

Oct. 4, 1932.

W. A. MORRIS

1,880,460

MACHINE FOR FORMING CARTONS

Filed Sept. 13, 1929

2 Sheets-Sheet 1

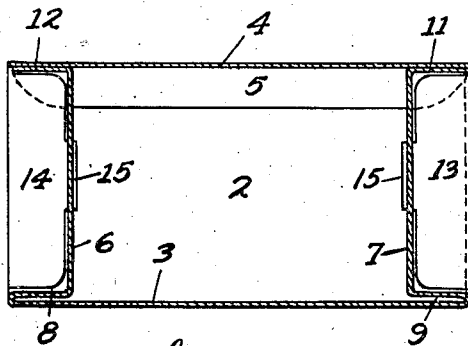
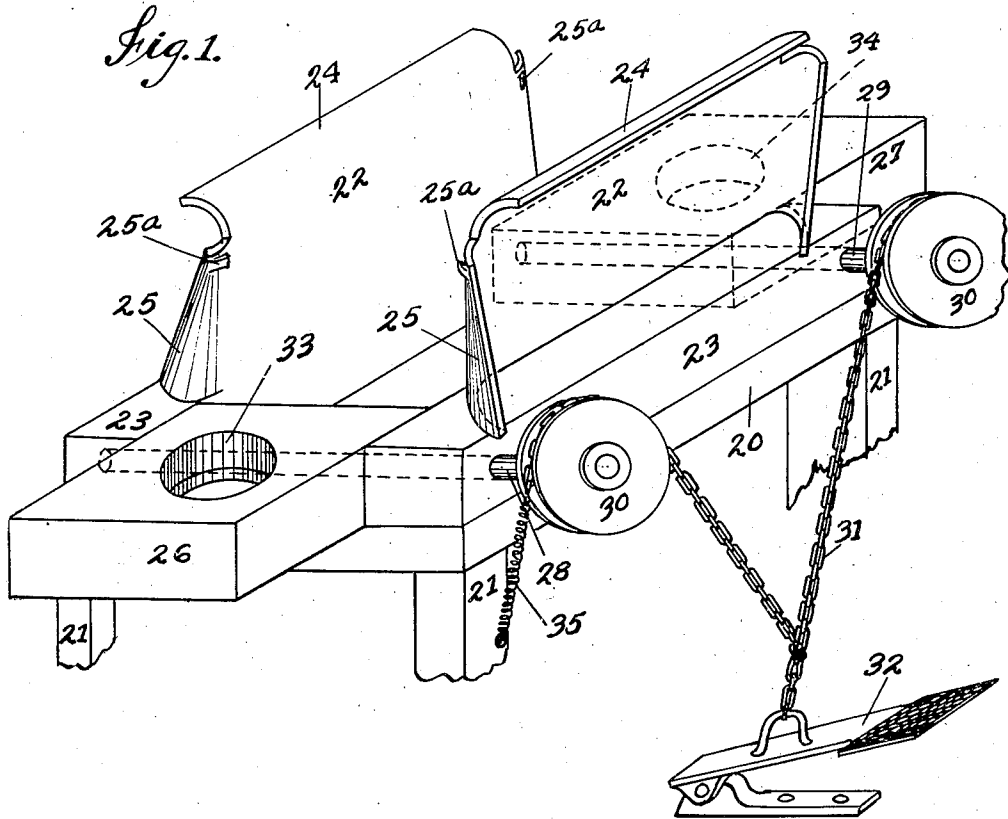


Fig. 2.

INVENTOR.

Warren A. Morris

BY

Allen S. Allen

ATTORNEYS.

Oct. 4, 1932.

W. A. MORRIS

1,880,460

MACHINE FOR FORMING CARTONS

Filed Sept. 13, 1929

2 Sheets-Sheet 2

Fig. 5

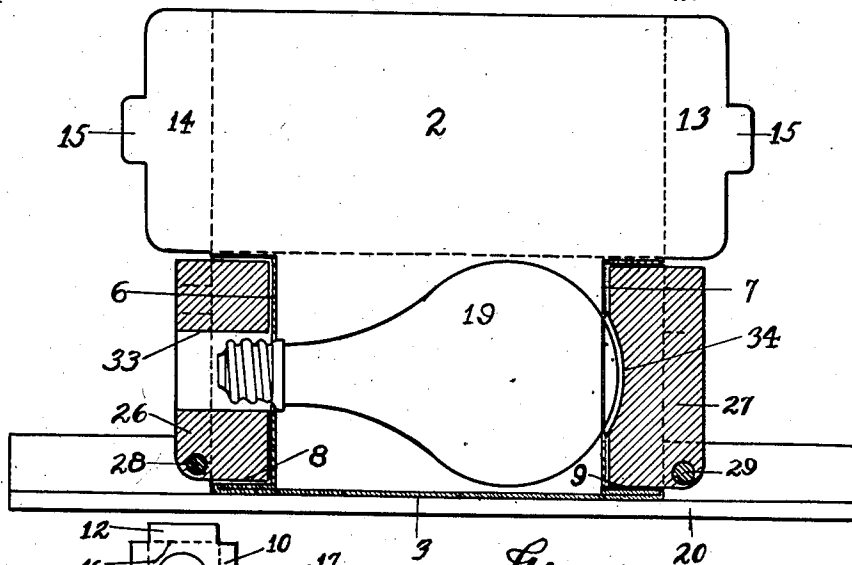
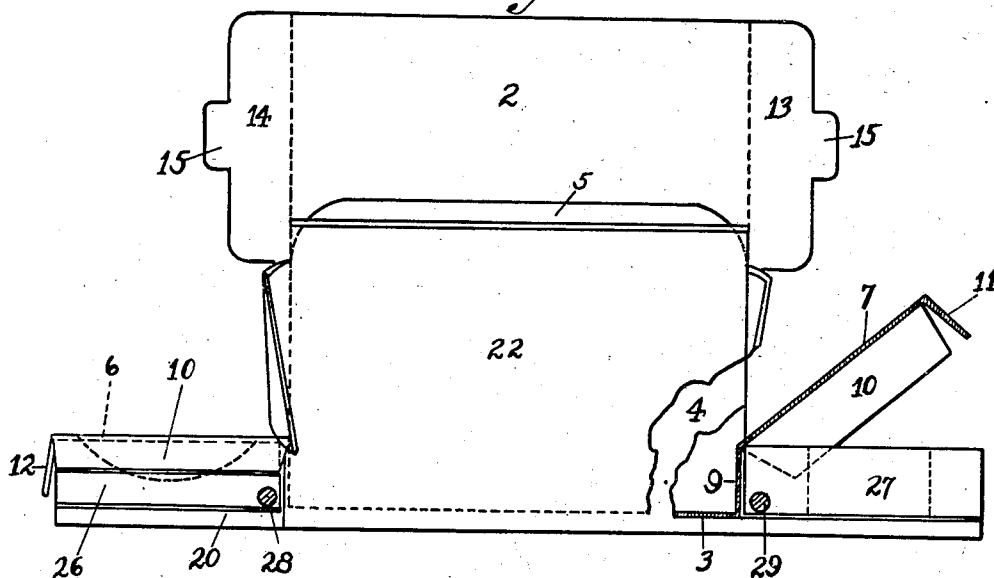


Fig. 4

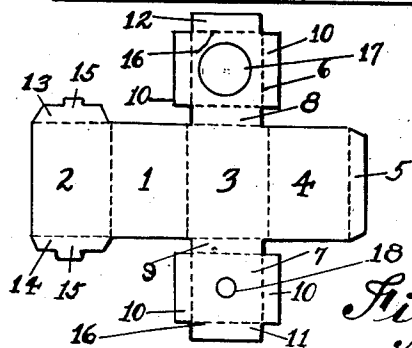


Fig. 3

INVENTOR.

Warren A. Morris

BY

Allen Allen

ATTORNEYS.

UNITED STATES PATENT OFFICE

WARREN A. MORRIS, OF WYOMING, OHIO, ASSIGNOR TO THE RICHARDSON COMPANY,
OF LOCKLAND, OHIO, A CORPORATION OF OHIO

MACHINE FOR FORMING CARTONS

Application filed September 13, 1929. Serial No. 392,451.

The primary object of my invention is the provision of a mechanism to assist in the rapid setting up from blanks and the filling of cartons for fragile objects, namely cartons of a type in which integral, articulated series of flaps form recessed platforms which support a fragile article, and which are a part of the carton itself. As will hereinafter be fully described the setting up of these cartons and of analogous types present special problems, the solution of which comprises the ancillary objects of my invention. These objects will be pointed out hereinafter or will be apparent to one skilled in the art upon reading these specifications. Reference is made to the accompanying drawings.

Figure 1 is an isometric view of a simple form of my machine.

Figure 2 is a longitudinal section of a platform carton of a type which I shall use as exemplary in explaining the construction and use of my machine.

Figure 3 is a representation of the blank from which the carton of Figure 2 is to be set up.

Figure 4 is a sectional view through my machine showing the platform-folding members in upraised position.

Figure 5 is a side elevation of my machine with a portion cut away, showing the blank inserted in the machine before the operation of the platform folding members.

The several drawings are semi-diagrammatic in parts, and all but the essential portions thereof have been omitted. Thus, I have not shown a machine equipped with feeds, plungers and the like, for the complete automatic setting up of cartons. The type of machine which I show is one adapted for the facilitating of a rapid semi-manual operation of setting up one type of carton. This type, however, embodies means for setting up the main portion or body of the carton and the folding of the recessed panels into position. These means are the subject matter of this invention.

My machine, embodying the said means, is suitable for the setting up of many types of platform cartons, and is not restricted to types in which the platforms are an integral

part of the carton blank. In describing the construction and operation of my machine in connection with the carton shown in blank form in Figure 3, I desire it to be understood that my machine is not limited thereto, but is equally adapted to the setting up of glue-types of cartons, such as, for example, but without limitation, the carton of my copending application Serial No. 394,444 filed Sept. 23, 1929, and other types.

The carton of Figure 3, forms the subject matter of my copending application Serial No. 373,123, filed June 24, 1929. The blank comprises a bottom member 1, side members 2 and 3, and a top member 4 provided with a tuck end flap 5. These members are articulated together, score lines being indicated by dotted lines. To the side member 3 are articulated, by means of platform supporting flaps 8 and 9, platforms 6 and 7. These platforms are provided with side flaps 10 and end flaps 11 and 12, all of a width proportioned to the recessing of the platforms as determined by members 8 and 9. The side member 2 has at its ends two flaps 13 and 14, provided centrally of their outer sides with comparatively narrow locking tongues 15. The flaps 13 and 14, when the box is set up, are designed to fold over the flaps 11 and 12. In the line of score whereby flaps 11 and 12 are articulated to the platforms 7 and 6, occur slits or cut-lines 16 to receive the locking tongues 16. The assembly of the carton will be clear from the section, Figure 2. When the locking flaps are in place the carton is held in fully assembled form even when the lid is open, which is not the case with any other unpasted platform carton formed of a single blank. The platforms may have appropriate holes 17 and 18, where desirable, to hold such a fragile object as an incandescent lamp, the hole 17 holding the bulb end thereof while the hole 18 engages the screw base, permitting the testing of the lamp without its removal from the carton. While the contents of such a carton are not essential in holding it in set up relationship, they are of assistance to that end inasmuch as they resist any movement of the platforms inwardly such as would permit the disengagement of the locking tongues 15 from the slots

16. The carton is closed after filling like any other tuck end carton, the tuck end flap 5 seating between the side member 2 and a pair of the flaps 10.

5 This carton may be set up and filled by hand with a fair rate of speed; but the purpose of the embodiment of my invention which I shall now describe is to provide mechanical means for performing the initial forming operations, comprising the setting up of the
10 body portion of the carton, and the correct positioning of the recessed platforms. In this embodiment of my invention, a suitable base 20 is mounted at a convenient height for the operator as by being mounted upon a table, or upon the legs 21. Two side members are mounted in such a way as to extend upwardly from the base so as to hold the sides of the carton body in the desired rectangular
20 relationship. The side members are conveniently formed of pieces of sheet metal 22, and may be mounted upon elongated blocks 23 which are affixed to the base. The members 22 are rolled or turned over at their upper
25 edges 24 to facilitate the initial setting up operation. The carton blank of Figure 3 is placed above the two side members of the machine with the side member 3 therebetween. The blank is then depressed forcibly until the
30 side member 3 of the carton lies along the base, the bottom member 1 lies along the rear side member of the machine, and the top member 4 lies along the front side member of the machine. These several members of the
35 carton blank will then lie at right angles to each other; but the side member 2 will not be bent over, but will extend upwardly in the same plane as the bottom member 1. The blanks may of course be fed into the machine
40 automatically, and the depressing of the blank also accomplished automatically as by a plunger. It will be possible also in a modification of the structure to hinge the side members 22, swing them downward, position
45 the blank, place a form above it, then bring up the side members, bending the blank to shape, and finally to withdraw the form. These modifications and others do not change the spirit of scope of the invention of this application. In the form shown, the machine
50 side members 22 are fixed in position with reference to the base, and a blank is placed above them by hand, and depressed between them by hand. Machines are in common use
55 which will take a carton blank, bend it to the shape of a rectangular carton and glue the several parts. There has been to my knowledge, however, no mechanism hitherto devised to set up into a carton body an articulated
60 integral platform in proper recessed relationship.

I accomplish the setting up of the platforms by providing members 26 and 27, suitably pivoted with reference to the base, and
65 adapted to swing from the horizontal to the

vertical. In their horizontal position their inner or opposed edges, as shown in Figure 5, are separated by a distance only slightly greater than the length of the carton. Their horizontal upper surfaces are separated from
70 the base by a distance equivalent to the width of the platform supporting flaps 8 and 9. The result of depressing a blank between the side members 22 is to cause these flaps to be bent at right angles to the blank member 3, and to lie along the opposed sides of the mem-
75 bers 26 and 27.

These members are conveniently in the form of blocks, pivoted on shafts 28 and 29 which may extend through the members 23, and which may be equipped with wheels 30 to which are attached the ends of a bifurcated chain 31. This chain may run to a foot
80 treadle 32 as a convenient means of power actuation. The wheels are fast on the shafts, and the shafts are fast in the blocks 26 and 27. The working of the foot treadle by an operator will result in the swinging of the blocks from horizontal to vertical position.

When the blocks 26 and 27 are in vertical
90 position, their inner opposed sides correctly position the platforms recessed within the carton body, and their lower edges are separated from the base a distance such as will give proper clearance to the blank member
95 3 and the platform supporting flaps 8 and 9, which are superposed thereon. This is clearly shown in Figure 4. The mechanical movement of the blocks successfully positions
100 the platforms, which is a difficult operation because a horizontal thrust would tear or damage the blank. This, in turn, is because the platform must not only be thrust inwardly but downwardly at the same time so
105 that the flaps 8 and 9 will pivot about their line of articulation with the blank member 3. Otherwise the flaps 8 and 9 will be torn loose.

The side edges of the members 22 are also
110 turned over or rolled as at 25 to facilitate the bending over of the flaps 10 on the platforms as they are swung into position; and the rolled portions have fingers 25a which serve the combined purpose of guiding the
115 platforms and flaps into the carton body, and of holding them there when the blocks 26 and 27 return to horizontal position under the influence of springs 35 when the treadle is released. The blocks are hollowed out as
120 at 33 and 34 to accommodate the ends of an incandescent lamp bulb 19 which project through the holes 17 and 18 in the platform.

In using my machine, an operator takes a blank in one hand and depresses it between
125 the upright members 22 until it occupies the position shown in Figure 5. Then with the other hand she places a lamp within the carton body, as shown in Figure 4. Operating the foot treadle she swings the platforms
130 into position by means of the blocks 26 and

27. Then she releases the treadle, whereupon the blocks return to horizontal position. The platforms, however, remain in place because they are held on one side by the lamp and on the other by the fingers 25a. Next the operator, first turning over the flaps 11 and 12, if necessary, turns over the tuck end flap 5 on top of them, and then the side member 2 over all. Finally she turns the locking flaps 13 and 14 beneath the platforms 11 and 12 and inserts the tongues 15 into the slits 16. This she can do because, as indicated, the platform positioning blocks 26 and 27 have swung down out of the way. The completely set up, filled and closed carton is thereupon removed from the machine. These operations may be followed and repeated with great rapidity.

As hereinabove indicated the embodiment of my machine which I have described is a simple form, but embodies my invention. It may be made automatic in operation and may be equipped with automatic feeding and delivery devices. It is capable of modification without departing from the spirit of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a machine for setting up platform cartons, means for holding the body of a carton in set up form comprising parallel forms, and means for positioning platforms recessed therein by an inward and downward motion.

2. In a machine for setting up platform cartons, means for setting up the body of a carton comprising parallel forms, and means for recessing platforms therein, said means having an inward and downward motion.

3. In a machine for setting up platform cartons, means for holding the body of the carton in set up position comprising parallel forms, and swinging plungers coacting therewith to recess platforms therein.

4. In a machine for setting up platform cartons, means for holding the body of the carton in set up position, and swinging plungers coacting therewith to recess platforms therein, and means on said first mentioned means for holding the platforms in recessed position upon the withdrawal of the said plungers.

5. In a machine for setting up cartons, a base and uprights thereon for holding the body of the carton in assembled position, plungers for recessing platforms in said body pivoted to said base, said plungers having an inward and downward motion, and means for moving said plungers.

6. In a machine for setting up cartons, a base and uprights thereon for holding the body of the carton in assembled position, plungers for recessing platforms in said body, said plungers having an inward and

downward motion, and means for moving said plungers, and means on said first mentioned means for holding the platforms in recessed position upon the withdrawal of the said plungers.

7. In a machine for setting up integral platform cartons, means for setting up the body of the carton comprising parallel forms, and means for recessing the platforms therein by an inward and downward motion whereby platform attaching flaps are caused to pivot about their lines of articulation with the body of the carton.

8. In a machine for setting up integral platform cartons, means for setting up the body of the carton, and means for recessing the platforms therein by an inward and downward motion whereby platform attaching flaps are caused to pivot about their lines of articulation with the body of the carton, and means on said first mentioned means for holding the platforms in recessed position upon the withdrawal of the said plungers.

9. In a machine for setting up cartons a base and parallel side members adapted to hold the body of the carton in assembled position, and swinging plungers pivoted to said base adapted to recess platforms therein by swinging from horizontal to vertical, said plungers having a portion to engage the platform and a portion to engage a platform attaching flap, said last mentioned portion swinging from vertical to horizontal whereby said flap is positioned against and parallel to a side of said carton.

10. In a machine for setting up cartons a base and parallel side members adapted to hold the body of the carton in assembled position, and swinging plungers pivoted to said base adapted to recess platforms therein by swinging from horizontal to vertical, said plungers having a portion to engage the platform and a portion to engage a platform attaching flap, said last mentioned portion swinging from vertical to horizontal whereby said flap is positioned against and parallel to a side of said carton, and means for moving said plungers.

11. In a machine for setting up cartons a base and side members adapted to hold the body of the carton in assembled position, and swinging plungers adapted to recess platforms therein by swinging from horizontal to vertical, said plungers having a portion to engage the platform and a portion to engage a platform attaching flap, said last mentioned portion swinging from vertical to horizontal whereby said flap is positioned against and parallel to a side of said carton, and means for moving said plungers, and means on said first mentioned means for holding the platforms in recessed position upon the withdrawal of the said plungers.

12. In a machine for setting up platform cartons, a base, parallel uprights thereon to

hold the body of a carton in set-up form, plungers pivoted with respect to said base to swing upwardly and into said carton body to position platforms therein, and means for the simultaneous movement of said plungers.

5 13. In a machine for setting up platform cartons, a base, uprights thereon to hold the body of a carton in setup form, plungers pivoted with respect to said base to swing
10 upwardly and into said carton body to position platforms therein, and means for the simultaneous movement of said plungers, and fingers on said uprights to hold said platforms in place upon withdrawal of said
15 plungers.

14. In a machine for setting up platform cartons, a base, parallel uprights thereon to hold the body of a carton in setup form, plungers pivoted with respect to said base
20 to swing upwardly and into said carton body to position platforms therein, and means for the simultaneous movement of said plungers, and fingers on said uprights to hold said platforms in place upon withdrawal of said
25 plungers, said plungers hollowed out centrally to accommodate the ends of an object projecting through said platform.

WARREN A. MORRIS.

30

35

40

45

50

55

60

65