

J. J. MILLER.
BOX MACHINE.

APPLICATION FILED SEPT. 17, 1912.

1,053,627.

Patented Feb. 18, 1913.

2 SHEETS-SHEET 1.

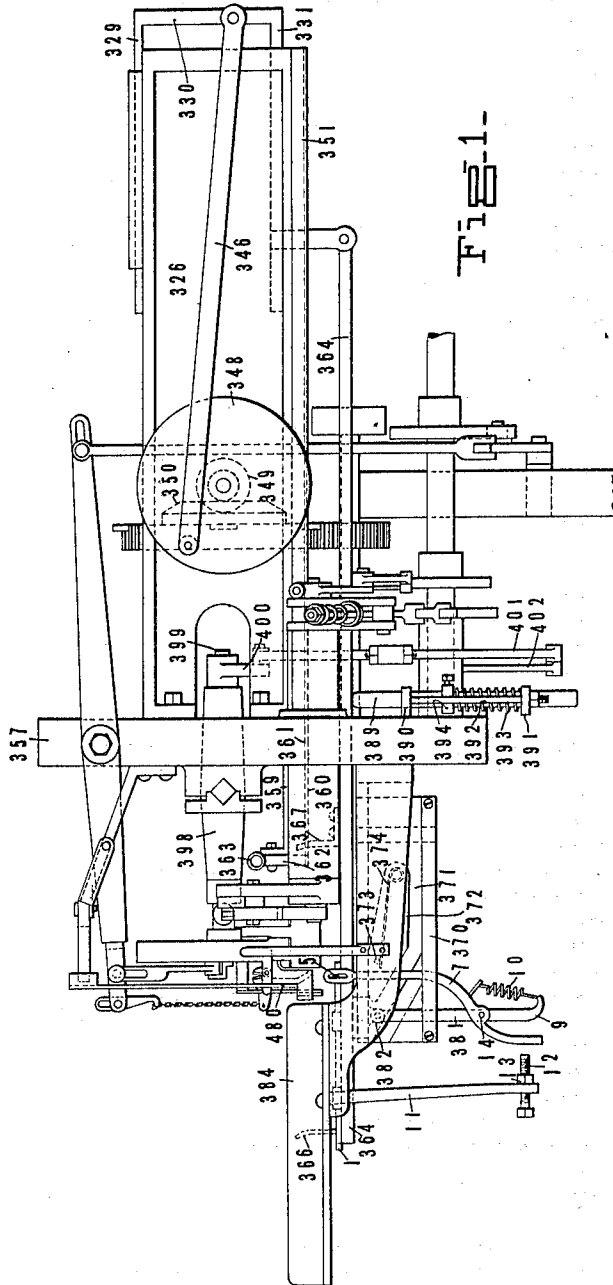


Fig-1-

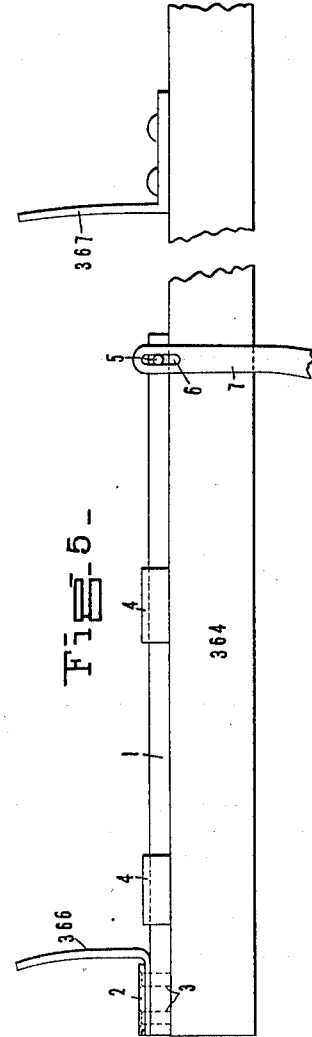


Fig-5-

WITNESSES

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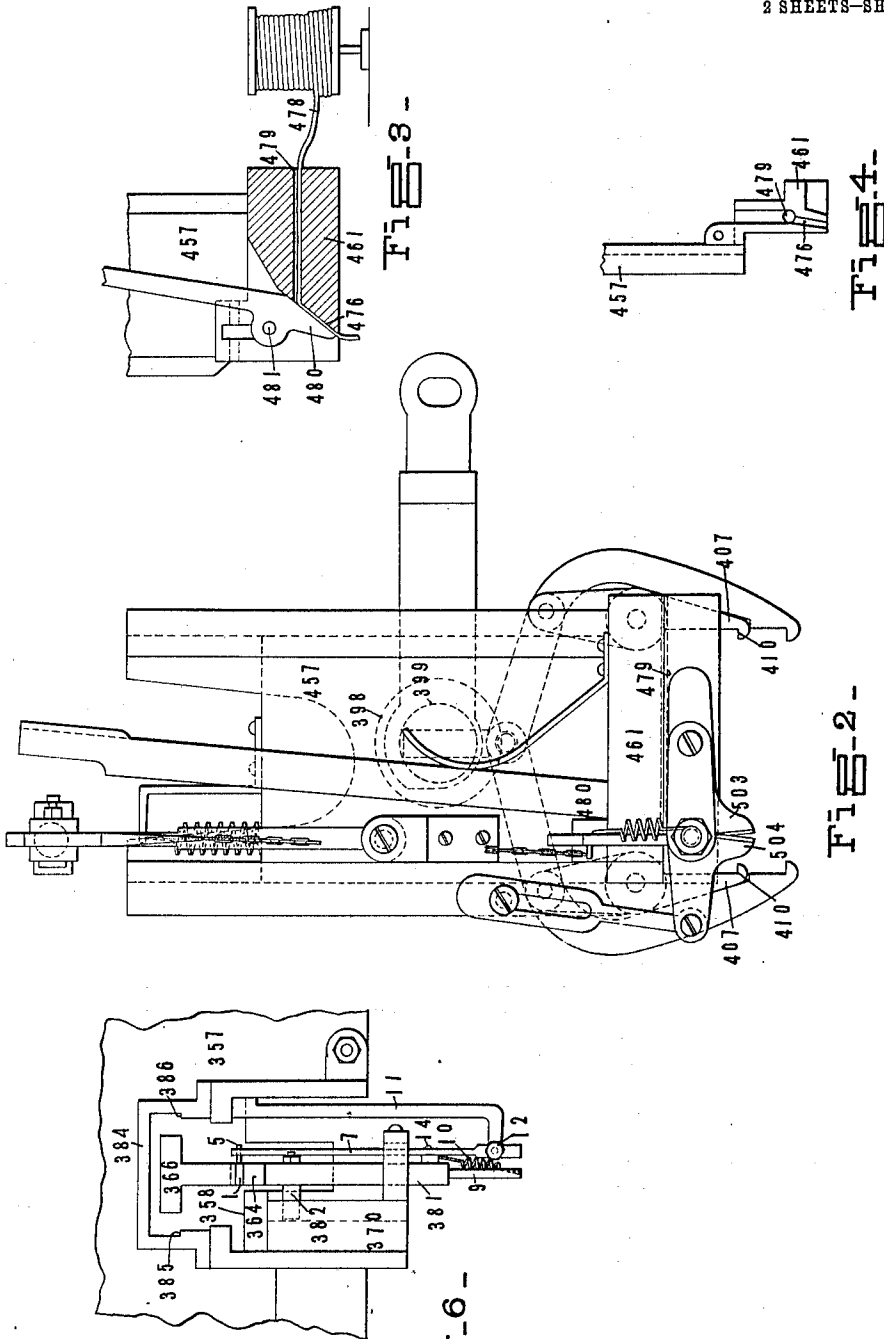
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UNITED STATES PATENT OFFICE.

JOHN JACOB MILLER, OF BUFFALO, NEW YORK, ASSIGNOR TO F. N. BURT COMPANY LIMITED, OF BUFFALO, NEW YORK, A CORPORATION OF ONTARIO, CANADA.

BOX-MACHINE.

1,053,627.

Specification of Letters Patent.

Patented Feb. 18, 1913.

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To all whom it may concern:

Be it known that I, JOHN JACOB MILLER, 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-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 machines, and with respect to its more specific features, to mechanism for assembling a cord, preferably a ripping cord, with a box or box element.

One of the objects of the invention is to provide a practical mechanism of the character referred to whereby variation in the lengths of cord assembled with the box elements may be obtained.

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.

While the invention is capable of general use, the specific embodiment herein described is more particularly devised to combine with and form a part of the box machine disclosed in the application for patent of Carlos Holly, Serial Number 602,862, filed January 16, 1911, and it is to be understood that so much of the description and drawings of that application as may be required to clearly disclose the present embodiment are to be regarded as embodied in the present description and drawings.

In the accompanying drawings wherein similar reference characters refer to similar parts throughout the several views, Figure 1 represents a view in elevation of a portion of the box making machine of the aforesaid application with the present improvement applied thereto; Fig. 2 is a view of the oscillatory carriage through the instrumentality of which the box elements are assembled with the cord; Figs. 3 and 4 illustrate details of the carriage; Fig. 5 is an enlarged detail view of a portion of the device for removing the assembled elements from the carriage, and Fig. 6 is an end view

of a portion of the mechanism shown in Fig. 1.

Some description of the machine of the prior application will facilitate the disclosure of the improvement.

The frame of the machine comprises a horizontally arranged I-beam 326, supporting at its upper and lower sides guide rods 329 and 331 joined by a cross-bar or head 330. The cross-head is reciprocated by means of a connecting rod 346 pivoted thereto and to a disk wheel 348 journaled in the I-beam. Intermittent rotary motion is communicated to the wheel 348 in any suitable manner, preferably by the bevel pinion 349 meshing with a bevel gear 350 on an intermittently driven shaft as in the machine of the application above referred to. A box feeding device, or picker, (not shown) is connected to the cross head and its operation delivers boxes successively from a suitable supply into a downwardly open channel or guideway formed by depending plates 351 secured to the opposite sides of the lower head of the I-beam. The plates 351 have horizontal flanges extending toward and spaced from each other and these flanges guide and support the boxes open side down, as they are fed thereto by the picker, each succeeding box pushing the box ahead of it so that the guideway becomes filled with a series of the boxes. Before the boxes are delivered into the guideway they are provided on their inner walls with glue.

At the inner end of the I-beam is a transversely arranged supporting plate 357, having an opening 358 through which the box bodies pass as they are fed by the picker, and on the side of the plate 357 opposite the I-beam, a continuation of the guideways 351 is provided. Preferably this further guiding of the box bodies is accomplished by a horizontally arranged plate 359 secured to the plate 357 and provided with downwardly projecting guide plates 360 having inwardly extending box-supporting flanges 361. The plates 360, 361, form the termination of the guide passageway leading from the picker mechanism, and a pawl 362 is resiliently held in position across the passageway by a spring 363. The oscillatory carriage is adapted to move into and out of coincidence with the end of the guide passageway formed by the plates 351 so

that upon further feeding of the box bodies beyond the end of the guideway they will pass into the carriage, the carriage pressing aside the stop 362 as it assumes position in front of the passageway to receive the boxes.

In order to feed the box bodies from the end of the guide passageway into the carriage, a pusher mechanism is provided consisting of a rod 364 pivoted at one end to a bracket on the supporting rod 331 and lying immediately below the guideway formed by the plates 351 and provided with two fingers 366 and 367 attached thereto, one at the outer end and one at a distance from said end, said fingers being adapted to engage the inner face of a wall of a box and feed the same forwardly as the rod 364 moves in one direction. Inasmuch as the fingers 366 and 367 are disposed to engage the inner walls of the downwardly open boxes, the movement of these fingers is guided so that they rise and fall as well as reciprocate, entering the boxes in order to feed the same forwardly, and moving in a path below the boxes in order to re-assume position for feeding. The movement whereby the fingers escape the boxes on re-assuming position for feeding is accomplished by mechanism comprising the rod 364, and a depending lug 381 on said rod, carrying a roller 382 on its lateral face, which roller plays in a slot 371 in a vertically arranged plate 370 and between the walls of said recess and a switch 372 pivoted to the plate 370; a pin 373 on the switch being engaged by a spring 374, whereby the switch is held upwardly against the upper horizontal face of the recess 371. As the rod 364 is reciprocated its end portion is raised and lowered. The depending lug 381 is guided between the plate 370 and a rod 380 spaced from the lower portion of said plate.

384 represents a downwardly open channel bar having shoulders 385 and 386 and into the channel bar the assembled boxes and cord are delivered by the pusher device described. The push-rod 364 is yieldingly pressed upwardly by a plunger 389 guided in an opening in the lug 390 on the plate 357 and passing through an opening in a cross-piece 391 supported a substantial distance below the plate on the rods 392, a spring 393 surrounding the rod and held between the cross-piece 391, and an adjustable collar 394 on the rod.

The operation of the pusher mechanism is as follows:—The box bodies are fed forwardly in the guideways 351 by the picker mechanism (referred to) operated by the reciprocation of the rod 331, and eventually the foremost box arrives at the end of the guideway adjacent the stop 362. Assuming the stop 362 to have been thrown aside by the carriage when in position to receive the box body, and the push-rod 364 to have been

thrown rearwardly and upwardly to pushing or feeding position, the finger 367 will contact with the box body which is immediately in rear of the one about to enter the carriage, while the end finger 366 will assume position beneath the box in the carriage and to which a collar has just been applied. The end finger, or ejecting finger, will take position immediately in rear of and close to the inside face of the front wall of the assembled box, but the distance between the fingers in this position is such that when the end finger is in the position described, the finger 367 is some distance in rear of the front wall of the box body with which it is about to cooperate as above described. As the pusher moves forwardly, or to the left in Fig. 1, its front finger 366 operates on the completed box to move it forwardly positively into the channel plate 384 along the shoulders 385 and 386, while the finger 367 is moving up to the front wall of the box body immediately adjacent thereto. Thus the completed box is fed some distance forward before the rear finger 367 begins to push the box adjacent thereto. When the finger 367 engages the wall of its adjacent box, this latter pushes the box just ahead of it,—and which is between the boxes engaged by these fingers,—into the carriage. The purpose of moving the completed box some distance before feeding a box into the carriage is to obtain a substantial length of cord extending from the completed box.

In the other application above referred to, the box bodies which have been fed by the pusher into the carriage, are assembled with a collar or neck, which latter telescopes inside the flanges of the box bodies, and a cord, from a suitable practically endless supply, is interposed between the collar and the flange of the box body, whereby upon the assembly of these elements the collar, body and cord are adhesively attached by means of the glue provided upon the interior of the box body as before explained. In order to assemble the collar, body and cord, a shaft 399 is provided journaled in a bearing sleeve 398, one end of said shaft having a crank arm 400 to which is pivoted a rod 401 in turn connected to a rock-lever 402 operated by a continuously driven cam. The carriage is fastened to the opposite end of the shaft 399 from the arm 400, and two supporting members, arms or jaws, are pivoted one at each side of the carriage. Each jaw comprises a depending portion 407 of a length substantially the same as the part of the box body to be held, and a flange or hook 410 to support the edge of a box body. It will be understood that the jaws are so spaced apart that a box body may be supported and slightly gripped thereby at proper times.

Mounted to slide on the outer lateral face of the carriage is a plate 457, which at its inner end is adapted to abut the body of the carriage to limit its inward movement. On the outside of the plate 457, at its lower portion, is a supporting projection or block 461. A cord 478 supplied from a spool is threaded through a guiding opening 479 in the block 461, and thence into a slot 476, its end being designed to emerge from the bottom face of the block at the point where said face and the inner wall of the slot meet. In order to grip and release the cord, a thin gripping finger 480 is pivoted to the block at 481 so as to move edgewise in the slot 476, and press the cord against the inner wall of the slot. When the box body is pushed into the jaws of the carriage, the edge of the flange will be adjacent to the point where the slot 476 opens into the bottom of the piece 461. The end of the cord is then turned over the edge of the flange, and when the carriage is moved to the collar carrier the collar is telescoped within the box body, the end of the cord being seated between the collar and flange and in contact with the glue on the wall of the box body. The carriage with the assembled box body, collar and cord is then again moved into position adjacent the guideways for the box bodies, the block 461 is raised and the assembled elements are pushed from the carriage, the cord being drawn or fed from the spool by the ejection of the assembled elements from the carriage. As the assembled elements are ejected the cord passes between shear blades 503 and 504 supported by the piece 461, and at the completion of the movement of the pusher or ejector, the shears are operated to sever the cord, the tension finger 480 being at once positioned to hold the free end of the cord.

It will be understood that the above description is merely a brief outline of the construction and operation of a part of the mechanism disclosed in the prior application.

It will be noted that in the prior construction both the front ejecting finger and the rear feeding-in finger are each fastened to the pusher rod 364 and are thus a fixed distance apart, so that the length of the path traversed by the box in being ejected from the carriage is dependent upon the length of the path of movement of the pusher rod, and accordingly the length of cord drawn past the shears is also dependent on this movement of the pusher rod.

The present improvement provides mechanism whereby the length of the section of cord attached to the box may be varied. To this end, the means adapted to supply the cord and the boxes, and to assemble the cord with the boxes, may be preserved, as in the prior application above referred to. Cooper-

atively associated with these mechanisms is a means whereby the length of the path traversed by the box, on being ejected from the carriage, may be varied, whereby variable lengths of cord may be drawn past the shears or cord cutter before the cord is severed, and the preferred form comprises mechanism whereby the ejecting pusher finger, or front box-moving finger, corresponding to the finger 366 of the aforesaid application, is caused to move a sufficient distance to provide the length of cord desired, irrespective of the precise length of path of the pusher rod 364. To this end, the front finger 366 is slidably mounted on the pusher rod 364, as by means of a bearing plate 1, resting thereon, and to one end of which the front finger is adjustably clamped by plate 2 and screws 3. The plate 1 is adapted to slide longitudinally of the pusher rod and is guided thereon by clips 4. The other end of the bearing plate has a laterally projecting pin 5, engaging a slot 6 in a lever 7 fulcrumed on an arm 9 fast to the pusher rod, said arm 9 in this instance being a prolongation of the guide lug 381 referred to in the prior application. A spring 10 connected to the lever 7 and the arm 9 operates to move the front finger into its initial feeding position relative to the rear finger and yieldingly retain it therein against the resistance of the box, any suitable means being employed to limit this movement, in the present instance the contact of the base of the front finger with the front guide clip 4.

Depending from the fixed frame is a bracket 11 having a detent disposed in the path of the lower arm of the lever 7, the detent comprising a pin 12 having threaded engagement with the bracket 11 and adapted to be locked in adjusted position by a nut 13.

With the described arrangement it will be observed that when the pusher rod begins its motion the front finger will at once move the assembled elements from the carriage, and the rear finger will subsequently contact the front wall of one of the box bodies in the guideway, whereupon the assembled elements and the box body will be moved simultaneously. A certain length of cord will have been fed past the cutter or shears by the movement of the pusher rod and without any movement of the front finger relative to said rod. Prior to the termination of the forward movement of the pusher rod, the lower arm of lever 7 will contact the relatively fixed pin 12, and as the forward movement continues to its completion, the front finger will be moved forward relatively to the rear finger and the pusher rod by the movement of the lever 7 around its pivot 14, thus thrusting the box farther forward and drawing or feeding a greater length of cord past the cutter. Upon the

completion of the forward thrust of the box, the cutter will sever the cord, as described in the aforesaid other application, and the tension finger 480 will retain the end of the cord supply in position to be attached to the succeeding box. By adjusting the position of the detent pin 12, the length of stroke of the finger 366 may be varied and a greater or less length of cord may be fed before the forward motion of the pusher bar ceases. Thus by the above-described construction the objects hereinbefore referred to are efficiently accomplished in a simple and practical manner.

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 claim as new and desire to secure by Letters Patent is:

1. In an apparatus of the character described, in combination, automatically acting means adapted to feed cord, means adapted to supply boxes, means adapted to attach predetermined lengths of cord to the boxes, and means whereby the lengths of cord attached may be varied.

2. In an apparatus of the character described, in combination, automatically acting means adapted to feed cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord to provide predetermined lengths thereof, and means whereby the lengths of cord attached may be varied.

3. In an apparatus of the character described, in combination, automatically acting means adapted to feed cord, means adapted to supply boxes, means adapted to attach the cord to each box, a cutter, means adapted to feed the attached cord relatively to the cutter, and means whereby said feed may be varied.

4. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, a cutter, means adapted to move the box and thereby feed the cord relatively to the cutter, and means whereby the feed movement of the box and cord may be varied.

5. In an apparatus of the character de-

scribed, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to the boxes, reciprocatory means adapted to feed the boxes to the attaching means, reciprocatory means adapted to feed the boxes and attached cord from the attaching means, means adapted to vary the length of the stroke of the last mentioned means, and means to sever the cord.

6. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord, a reciprocatory rod provided with a relatively fixed box moving finger and a relatively movable box moving finger, and means to move the fingers relatively to each other on reciprocation of the rod.

7. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord, a reciprocatory rod provided with a relatively fixed box moving finger and a relatively movable box moving finger, and means to cause the movable finger to reciprocate relative to the rod.

8. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord, a reciprocatory rod, means carried thereby adapted to feed boxes to the attaching means, and means carried thereby adapted to feed an attached box and cord from the attaching device comprising a slidably mounted pusher finger.

9. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord, a reciprocatory rod, a pusher finger fixed relatively to the rod, a second pusher finger slidably mounted on the rod, resilient means adapted to move the second finger into predetermined position relatively to the first, and means to move the second finger from said position.

10. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord, a reciprocatory rod, a pusher finger fixed thereon, a pusher finger slidably mounted thereon, a detent, and means whereby upon the reciprocation of the rod the second mentioned finger is caused to reciprocate relatively to the rod.

11. In an apparatus of the character de-

scribed, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord, a reciprocatory rod, a pusher finger fixed thereon, a pusher finger slidably mounted thereon, a detent, and a lever fulcrumed on the rod and connected to the second mentioned finger and adapted to contact the detent as the rod is operated.

12. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to each box, means adapted to sever the cord, a reciprocatory rod, a pusher finger fixed thereon, a pusher finger slidably mounted thereon, a detent, an arm depending from the rod, a lever fulcrumed on the arm and flexibly connected to the second mentioned pusher finger, and a spring connected to the arm and second mentioned finger adapted to move said finger toward the other finger, said lever having an arm disposed to contact the detent.

13. In an apparatus of the character described, in combination, means adapted to supply cord, means adapted to supply boxes, means adapted to attach the cord to the boxes, a plurality of means adapted to respectively feed the boxes to and from the attaching means, means for reciprocating the feeding means, and adjustable means adapted to lengthen the stroke of the means for feeding the boxes from the attaching means.

14. In an apparatus of the character described, in combination, mechanism adapted to assemble a cord and a box, reciprocatory

mechanism adapted to move a box to the assembly mechanism, and means adapted to deliver the assembled elements from the assembly mechanism and cause a length of cord to be fed varying from the length of movement of the box to the assembly mechanism.

15. In an apparatus of the character described, in combination, mechanism adapted to assemble a cord and a box, a reciprocatory device adapted to move the box into the assembly mechanism and the assembled elements therefrom, and means to vary the extent of one of said movements.

16. In an apparatus of the character described, in combination, cutting mechanism, mechanism adapted to move a box and attached cord past said cutting mechanism, means to cause the cutting mechanism to sever the cord at a point to provide a length of cord extending from the box, and means adapted to vary the length of movement of the cord past the cutting mechanism before the cutting operation.

17. In an apparatus of the character described, in combination a cord supply, a cord cutter, means adapted to feed different portions of a cord from said supply into position such that upon operation of the cutter sections will be successively severed from the cord, and means adapted to vary the feed of the cord.

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

JOHN JACOB MILLER.

Witnesses:

H. C. COPPINS,
E. P. STITZ.