April 17, 1934. E. A. ZIMNIAK 1,954,908

DEVICE FOR OPENING AND FOLDING OF OUTSIDE BOXES

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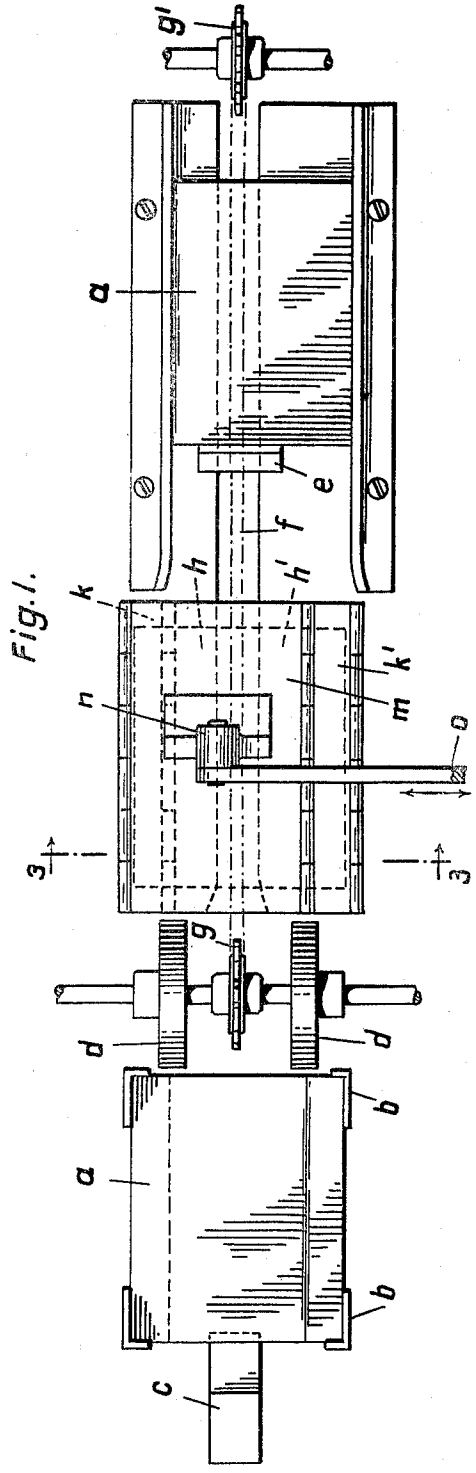


Fig. 1.

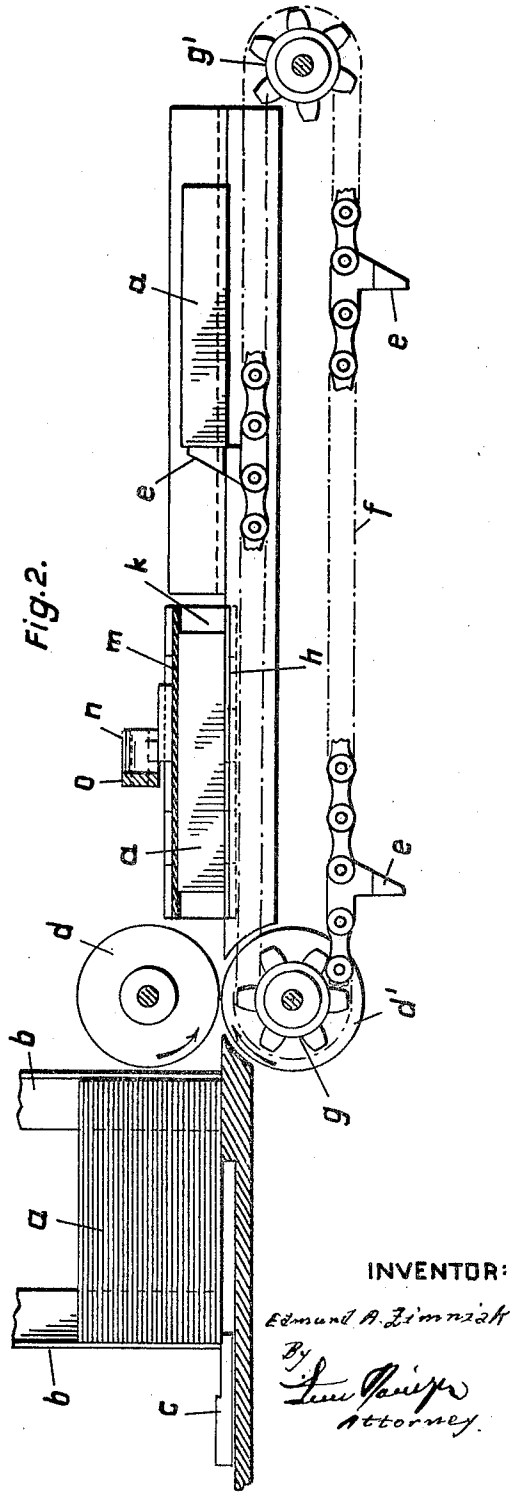


Fig. 2.

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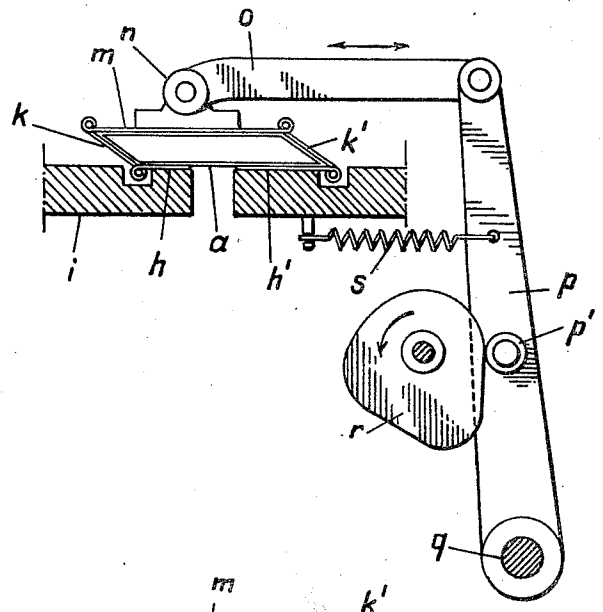
Attorney.

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Fig.3.



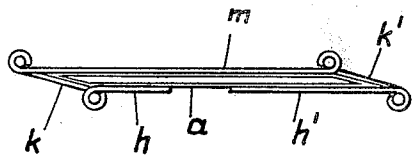


Fig.4.

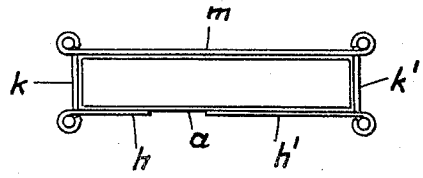


Fig.5.

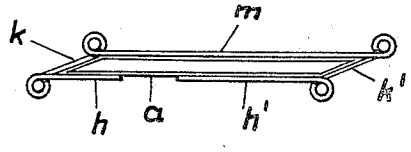


Fig.6.

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Patented Apr. 17, 1934 1,954,908

UNITED STATES PATENT OFFICE

1,954,908

DEVICE FOR OPENING AND FOLDING OF OUTSIDE BOXES

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Application January 6, 1933, Serial No. 650,557
In Germany January 14, 1932

5 Claims. (Cl. 93—53)

The invention relates to a device for setting up folded boxes and the like intended for push cases.

It has been suggested to effect erection and folding of such boxes by means of hinged levers which are caused to bear against the sides of the outside box and to set up the same while rocking about their hinges, but the movements of such levers did not correspond sufficiently to those of the sides of the box and the latter was subject to injurious pressure.

An object of the present invention is to avoid this inconvenience.

Another object of the invention is to support the box around substantially its entire periphery while it is being set up.

A further object of the invention is to provide a setting up device which can operate at high speed without danger of damaging the box.

According to the present invention these objects are achieved by providing a hinged setting up frame having sides substantially coincident with the sides of the box and connected by hinges substantially coincident with the corners of the box, whereby the box presents a chamber exactly circumscribing the box.

The drawings show an embodiment of the invention by way of example and represents in—

Fig. 1 a diagrammatical top plan view,

Fig. 2 a diagrammatical side elevation of an embodiment of the invention,

Fig. 3 a cross section on line 3—3 of Fig. 1, on an enlarged scale;

Figs. 4, 5 and 6 show the outside box in the device in its various operative positions of erection and folding.

The outside boxes made and compressed into a flat body a in a well-known manner lie above one another as a pile in the piling appliance b and the lowermost in any instant is advanced by a ram c in a way per se known. The outside box is then brought between two revolving pairs of rollers d and d^1 by which it is seized in order to be transmitted to the opening appliance. After having been opened, the outside box is seized by a catch e and further advanced. A plurality of catches of this type are secured to an endless chain represented by a chain-dotted line f in the drawings and which runs on two sprocket wheels g, g^1 one of which is keyed to the same shaft as the rollers d^1.

The appliance intended for opening and folding the outside box essentially consists in a frame formed of four sides or walls hinged to one another and enclosing the outside box to be opened. The lower wall comprises two parts h and h^1 which are rigidly connected to a table i (Fig. 3) and separated from each other by a slot leaving free passage to the catches e. The two sides k and k^1 are connected to the said parts h and h^1 by means of hinges and the top edges of the sides k, k^1 are also hinged to one another by means of the top plate m. To the said top plate m is pivoted by means of a pin n a link o, the other end of which is attached to a lever p. This lever p is revoluble about a pin q (Fig. 3) and is rocked by a cam r against which it bears by means of a pin or roller p^1. A spring s causes the lever p to reliably bear against the cam r.

The rollers d, d^1 push the outside box into the chamber formed by the plates h, h^1, k, k^1 and m which chamber, when receiving the said outside box, occupies the position shown by Fig. 4. As soon as the outside box has been placed in the chamber, the latter is erected by the cam so that the two side plates k, k^1 are gradually brought from the position shown in Fig. 4 into the position obvious from Fig. 5. When the chamber is further moved by the mechanism o, p, r the outside box is folded down in the opposite direction, viz. the appliance with the outside box therein is brought into the position Fig. 6 and finally back into the middle position obvious from Fig. 5. This having been done the operation has been completed.

Subsequently the outside box a is seized by the catch e and further advanced in order to be transmitted to the filling station where it is further handled in the well-known way. In order that the chain f may run continuously the catches e are preferably so spaced that, until the next catch is caused to seize, there is sufficient time for the erecting and folding operations described.

The device is susceptible of structural modifications as compared with the accompanying drawings. For instance, the plates forming the chamber may be recessed or composed of a plurality of sections or the alternating movement of the chamber may be accomplished by another mechanism such as a crank gear etc.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A machine for setting up folded boxes and the like comprising a hinged frame having sides substantially coincident with the sides of the box and connected by hinges substantially coincident with the corners of the box, means for anchoring one side of said frame, and a reciprocatory member engaging another side of the frame.

2. A machine for setting up folded boxes and the like comprising a hinged frame having sides substantially coincident with the sides of the box

and connected by hinges substantially coincident with the corners of the box, means for anchoring one side of said frame, a reciprocatory member engaging another side of the frame, and means for advancing boxes into and through the frame, said means being movable through a gap in the anchored side of the frame.

3. A machine according to claim 2, in which the reciprocatory member has an amplitude of reciprocation sufficient to rock the hinged sides through an angle approximating two right angles.

4. A machine for setting up folded boxes and the like comprising a table, a hinged frame having sides substantially coincident with the sides of the box and connected by hinges substantially coincident with the corners of the box, said frame being anchored at its lower side to the table by the hinges of said side engaging grooves in the table, a pivot on the side opposite the anchored side of the hinged frame, and reciprocatory drive means jointed to the said pivot.

5. A machine according to claim 1, in which the reciprocatory member is operated by a cam to collapse the hinged frame for reception of a folded box, then to turn the hinged sides through an angle sufficient to reversely fold the box, and finally to turn the hinged sides backwards to set up the box.

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