L. C. PALMER.

BOX MAKING MACHINE.

APPLICATION FILED JUNE 11, 1912.

1,070,518.

Patented Aug. 19, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

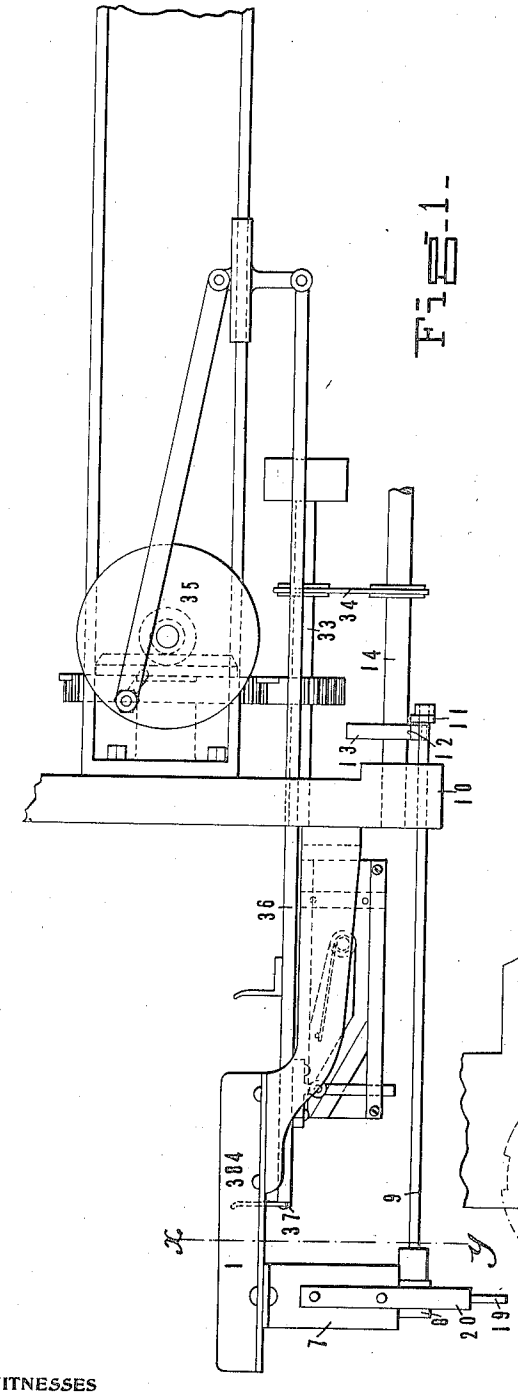
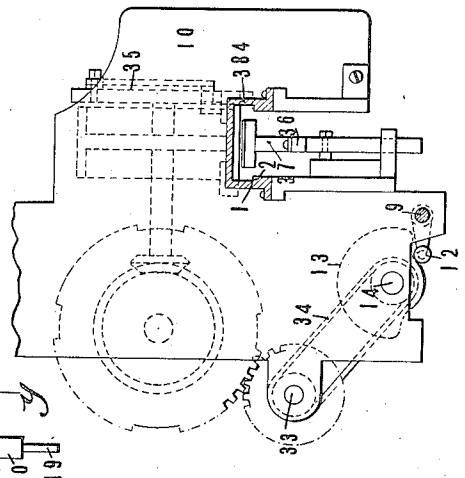


Fig. 2.



WITNESSES

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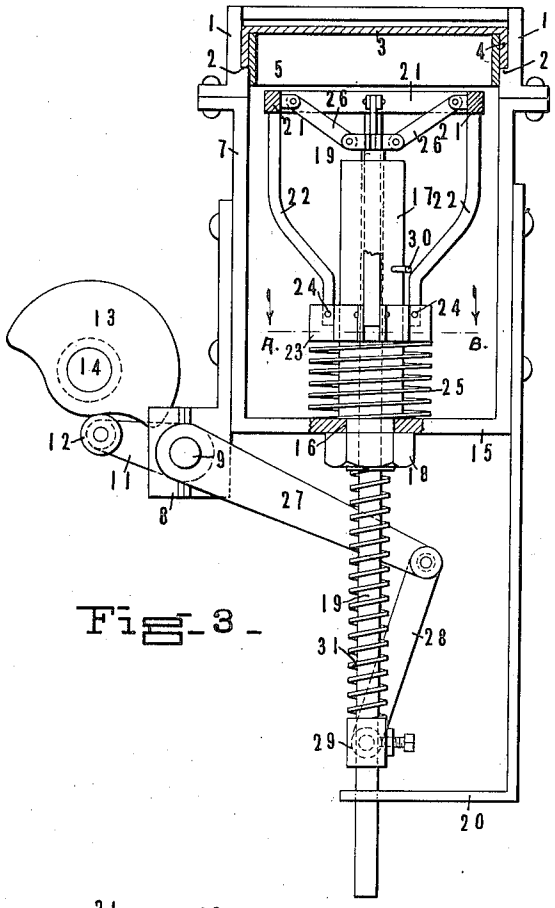


Fig. 3.

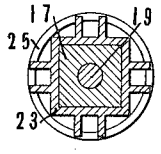


Fig. 5.

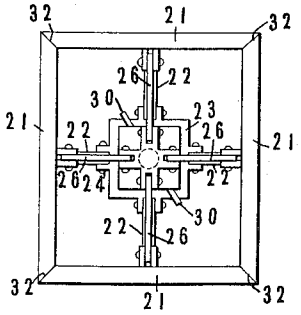


Fig. 4.

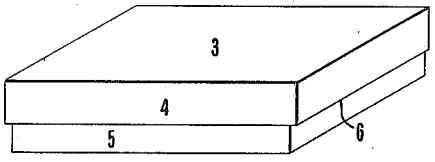


Fig. 6.

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UNITED STATES PATENT OFFICE.

LYNDAN C. PALMER, OF BUFFALO, NEW YORK, ASSIGNOR TO F. N. BURT COMPANY, LIMITED, OF BUFFALO, NEW YORK, A CORPORATION OF ONTARIO, CANADA.

BOX-MAKING MACHINE.

1,070,518. Specification of Letters Patent. Patented Aug. 19, 1913.

Application filed June 11, 1912. Serial No. 702,970.

To all whom it may concern:

Be it known that I, LYNDAN C. PALMER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Box-Making Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to box-making machinery, and more particularly to mechanism for pressing or squeezing adhesively attached elements of a box in order to more securely retain them in position, including devices for supporting and feeding boxes successively into and out of position for the application of the pressure.

One of the objects of the invention is the provision of an efficient mechanism for successively feeding adhesively attached box elements and pressing said elements together.

Another object of the invention is the provision of simple mechanism whereby the movable element of the press may be moved into and out of the path of the boxes.

Another object of the invention is the provision of practical means for applying the pressure on the inside of the box.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of the various possible embodiments of this invention: Figure 1 represents the mechanism in elevation when connected to a box making machine; Fig. 2 is a transverse section through Fig. 1 on the line *x—y;* Fig. 3 represents the pressing device elevation partly in section; Fig. 4 is a plan of the press heads; Fig. 5 is a cross section on line A—B; Fig. 6 is a perspective view of a preferred form of box.

This invention is preferably intended to press the shouldered boxes as they are delivered from the machine shown in application filed January 16, 1911, Serial No. 602,862, improvements in box machines, and is preferably set up as a part of said machine, its operating mechanism being driven by a suitable connection with the operating mechanism of said machine.

Referring now more specifically to the drawings, the numerals 1 indicate parallel vertically disposed guide bars provided with horizontally disposed shoulders or tracks 2 adapted to support the boxes as they are delivered from the carriage of the machine set forth in the above-entitled application. The boxes produced by the aforesaid machine comprise a head 3, a flange 4 surrounding the head, and a collar or neck 5 which fits or telescopes within the box, being adhesively attached to the inner wall of the flange. As these boxes are delivered from the machine above referred to it may happen that the collar will not be uniformly secured throughout its extent to the flange, and it is therefore desirable to press or squeeze the collar and flange together, in order to uniformly attach the same. To this end, after the boxes are delivered from the carriage of the aforesaid machine they are fed between the plates 1, being supported by their shoulders 6 on the tracks 2, the openings of the boxes being disposed downwardly. The elements 1 and 2 may be merely continuations of the guideway formed by the channel bar of the aforesaid application. The pressing elements of the present application are preferably designed to act upon the inner lateral walls of the boxes while they are supported between the plates 1, said plates thereby serving as pressing platens for opposite walls of the box, between which and the press heads the collar and flange are squeezed for the purpose aforesaid.

Preferably the channel bar denominated 384 in the aforesaid application is elongated and its outer portion forms what may be termed the press end of the channel bar, corresponding to the plates 1. Depending from and supported by the outer portion of the elements 1 is a U-shaped bracket 7 provided with a bearing box 8 in which is journaled a horizontal rock shaft 9. The shaft 9 is also supported in a bearing bracket 10, and its inner end adjacent the frame of the machine is provided with an arm 11 carrying an anti-friction roller 12 in position to be operated by a cam 13 on a rotary shaft 14, preferably identical with one of the con-

tinuously driven shafts of the aforesaid machine.

The bottom portion 15 of the bracket 7 is provided with an opening 16 and a fixed vertical guide or sleeve 17 is suitably secured to the cross piece 15 in line with the opening 16, as by means of the nut 18. The periphery of the guide bearing 17 is preferably non-circular or square in cross section, for a purpose which will hereafter appear. Mounted to reciprocate in the bearing 17 is a movable guide and operating rod 19 which extends through the opening 16 and through an auxiliary guide 20 depending from the bracket 7.

The numeral 21 indicates a press head which, in the present embodiment, is adapted to be moved into and out of the box and also in a direction to press against the lateral walls of the box on the interior of said box. Inasmuch as the box has a continuous wall, and in the present case four walls disposed at right angles to each other, four press heads corresponding to the head 21 are employed. The heads 21 have flat laterally disposed pressing faces adapted to contact the walls of the box when properly operated, and each head is provided with a depending supporting arm 22 and is guided in its movements toward and from working position relatively to the box, preferably by a retaining member or collar 23 surrounding the fixed guide 17 and movable up and down on said guide, each arm 22 being pivotally connected to the retaining member, as at 24. In the present embodiment a spring 25 surrounds the member 17 between the cross piece 15 and the retaining member, and this spring is of such a character as to move or elevate the press heads into working position opposite the portion of the walls of the box to be operated upon, and preferably will elevate the heads to such an extent that when moved laterally said heads will contact with the inner walls of the box above the shoulder 6.

The heads 21 being pivotally connected to the retaining member, are further guided in their upward movement by the rod 19, to which each head is connected, respectively, by links 26 pivotally joined to each head and to the upper end of the rod 19. The outer portion of the rock shaft 9 is provided with an arm 27 pivotally joined to a connecting rod 28, in turn pivotally connected to a block 29 which may be adjustably clamped at different points on the rod 19. By this construction the rotation of the shaft 14 will cause the cam 13 through the connections described to raise the rod 19, whereupon the spring 25 will cause the heads 21 to be elevated with the rod 19, and the press heads will thus be moved toward their working position in the box.

Fixed stop pins 30 disposed at diagonally opposite corners of the guide 17 and in the path of the retaining member 23 serve to limit the upward movement of the heads under the influence of the spring 25, said stop pins being positioned so as to cause the upward movement to cease substantially opposite the part of the box to be pressed. The heads 21 having been elevated to working position and their rise having been terminated by the stops 30, a further upward movement of the rod 19 is effected by the cam 13, whereupon the heads 21 are moved at an angle to their upward movement and caused to press against the lateral walls of the box, thus squeezing the same between the press heads and the platens 1. The pressure having been effected, the cam 13 permits the rod 19 to descend, its descent being assisted by a spring 31 encircling the rod 19 and interposed between the nut 18 and the clamp block 29, the spring 31 being of sufficient strength to cause the descent of the heads 21 against the resistance of the spring 25.

The pressing faces of the heads 21 are substantially the same in length as the walls of the box against which they operate. It will be observed that the heads 21 are so disposed as to move simultaneously into and out of working position, and also that their pressing movements are accomplished simultaneously, and that they move toward and from each other when moving into and out of pressing position. The heads 21 are so disposed when in lower position as to readily escape the edges of the box, and while any suitable means may be employed to limit their inner position, advantage is taken of the fact that a plurality of heads is employed, and their inner movement is limited by bringing the heads into contact with each other. The heads are disposed in the shape of a rectangle and the ends of each head are beveled, as at 32, so that each head forms, with an adjacent head, a miter joint, so to speak. Thus when the heads descend the ends of each head contact with adjacent opposite heads, restricting further inward movement. The rectangular shape of the guide 17 prevents any substantial rotary movement of the heads relative to a symmetrical axis, thus preserving the alinement of the several heads with the walls of the boxes, once that alinement has been determined.

The mechanism for feeding the boxes successively into pressing position is similar to the mechanism for removing the boxes from the carriage, as described in the prior application above referred to. In the illustration Figs. 1 and 2, a portion of the mechanism corresponding to that of the aforesaid application is shown. The numeral 33 represents a continuously driven shaft which, through chain 34, continuously rotates shaft 14 on which cam 13 is mounted. The crank

wheel 35 is intermittently driven from shaft 33, by means of mutilated gears and reciprocates a pusher rod 36 having properly spaced pusher fingers 37 whereby the boxes are successively delivered to the carriage, and from the carriage to the channel bar 384 thence to the tracks 2. The front finger 37 is so disposed as to contact the box in the carriage and feed the same into the channel bar 384, along which it is pushed by the next succeeding box into position immediately over the pressing mechanism.

It will now be seen that the above-described construction provides a mechanism capable of efficiently accomplishing, among others, the objects hereinbefore stated.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

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

1. In an apparatus of the character described, in combination, an article support, a press, means adapted to move the press into working position, and means operable independently of the presence of the article to be pressed or its support, adapted to cause the pressing movement in a path at an angle to the first mentioned movement.

2. In an apparatus of the character described, in combination, an article support, a press comprising a press head of less depth than the wall to be pressed, means adapted to move the press into working position, and means operable independently of the presence of the article to be pressed or its support, adapted to cause the pressing movement of the head in a path at an angle to the first mentioned movement.

3. In an apparatus of the character described, in combination, a press head, means adapted to move the head into working position adjacent the article to be pressed, means independent of the article to be pressed to determine the working position of the head, and means adapted to cause the pressing movement in a path at an angle to the first-mentioned movement.

4. In an apparatus of the character described, in combination, a press platen, a press head, means adapted to move the press head into working position adjacent the platen, a fixed stop to limit the movement to working position, and means adapted to cause the pressing movement in a path at an angle to the first-mentioned movement.

5. In an apparatus of the character described, in combination, a plurality of press heads adapted to move toward and from each other, means adapted to move the heads to working position adjacent the article to be pressed, means independent of the article to be pressed to determine the working position of the heads, and means adapted to cause the heads to move to press the article after the heads have arrived in working position.

6. In an apparatus of the character described, in combination, a guideway, means adapted to move articles along the guideway, a press head, means adapted to move the head into working position adjacent the articles, means independent of the articles to determine the working position of the head, and means adapted to cause the pressing movement of the head in a path at an angle to the first-mentioned movement.

7. In an apparatus of the character described, in combination, a guideway, means adapted to move articles along the guideway, a plurality of press heads, means adapted to move the heads to working position adjacent the article to be pressed, means independent of the article to be pressed to determine the working position of the heads, and means adapted to cause the heads to move from each other and press the article.

8. In an apparatus of the character described, in combination, spaced press platens, means adapted to dispose a box in pressing position with a wall extending between the platens, a press head, means adapted to move the press head toward said wall into working position, means independent of the box adapted to determine the working position of the press head, and means adapted to cause the pressing movement at an angle to the first-mentioned movement.

9. A press adapted to operate upon the inner wall of a box, comprising, in combination, a press head of less depth than the wall to be pressed, means adapted to move the press head into working position, a fixed stop to limit the movement to working position, and means adapted to move the press head at an angle to the first-mentioned movement.

10. In an apparatus of the character described, in combination, a press head, a fixed guide therefor, a spring surrounding the guide and adapted to move the press head into working position, and means to cause a pressing movement of the head after its arrival in working position.

11. In an apparatus of the character described, in combination, a press head, a fixed guide therefor, a spring surrounding

the guide and adapted to move the press head into working position, a stop to limit the movement of the press head to working position, and means to cause a pressing movement of the head at an angle to its first-mentioned movement after its arrival in working position.

12. In an apparatus of the character described, in combination, a fixed guide, a press head guided thereby, a movable guide, a link connected to the head and the movable guide, means to reciprocate the movable guide, and separate means to move the head.

13. In an apparatus of the character described, in combination, a fixed guide, a press head guided thereby, a movable guide, a link connected to the head and the movable guide, means to reciprocate the movable guide, separate means to move the head, and means to limit the movement of the head relative to the fixed guide.

14. In an apparatus of the character described, in combination, a fixed guide, a press head guided thereby, a movable guide, a link connected to the head and the movable guide, means to reciprocate the movable guide, separate means to move the head, and a pin on the fixed guide to limit the movement of the head relative thereto.

15. In an apparatus of the character described, in combination, a sleeve providing a fixed guide, a press head having an arm guided relatively to said sleeve, a spring surrounding the sleeve and adapted to cause movement of the arm in one direction, a rod guided in the sleeve, a link connecting the rod and the head, and means to reciprocate the rod.

16. In an apparatus of the character described, in combination, a sleeve providing a fixed guide, a press head having an arm guided relatively to said sleeve, a stop pin to limit the movement of the arm on the sleeve, a spring surrounding the sleeve and adapted to cause movement of the arm in one direction, a rod guided in the sleeve, a link connecting the rod and the head, and means to reciprocate the rod.

17. In an apparatus of the character described, in combination, a press head, a reciprocatory member, a link pivotally connected to the head and member, a guide member, a retaining member movably mounted on the guide member, an arm on the head pivotally connected to the retaining member, and a spring adapted to move the retaining member.

18. In an apparatus of the character described, in combination, a press head, a reciprocatory member, a link pivotally connected to the head and member, a guide member, a retaining member movably mounted on the guide member, a pin on the guide in the path of the retaining member, an arm on the head pivotally connected to the retaining member, and a spring adapted to move the retaining member.

19. In an apparatus of the character described, in combination, a plurality of press heads adapted to move toward and from each other, a fixed bearing, a rod slidable on the bearing, link connections between the heads and rod, a retainer movable on the guide, pivotal connections between the retainer and the heads, a spring adapted to move the retainer, and means adapted to reciprocate the rod.

20. In an apparatus of the character described, in combination, a supporting frame, a guide sleeve stationarily mounted thereon, a rod guided in said sleeve, press heads, links pivotally connecting each head with said sleeve, a retaining collar slidable on said sleeve and pivotally connected to each head, a spring surrounding said sleeve and adapted to press against the collar, a fixed stop in the path of the collar, a rock lever, connections between the rock lever and rod, and means to operate the rock lever.

21. In an apparatus of the character described, in combination, a guide rod, a press head, means comprising a pivotal connection between the rod and the head, means whereby the head is elevated into working position comprising means to positively move the rod and resilient means to move the head therewith, and resilient means to lower the head.

22. In an apparatus of the character described, in combination, tracks adapted to engage the opposite edges of open boxes and along which said boxes are adapted to slide, means to intermittently move boxes along said tracks, a press-head and means adapted to cause the press-head to press the inner lateral walls of the boxes engaging said tracks.

23. In an apparatus of the character described, in combination, vertically disposed spaced press platens having horizontal box supporting guides, means adapted to intermittently feed open boxes along said guides between the platens, the edges of the boxes adjacent their openings resting on said guides, relatively movable press heads, and means adapted to cause the heads to press the lateral walls of the successive boxes against the platens.

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

LYNDAN C. PALMER.

Witnesses:
JNO. O. HOLMES,
MART B. SHEPARD.