

F. E. BEAM.
MACHINE FOR PACKING ARTICLES OF PAPER BOARD AND THE LIKE.
APPLICATION FILED DEC. 24, 1917.

1,313,573.

Patented Aug. 19, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

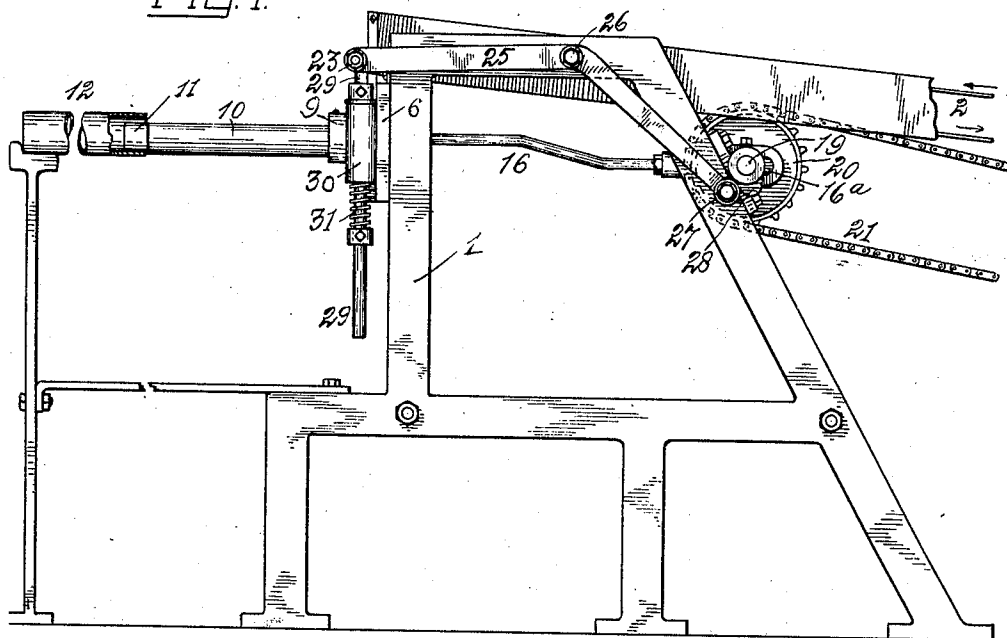
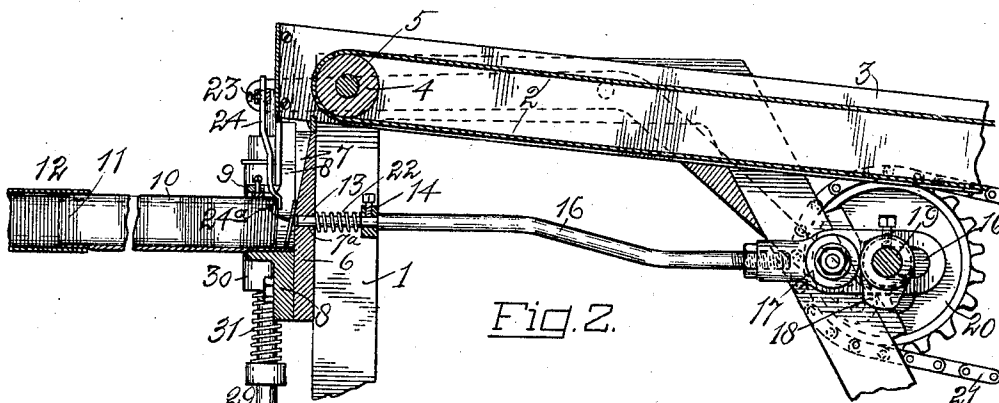


Fig. 2.

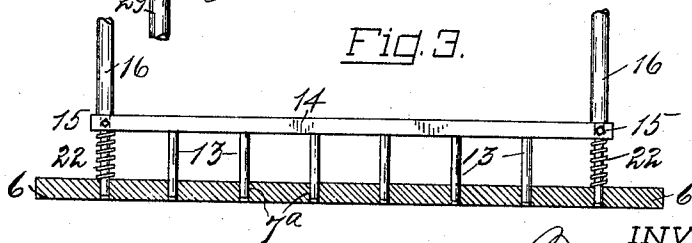


Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 4.

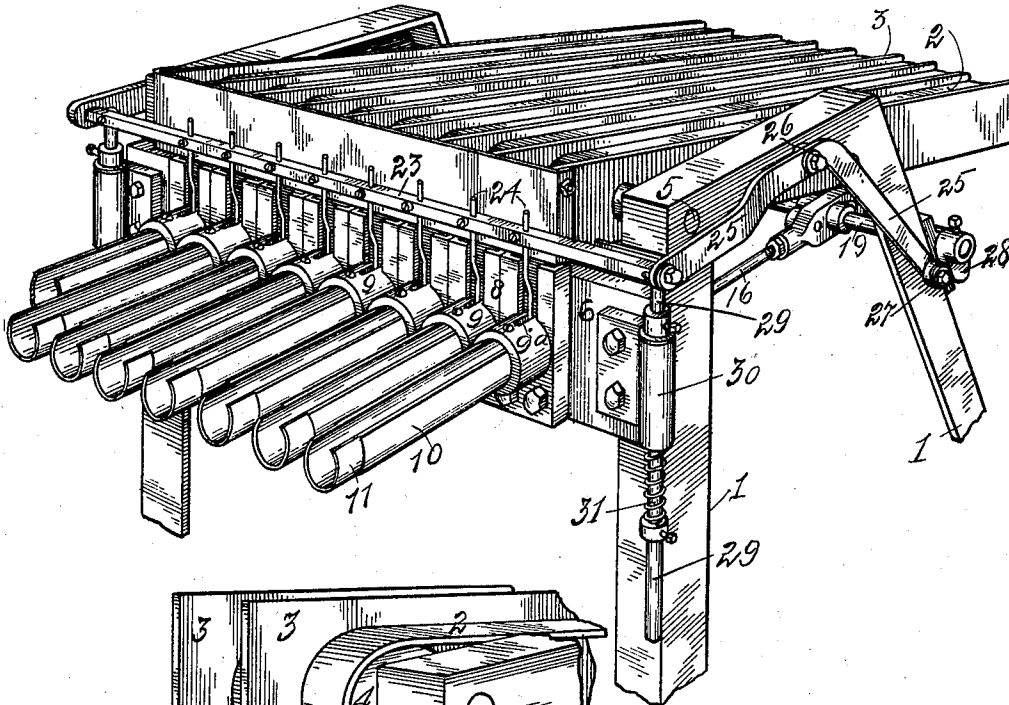
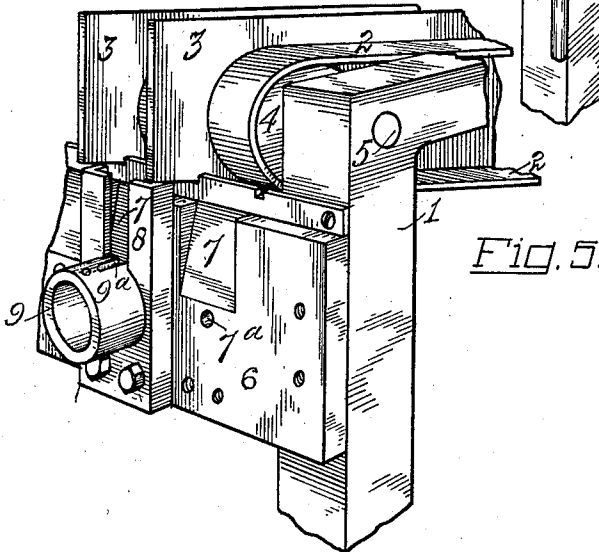


Fig. 5.

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UNITED STATES PATENT OFFICE.

FRANK E. BEAM, OF TOLEDO, OHIO.

MACHINE FOR PACKING ARTICLES OF PAPER-BOARD AND THE LIKE.

1,313,573.

Specification of Letters Patent.

Patented Aug. 19, 1919.

Application filed December 24, 1917. Serial No. 208,665.

To all whom it may concern:

Be it known that I, FRANK E. BEAM, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Machines for Packing Articles of Paper-Board and the like; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

In the manufacture of disks formed of paper board or similar fabric and which are used as milk bottle stoppers or caps, as well as in the production of similar articles, it is frequently required that the articles be packed in long tubes for convenience in handling, in transportation, and for economy of space. My machine is designed to cheaply, rapidly and accurately perform the operation here indicated.

To these ends, my invention consists of the mechanisms and devices hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a side-elevation of my machine; Fig. 2, an enlarged view of the discharge-end of my machine, partly in section; Fig. 3, a top plan-view of the punch-bar and punches hereinafter referred to; Fig. 4, a perspective view of the discharge-end of my machine on an enlarged scale, and Fig. 5, a perspective view on an enlarged scale of a portion of the discharge-end of my machine with parts removed to more clearly illustrate certain parts which are covered in the other views.

Like letters and numerals of reference indicate like parts throughout the drawings.

In the drawings, 1 is a stout frame upon the top of which travels a series of endless aprons or belts 2 separated by thin stationary strips 3. These belts travel over a roller or elongated pulley 4 on shaft 5, journaled in the side-members of the frame of the machine at one end, and over corresponding driving roller or pulleys at the other end of the machine—not shown. These aprons or belts are designed to receive from a machine for printing and cutting the disks of the kind referred to, such a machine being illustrated in my application for a patent filed

simultaneously herewith, Serial Number 208,664. Across the discharge-end of the frame of the machine is a bar 6 having a series of recesses 7 corresponding in number and arrangement with the belts 2, the recesses having respectively an inclined wall which forms a chute in operative relation to the corresponding belt 2, the top stretch of which discharges the disks into the recesses 7. Secured to the front of the bar 6 in operative relation to each of the recesses 7 is a box-like guide-piece 8, the interior of which coincides with the recess 7. Each guide-piece 8 is provided with a short horizontal tubular projection 9, the bore of which coincides with the bottom of the chamber of the guide-piece. Into the bore of each of these tubular parts 9 is removably secured one end of a metal tubular member 10, slotted along its top, over the outer end of which slotted tube may be slipped, as at 11, the receiving end of a packing-tube 12 composed of stout paper, card-board or the like.

As the articles to be packed are successively dropped from the top of the upper stretch of the belts 2 they fall edgewise through the chute formed by the recess 7 and the guide-piece 8. It is now necessary that the disks be caught and held in upright position and forced flatwise through the tubular guides 10 and into the packing-tubes 12. This result is obtained by means of the mechanism now to be described.

13—13 are push rods the forward ends of which move horizontally through holes 7^a in the bar 6 and in alinement with the tubular pieces 9. These push rods are secured at their rear ends to a horizontal cross-bar 14 to the opposite ends of which are secured, as at 15, cam-rods 16 which carry at their rear ends, respectively, a cam-roller 17 in operative relation to cams 18, on shaft 19, extending across and journaled upon the frame of the machine. This shaft carries a pulley or sprocket-wheel 20 driven by a belt or chain 21 from any suitable source of power. The rear end of the cam-rods 16 are slotted, as at 16^a, the slots receiving the shaft 19 which forms a support for the rear end of the cam-rods. Springs 22 interposed between the cross-bar 14 and the bar 6 hold the cam-rollers 17 pressed constantly against the cams 18. It will be seen that at each rotation of the sprocket 20 the forward ends of the push rods are projected into and withdrawn from the chamber of the guide-

pieces 8. This movement of the several push rods 13 forces forwardly and into the tubular projection 9 any disk which may rest upon its edge in front of the push rods.

5 As the push rods 13 are withdrawn from the chambers of the guide-pieces it is necessary that the disks which have been pushed forward by the push rods be now held against falling backwardly and thus ob-
10 structing the fall from the belt of the succeeding disk. To this end I provide a bar 23 which extends across the end of the machine directly above the tubular projections 9 and which carries a series of stout wire
15 fingers 24 which extend downwardly through slots 9^a in the tubular members 9 and at their lower end are curved, as at 24^a, to form a catch which in its lower position coincides with the advanced position of the push rods
20 13. The bar 23 at each end is supported upon one end of a bell-crank lever 25, fulcrumed as at 26, upon the frame of the machine, the other end of the bell-crank lever carrying
25 cam-roller 27 in operative engagement with cam 28 on shaft 19. 29—29 are guide-rods secured to the opposite ends of the cross-bar 23 and reciprocating vertically in guides 30 se-
cured to the frame of the machine. Compression springs 31 surrounding the guide-
30 rods and interposed between collars on the rods and the guides 30, hold the cam-members 27—28 in operative contact. The cams 18 and 28 are adjustable on their shafts and thus may be positioned and timed relatively
35 to each other in such manner that as the push rods 13 advance to push disks into the tubular projections 9, the pins 24 are lifted far enough to clear the upper edge of the disks. At the instant the push rods 13 be-
40 gin their retreat the bar 23, carrying the pins or fingers 24, is, by the action of the cams 27—28 and the lever 25, lowered into the position indicated in Fig. 2 so that the finger-points 24^a hold the disks from falling
45 backwardly. With the recurring alternate operation of the push rods 13 and the pins 24 the succeeding disks are forced forward step by step until the packing-tubes have received the requisite number of disks. Now
50 the packing-tubes may be quickly removed and replaced by empty tubes without interrupting the operation of the machine.

Having described my invention, what I claim and desire to secure by Letters Pat-
55 ent, is—

1. In a device of the described character a horizontal conveyer-belt, a vertical chute,

said belt being adapted to receive flatwise articles of the kind indicated and to dis- 60 charge the same edgewise into said chute, a horizontal tube connected with the bottom of the chute and arranged to receive in up-
right position such articles, a push rod arranged to move horizontally in the direction 65 of the tube, a retaining finger in operative relation to the tube and to the push rod, and devices for alternately actuating said rod and said finger.

2. In a device of the described character, a frame, a series of spaced conveyer-belts 70 mounted upon the frame, a corresponding series of chutes in operative relation to the belts, a corresponding series of push rods, a corresponding series of fingers, said push
rods and fingers being disposed at an angle 75 to each other, a cross-bar to which the push rods are secured, a cross-bar to which the fingers are secured, and means for oppositely and alternately actuating said bars.

3. In a device of the described character, 80 a frame, a series of spaced conveyer-belts mounted upon the frame, a corresponding series of chutes in operative relation to the belts, a corresponding series of push rods, a corresponding series of fingers, said push
85 rods and fingers being disposed at an angle to each other, a cross-bar to which the push rods are secured, a cross-bar to which the fingers are secured, a pair of cams operatively connected with said bars, and means for the
90 relative adjustment of said cams.

4. A machine of the described character comprising a frame, a series of spaced conveyer-belts mounted upon the frame, a cor- 95 responding series of chutes in operative relation to the belts, each of said chutes having a tubular discharge orifice, means for operatively connecting with said discharge
orifices a suitable receptacle, a series of push rods corresponding to said chutes, a series of 100 fingers corresponding to said chutes, said push rods and fingers being disposed at an angle to each other, a cross-bar to which the
push rods are secured, a cross-bar to which the fingers are secured, a pair of cams ad- 105 justable relatively to each other, and operative connections between the cams and said cross-bars.

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

FRANK E. BEAM.

Witnesses:

GERTRUDE BRACKER,
JOHN H. JAMESON.