E. E. LAWRENCE.

RECEPTACLE FILLING APPARATUS.

APPLICATION FILED JUNE 2, 1920.

1,413,338.

Patented Apr. 18, 1922.

5 SHEETS—SHEET 1.

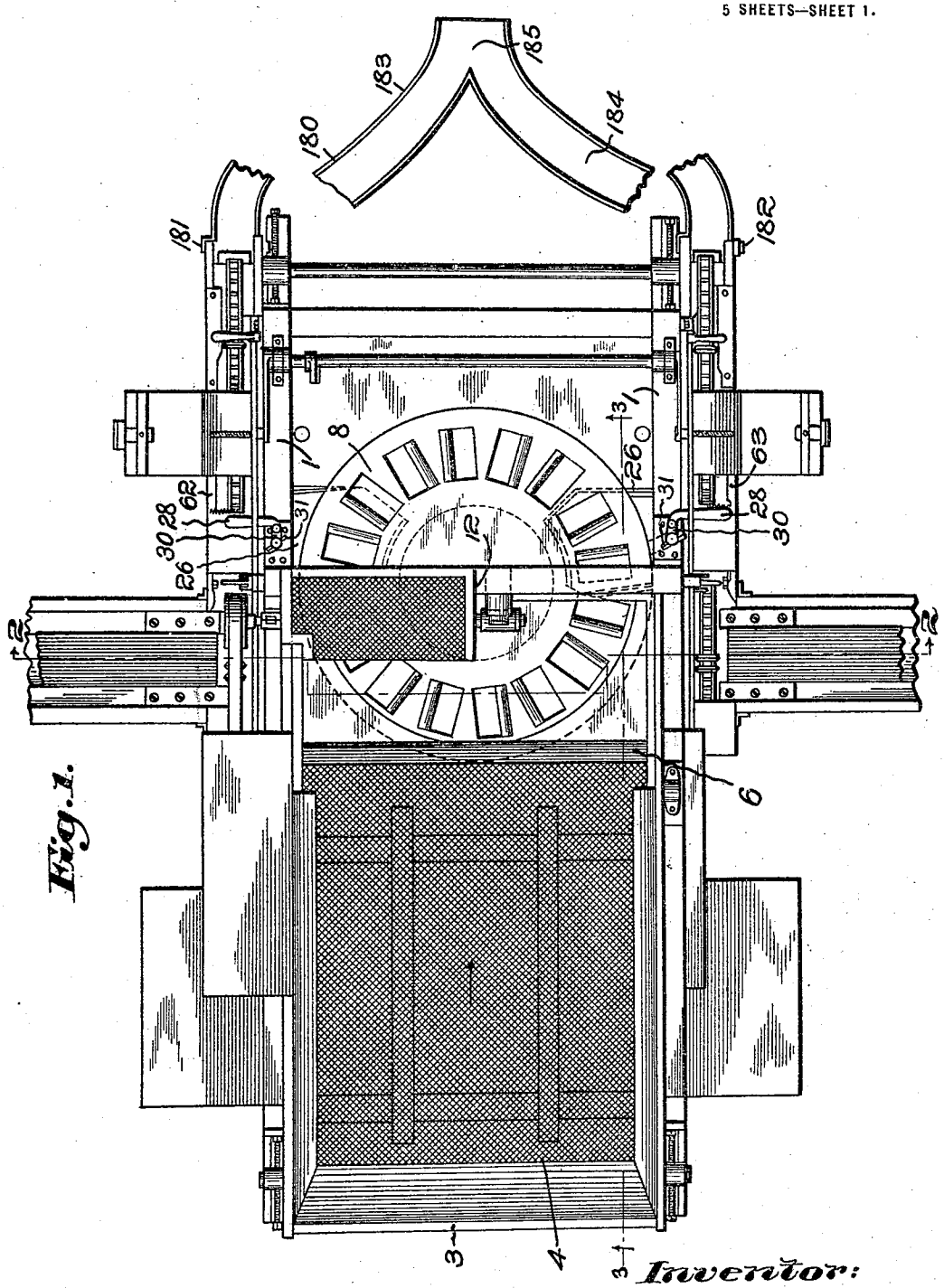


Fig. 1.

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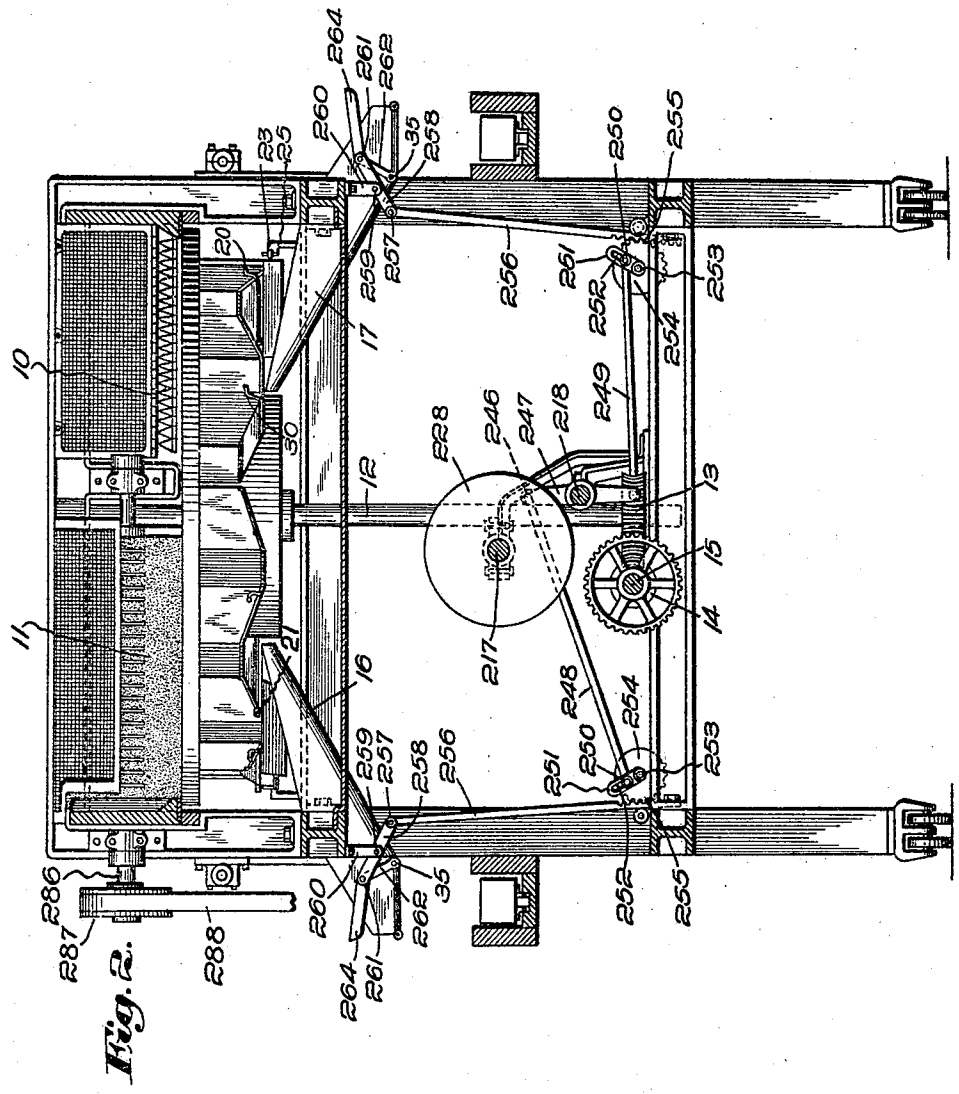


Fig. 2.

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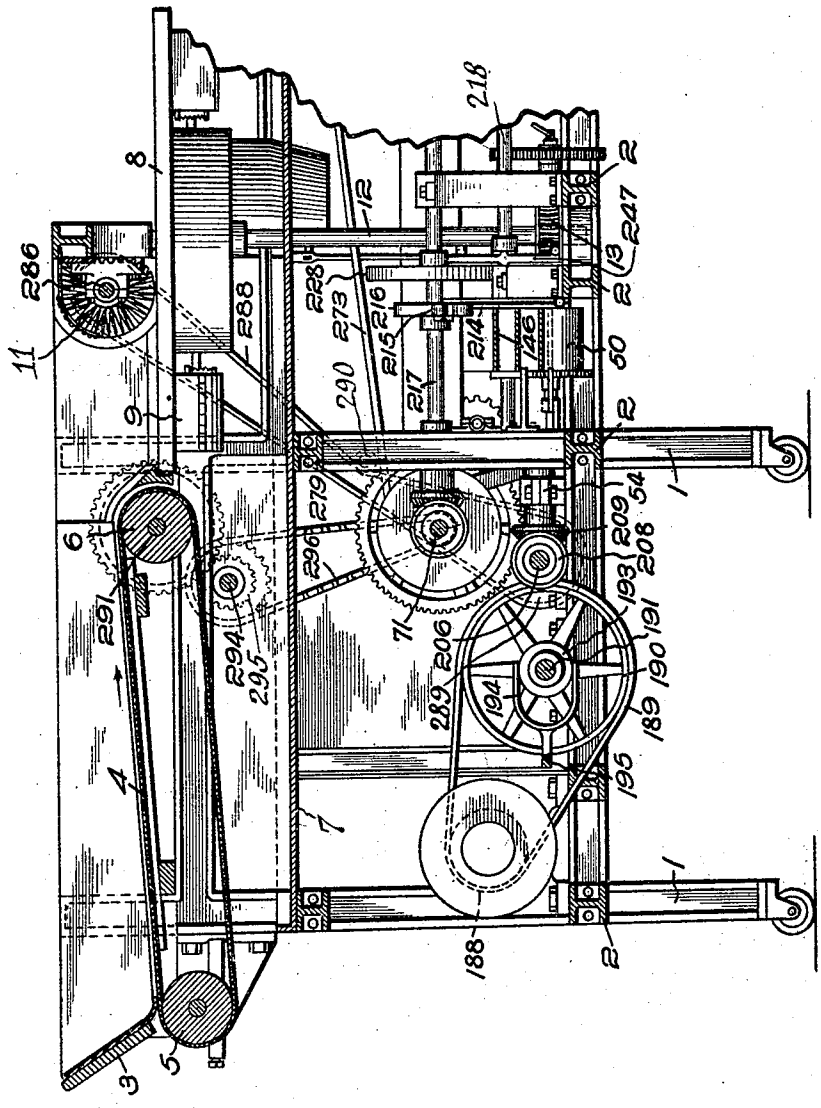
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5 SHEETS—SHEET 3.

Fig. 3.



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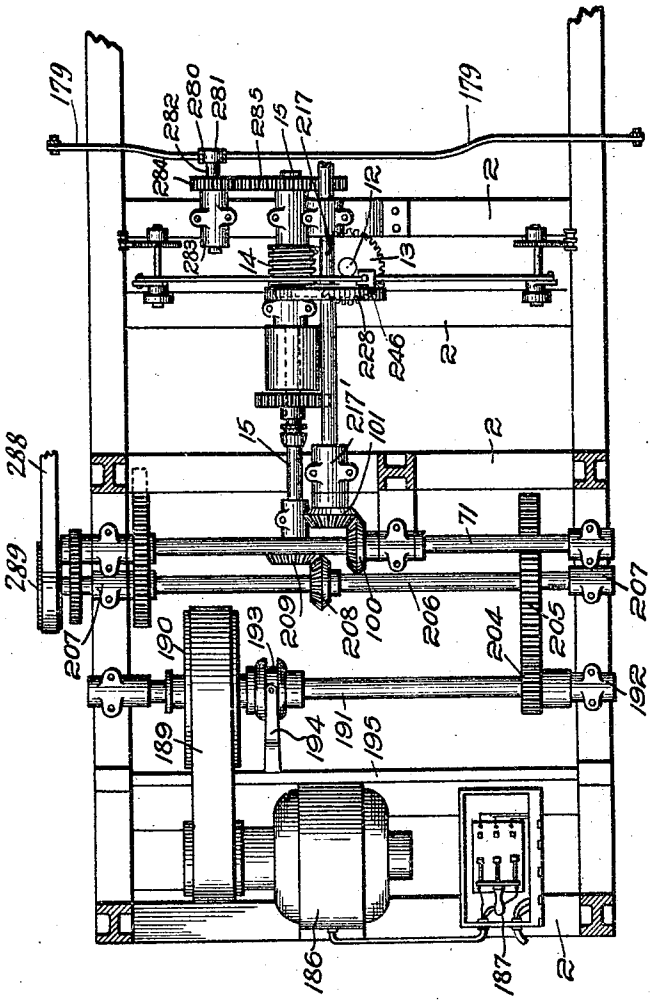
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5 SHEETS—SHEET 4.

Fig. 4.



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5 SHEETS—SHEET 5.

Fig. 6

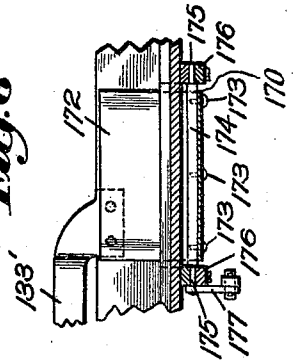


Fig. 4.

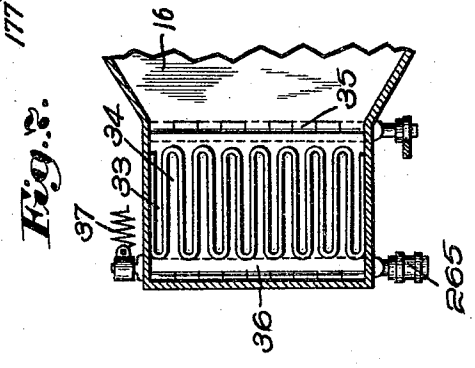


Fig. 5.

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UNITED STATES PATENT OFFICE.

EDWARD E. LAWRENCE, OF JAMAICA, NEW YORK, ASSIGNOR TO LOOSE-WILES BISCUIT COMPANY, OF LONG ISLAND CITY, NEW YORK, A CORPORATION OF NEW YORK.

RECEPTACLE-FILLING APPARATUS.

1,413,338. Specification of Letters Patent. Patented Apr. 18, 1922.

Original application filed June 15, 1916, Serial No. 103,875. Divided and this application filed June 2, 1920. Serial No. 386,044.

To all whom it may concern:

Be it known that I, EDWARD E. LAWRENCE, a citizen of the United States, and a resident of Jamaica, in the county of Queens and State of New York, have invented an Improvement in Receptacle-Filling Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to receptacle filling apparatus and particularly to apparatus for filling cartons with oyster crackers and like materials and is a division of my copending application Serial No. 103,875 filed June 15, 1916, now Patent No. 1,365,415.

In order that the principles of the invention may be readily understood I have disclosed a single embodiment thereof in the accompanying drawings wherein:

Fig. 1 is a top plan view of the apparatus embodying my invention;

Fig. 2 is a view partly in transverse section upon line 2—2 of Fig. 1 and partially in end elevation looking from the feeding-in end of the machine;

Fig. 3 is a right-hand sectional elevation substantially on the line 3—3 of Fig. 1, unessential parts of the machine being broken away;

Fig. 4 is a detail plan view of portions of the driving instrumentalities for the filling mechanism of the machine;

Fig. 5 is a vertical section through one of the chutes for conveying the filling from a pocket of the distributing member to a carton positioned therebeneath;

Fig. 6 is a vertical longitudinal section on the line 6—6 of Fig. 5;

Fig. 7 is a transverse section on the line 7—7 of Fig. 5.

While the apparatus herein disclosed may be used in other relations, it is particularly intended for use in filling pasteboard cartons with oyster crackers.

In the disclosed embodiment, the crackers are deposited in any suitable manner upon a travelling support and are thereby positioned in a series of pockets formed in or carried by a distributing member. Furthermore said embodiment of the invention is of a duplex apparatus and in accordance with such disclosure the crackers are discharged preferably simultaneously from said pockets at opposite sides of the machine into cartons or receptacles positioned therebeneath by suitable instrumentalities.

The invention is in no wise limited to the disclosure herein made as it is evident that many changes can be made within the scope and purpose of the invention.

Referring more particularly to the drawings, the framing of the machine is herein represented as consisting of a series of uprights 1 at opposite sides of the machine and at the ends of the machine and at certain other portions are transverse cross or tie members 2.

The crackers or other articles with which the receptacles are to be filled are deposited by hand or otherwise in a hopper 3 at the feeding-in end of the machine. The bottom of said hopper is composed of an open-mesh endless apron 4 preferably formed of wire and mounted for movement in the direction of the arrow, Fig. 1 upon rolls 5, 6 supported on the framing of the machine and continuously driven as hereinbefore described. Preferably, by the rolls 5, 6 the crackers or other articles are fed upwardly and the crumbs are discharged through the meshes of the belt onto a transverse sheathing 7 here shown as flat and which may, if desired, as shown in Fig. 3, extend from the front to the rear of the machine as well as from side to side thereof. If desired the rear portion of said sheathing 7 may be downwardly inclined toward the feeding end of the machine throughout the extent thereof, that is vertically beneath said feeding apron 4, whereby the crumbs falling into said apron accumulate at the lower portion of said sheathing for ready removal. The crackers are delivered upon the apron 4 and are deposited, through any suitable distributing device. For that purpose I have herein represented a disk-like member 8 mounted upon a vertical pivot and having a series of pockets 9 through which the crackers or other filling are deposited on the rotation of said distributing member.

One or more operatives stand at the feed-

ing-in end of the machine and keep a sufficient supply of crackers upon the apron 4, thus insuring the filling of all the pockets 9. In order to prevent over-filling of the pockets and the proper distribution of the crackers, I preferably provide two brushes 10, 11 shown most clearly in Fig. 2.

The brush 10 is a stationary one and is positioned transversely of the disk-like member 8 substantially midway from front to rear thereof and at one side of the longitudinal center of the machine for the purpose of preventing the crackers from accidentally getting from the feeding end of the machine into the filling pockets, after the pockets have been properly filled and prior to the discharge thereof.

Preferably I employ such a device inasmuch as in the disclosed embodiment of my invention certain of the pockets are not discharged until the disk 8 has turned at least through 180° of rotation subsequent to the filling thereof. The said disk is rotated in a clockwise direction in Fig. 1 and it will therefore be observed that each pocket, after filling, passes first under the rotary brush 11. This brush is turned in a clockwise direction and brushes back surplus crackers from the filled pockets toward the filling apron 4. As will be more fully pointed out hereinafter alternate pockets will discharge in proximity to the rotary brush 11 but the remaining pockets will not discharge until in the vicinity of the stationary brush 10 see Fig. 2.

There is danger that the last-mentioned pockets may receive an over-supply of crackers if the stationary brush 10 or some other suitable means be not provided for that purpose.

The disk-like member 8 is mounted for rotation in a horizontal plane upon a vertical shaft 12 which, as shown most clearly in Figs. 3 and 4 has fast upon the lower end thereof a gear 13 meshing with a worm 14 upon a suitable shaft 15. The said disk-like member 8 is given a step-by-step movement of rotation in a clockwise direction viewing Fig. 1.

Inasmuch as the apparatus of the disclosed embodiment of the invention is a duplex one, I have provided two bevelled chutes 16, 17 shown most clearly in Fig. 2, the discharge chute 16 being shown in detail and on an enlarged scale in Fig. 5. Each of said chutes is suitably supported by the framing as illustrated in Fig. 5 and extends, at its upper end, beneath the discharging position of the pockets. Each of said pockets is provided with a hinged closure 18 normally held in closed position by a spring 19.

As shown most clearly in Fig. 2, alternate closures 18 are provided with upwardly and outwardly extending, generally L-shaped lugs 20, the remaining closures being provided with outwardly extending or straight lugs 21. Thus the two sets of lugs 20, 21 terminate in different horizontal planes, where they are provided with terminal rolls 22, 23. The rolls 22 are adapted to engage the lower curved faces 24 of the cam-like bracket 25 of the bases 26 supported upon the frame at 27 and shown most clearly in Fig. 5. The remaining or alternate rolls 23 being positioned at a lower level are not acted upon by the cam-like bracket 25 and hence are not opened at the left-hand side of the machine viewing Fig. 2. At the right-hand side of the machine I position a corresponding cam-like bracket at a lower level and along the cam-like surface of which the rolls 23 ride, thereby opening alternate or remaining closures 18 at the said right-hand side of the machine.

As indicated most clearly in Figs. 1 and 5, each of the cam-like brackets for operating the closures 18 is adjustable in and out of operative position, whereby without stopping the machine, or any part thereof, the disk-like member 8 may be rotated without discharging the contents of the pockets. While this may be effected in any suitable manner, I have herein represented a hand lever 28 located adjacent each of said cam-like brackets, the same being pivoted at 29 upon the machine frame and having inwardly extending arms 30 provided with pins adapted to enter slots 31 whereby the bases 26 may be slid in or out when the wing nuts have been loosened. Upon adjustment of the said cam-like brackets into or out of operative position, the wing nuts are again tightened.

At their lower, outer ends, the discharge chutes 16, 17 are provided with any suitable closure means as shown most clearly in Figs. 5 and 7, and each has two sets of intermeshing fingers 33, 34 respectively pivoted at 35, 36 as indicated in Fig. 7. The sets of fingers 34 are normally held in closed position by the action of the coil spring 37 connected to the pivotal support for the set of fingers 34 and to the exterior of the chutes 16, 17 as indicated at 38, and the set of fingers 33 are held in their open or closed position by the finger operating means hereinafter described.

The cartons for the oyster crackers or filling may be of any suitable shape and structure and in said copending application I have illustrated and described a carton well adapted for use with the present machine.

These cartons, one of which is shown in dotted lines in Fig. 5, are supported in any suitable manner beneath the discharge ends of the chutes 16, 17. The means herein employed for supporting said cartons con-

sist of conveyor or endless chains 67 operating in troughs 62, 63 arranged at opposite sides of the machine and, being no part of this invention, no further description thereof is believed necessary.

To insure the filling from the chute being properly deposited in the carton positioned beneath the end of said chute, I preferably, though not essentially, impart a shaking or jarring action to the carton after the same has been filled or as it is being filled prior to the closing thereof, and for this purpose I may provide any suitable means, but preferably, as shown in Figs. 5 and 6 I provide a U-shaped member 170, the upstanding portions 171, 172 of which enter between the upstanding walls of the trough and the body of the carton directly beneath the mouth of the co-acting chute 16 or 17. Said shaking or jarring member may be operated in any suitable manner and for this purpose I have represented it as secured by screws 173 to the squared portion of the rock shaft 174, the rounded end portions 175 of which are mounted in suitable bearings 176 at the under side of the trough. To one of said portions is suitably connected a link 177 pivotally connected at 178 to an operating rod 179. The cartons, after being properly filled, and otherwise treated, will be discharged from the two sides of the machine in any suitable manner and to any desired point. Herein I have represented in Fig. 1 a duplex discharge chute 180 hinged to the frame of the machine at 181, 182 so that, when the machine is not in use, the chute may be folded up, out of the way. The two parts 183, 184 of the chute meet at 185 and from this point the filled or closed receptacles are discharged.

In order to drive the various operating parts of the machine I may provide any suitable means. In Fig. 4 and elsewhere I have represented the preferred form of means employed by me. Any suitable motive power may be employed. Preferably in said figure, I employ an electric motor 186 of any suitable type and controlled by switching means generally indicated at 187. Passing about the shaft 188 of the electric motor is a belt 189 also passing about a pulley 190 loosely mounted upon a transverse shaft 191 in suitable bearings 192 upon the framing of the machine. The said pulley 190 is adapted to be clutched to the shaft by any suitable clutching means and herein is represented as having an annularly grooved member 193 receiving the inner end of an operating yoke 194 inwardly extending from a rod 195, the latter being mounted for convenient access in any suitable manner.

The main drive shaft 191 is provided with a pinion 204 fast thereon and meshing with a gear 205 fast upon a transversely extending shaft 206 mounted in bearings 207 in side members of the machine frame. Fast upon said shaft 206 and about mid-width of the shaft is a beveled gear 208 meshing with a similar gear 209 upon the longitudinally extending shaft 15 upon which is mounted the worm 14 hereinbefore referred to.

At the proper times in the operation of the machine, the opening and closing means for chutes 16, 17 are operated preferably by means of a cam 228, herein attached to a longitudinally disposed shaft 217 journalled in suitable bearings 217', 217' upon the cross members 2, said shaft 217 receiving its motion through suitable bevelled gears 100, 101, the latter being secured to a transverse shaft 71 journalled to rotate in suitable bearings in the side members 1 of the frame, said shaft 71 being driven in the manner hereinafter more fully described. The cam 228 is provided with a track and adapted to receive a cam roll as indicated in dotted lines at 246 in Fig. 4. Said cam roll is mounted upon a lever arm 247 shown most clearly in Fig. 3, the said lever arm being loosely pivoted upon a stationary shaft 218, as most clearly shown in Figs. 2 and 3.

Connected to the said lever 247 above and below its pivotal point are links 248, 249 which extend to the opposite side of the machine and there are pivotally connected by pins 250, 250 to the crank arms 251 having therein slots 252. The said crank arms are fast upon the shafts 253 mounted in suitable bearings and having fast thereon multilated gears 254, the teeth whereof mesh with the teeth 255 of links 256 which extend upward and are pivoted at 257 to levers 258 themselves pivoted at 259 upon brackets 260 depending from longitudinally extending members of the machine frame. To the outer end of said levers 258 are pivotally connected at 261 links 262 fast to pivots 35 of the fingers 33 of the chute closing members as most clearly indicated in Figs. 2, 5 and 7.

Thus, in the rotation of the said cam 228, the fingers 33 are moved into closing and opening position. Upon the outer ends of the levers 258 I have pivotally connected at 261 arms 264 which, in the opening movement of the fingers 33, are adapted to strike rolls 265 upon the supporting arms for the fingers 34 and thereby to depress said fingers, the rolls 265 being eccentric to the pivots 36 for said fingers.

Viewing Fig. 2 it will be evident that in the opening movement of the set of fingers 33, 34 the fingers 33 open somewhat in advance of the fingers 34. While I am not limited to such action of parts, the same is advantageous in that the fingers 33, in their

initial movement, press back the upstanding portion of the carton cover substantially as indicated in dotted lines in Fig. 5, so as to insure a free passage for the discharging crackers and to assist to guide said crackers into said carton. At the front of the carton the fingers 34 likewise assist in properly guiding the crackers to said cartons.

Any suitable means may be employed to operate the shakers 170 positioned in troughs 62, 63. Herein for the purpose I have, in Fig. 4, represented each of the rods 179 extending from said shakers as connected to an eccentric strap 280 (see Fig. 4) surrounding an eccentric 281 upon the end of a short shaft 282 mounted with bearings 283 upon the machine frame and having a pinion 284 meshing with a gear 285 fast upon the shaft 15. In this manner, an intermittent shaking movement is imparted to said shakers. Any suitable means may be employed to rotate the brush 11 that is positioned above the disk-like member 8. Herein for the purpose I have represented said brush as mounted upon a shaft 286 shown most clearly in Fig. 2 and having a pulley 287 driven by a belt 288 which as shown in Figs. 3 and 4 passes about a pulley 289 upon the shaft 206. A suitable guide pulley 290 may be employed, if desired. In the described manner, the brush shaft is constantly rotated.

Any suitable means may be provided to drive the apron 4 for conveying the loose crackers or filling to the disk member 8. I have represented, as shown most clearly in Fig. 3, a pulley 6 as fast upon a shaft 291 and a shaft 294 having thereon a sprocket gear 295 driven by a sprocket chain 296 passing about a suitable sprocket gear upon the shaft 71. In this manner the said apron 4 is continuously driven in the direction of the arrow adjacent thereto in Fig. 3.

It is clear from the foregoing description that, in the disclosed embodiment of my invention, wherein a duplex machine is illustrated, the empty cartons are suitably fed at each side of the machine into the troughs where they receive the crackers that are discharged through said chutes in predetermined quantities and are suitably shaken in readiness for the cartons to advance to other operating instrumentalities, not herein shown or described, and after having been suitably operated upon said cartons are discharged from the machine at the end 185 of the discharge chute.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims:

1. A receptacle filling apparatus comprising means to support said receptacles, means to fill the latter, and horizontally pivoted means to grasp and shake the receptacles to settle down the contents thereof.

2. A receptacle filling apparatus comprising means to support a receptacle; a filling device and horizontally pivoted means positioned beneath the filling device to grasp and shake said carton or receptacle from side to side.

3. Carton filling means comprising, in combination, a distributing member and chute for directing filling from said distributing member to said carton, and closure means for said chute adapted when open to guide the filling into said carton.

4. In combination a horizontally positioned rotary distributing disk having normally closed pockets, a belt-like conveyor extending over a portion of said disk and adapted to convey filling into the pockets of said conveyor disk and means to open the pockets in a predetermined sequence.

5. Carton filling means comprising, in combination, a distributing member and chute for directing filling from said distributing member to said carton, and closure means for said chute adapted when open to hold the flap of said carton open and to guide the filling into said carton.

6. A duplex carton filling apparatus having a distributing member provided with filling pockets adapted to receive the filling material, and means automatically to open said pockets in the direction of the flow of the material.

7. A duplex carton filling apparatus having a filling member provided with filling pockets and adapted to receive solid material in a divided condition, and means automatically to open alternate pockets at opposite sides of the apparatus.

8. A duplex machine for filling receptacles comprising in combination a distributing member having a series of pockets adapted to receive crackers or like divided solid material, discharging chutes at opposite sides of the machine, means to fill said pockets, and coacting means to open alternate pockets at opposite sides of the machine.

9. A machine for filling receptacles comprising a distributing member having a series of pockets adapted to receive crackers or like divided solid material, a discharge chute to cooperate with said pockets, means to fill said pockets and said chute, and means to open said pockets when in alignment with said chutes.

10. A duplex machine for filling cartons comprising, in combination, a distributing member having feeding pockets at each side of the machine, chutes at opposite sides of

the machine in communication with said feeding pockets, closures for said pockets, and means to operate said closures to open a portion only of said pockets at one side of the machine and to open the remaining pockets at the other side of the machine.

11. A carton filling machine comprising a distributing member having pockets to receive the filling material, and two brushes positioned above said disk, one brush being stationary and acting to prevent the filling from passing from the filling end of the machine into the filled pockets and the other acting to brush surplus articles back into the filling end of the machine.

12. A duplex carton filling machine comprising a rotary feeding member having pockets, closing means for the pockets, and means positioned at different levels at opposite sides of the machine to engage alternate closing means, thereby to open alternate pocket closing means.

13. A duplex carton closing machine comprising a distributing member having depending pockets, closing means for said pockets having protruding lugs terminating at different levels, and means at opposite sides of the machine to engage alternate lugs, thereby to discharge alternate pockets from opposite sides of the machine.

14. A carton filling apparatus having a feeding disk provided with pockets, closures therefor, means in proximity to the filling position of the cartons to open said closures, and means for adjusting said opening means whereby said opening means may be rendered active or inactive.

15. A carton filling apparatus having a distributing member provided with pockets, closures therefor, means in proximity to the filling position of the cartons to open said closures, a chute for directing filling from said pockets to said cartons, closure means for said chute, and means automatically to operate said closure means.

16. A carton filling apparatus having a distributing member provided with pockets, closures therefor, means in proximity to the filling position of the cartons to open said closures, a chute for directing filling from said pockets to said cartons, and closure means for said chute adapted when open to guide the filling to said cartons.

17. A receptacle filling apparatus comprising means to support and feed receptacles, means to fill the latter, and means to engage the receptacles at opposite sides thereof while being fed and to shake the same while so engaged, thereby to settle down the contents thereof.

18. A receptacle filling apparatus comprising means to support and feed said receptacles, means to fill the latter and holding means to shake the receptacles while being fed, thereby to settle down the contents thereof.

19. A receptacle filling apparatus comprising means to support said receptacles, means to fill the latter, and means to hold and rock the receptacle upon a horizontal axis, thereby to settle down the contents thereof.

20. A receptacle filling apparatus comprising means to support receptacles, means to fill the latter, a U-shaped member horizontally pivoted beneath said support to engage opposite sides of the receptacles, and means to move said member upon said horizontal pivot, thereby to settle down the contents of the receptacles.

21. A receptacle filling apparatus comprising a belt like conveyor for the receptacles, means to fill the latter while upon the belt-like conveyor, a member to engage the receptacles while so supported upon said belt-like conveyor, and means to move said member while the receptacle is being filled so as to agitate the contents of the receptacles.

22. In combination, a horizontally positioned rotary disk having pockets, a conveyor adapted to convey filling material into the pockets of said disk, and means to remove excess material from said disk.

23. In combination, a horizontally positioned, rotary disk having pockets, a conveyor adapted to convey filling material into the pockets of said disk, and means automatically to discharge material simultaneously from opposite pockets of said disk.

24. In combination, a horizontally positioned rotary disk having pockets, a conveyor extending over said disk to fill the pockets, and means for preventing overfilling of said pockets and comprising a brush adapted to engage the material upon said disk.

25. A duplex carton-filling apparatus having a distributing member provided with filling pockets adapted to receive the filling material, a plurality of chutes into which the pockets are dischargeable, a pair of inter-engaging members constituting a closure for each of said chutes, and means automatically to open said members.

26. A duplex carton-filling apparatus having a distributing member provided with filling pockets adapted to receive the filling material, a plurality of chutes into which the pockets are dischargeable, two sets of intermeshing fingers for each of said chutes, and means automatically to move said fingers into open position.

27. A duplex carton-filling apparatus having a rotary distributing member provided with filling pockets adapted to receive the filling material, pivoted means constituting closures for said pockets, and provisions for

swinging alternate ones of said pivoted means in the direction of the flow of the material, thereby to open pockets at opposite sides of the apparatus.

28. A machine for filling receptacles comprising a distributing member 8 having a series of pockets 9 to receive the filling material, means 10 for preventing the filling from passing from the filling end of the machine into the filled pockets, and means 11 for forcing surplus material back into the filling end of the machine.

29. A duplex carton filling machine comprising a conveyor 4, a distributing member 8 having pockets 9, closures 18 therefor having lugs 20, 21, means 25 at opposite sides of the machine to engage alternate lugs thereby opening alternate pocket closures, and means 16, 17 for directing filling from said pockets to the cartons.

In testimony whereof, I have signed my name to this specification.

EDWARD E. LAWRENCE.