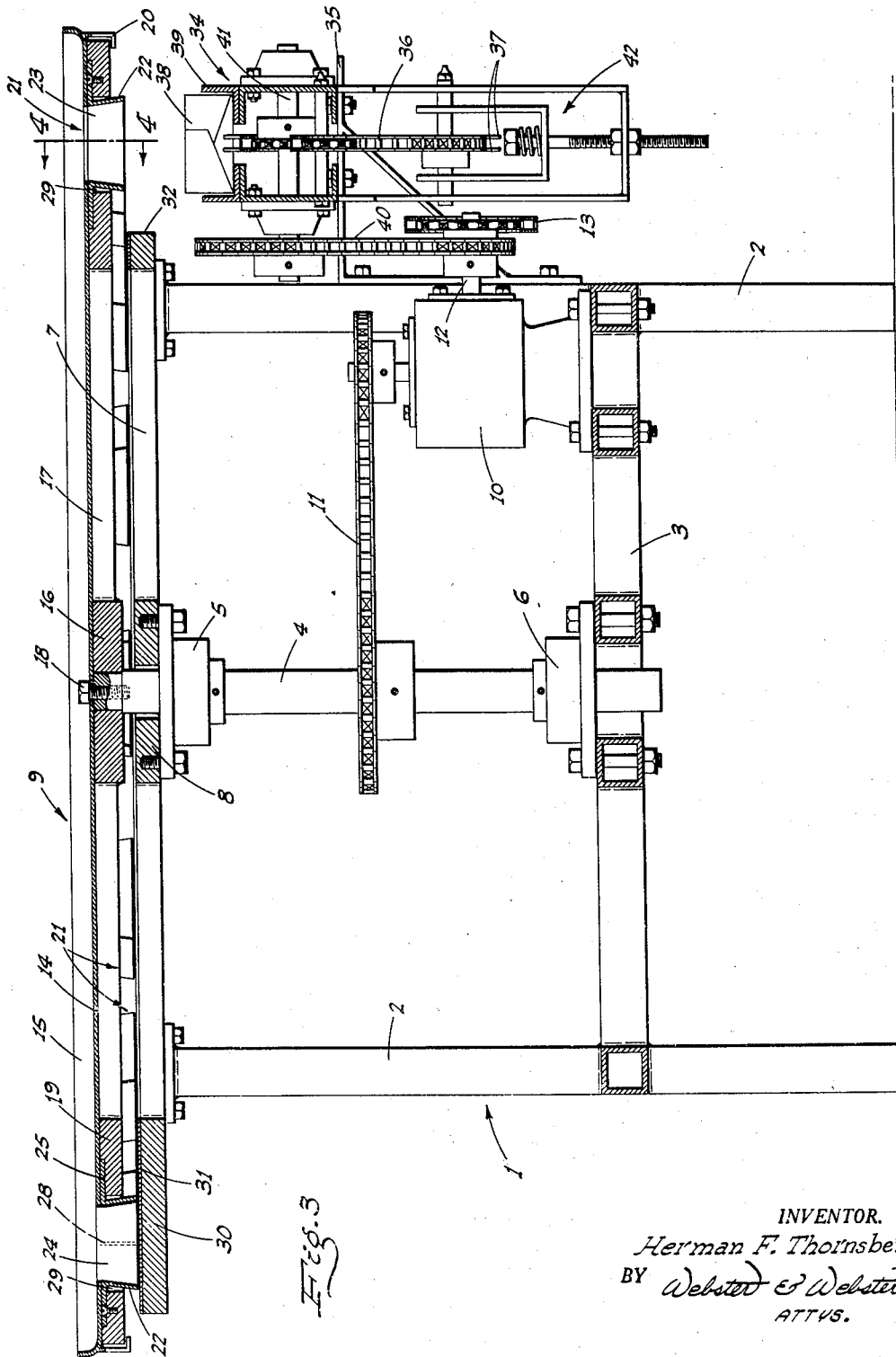
H. F. THORNSBERRY

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CARTON FILLER

Herman F. Thornsberry, Modesto, Calif., assignor to
T and C Manufacturing Company, Modesto, Calif., a
copartnership

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1 Claim. (Cl. 141-144)

This invention relates in general to a power driven device for filling open-topped cartons with a predetermined quantity—by volume—of produce, such as small fruit or vegetables; i. e., those capable of being dispensed or filled into a carton by pouring. One example would be the filling of retail size cartons with shelled peas preparatory to quick-freezing the same.

In particular the invention is directed to, and it is a major object to provide, a carton filler of pocketed, turntable type—yet of novel construction and function—adapted to successively fill open-topped cartons, moving on an adjacent conveyor, with a predetermined quantity of produce. In such carton filler the turntable pockets are initially open top and bottom, but run in bottom closing relation on a produce retention platform between a filling point and a dispensing point; the pockets individually and successively passing from or running off said platform at the latter point, whereby the pocketed produce then falls or dispenses downwardly into a then vertically matching one of the cartons on the conveyor.

Another important object of the invention is to provide a carton filler, of the type described, wherein the turntable—and particularly the pocket forming assembly of the latter—is constructed so that the pockets can be readily adjusted to alter the volumetric capacity thereof, and for the purpose of setting the pockets to a capacity the same as that of the cartons to be filled with produce.

An additional object of the invention is to provide a carton filler, of the type described, wherein the pockets taper from bottom to top; i. e., there is downward divergence between the opposed side walls, and between the opposed end walls. The advantage of this feature is that it prevents the produce from sticking or bridging in the pockets when at the point for dispensing of the produce into the cartons.

It is also an object of the invention to provide a carton filling device which is designed for ready manufacture and convenience of use.

Still another object of the invention is to provide a practical and reliable carton filler, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

In the drawings:

Fig. 1 is a side elevation of the carton filler.

Fig. 2 is a top plan view of the carton filler partly broken away.

Fig. 3 is an enlarged sectional elevation taken on line 3-3 of Fig. 1.

Fig. 4 is a fragmentary transverse sectional elevation, in enlargement, taken on line 4-4 of Fig. 3.

Referring now more particularly to the drawings, and to the characters of reference marked thereon, the carton filler comprises an upstanding skeleton frame, indicated generally at 1, which frame includes corner

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legs 2 connected together—intermediate the ends—by a horizontal brace structure 3.

A vertical shaft 4 is mounted centrally in the frame 1, and such shaft is carried in an upper bearing 5 and a lower bearing 6. The upper bearing 5 is secured to a fixed spider wheel 7 which is rigidly mounted on the frame 1; said spider wheel 7 having a hub 8 to which said bearing 5 is attached. The lower bearing 6 is connected to the brace structure 3, as shown.

The vertical shaft 4 projects at its upper end above the fixed spider wheel 7, turning in clearance relation in the hub 8 and having a circular rotary conveyor or turntable, indicated generally at 9, mounted on the upper end portion of said shaft adjacent but above the fixed spider wheel 7.

In order to rotate the turntable 9 the vertical shaft 4 is driven from a gear box 10 by means of an endless chain and sprocket unit 11; the gear box 10 being fixedly supported by the brace structure 3, and the input shaft 12 of said gear box 10 being driven by an endless chain and sprocket unit 13 powered from a source such as an electric motor (not shown).

The turntable 9 is comprised of a relatively large-diameter top disc 14 having an upstanding peripheral lip 15; the disc being centrally supported by the hub 16 of a rotary spider wheel 17. The top disc 14 and the rotary spider wheel 17 are normally maintained in fixed but relatively rotatably adjustable relation by the center bolt 18 which secures the turntable to the upper end of the vertical shaft 4; the hub 16 having engagement with a shoulder on the shaft, as shown.

At the peripheral portion thereof the top disc 14 is supported, from below, by a flat annular platform 19; there being L-shaped clips 20 at circumferentially spaced points on the disc 14 engaging beneath the edge of such platform, and which is a part of the spider wheel 17.

The turntable 9 is provided, adjacent but somewhat inwardly of its peripheral edge, with a circumferential row of equally spaced, produce receiving pockets, each indicated generally at 21.

The produce receiving pockets 21 each include opposed downwardly diverging side walls 22 and opposed downwardly diverging end walls, one being indicated at 23 and the other at 24.

The pockets 21 are each formed in the following manner:

The flat annular platform 19 of the rotary spider wheel 17 is fitted—in recessed relation, and on top—with an annular face plate 25, which face plate is formed with a pocket opening 26; there being corresponding pocket openings 27 in the top disc 14. The openings 26 and 27 are adapted to register to selective extent and dependent on the rotative adjustment of said top disc 14 relative to the rotary spider wheel 17.

The side walls 22 and the end wall 23 are integral down-bent parts of the face plate 25, whereas the end wall 24 is an integral down-bent part of the top disc 14; said side walls 22 and end wall 23 depending from corresponding edges of the pocket opening 26, while the end wall 24 depends from the corresponding edge of the related pocket opening 27.

With this arrangement, it will be recognized that with rotative adjustment of the top disc 14 relative to the spider wheel 17 the end wall 24 will be adjusted, in spacing, relative to the end wall 23; all to the end that the volumetric capacity of each pocket 21 can be set within very close limits, and yet without in any way changing the downward divergence of the opposed side walls 22, and the like divergence of the end walls 23 and 24. The walls 24 are stabilized by a reinforcing web 28 on the outside. The pockets 21, constructed in the manner described, depend through openings 29 in

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the platform 19 and thence extend downwardly to a bottom or lower edge termination a distance therebelow.

At said bottom wall lower edge the pockets 21 run on a flat, substantially annular rim 30 formed with spider 7 and top-surfaced with a metallic plate 31; such rim being of full-circle extent, except that at the front of the machine the rim 30 and the surface plate 31 have a tangential cut-out 32 whereby to define a radial drop-off edge 33 over which the pockets 21 successively pass.

A horizontal, linear conveyor, indicated generally at 34, is supported by brackets 35 at the front of the machine; such conveyor including an endless conveyor chain 36 fitted with pusher lugs 37 which rear-end engage and advance the open-topped cartons 38 in equally spaced relation in a row. The row of such cartons 38 is supported by a carton guideway 39 included in the conveyor 34 and disposed generally tangentially of the turntable 9 and in such position that said cartons 38 successively pass below the radial drop-off edge 33.

The endless conveyor chain 36 of the conveyor 34 is driven, in timed or synchronized relation to the turntable 9, by an endless chain and sprocket unit 40 which extends between the input shaft 12 of gear box 10 and the cross shaft 41 at one end of said conveyor 34; the chain 36 being maintained under working tension by a chain tightener unit, indicated generally at 42.

The timing of the turntable and the conveyor 34 is such that as each pocket 21 reaches and passes the radial drop-off edge 33, one of the cartons 38 on the conveyor 34 does likewise but below said edge.

When the described carton filler is in operation the produce is fed from a chute C onto the top disc 14 at a point remote from the conveyor 34; such produce falling generally onto said disc in the path of the pockets 21, so that much of the produce actually delivers directly into said pockets. Between the chute C and the front of the machine, workers manually complete the filling of the pockets or remove any excess.

The pockets 21, filled as above, run in bottom-closing relation on the surface plate 31 until the drop-off edge 33 is reached, and then—as each pocket progressively bottom-opens beyond said edge—the produce discharges downwardly and is received in the related forwardly moving carton 38, filling the latter. The end wall 24 of each pocket 21 is pre-set to a position such that all have a like capacity, and which is that of the cartons to be filled.

The carton filler of the present invention is of advantage in that cartons are continuously successively

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filled as they pass in a row; each carton receives the desired or predetermined amount of produce; and the produce—by reason of the downwardly divergent walls of each pocket—discharges freely therefrom into the adjacent carton.

From the foregoing description it will be readily seen that there has been produced such a device as will substantially fulfill the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described the invention the following is claimed as new and useful, and upon which Letters Patent are desired:

A carton filler comprising an upstanding frame, a turntable journaled on the frame, the turntable having a circumferential row of pockets therein, the pockets being initially open top and bottom, a retention platform mounted on the frame directly below the turntable and in bottom closing relation to the pockets for a substantial distance but less than a full circle of travel, the platform having a peripheral cut-out defining a drop-off edge substantially radially of the turntable and a relatively long edge parallel to a line tangent to the turntable, the pockets progressively passing over said drop-off edge in bottom-opening relation, a driven straight-line conveyor to support a row of open-top cartons in single-file order, and means mounting the conveyor under the platform adjacent the periphery thereof and parallel to and outwardly of said long edge of the cut-out, whereby to successively pass the cartons on the conveyor below said drop-off edge in the same direction as the pockets travel; the pockets being spaced on the turntable and the cartons being spaced on the conveyor so as to pass said cut-off edge in vertical matching relation upon synchronized drive of said turntable and conveyor.

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