

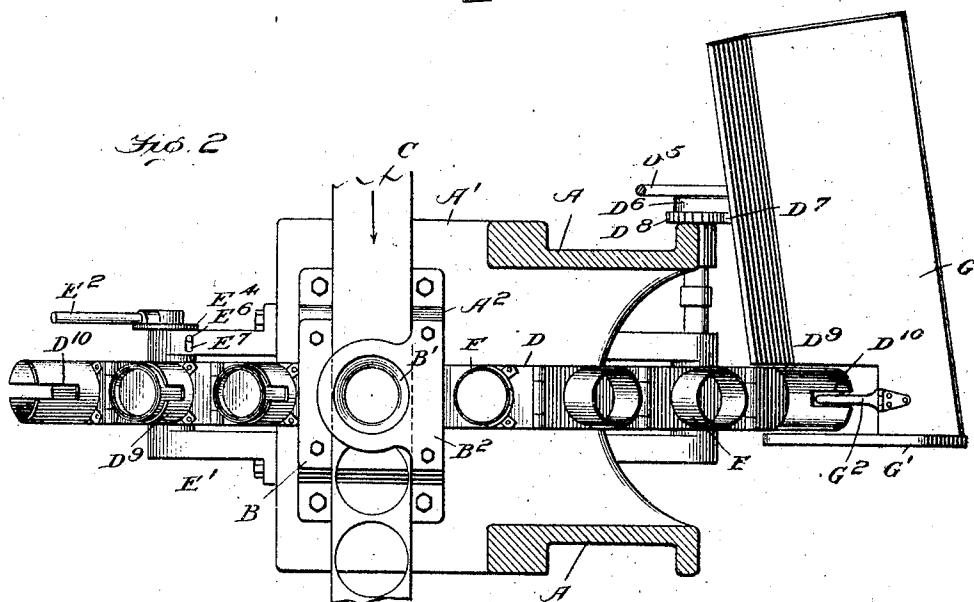
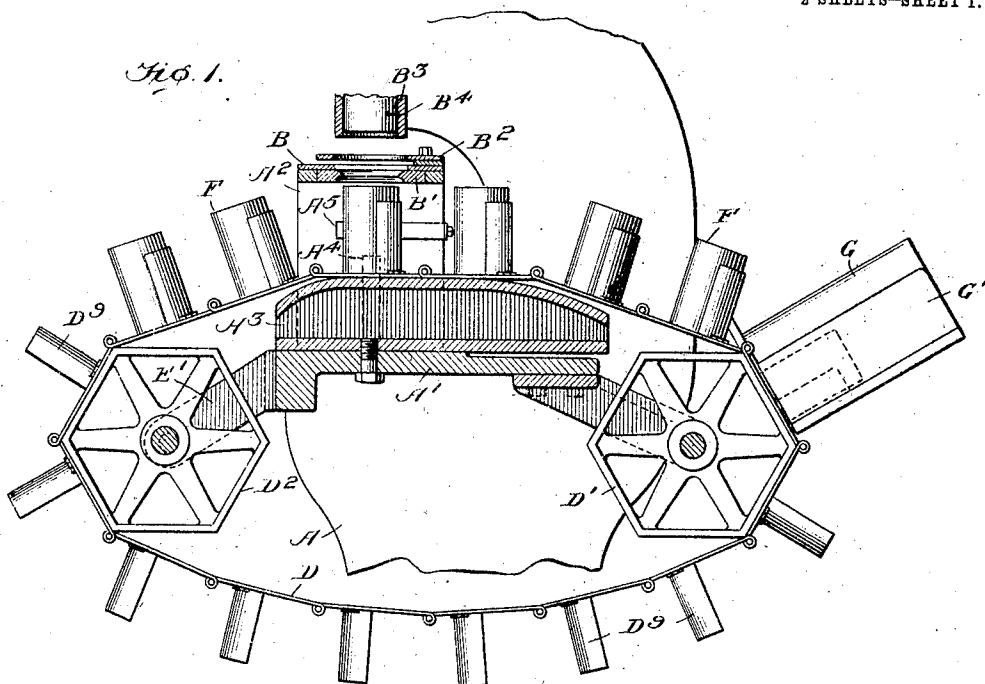
C. F. JENKINS.
 MAKING BOXES OR BOTTLES.

APPLICATION FILED JUNE 25, 1908. RENEWED JULY 14, 1909.

991,509.

Patented May 9, 1911

2 SHEETS—SHEET 1.



Inventor

Charles Francis Jenkins

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Attorney.

Witnesses

Edwin L. Bradford

R. Craig Greene

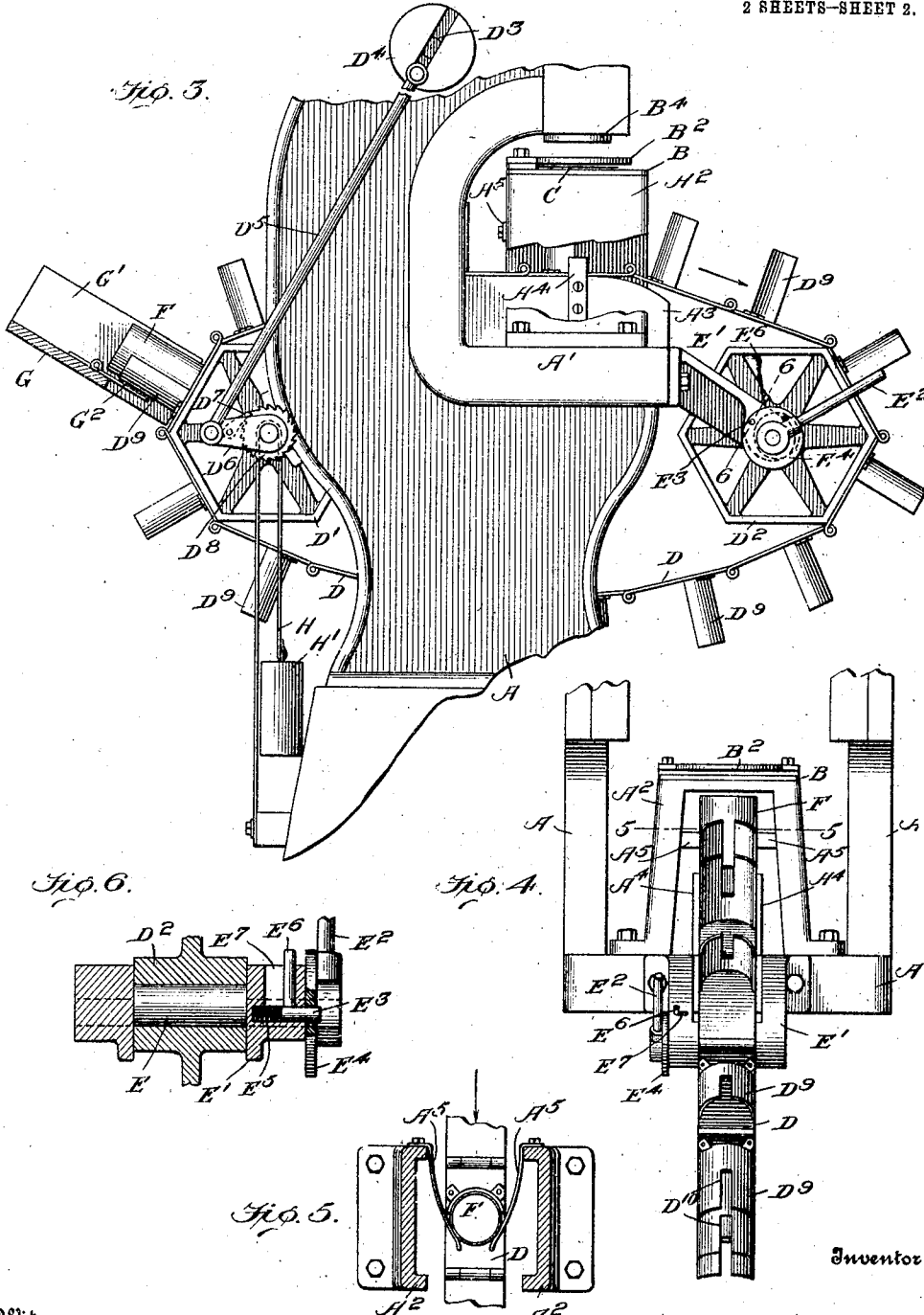
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UNITED STATES PATENT OFFICE.

CHARLES FRANCIS JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR,
BY MESNE ASSIGNMENTS, TO SINGLE SERVICE PACKAGE CORPORATION OF AMERICA, A CORPORATION OF NEW JERSEY.

MAKING BOXES OR BOTTLES.

991,509.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed June 25, 1908, Serial No. 440,367. Renewed July 14, 1909. Serial No. 507,578.

To all whom it may concern:

Be it known that I, CHARLES FRANCIS JENKINS, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Making Boxes or Bottles, of which the following is a specification, reference being had therein to the accompanying drawing.

- 10 The principal object of this invention is to provide automatic devices for presenting open cylindrical boxes or bottles accurately in position for receiving bottoms, and to this end an indefinite series of bottle bodies
15 advancing step by step halts at such intervals that each bottle body rests for a moment while it is provided with a bottom, means being provided for securing accuracy of position during the interval of rest.
- 20 For illustration, the invention is shown as embodied in apparatus for making paper milk bottles, and in this special art the bodies of the bottles are usually made up of spirally wound paper strips, and the bottoms are paper disks drawn in dies to provide each with an integral, down-turned
25 marginal flange in the form of a short cylinder snugly fitting the interior of the body. It is, however, obvious that the invention is
30 not necessarily limited to making bottles of paper, nor by the use that is made of the completed bottles, or boxes, as they may be called if used for solids instead of liquids.

- 35 In the drawings, Figure 1 is a side elevation of the principal portion of a machine embodying my invention. Fig. 2 is a plan view of the same apparatus. Fig. 3 is an elevation looking from the side opposite that seen in Fig. 1. Fig. 4 is an end elevation.
40 Fig. 5 is a section on the line 5-5, Fig. 4. Fig. 6 is a section on the line 6-6, Fig. 3.

- In these figures, A represents the frame of an upright die press provided with a horizontal bed A' from which rises a rigid die support A², of inverted U-shape, which carries a cutting die B, a forming die B' and a
45 stripper B². Above these parts are mounted a hollow cutting plunger B³ to co-act with the die B, and a forming plunger B' to co-act with the die B' and by its further descent, after its forming action, to force into
50 a bottle the formed bottom which these dies have formed after cutting it from a strip C of paper stock. An endless belt, made up of

a series of hinge-connected plates D passes 55 through the arched die support A² and around the bed A'. It is carried by polygonal pulleys D', D², supported by the frame, the former rotated step by step from a shaft D³ by means of a crank-plate D⁴, pitman 60 D⁵, crank D⁶ mounted loosely upon the pulley shaft, and a pawl D⁷ upon the crank and engaging a ratchet wheel D⁸ rigidly connected with the pulley, the parts being so proportioned and adjusted that each rotation 65 of the shaft D³ advances the belt through a distance equal to the length of one of its plates. The pulley D² is loosely mounted upon a crank or eccentric shaft E mounted in brackets E' fixed to the frame 70 and itself rotated by means of a hand lever E² to move this pulley toward or away from its companion. It is locked in desired position by a bolt E³ urged outward in a way in one bracket and into engagement in one 75 of a series of apertures in a disk E⁴ connected with the lever, by a spring E⁵. The bolt may be disengaged at will by means of a stud E⁶ projecting from the bolt and sliding in a way E⁷. 80

Each plate of the belt is intended to carry a single bottle body F and to stop momentarily with that body accurately in position beneath the forming and inserting plunger B⁴, which, during the momentary rest of the 85 bottle, forms a bottom and forces it into the open end of the bottle body.

For delivering one body to each belt plate, I provide a fixed chute G transverse to the plane of the belt and having one end in close 90 proximity to the pulley D'. The chute is downwardly inclined toward the pulley both in the direction of its length and of its width. Open bottle bodies F are delivered in this chute, by the devices which form 95 them or otherwise, and owing to the double inclination they roll down with one end in close proximity to the belt, the foremost one being arrested, by the stop G', in the medial plane of the belt and with its axis approximately perpendicular to the plane of one 100 of the belt plates. Each of the latter bears, in perpendicular position, a rigid nearly semi-cylindrical forwardly concave wing D⁹, and the bottom of the chute is cut away to 105 permit these to pass. To prevent the foremost body in the chute from falling into this opening, the bottom of the chute is pro-

vided with an upwardly swinging hinged arm G² projecting, along the middle of the opening, toward the pulley, and each wing is slotted at D¹⁰ so that it may not engage this arm in passing. At each advance of the belt, a wing engages the foremost body and carries it forward, the remainder of those in the chute rolling down and bringing another into position.

As the bodies advance to the dies, the plates slide along the upper face of a rigid support A³ bolted to the bed A' and of such height that each body, as it comes to rest directly beneath the dies, is at precisely the right height to have a cup-like bottom forced into its open end by the descending plunger, the thrust of which is supported by the member A³. At this point the plates pass between the guides A⁴, insuring accurate location, and at the same time the bottle body is held closely against the upright wing D⁹ by two light inclined springs A⁵, secured to the member A², and which yield allowing the bottle and wing to pass between them when the belt again advances. These springs are preferably as shown, approximately equidistant from the planes of the upper and lower ends of the wings, and the portions along which each bottle slides, in approaching position beneath the plunger, constantly converge, so that the bottle when it comes to rest is gently but invariably held against both top and bottom of its wing, which is then accurately vertical, the plates being kept exactly horizontal by the fixed plane-faced support A³, and also held exactly in the proper line of travel by the guides A⁴. The part B' insures perfect circular form of the bottle's upper edge, and thus the practically perfect registry of bottle and plunger, which is indispensable with a high speed machine using thin paper stock, is secured. After receiving their bottoms, the bottles are successively discharged as the wings pass around the pulley D² and may be received by paraffining devices, not shown.

As this apparatus operates at somewhat high speed there is danger that momentum of the parts may prevent the bottle from registering with the dies with that accuracy which is essential, and for this reason a constantly acting friction brake is applied to the shaft of the pulley D'. As shown, this brake may be a simple strap H held against the shaft by a heavy weight H'.

In the particular machine shown, the bottles are of such height as to contain a pint, but if it be desired to make with the same machine bottles containing a quart, the support A³ may be removed and the belt be permitted to drag over the bed A', the pulley

D² being moved outward by the lever E² to compensate the loosening of the belt.

What I claim is:

1. In apparatus of the class described, the combination with an endless belt provided with rigid perpendicular wings adapted to engage bottle bodies near both top and bottom of their rear sides and compel them to advance, with the belt, to closure inserting devices, of spring stops arranged at one point in the path of the wings, between the planes of their upper and lower ends, upon opposite sides of said path, to press the bottles accurately against the wings; the portions of the springs along which the bottles slide in passing to said devices constantly converging forwardly, substantially as set forth.

2. The combination with belt pulleys and an endless belt borne thereby and adapted to carry bottle bodies, of a plunger adapted for forcing bottoms into bottles carried by the belt, means in line with the plunger for supporting the bottle-carrying fold of the belt, at different distances from the plunger, against the plunger's thrust, and means for varying the separation of said pulleys to compensate changes in the position of the point of the fold's support.

3. The combination with a bottle carrying belt provided with forwardly concave wings perpendicular to the belt, of an inclined chute transverse to the end portion of the path of said wings, cut away to allow the wings to pass, and provided with a stop in position to arrest the foremost body in the chute in the path of the wings, and an arm for supporting said foremost body in position, the wings being slotted to pass said arm.

4. The combination with a bottom inserting plunger, of an endless belt provided with forwardly concave wings for carrying bottle bodies beneath the plunger, springs below the plunger, projecting into the path of bottle bodies carried by the belt and between the planes of the upper and lower ends of said wings, and having the portions along which each bottle slides in approaching alinement with the plunger constantly converging, and means for advancing the belt step by step to bring the bodies to rest in succession between said springs and in alinement with the plunger.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES FRANCIS JENKINS.

Witnesses:

R. CRAIG GREENE,
CHAS. W. BLACKWOOD.