Dec. 9, 1924.

1,518,151

W. L. KENNEDY

BOX COVERING MACHINE

Filed May 23, 1922

2 Sheets-Sheet 1

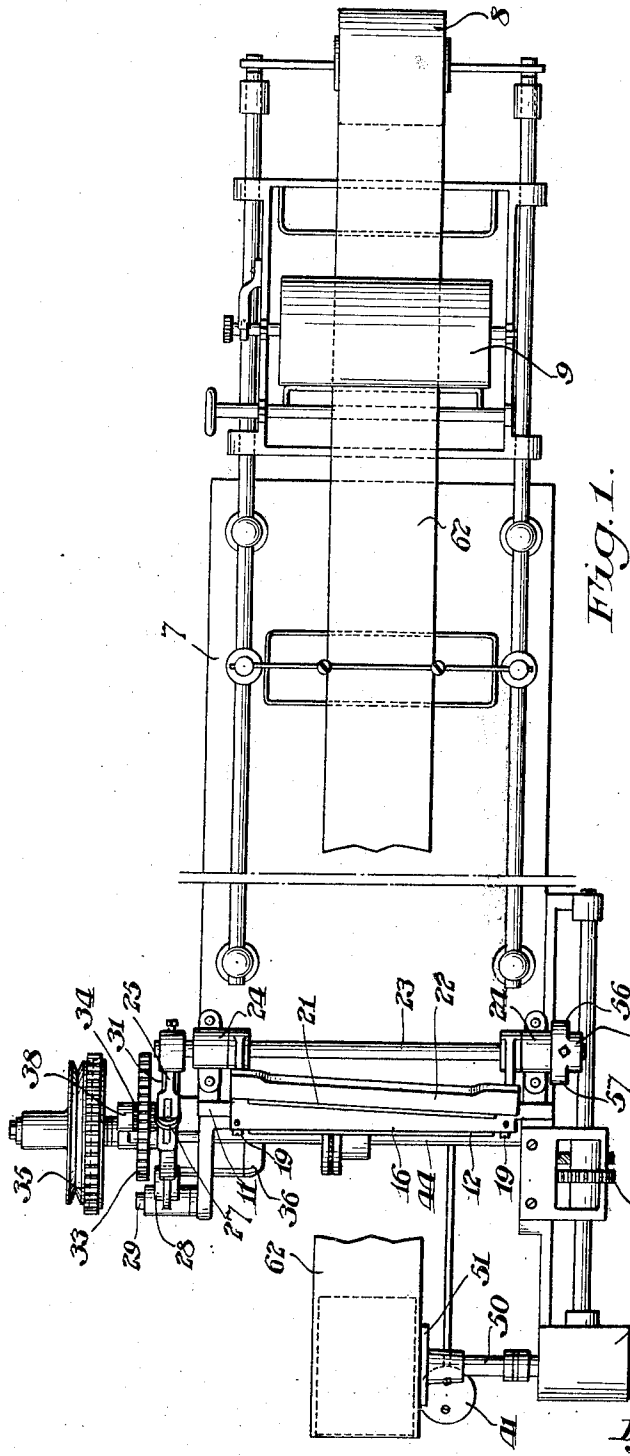


Fig. 1.

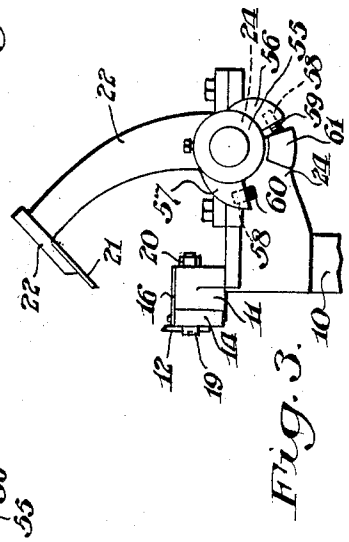


Fig. 3.

Inventor:
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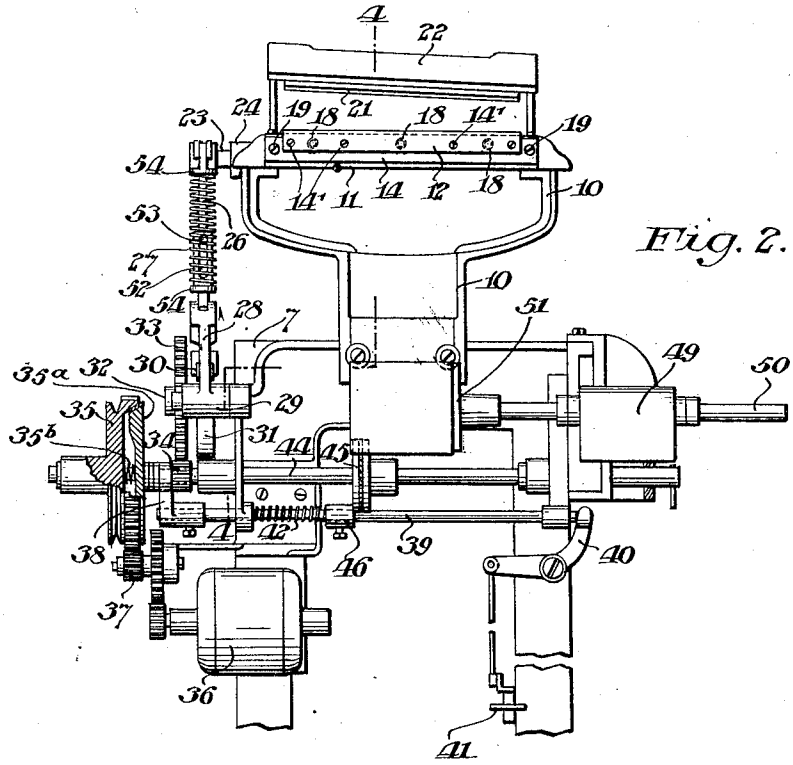


Fig. 2.

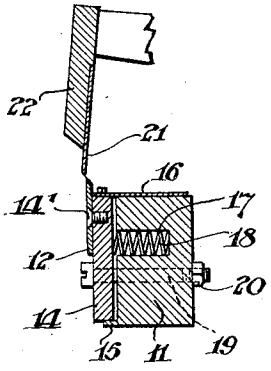


Fig. 5.

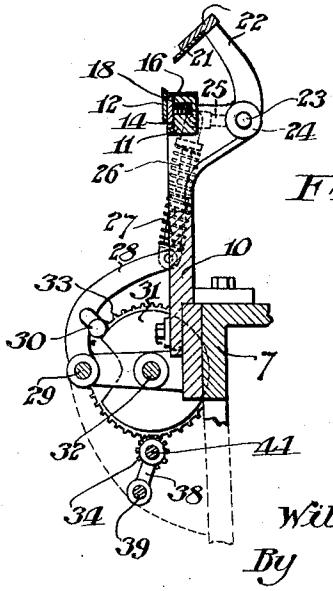


Fig. 4.

Inventor:
William L. Kennedy,
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Patented Dec. 9, 1924. 1,518,151

UNITED STATES PATENT OFFICE.

WILLIAM L. KENNEDY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SCHUCH MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A COPARTNERSHIP COMPRISING CORNELIUS F. SCHUCH AND FRANK A. DUCKETT.

BOX-COVERING MACHINE.

Application filed May 23, 1922. Serial No. 563,142.

To all whom it may concern:

Be it known that I, WILLIAM L. KENNEDY, a citizen of the United States, residing at Tacony, Philadelphia, county of Philadelphia, State of Pennsylvania, have invented a new and useful Box-Covering Machine, of which the following is a specification.

The invention relates to box covering machines. The object is to provide improved method and means for actuating and for controlling the actuation of the knife elements used for severing portions from a cover supply strip.

The movable knife is normally operated by mechanical means through a yielding connecting element to cooperate with the stationary knife synchronously with the rotative movement of the box support, so that the length of the severed portion will correspond with the exact periphery of the surface to be covered.

The invention comprises means whereby the movable knife may be arbitrarily operated for severing portions from the strip, independently of the normal knife actuating mechanism.

The invention also comprises means for supporting the stationary knife element so that the same may have a resilient yielding movement when cooperating with the movable knife, and also means whereby the initial position of the stationary knife element may be adjusted from time to time as required.

Referring to the drawings, which illustrate merely by way of example suitable means for effecting the invention—

Fig. 1 is a plan view of a box covering machine containing my invention.

Fig. 2 is a front elevation of same.

Fig. 3 is a side elevation of the knife element and supporting means on an enlarged scale.

Fig. 4 is a section on line 4, 4 of Fig. 2.

Fig. 5 is a fragmentary section on an enlarged scale.

Similar numerals refer to similar parts throughout the several views.

The usual table 7 is provided with the paper reel 8, paste roller 9 and adjustable strip guides etc. as shown.

On the front end of the table 7 is secured the bracket 10 supporting the horizontal bar 11 for supporting the stationary knife element 12. The knife blade 12 is secured to the plate 14 by any suitable means, as for example by the screws 14′. The plate 14 is secured in the channel formed by the projection or offset 15 of bar 11 and by the plate 16, preferably of sheet metal which is secured to plate 14 and which has a movable sliding engagement with the top of bar 11. The bar 11 is also provided with the recesses 17 in which are seated the compression springs 18. The plate 14 is held in the position shown in Figs. 4 and 5 by the bolts 19 which pass through the bar 11 and plate 14 and which are provided with the nuts 20. The adjustment therefor of knife 12 both with respect to bar 11 and also with respect to the co-operating movable knife 21 is thus secured by means of said bolts 19 and nuts 20. It will also be noted that a space is provided between the adjacent faces of bar 11 and plate 14 which permits a considerable play of knife 12 with respect to said bar 11.

The movable knife 21 is secured to frame 22 mounted on shaft 23, mounted on the bearings 24. Shaft 23 is provided with the arm 25 connected, through a telescoping connecting rod 26 controlled by spring 27, with the lever 28 pivotally mounted at 29 and having the contact roller 30 for cooperating with the rotating cam 31. This cam 31 is mounted on the shaft 32 provided with the gear wheel 33 which meshes with pinion 34. The driving pulley 35, and the direct connected motor 36 are connected, through suitable gears, to pinion 37, so that either pulley 35 or motor 36 may be used for driving the machine. Pulley 35 is loosely mounted on shaft 44, while a friction clutch element 35^a is feathered on shaft 44, and is adapted to cooperate with a friction surface on the inner face of pulley 35. A spring 35^b acts normally to keep the clutch elements out of cooperative contact. The link member 38 is mounted on shaft 39 and has its upper end slidable on shaft 44. This shaft 39 is adapted to be shifted, in one direction, by means of lever 40 and treadle 41, and in the other direction by spring 42. The treadle actuated movement of shaft 39 and link member 38 causes the cooperation of clutch elements 35 and 35^a. This causes

the actuation of shaft 44 and the gears 34, and 33. An element of brake 45 is rotatably fixed on shaft 44, while the other co-operating brake element is loose thereon. A device carried on shaft 39, as at 46, is adapted to cause the coaction of the brake elements, when the clutch elements are separated and vice versa. Shaft 44 also transmits through suitable gears, as at 48 and 49, movement to shaft 50 carrying the supporting frame 51 for the box which is operated upon.

As above stated the connecting rod 26 is provided with telescoping elements, one element in the form of a rod and the other in the form of a sleeve; the sleeve element having a slot as at 52 for cooperating with a projection, as 53, from the rod element, to limit the relative movement of said elements, see Fig. 2. A compression spring 27, surrounds said elements, with its end engaging the abutments 54. The hub 55 of frame 22 is provided with the wings or projections 56 and 57. These projections are preferably recessed as at 58 to receive the bumpers or cushion devices 59 and 60, of rubber or leather, or yielding but preferably elastic material. Upon the stationary frame or bearing structure 24 is provided a lug 61, which projects between the flanking wings or projections 56 and 57 and engages the bumpers 59 and 60 to limit, with cushioning action, the rotative movement, in each direction, of said movable knife 21. A further function of the cooperation of elements 59, 60 and 61 is to give a slight rebound at the end of each movement which facilitates the return movement of the parts.

In operation.

The strip 62 of covering material is fed in the usual way between the knife elements 12 and 21 to the box to be operated upon, which is mounted on the rotatable frame 51. This frame is given such degree of rotation, that the strip of material, which is secured to the box mounted on said rotating frame 51, is drawn to a sufficient extent between the knife element to insure such length of severed strip as is required. The knife actuating mechanism, as will appear from the above description, is operated relatively to the frame rotating elements, so that at the moment the required amount of material passes between the knives, the same are actuated to cooperate in severing the same. It is customary to mount the movable knife with its cutting edge in a line, which is inclined both to the horizontal and to the vertical plane, while the cutting edge of the stationary knife is in line with both said planes. This results in a shearing coaction between said knives, but this usually requires an extremely nice adjustment of the one with respect to the other. By arranging the stationary knife in the manner above described the preliminary adjustment of the knife is greatly facilitated and its capacity of yielding under pressure assures a more perfect shearing co-operation with the other knife, without requiring such niceness in initial adjustment: in other words when the two knives engage, the yielding capacity of the otherwise stationary knife enables it automatically to adjust itself with the movable knife throughout its shearing stroke, which assures an extremely clean and certain shearing cut of the strip. Such automatic action also compensates for wear and therefore greatly increases the life of efficient co-operation between the knives.

The rotating movement of frame 51 and the synchronous coaction of the cutting blades only occur upon the pedal controlled cooperation of clutch elements 35 and 35ª. When the pedal is released the frame rotation is arrested and the knife 21 is held in the elevated position by the force exerted by spring 27.

Arbitrary actuation of knife 21.

When the machine is at rest and the knife 21 held in the elevated position as shown in Figs. 3 and 4, and it is desired to cut another section from the strip of covering material, the desired amount of said material is drawn over knife 12, and knife 21 is depressed simply by forcing the same down by hand against the tension of spring 27. In other words the operator may arbitrarily cut additional sections as required from the strip, at any time, independently of the normal operation of the machine. Upon withdrawing the hand from the knife frame 22, after such arbitrary actuation, the knife resumes the elevated position in response to the pressure of the spring 27.

The advantage of the cushioning elements 59 and 60 is not only to relieve shock or jar in arresting the movement of the knife frame in each direction, but also the tendency of reaction of said resilient element is to assist in the reversal of movement of same.

It should also be noted that the parts are so arranged and proportioned that the buffer 60 tends to limit the downward movement of the knife before it reaches its final cutting position, so that the momentum of the moving parts is utilized to overcome this tendency.

It will be understood that the spring 27 is still under slight compression after the knife reaches the elevated position so that when the cam recess comes into register with the roller 30, there is a slight spring reaction to cause the return of a roller into the recess.

What I claim is:—

1. In a box covering machine, the combination of a supporting bracket, a horizontal stationary bar connected thereto, a knife loosely supported by the bar, a frame piv-

otally mounted on said bracket, and carrying a knife rigid therewith normally above but adapted to cooperate with the first mentioned knife when said two knives are brought into closely approximate vertical planes, with the stationary knife between the movable knife and its axis of movement, and means for operating the movable knife.

2. In a box covering machine, the combination of a supporting bracket, a horizontal stationary bar connected thereto, means forming a channel in the front face of said bar, a plate loosely mounted in said channel, means exerting resilient pressure on said plate, means connected to the bar for limiting the pressure-actuated movement of the plate, a knife secured to the plate, a frame pivotally mounted on said bracket, and carrying a knife rigid therewith adapted to cooperate with the first mentioned knife when said two knives are brought into closely approximate vertical planes, with the stationary knife between the movable knife and its axis of movement, and means for operating the movable knife.

WILLIAM L. KENNEDY.