June 29 , 1926. 1,590,567

G. C. EKSTRÖM

MEANS FOR BRINGING FOLDED OUTER BOXES FOR PUSH BOXES AND THE LIKE INTO OPEN POSITION

Filed Nov. 3, 1923

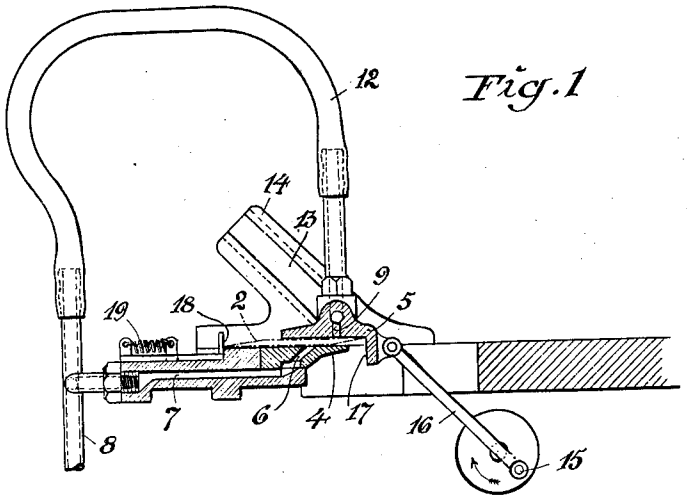
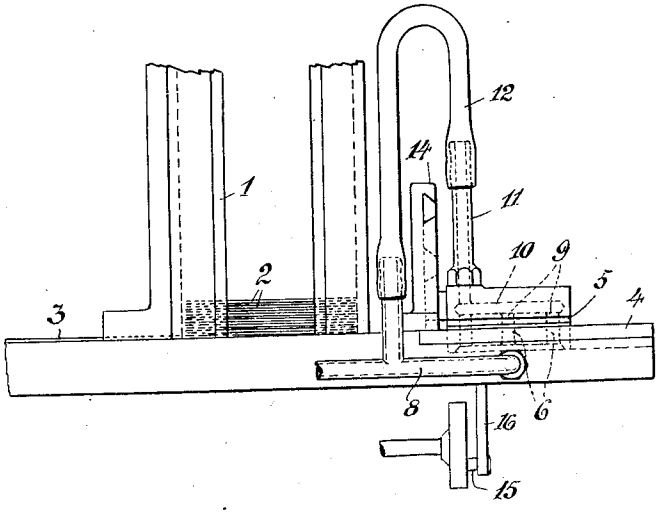


Fig. 1

Fig. 2



Inventor

G. C. Ekström

By Marks & Clark

Attys.

Patented June 29, 1926. 1,590,567

UNITED STATES PATENT OFFICE.

GUNNAR CHRISTIAN EKSTRÖM, OF STOCKHOLM, SWEDEN, ASSIGNOR TO AKTIEBOLAGET GERH. ARENNS MEKANISKA VERKSTAD, OF STOCKHOLM, SWEDEN, A CORPORATION OF SWEDEN.

MEANS FOR BRINGING FOLDED OUTER BOXES FOR PUSH BOXES AND THE LIKE INTO OPEN POSITION.

Application filed November 3, 1923, Serial No. 672,657, and in Sweden November 4, 1922.

Outer boxes for push boxes for cigarettes or other articles are manufactured, according to one method, in such manner, that a string of cardboard or the like, after the cutting of longitudinal grooves, is folded transversally along the said grooves, the edges of the string being then pasted together and the string subjected to great pressure, until the paste has got dry, whereupon the string is cut into pieces of such a length, that the same, brought into open position, constitute outer boxes, into which the inner boxes may then be pushed. The present invention relates to a device for mechanically bringing the folded boxes, manufactured either in the manner just stated or in any other manner, into open position. According to the invention the folded outer box is subjected to a suction on both sides so that the parts of the box are moved from one another. Although the said suction may be sufficient for the opening of the box, the box, besides, is subjected to a pressure transversally, which pressure, after the box has been partially opened by the suction, alone may prosecute the opening operation.

Fig. 1 of the accompanying drawing shows in a side view, partially in vertical section, a device arranged in accordance with the invention and adapted to open the boxes by suction in combination with pressure transversally of the box. Fig. 2 shows the device viewed from the left hand side in Fig. 1.

From a magazine 1, containing folded outer boxes 2, the boxes are moved one after the other by a slide 3 into the space between a table 4 and a plate 5. A folded outer box 2 located in the said space is shown by dotted lines in Fig. 1. In the table 4 suction-channels 6 are provided, which communicate with a common channel 7 and a pipe 8, leading to a pump, not shown. Also in the plate 5 suction-channels 9 are provided, which through a channel 10, a pipe 11 and a hose 12 communicate with the said pipe 8. Plate 5 is fixed to or made integral with a slide 13, which is movable in a dovetail shaped guide 14, extending upward in an oblique direction over the table 4. The plate 5 is moved in the said guide by a crank 15 and a link 16. The said crank is rotated mechanically in any suitable manner. During the upward movement of the plate 5 the box 2 is subjected to suction at its bottom and top sides. The bottom part of the box is held stationary at the table 4 by the suction, while the top part is moved upwards by the plate 5, so that the box is opened.

According to Fig. 1 the plate 5 has a downward projecting flange 17. During the movement of the plate upwards in the oblique direction the flange 17 is forced against the right edge of the folded box, while the left edge of the box bears against an abutment 18, not shown in Fig. 2, so that the plate 5 forces the box 2 into its open position by means of the flange 17. Owing to the fact that the side parts of the box are swung upwards in arc-shaped paths, while the box is forced into its open position, and the plate 5 together with the flange 17 is moved along a straight path, the abutment 18 must be yieldable in order to permit the box to move for a short distance toward the left during the opening operation. In Fig. 1 the said abutment consists of an angular suitably guided piece 18 which by a spring 19 is normally held against an offset provided in the table.

While the outer box is held in open position by table 4, plate 5, flange 17 and abutment 18, the inner box is pushed into the same. After the inner box has been put into the outer box, the push-box is moved away for instance by the subsequent folded outer box, which by the slide 3 is pushed through a slot, provided between the table 4 and the guide 14, and is placed into the position shown by the dotted lines in Fig. 1. The parts are then returned to the shown starting position for bringing the box last mentioned into opened position. The invention may, evidently, be carried out in many other ways than the one illustrated in the drawing. For instance, a sucking member moved straight upwards may be used. It is sufficient, that the said member opens the closed box only for an inconsiderable distance. A piston or slide moved horizontally toward the left in Fig. 1 will then be able to force the box, bearing against an abutment, into its fully open position. The device may be used also for opening folded

boxes of other types than the one described.

I claim:

In a device for bringing folded outer boxes for push boxes into open position the combination of a stationary sucking member supporting the box, an abutment for one of the outer folds of the box provided on the said member at right angles to the same, a second sucking member movable upwards and inwards above the stationary sucking member, and an abutment for the opposite outer fold of the box provided on the second sucking member and extending downwards at right angles to the same, the said abutments being adapted to hold the opened box in a square condition for the introducing of the inner box.

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

GUNNAR CHRISTIAN EKSTRÖM.