June 1, 1943. G. B. FIRST ET AL 2,320,581

APPARATUS FOR CONVEYING AND FILLING CARTONS

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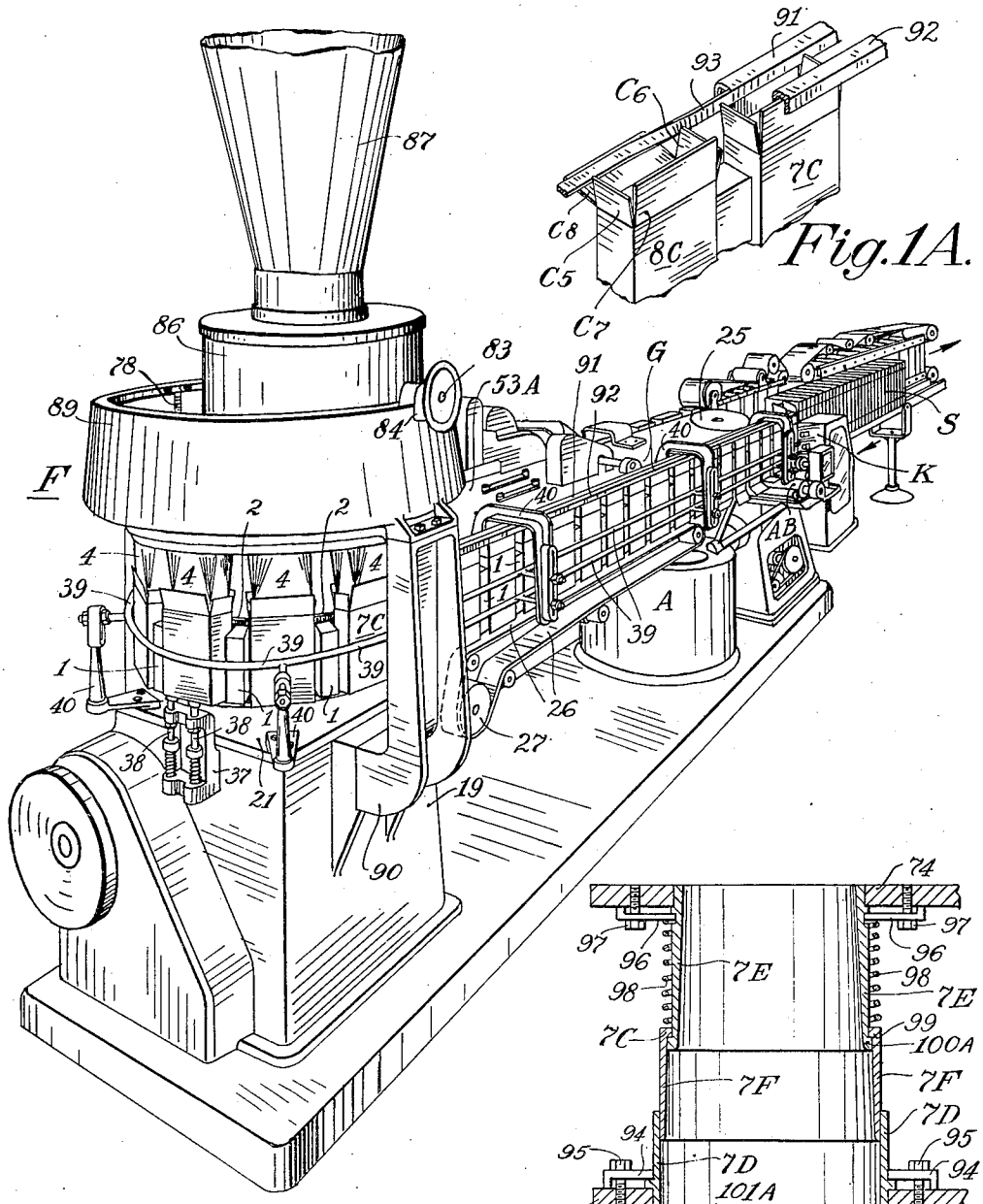


Fig. 1.

Fig. 1A.

Fig. 7.

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APPARATUS FOR CONVEYING AND FILLING CARTONS

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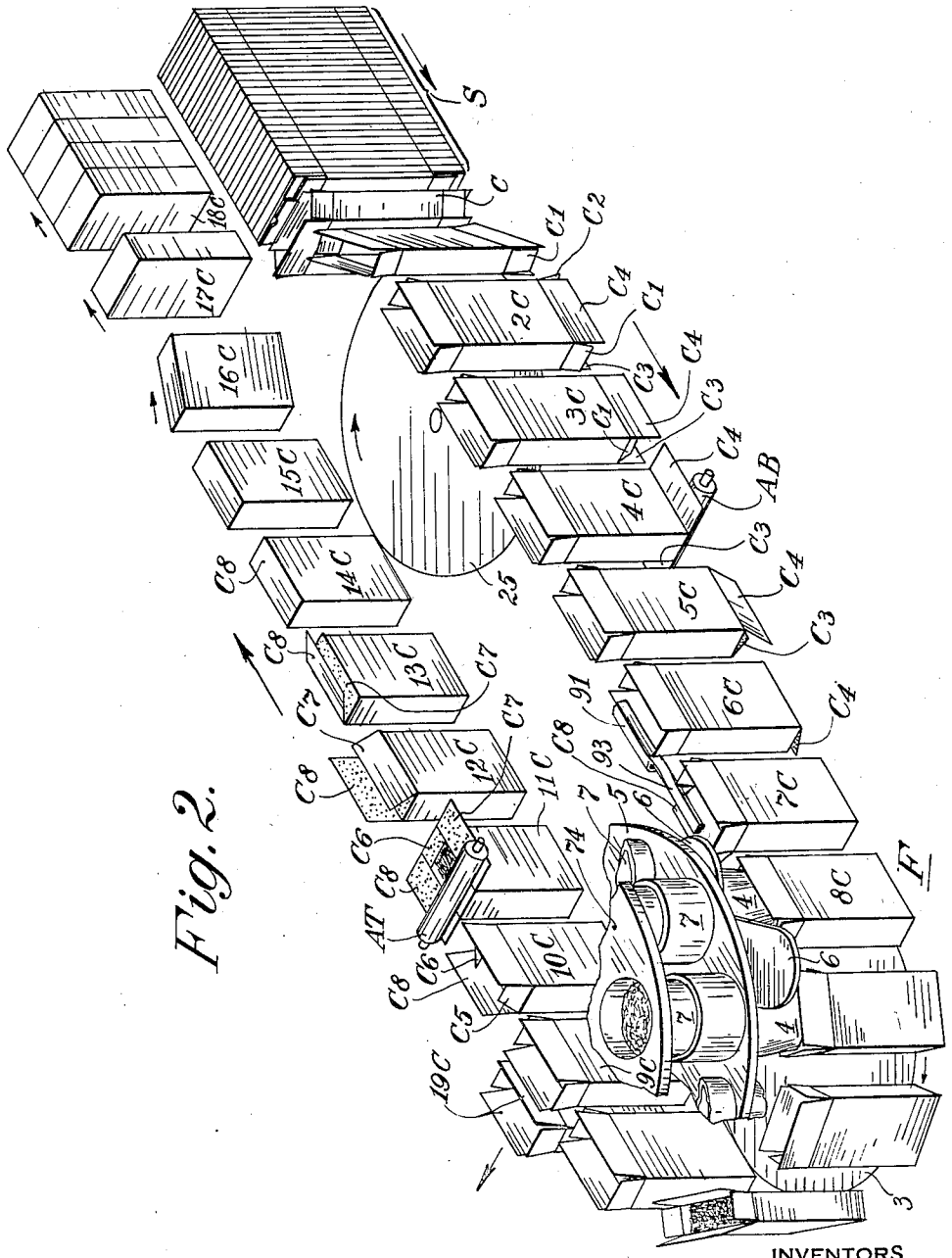


Fig. 2.

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APPARATUS FOR CONVEYING AND FILLING CARTONS

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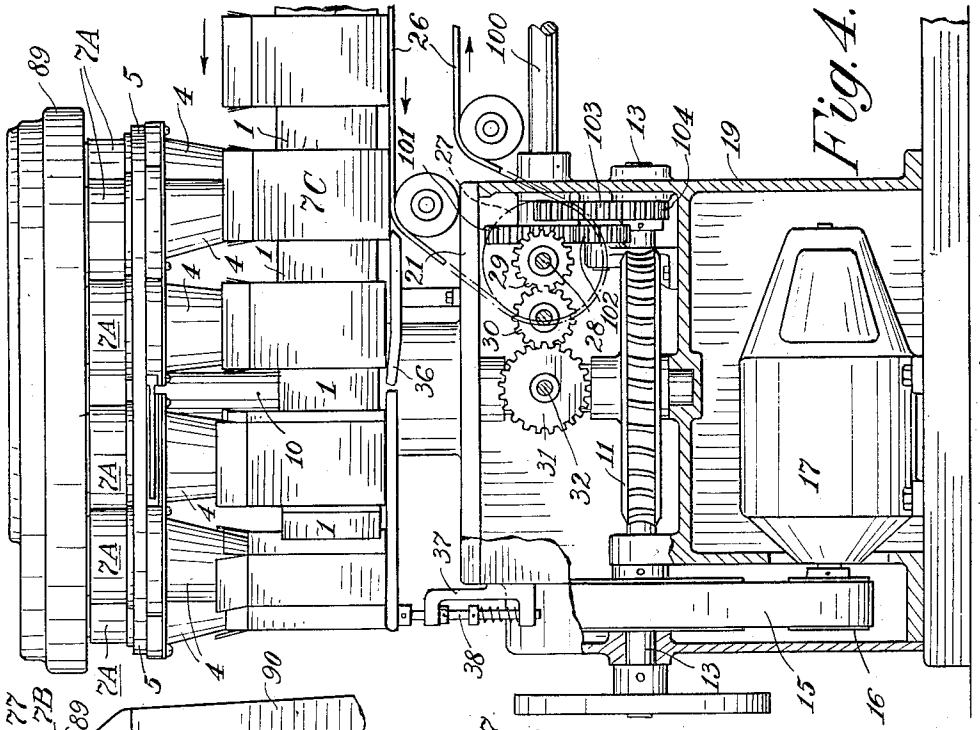


Fig. 4.

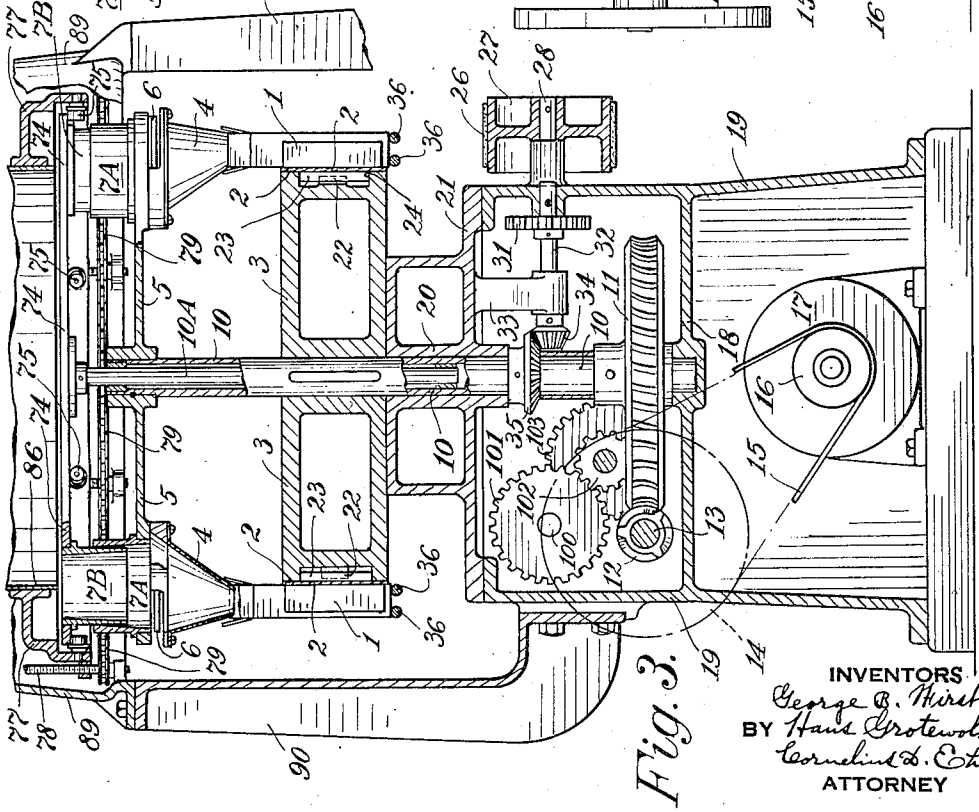


Fig. 3.

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APPARATUS FOR CONVEYING AND FILLING CARTONS

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Fig. 6.

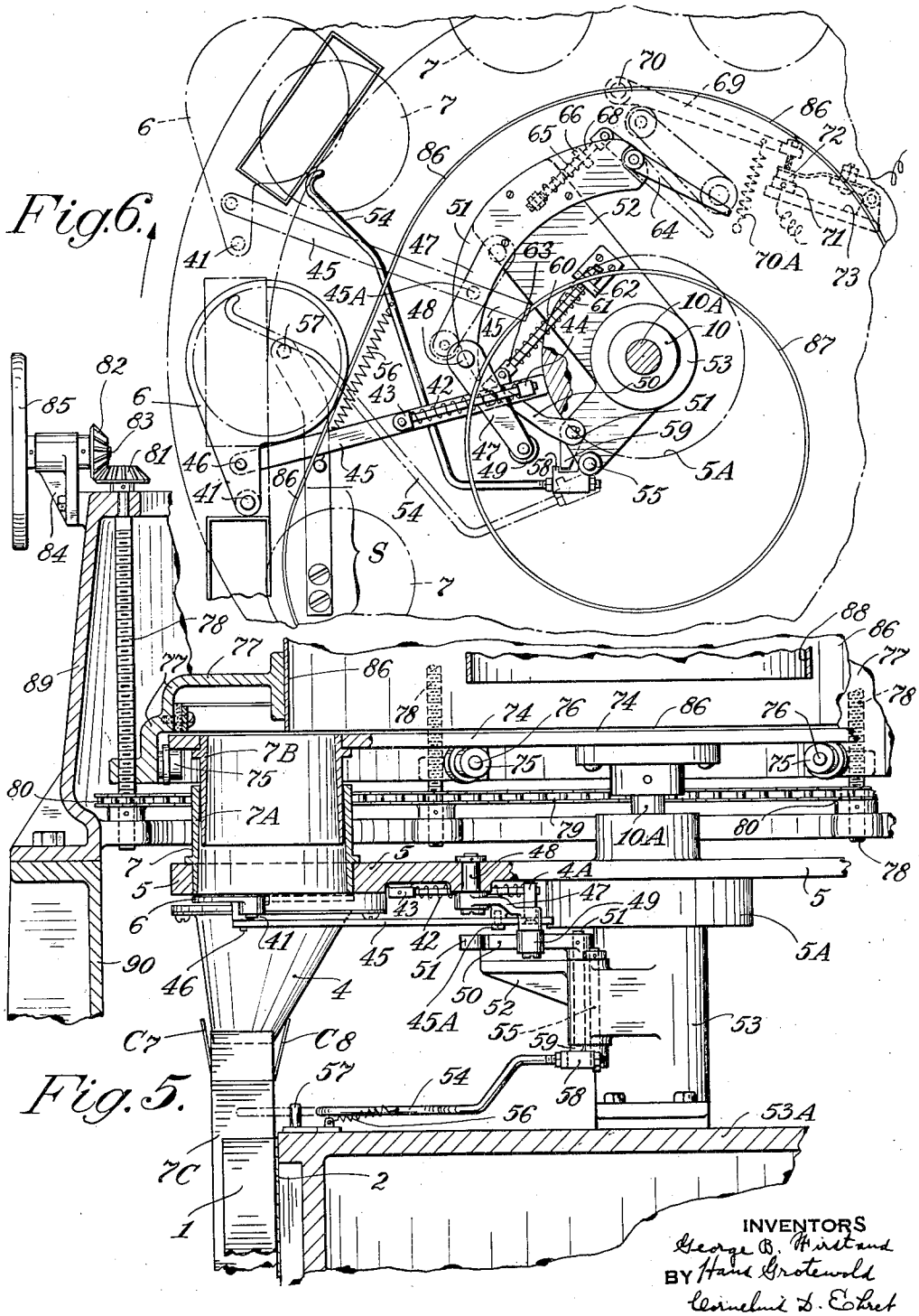


Fig. 5.

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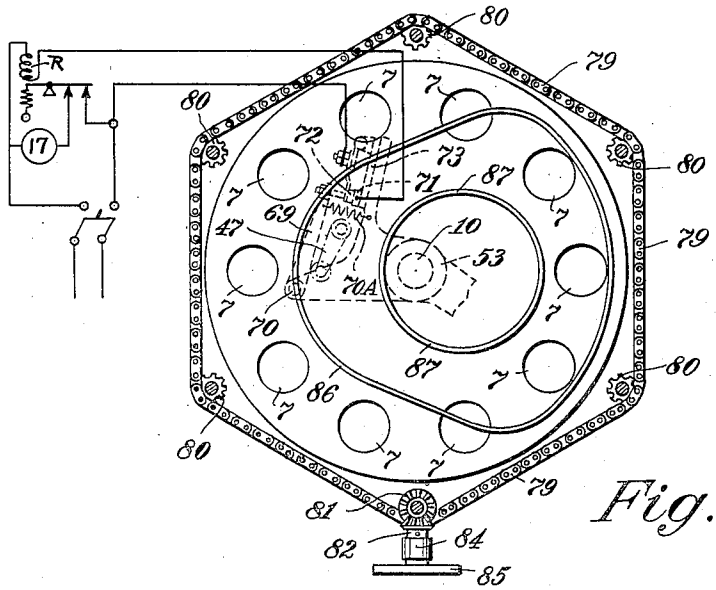


Fig. 9.

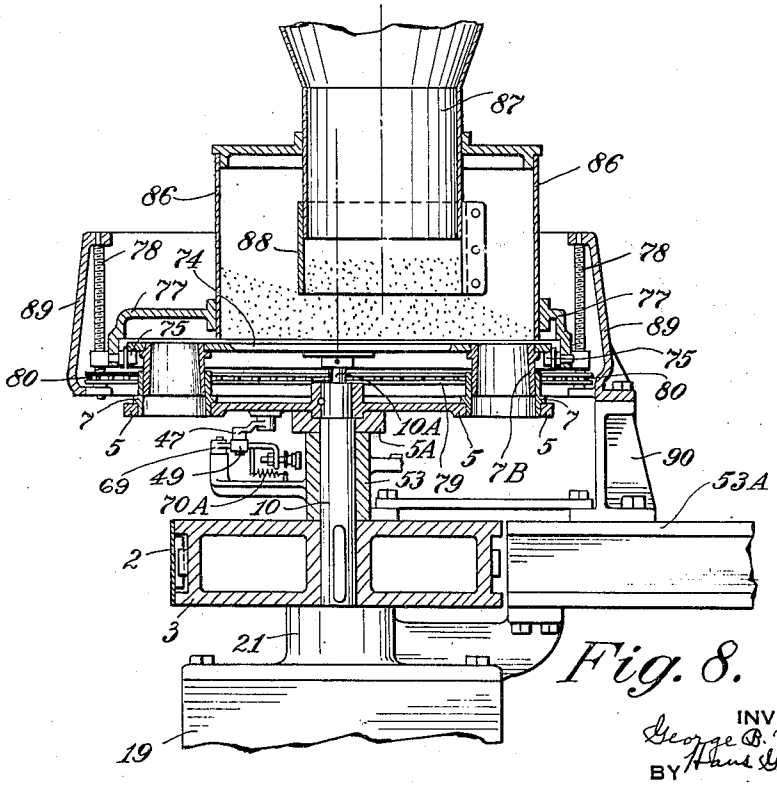


Fig. 8.

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Patented June 1, 1943

2,320,581

UNITED STATES PATENT OFFICE

2,320,581

APPARATUS FOR CONVEYING AND FILLING CARTONS

George B. First and Hans Grotewold, Philadelphia, Pa., assignors to Stokes and Smith Company, Summerdale, Philadelphia, Pa., a corporation of Pennsylvania

Application November 4, 1939, Serial No. 302,807

11 Claims. (Cl. 226—97)

Our invention relates to apparatus for conveying and filling cartons or like receptacles.

In accordance with one aspect of our invention, during transport of empty cartons by an endless conveyor toward a filling station at least one top flap of each of the successive cartons is temporarily bent outwardly and downwardly to clear a filling snout moving into alignment with the carton, and that flap is returned to or permitted to return sufficiently toward its original position so that during filling of the carton, the snout at least during discharge therefrom is surrounded or housed by the upstanding flaps, so preventing escape of the filling; more particularly, as each carton in turn is aligned with a snout, it is lifted, as by an inclined trackway, to bring the discharge end of the snout well below the upper edges of the flaps of the cartons.

In accordance with another aspect of our invention, gates permitting discharge through the snouts into the cartons are controlled by a device which in advance of opening of each gate determines whether or not there is a carton in position to be filled, and which, upon failure of a carton to be in such position, prevents opening of the gate.

In accordance with still another aspect of our invention, between the station at which a measuring flask is opened for discharge therefrom and the station at which it is refilled, there is disposed mechanism which detects failure of the flask-gate to reclose, and which, upon such failure, either warns the operator and/or interrupts operation of the apparatus.

Our invention further resides in the features of combination, construction and arrangement hereinafter described and claimed.

For an understanding of our invention and for illustration of a preferred form thereof, reference is to be had to the accompanying drawings, in which:

Fig. 1, in perspective, discloses a machine for opening, filling and closing cartons;

Fig. 1A, in perspective, is a detail view, on enlarged scale, of flap-deflecting structure shown in Fig. 1;

Fig. 2, in perspective, illustrates the successive operations performed upon the cartons by the machine of Fig. 1;

Fig. 3 is a front elevational view, partly in section and with parts broken away, of the carton-filling mechanism of the machine of Fig. 1;

Fig. 4 is a side elevational view, partly in section, of the carton-filling mechanism of Figs. 1 and 3;

Fig. 5, on enlarged scale, and partly in section, shows mechanism for controlling and adjusting measuring flasks of the filling mechanism;

Fig. 6 is a plan view of control mechanism shown in part in Fig. 5.

Fig. 7 is an elevational view, partly in section, of a modified form of measuring flask.

Fig. 8 is side elevational view, partly in section, showing mechanism and parts appearing in Fig. 5.

Fig. 9 includes a plan view of parts appearing in Fig. 8 and a schematic wiring diagram of a control circuit including a switch shown in Fig. 6.

The filling machine shown in Fig. 1 is generally of the type disclosed in United States Letters Patent No. 1,527,030 to Delamere et al.; cartons are in turn removed from the stack S, opened by mechanism K, preferably of the type described and claimed in our copending application Serial No. 304,678, filed November 16, 1939, and positioned between a pair of blocks or similar clamping elements 1, forming spaces or pockets in which the cartons are disposed or clamped during their transport, extending outwardly from the endless conveyor belt 2, Figs. 1, 3 and 4. As each carton passes through the stages exemplified in Fig. 2 by cartons 2C—6C, the panels or flaps C1, C2, at the lower end thereof are turned inwardly, then the lower or bottom-forming panels C3, C4 are turned outwardly so that as the four panels C1—C4 pass over the roller AB, adhesive is applied thereto; the panels C3, C4 are then, in succession, turned inwardly to form the closed bottom of the carton, as exemplified by cartons 5C, 6C, Fig. 2.

The apparatus A for supplying adhesive to roller AB and to roller AT, subsequently described, is preferably of the type disclosed and claimed in our copending application Serial No. 302,806, filed November 4, 1939.

As each carton, Figs. 1 and 2, is moved by the conveyor belt 2 at the filling station F along the curved portion of its path having its axis of curvature substantially coincident with the axis of rotation of the driving drum 3 of the conveyor belt 2, it comes into register with a filling snout 4 depending from the plate 5 rotating about the same axis as the driving drum 3 of the conveyor. With each snout is associated a gate 6 which is opened, as hereinafter fully described, to permit discharge into a carton of the contents of the corresponding measuring flask 7.

As the cartons pass beyond the filling station and resume travel in a straight line, the top of each successive carton is closed and sealed. Spe-

cifically, the top end panels C5, C6 are first turned downwardly and inwardly (carton 10C, Fig. 2), and the top side panels C7, C8 turned downwardly and outwardly (carton 11C, Fig. 2), for application of adhesive to all four panels C5 to C8 by the adhesive-applying roller AT. The panels C7, C8 are then turned inwardly in succession to cover or close the top of the carton (cartons 12C—14C, Fig 2). The closed and filled cartons are removed from the conveyor belt, turned approximately 90° (cartons 15C—18C, Fig. 2) by mechanism of the type disclosed in our aforesaid application Serial No. 302,806, and stacked. Preferably each carton, while moving along its path between the filling station and the top closing station, is checked for proper quantity of filling, and if insufficient, the carton is ejected from the conveyor (carton 19C, Fig. 2), preferably by mechanism of the type shown in our aforesaid copending application Serial No. 304,678.

Referring to Figs. 3 and 4 for a more detailed explanation of the construction and operation of the filling mechanism, the driving drum 3 for the conveyor belt 2 is keyed or otherwise suitably attached to the hollow drive shaft 10, to the lower end of which is attached the worm wheel 11 driven from the worm 12 on shaft 13 to which is secured pulley 14 connected by belt 15 to pulley 16 on the shaft of the motor 17. The lower end of the shaft 10 is supported by the cross member 18 of the housing 19. Between the drum 3 and the gear 11, the shaft 10 passes through the bearing 20 supported by the top plate 21 of housing 19.

Preferably the periphery of the drum 3 is provided with a plurality of projections 22 serving as teeth or cogs engaged by elements 23 extending inwardly from the belt 22 and received by the recess 24 in the periphery of the drum 3 and a corresponding recess in the periphery of drum 25 at the opposite end of the conveyor.

During transport of the cartons by the conveyor from the bottom-closing mechanism to the filling mechanism, the bottoms of the cartons are engaged by the belt 26 which passes over the driving pulley 27 on shaft 28 extending outwardly from the housing 19 of the filling mechanism. To the shaft 28 there is attached, within the housing 19, gear 29 which, through gear 30, drives the gear 31 on shaft 32 supported by a bracket 33 from the top plate 21 of housing 19. The bevel gear 34 on shaft 32 is driven from the corresponding bevel gear 35 on shaft 10. The gear ratios are preferably such that the linear velocity of belt 26 is substantially the same as the linear velocity of conveyor 2. The belt 26 by pressing against the bottom of the cartons maintains the bottom-forming panels C1—C4 firmly in engagement with each other during setting of the adhesive applied thereto by roller AB.

The shaft 100 driven from the gearing, including gears 101, 102, 103 and 104, is the main drive shaft from which is derived the power for operating the mechanism for feeding the stack S of cartons, the carton-opening mechanism K, gluing mechanism G and other components of the complete machine.

Guide channels 91, 92 slidably receive the top edges of flaps or panels C7, C8 of the cartons to allow belts 26 to exert substantial pressure upwardly on the closed bottoms of the now open cartons, and to restrain the flaps spread or approximately in the planes of the sides of the cartons as they move toward the filling snouts. As shown most clearly in Fig. 1A, the bar 93, serving as an extension of guide 91, turns the flap C8 of each carton downwardly and outwardly just before a snout moves into alignment with that carton. As the carton continues to move along below the snout, the flap C8 slides off bar 93 and springs back against the outside of the snout 4, Fig. 5. By so turning the flaps C8 of the cartons downwardly and outwardly, the snouts extend deeply below the level of the upper edges of the flaps, with consequent negligible escape of material during filling.

During their transport in the rectilinear portions of their paths, the cartons are firmly held by the conveyor blocks or elements 1, for operation thereon of devices including the mechanisms which fold their bottom and top-forming flaps C1—C8; but as the cartons move in the curved portion of their path, beyond folding bar 93, the sides of the blocks 1 become radial or non-parallel, so freeing the cartons of clamping pressure though still effective to push the cartons along the curved portion of their path. While the cartons are so free to move in the pockets formed between the adjacent pairs of blocks 1, each in turn is progressively lifted by the inclined trackway formed by the bars 36 to bring the lower end of the aligned discharge snout well below the level of the top edges of flaps C5—C8 thus to minimize escape into the air of appreciable amounts of finely divided or powdered filling material such as soap powder, flour or the like.

For clarity, Fig. 4, the inclination of the trackway is shown to be quite abrupt; actually it is somewhat less steep though capable of adjustment, as hereinafter described.

The trackway 36 is inclined downwardly on the opposite sides of the housing 19 so that the filled cartons are, in effect, withdrawn from the filling snouts to clear them as the paths of the cartons and snouts diverge.

The central portion of each rod 36 is vibrated during accumulation of filling in a carton to settle it, so to insure the top of the total quantity of the filling in each carton in safely below the score lines defining its flaps C5—C8, i. e., safely below the upper edges of the sides of the carton. The vibrator 37 may be of any suitable type; for example, it may comprise a pair of electromagnetically reciprocated or vibrated core or armature members 38 attached at their upper ends to rods 36.

The lower ends of the snouts are unobstructed by any pivoted gate structure which would be and heretofore has been a source of trouble because causing packing of material in the snout and imperfect cut-off. Gates 6 are self-cleaning of any material tending to adhere thereto and move transversely between the flasks and snouts preferably at the region of greatest cross-sectional area of the path of the filling material.

Preferably throughout the travel of the cartons with the conveyor, they are restrained from movement outwardly from the conveyor by one or more guard rails 39 supported from brackets 40 attached to the framework of the machine. Preferably the brackets 40 are slotted to permit vertical adjustment of the guides 39.

Referring particularly to Figs. 3 and 5, the upper end of each of the filling snouts 4 is spaced from the underside of the supporting plate 5 to permit the associated gate 6 to move from and

toward the position shown in Fig. 5 for which it serves as the bottom of the corresponding measuring flask 7. Each gate, supported by a pivot pin 41 extending from the underface of the plate 5, is biased toward its flask-closing position by a spring 42 compressed between a block 43 pivotally attached to plate 5 and the block 44 on the lever 45 connected by pin 46 to the gate 6. The disk 5A attached to shaft 10 serves as a stop limiting movement of the gate 6 in clockwise direction about its pivot pin 41. Each gate lever 45 is pivotally connected at 45A to a control lever 47 pivotally mounted by a pin 48 to the supporting plate 5 and having at its free end a cam roller 49.

Each gate swings outwardly so that the material flowing from the flask is directed by the sloping side wall of the filling snout toward one side of the carton, while the air displaced by the filling tends to flow toward the other side of the carton with escape through the gaps between the flaps C8, C5, C6 and the snout 4. By so avoiding entrapment of air by the falling material, and by providing a path for escape of air substantially free of the falling material, loss of material is rendered negligible.

The arrangement for effecting outward or opening movements of gates 6 includes the stationary cam 51 supported by bracket 52 of column 53 attached to frame member 53A and the mechanical switch member 50 pivotally mounted at 51A to another bracket or extension from column 53.

Member 50 is biased to the position shown in Fig. 6 with its outer edge substantially tangent to the peripheries of stop 5A and cam 51 by spring 60 coiled about rod 61 slidable through guide 62 on bracket 52 and connected to block 63 pivotally mounted on switch member 50.

When the mechanical switch member 50 is in the position shown in Fig. 6, it directs the cam roller 49 of the succesive control levers 47 into engagement with the outer surface of the cam 51 supported by the bracket 52 extending from the column 53 attached to frame member 53A. Figs. 5 and 8. As the plate 5 continues its rotation in clockwise direction, the cam 51 causes control member 47 in turn to swing in clockwise direction about its pivot 48 from the full line to dotted line position, Fig. 6, and so cause opening of the gate 6 in opposition to the biasing spring 42. The cam 51 holds each gate 6 open throughout an angle sufficiently great to insure complete discharge of the contents of each flask into the carton beneath it.

To avoid discharge of the contents of a measuring flask when no carton is in position beneath it to be filled, there is provided an empty-pocket detector including the feeler 54 pivotally mounted upon the pin 55 supported from standard 53 and biased by spring 56 against the stationary stop 57. The arm 54 is engaged by each successive carton and moved from its dotted line position against stop 57 to its full line position, Fig. 6, so to dispose movable stop 58 that switch member 50 cannot move in clockwise direction about its pivot 51A when engaged by the successive cam rollers 49.

In the event one of the conveyor pockets is empty, the arm 54 remains against stop 57 thus leaving the movable stop 58 in its dotted line position, Fig. 6, out of the path of the latch member 59 of the switch member 50. Consequently, when the control member 47 of gate 6 corresponding with the empty conveyor pocket engages the switch 50, the latter yields, whereupon the cam follower 49, instead of being directed into engagement with the outer face of the cam 51, moves along a different path, namely, against the inner arcuate face of cam member 51. The inner end of gate lever 45 remains in engagement with stop disk 5A and the gate remains closed until, in the next or some subsequent revolution of disk 5, a carton is positioned by the conveyor 2 below the corresponding flask.

When the gate control member 47 passes beyond the switch 50, the latter is restored to its normal full line position by the biasing spring 60 coiled about the rod 61 and compressed between the stationary guide bracket 62 and the block 63 pivotally connecting the switch member 50 and the rod 61.

Referring to Fig. 6, the cam 51 terminates in a pivoted extension 64 biased to its full line position by spring 65 compressed between the stationary bracket 66 and the nuts 67 on a pin 68 which extends through the bracket 66 and is pivotally connected to the cam extension 64. Normally, the gate-biasing spring 42, as above stated, is capable of effecting reclosure of the gate 6. As the cam roller 49 moves along the surface of cam 51, the spring 42 maintains engagement of cam roller 49 first with the cam 51 and subsequently with its pivoted extension 64 which gradually yields and so avoids undesirably abrupt closure of the gate. The spring 65 thereafter returns the extension 64 to full line position for which it clears any cam roller 49 that may have been diverted by the switch member 50 to follow its other path along the inner face of the cam member 51.

In the event a gate 6 does not reclose for any reason, such, for example, as jamming due to a foreign object in the filling, it is desirable, of course, to prevent the associated flash from receiving another charge of material until jamming of its gate has been corrected. When biasing spring 42 is incapable of effecting reclosure of a gate, its associated cam roller 49 in passing beyond cam 51 engages the arm 69, pivoted at 70 to any suitable stationary structure located beneath the plate 5 and biased to the position shown in Fig. 6 by the spring 70A and moves it in counterclockwise direction thus effecting separation of the electrical contacts 71, 72 of a control switch 73 which may be utilized, by control of a suitable signal, to warn the operator of the jammed gate or, through suitable known relay devices, exemplified by relay R, Fig. 9, to interrupt operation of the machine as by de-energization of motor 17.

Referring particularly to Figs. 3, 5 and 8, each of the flasks 7 comprises two telescoping sections of increasing internal cross-sectional area, from top to bottom, to insure complete discharge and free flow of the material; the lower section 7A is carried by the plate 5, and the upper section 7B is carried by a second plate 74 attached to the upper end of a guide rod or shaft 10A which is slidable in the hollow shaft 10.

The plate 74 is supported by a plurality of rollers 75 which engage its lower outer edge and are mounted upon the pins 76 extending inwardly from the cap-shaped member 77. The member 77 is, in turn, supported by a plurality of threaded shafts 78 which pass through the rim of member 77 and which are connected for rotation in unison by the chain 79, Fig. 9, which passes over the sprockets 80 attached to the lower ends of the threaded shafts 78. To the upper end of one

of the shafts 78 is attached a bevel gear 81 in mesh with a bevel gear 82 on shaft 83 supported by bracket 84 and having attached thereto a handwheel 85 which, when rotated in one direction or the other, raises or lowers the member 77 and thus simultaneously changes the capacities of all of the measuring flasks 7 by changing the spacing between the plates 5 and 74. This change in capacity of the measuring flasks can be effected without interrupting the operation of the machine.

Bracket 84 is attached to the upper edge of the tubshaped guard member 89, supported at the upper ends of brackets 90, extending upwardly from opposite sides of housing 10.

To the adjustable plate-support 77 is attached the side wall of a housing or chamber 86 whose bottom is formed by the plate 74. As the closed flasks pass beneath the housing, they receive a charge of the filling, the lower edge of the side wall structure serving as a scraper preventing overfilling of the flasks. The cam 51 is so constructed and positioned that the gate 6 of each of the flasks remains closed until after the open upper end thereof has passed completely beyond or outside of the side wall structure of the chamber 86.

The attachment of aforesaid side wall structure to member 87 insures maintenance of proper relative vertical posiiton of plate 74 and lower edge of wall structure 86 for all positions to which plate 74 is adjusted by handwheel 85 to procure the desired flask capacities.

The filling material for the cartons may be supplied to the chamber 86 from any suitable source, for example, from a supply conduit or hopper 87 whose lower end slidably fits the sleeve 88 attached to and adjustable with chamber 86.

The lower end of sleeve 88 is not positioned over the path of the flasks, Fig. 9, because in such event the static-pressure head of material in hopper 87 would affect the amount or weight of material passed into the flasks; to avoid such variation in amount or weight, the lower end of the column of material, partly within hopper 87 and partly below it, rests upon the rotating plate 74 without overlapping any of flasks 7. As the plate 74 rotates, it spreads the material outwardly beyond the edge of sleeve 88 to position to fall into the flasks; the excess filling is scraped off, as aforesaid, by the lower edge of the sidewall structure of chamber 86 in the region marked S, Figs. 6 and 9. At and near this region, the sidewall structure is curved in avoidance of packing of that excess material. In brief, the material within chamber 86 is circulated, because of rotation of plate 74 and the shape of the chamber 86, about the sleeve 88. As this circulating supply of material is depleted by charging of the flasks, additional material from sleeve 88 replenishes it upon plate 74.

The range of variation of the amount of filling delivered to a carton may be extended by substituting for flask 7, previously described, one having at least one section in effect floating between and telescoping with sections attached respectively to plates 5 and 74. Referring to Fig. 7, the lowermost section 7D of the flask 7C is attached, preferably removably, as by clamps 94 and bolts 95, to plate 5; the uppermost section 7E is attached, preferably removably, as by clamps 96 and bolts 97, to the upper, adjustable plate 74; the floating section 7F slidably fits section 7E, and is biased by spring 98 to the position shown in Fig. 7, with its inwardly directed flange 99 in engagement with the outwardly directed flange 100A of section 7E.

When plate 74 is lowered, the sections 7E and 7F move as a unit with respect to section 7D until, for further lowering of plate 74, movement of the floating section 7F is arrested by engagement with stop structure, for example the stop 101A attached to plate 5 and projecting into the interior of section 7D. Lowering of plate 74 may be continued further to reduce the capacity of the flask until the lower edge of section 7E is arrested by engagement with stop structure, for example aforesaid stops 101A, suitably before it moves into the path of flask gate 6.

A still greater range of adjustment of flask capacity may be procured by providing additional floating sections each telescoping with sections above and below it and in succession arrested from movement as plates 5 and 74 are moved relatively toward each other; but we prefer, under the circumstance a great change of capacity is desired, to remove the flasks 7 or 7C and replace them with flasks each having suitably different mean or nominal capacity and each adjustable in depth throughout a range of, for example, not greater than three or four times the minimum depth.

Features herein disclosed but not claimed are claimed in our copending divisional application Serial Number 464,326 filed November 3, 1942.

What we claim is:

1. Apparatus for conveying and filling cartons comprising a plurality of flasks, a movable support therefor, gates for said flasks, an operating member for each of said gates, stop structure for engagement by all of said operating members, means for biasing said gates to their flask-closing positions and said operating members toward engagement with said stop structure, cam structure for actuating said operating members to open said gates, structure providing spaces for cartons during their transport in register with said flasks, and a device responsive to presence of a carton in each of the successive pockets to effect movement from said stop structure of the operating members of the successive gates, of the flask with which the carton is aligned, to permit actuation of the operating members by said cam structure.

2. Apparatus for conveying and filling cartons comprising a flask, a rotatable support for said flask, structure providing a space for transport of a carton for filling from said flask, a gate for said flask, a gate-control member carried by said support for movement in one or the other of two paths, means biasing said control member for movement in one of said paths to maintain closure of said gate, cam structure cooperative with said control member during movement in the other of said paths to effect opening of said gate at predetermined position of said flask, switch structure yielding to allow said control member to move in said one of said paths, and latching means normally preventing yielding of said switch structure released upon absence of a carton from said space.

3. Apparatus for filling cartons comprising a flask, means for moving said flask along a path, a gate for said flask, a station along said path at which said gate is opened for filling of a carton, a second station along said path at which the flask is refilled, and means intermediate said stations for detecting failure of said gate to close after filling of a carton.

4. Apparatus for filling cartons comprising a

flask, means for moving said flask along a predetermined path, a gate for controlling discharge from the flask into a carton, means for biasing said gate to flask-closing position, a device adjacent said path of movement for opening said gate in opposition to said biasing means, and a second device beyond said first device for detecting failure of said biasing means to reclose said gate when no longer opposed by said first device.

5. Apparatus for filling cartons comprising a flask, a rotatable support therefor, a gate for controlling discharge of the flask, means for biasing said gate to flask-closing position, a gate-control member carried by said support, cam structure for engaging said member to open said gate and hold it open in opposition to said biasing means for filling of a carton from said flask, and means for detecting jamming of the gate comprising structure disposed beyond said cam structure for engagement by said control member in event of failure of said biasing means to reclose said gate.

6. Apparatus for conveying and filling cartons comprising an endless conveyor having spaces for cartons, a member rotatable above said conveyor, a plurality of carton-filling flasks carried by said member, gates individual to said flasks and each associated with a gate-control member, biasing means individual to said gates for closing them, cam structure successively overcoming said biasing means by engagement with the successive control members to open each gate for predetermined range of movement of its associated flask, means responsive to absence of a carton from any of said spaces to prevent said cam structure from overcoming the biasing means of the gate for the flask corresponding with the empty space, and means beyond said cam structure for detecting failure of any of said biasing means to reclose its associated gate by engagement with the associated control member.

7. Apparatus for conveying and filling cartons comprising an endless conveyor for moving a series of cartons, a rotatable support, a plurality of filling snouts depending from said support and circumferentially spaced about the axis of rotation thereof, and means for enclosing each snout in succession by the carton flaps comprising means for bending at least one of the flaps of each carton outwardly and downwardly as the carton approaches alignment with a snout and releasing it after alignment with the snout.

8. Apparatus for conveying and filling cartons comprising an endless conveyor for moving a series of cartons, a rotatable support, a plurality of filling snouts depending from said support and circumferentially spaced about the axis of rotation thereof, means for enclosing each snout in succession by the carton flaps comprising means for bending at least one of the flaps of each carton outwardly and downwardly as the carton approaches alignment with a snout and releasing it after alignment with the snout, and an inclined trackway for lifting each carton with respect to the conveyor when aligned with a snout.

9. A filling machine comprising a rotatable member having flask openings circumferentially spaced about its axis of rotation, means for supplying flask filling material comprising a conduit having an open end disposed above said support in displaced relation to the path of said flask openings, and a chamber surrounding said end of the duct and in part covering the path of said flask openings and having side wall structure extending on opposite sides of the axis of rotation of said member to effect circulation thereon of said material in a path about said open end of the conduit and in part overlying said part of the path of said flask openings.

10. Apparatus for filling cartons comprising a rotatable member, a plurality of flasks depending from said member and having their upper open ends angularly spaced about the axis of rotation thereof, a stationary supply chamber for carton-filling material having its lower end closed by said member, in part overlying the path of the open ends of said flasks, and extending on opposite sides of said axis of rotation so to provide, by rotation of said member, circulation of said filling material within said chamber in a path in part overlying said path of the upper ends of the flasks, and means for moving cartons with their open ends positioned to receive filling discharged from said flasks.

11. Apparatus for filling cartons comprising a rotatable member, a plurality of flasks depending from said member and having their upper open ends angularly spaced about the axis of rotation thereof, a stationary supply chamber for carton-filling material having its lower end closed by said member, in part overlying the path of the open ends of said flasks, and extending on opposite sides of said axis of rotation so to provide, by rotation of said member, circulation of said filling material within said chamber in a path in part overlying said path of the upper ends of the flasks, means for supplying material to said chamber comprising structure confining a mass of said material having an open end adjacent and above said support and displaced from the path of the upper open ends of said flasks, and means for moving cartons with their open ends positioned to receive filling discharged from said flasks.

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