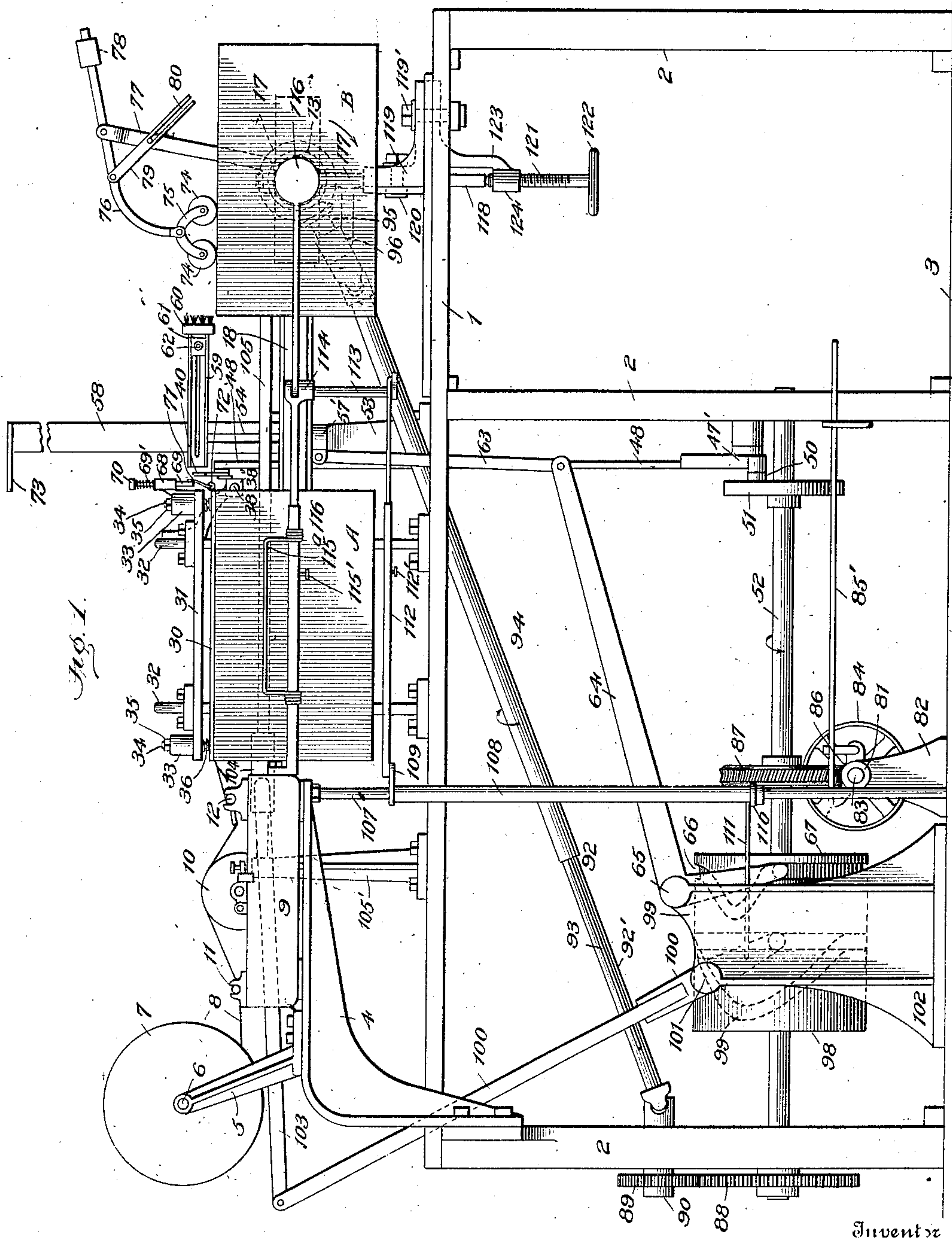


No. 862,357.

PATENTED AUG. 6, 1907.

P. S. SMITH.
BOX COVERING MACHINE.
APPLICATION FILED FEB. 18, 1904.

3 SHEETS—SHEET 1.



Witnesses

Edwin L. Bradford

C. G. Leighman

By

Philip S. Smith
J. Frawville Meyer

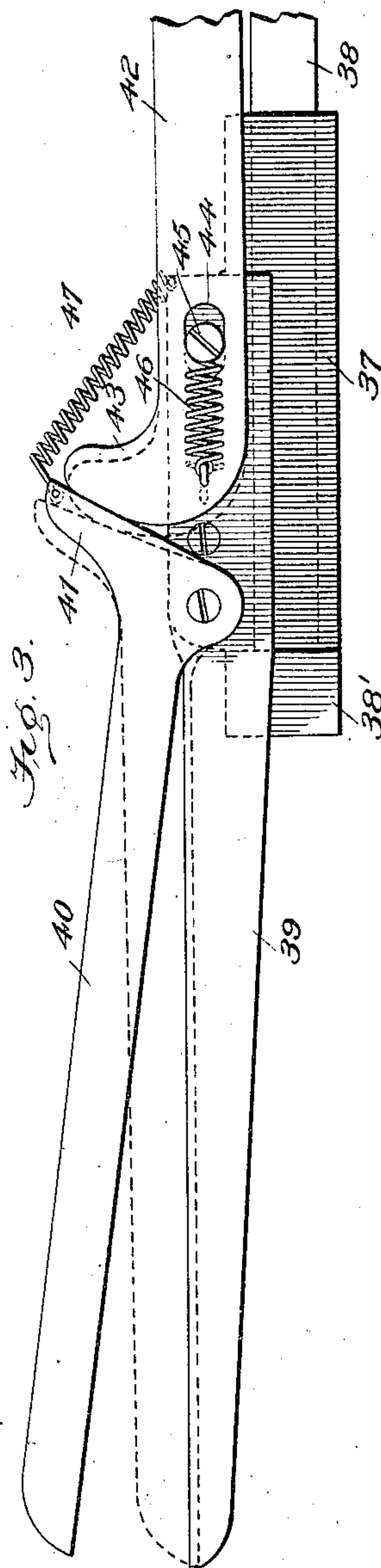
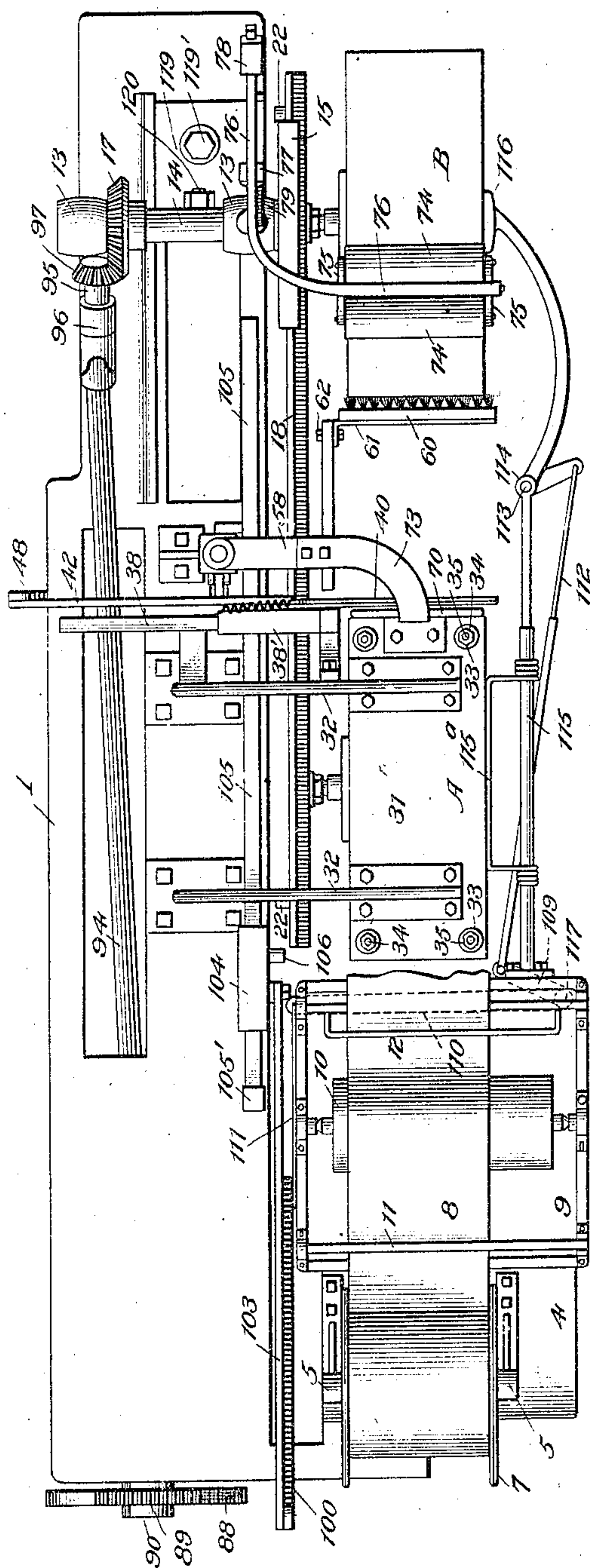
Attorney

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3 SHEETS—SHEET 2.



Inventor

Philip S. Smith

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By J. Lawrence Meyers Attorney

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Witnesses

Edwin L. Bradford

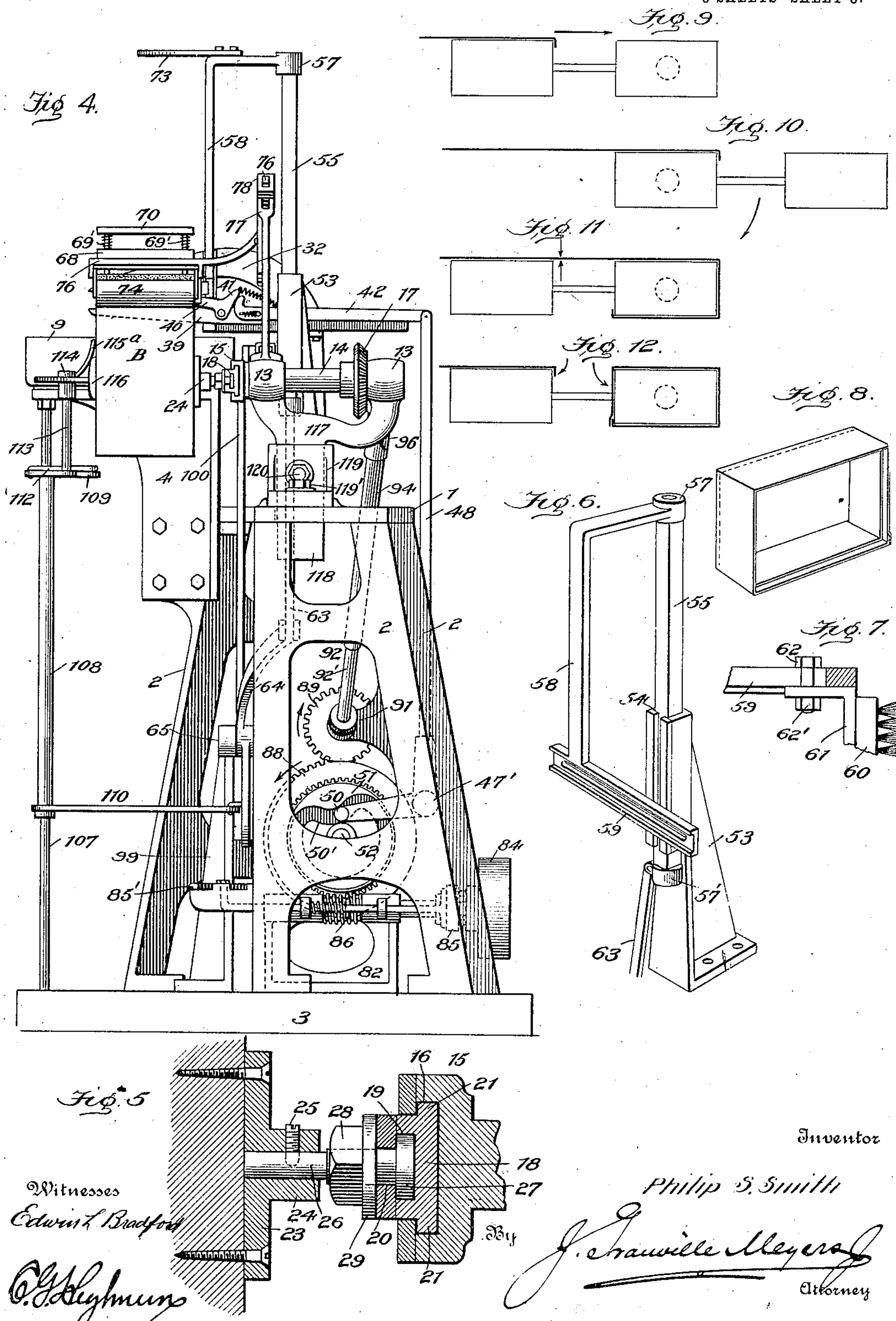
C. G. Heylman

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3 SHEETS—SHEET 3.



Inventor

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UNITED STATES PATENT OFFICE.

PHILIP S. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

BOX-COVERING MACHINE.

No. 862,357.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed February 18, 1904. Serial No. 194,189.

To all whom it may concern:

Be it known that I, PHILIP S. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Box-Covering Machines, of which the following is a specification.

This invention relates to box covering machines, and more particularly to that type known in the art as stripping machines, in which a gummed covering strip or band is applied to the outer side and end walls of a box, in such a manner as to entirely cover said walls. In machines heretofore constructed of this type, only one box could be covered at one operation, and the one box must be completely covered and removed from the machine before work on another box could commence. Such machines comprise generally, a reel for supporting the covering strip, means for applying glue to the strip, and a rotatable box form or support upon which the box to be covered was carried. In using a machine of this construction, a box is first placed upon the form, the gummed strip is drawn forward and the free end pasted to one side or end of the box, the form with the box thereon is rotated, and the strip wound around the box, it being understood that the rotation of the form unwinds the strip from the reel and carries it over the glue roller. When the strip has been wound entirely around the box, so that all sides are covered, said strip is severed and the end pasted to the box wall, overlapping or abutting the end just applied, and the box is removed from the form. The projecting edges of the covering strip are then turned in and pasted on the bottom and over the top edges of the box, respectively, by hand, thus completing the box. To cover another box the same series of operations must be again gone through with, and for every box covered the attendant must bring the end of the covering strip forward and paste the free end to the box.

The object of the present invention is to provide a machine by which the process of covering boxes may be made continuous and automatic in its operations, requiring no attention beyond the placing of boxes on the form and the removal of the completed box therefrom. To attain this end I employ two box forms instead of one, and arrange these forms so that one will feed the covering strip to the other during the movement of the form, thus beginning the covering operation of one box before it is completed on the other. By this method of procedure, one box at least is always undergoing the covering process during the operation of the machine.

Briefly stated, the present invention comprises means such as a glue roller, whereby the strip of paper is glued on one side, an element mounted to have a longitudinal and a rotary movement, and two box forms or supports carried by said element the said forms

being located in line with each other, but separated one from the other at a distance equal, or about equal to the length of one of the box walls, the arrangement being such that when the said element with the forms thereon is moved forward longitudinally during the covering operation, such movement will draw out a sufficient length of the covering strip behind the rear form, so that when the forward form is rotated to bring it into the position previously occupied by the rear form, the covering strip will be in a position to be engaged thereby.

Another feature of the invention relates to means for severing the paper strip at a predetermined point between the box supporting members in the intermission between the rotary movement of the box form and the longitudinal movement thereof.

Another feature of the invention relates to means whereby the severed ends of the covering strips are secured to the ends of the respective boxes on the form.

Another feature relates to means for firmly pressing the covering strip to the box after it has been covered and before it has been removed from the form.

Another feature relates to means whereby the boxes may be securely retained upon the forms during the covering operation and whereby each box may be released therefrom at the completion of the operation.

Another feature relates to means whereby all of the above stated means may be actuated to perform their functions in proper sequence and in regularly recurring cycles.

Another feature relates to means whereby all of the necessary parts may be adjusted for operating on boxes of different sizes.

There are other more or less important features due to the peculiar construction and arrangement of parts, all as will more clearly hereinafter appear.

The invention will now be fully described, and the several novel features will be particularly pointed out in the claims at the close of the specification.

Figure 1, is a side elevation of the complete machine. Fig. 2, is a plan view thereof. Fig. 3, is an enlarged detail of the shears and their operating mechanism. Fig. 4, is an end view of the machine from the rear. Fig. 5, is an enlarged section on the line $x-x$ of Fig. 2, showing in detail the connecting means between the forms and the rotatable element. Fig. 6, is a perspective view of the adjustable support for the means whereby the ends of the covering strip are affixed to the boxes. Fig. 7, is an enlarged detail of the brush for securing the strip to the end of one of the boxes. Fig. 8, is a perspective view of the box as it leaves the machine, and Figs. 9, 10, 11 and 12, are diagrammatic views showing the several positions of the forms, with the covering strip applied, during the operation of covering boxes.

Referring to the drawings in which like numerals refer to like parts, the numeral 1, designates a table upon which the working parts of the device are carried, and having legs 2, and a base 3.

5 From one end of the table 1, rise two upwardly and horizontally inclined brackets 4, provided at their upper ends with arms 5, in which is journaled an axle 6, carrying a spool 7, upon which is supported the covering strip or band 8, usually of paper.

10 Located in front of the reel or spool and also supported upon the brackets 4, is a glue tank 9, and rotating in said tank is a glue applying roller 10, over which the covering strip or band 8, is caused to pass in such a manner as to apply glue to the under face thereof. Guides 11 and 12, are placed upon opposite sides, respectively, of the glue applying roller, so as to cause the covering strip or band to bear upon and make contact with the face of said roller.

15 Journaled in bearings 13, carried by a Y-shaped sliding member 117, at the opposite end of the table, is a rotatable shaft 14, carrying at one end a head 15, having an undercut or grooved way 16, and at the opposite end a bevel gear 17.

The reference numeral 18, designates a comparatively long bar hereafter called the "form carrier", said bar being provided throughout its length, or substantially so, with a T-shaped groove 19, the narrower portion 20, of which (see Fig. 5) is open along the front of the bar. The said bar is also provided with projecting flanges 21, along its upper and lower longitudinal edges respectively, which are arranged to fit and slide freely in the undercut groove 16, of the head 15. By this construction it will be seen that the form carrier can be moved freely back and forth in the direction of its length, in the groove of the head, and, by reason of the fact that the head which supports the bar can be rotated, said bar is also capable of rotation about its longitudinal axis. The bar 18, is also provided on its rear face near either end, with projecting lugs or stops 22, for a purpose to be hereinafter stated.

Adjustably and removably supported on the bar 18, are two supports, A and B, for supporting and carrying boxes to be covered. These supports may be of any desired construction, those shown in the present instance being ordinary solid wooden forms. I do not limit myself, however, to any specific form of box support, the present showing being only by way of example. These box supports A and B, are adjustably mounted upon the form carrier 18, in the following manner, reference being had to Fig. 5 of the drawing. If a solid wooden form block is employed, such as here shown, I screw to the back of each block a plate 23, having an integral hollow base 24, and in this base I fix by means of a screw 25, a bolt 26, having a head 27, at its free end, said head being located in the T-shaped groove of the bar 18. The bolt 26, is threaded intermediate its ends, and screwed upon its threaded portion is a nut 28, between which and the face of the bar 18, is placed a washer 29. It will be understood that by screwing the nut 28 toward the bar 18, the head 27, of the bolt may be tightly clamped in the T-shaped groove, thus preventing any movement of the form block relatively to the bar. It will also be understood that by unscrewing the nut 28, the parts will be released and the forms may then be adjusted toward and

from each other along the bar 18, for a purpose presently to appear.

From the foregoing description it will be evident that the machine comprises essentially two box supports, one arranged in advance of the other, said supports being carried by a longitudinally movable element (the bar 18) and said element being capable of rotary movement by reason of the fact that it is mounted on a rotatable element (the head 15) carried by the shaft 14. It will be seen therefore, reference being had to Fig. 1, that by moving the bar 18 longitudinally, the forms A and B will advance together, the rear form A, taking up the position previously occupied by the form B, and then, by partially rotating the bar, the form B, will be brought to the position formerly occupied by the form A. In this manner, by giving alternate longitudinal and rotary movements regularly to the bar 18, the forms will be caused to follow each other, the one taking up the position formerly occupied by the other. I will now describe the means whereby I cause these actions to be performed.

Rotating in bearings 81, in brackets 82, rising from the base 3, of the machine, is a cross shaft 83, having loosely mounted therein a band wheel 84. The numeral 85 designates a clutch of ordinary construction, having one of its parts secured to or integral with the band wheel, and the other part splined upon the shaft 83, and capable of longitudinal motion thereon, designating a lever for actuating the movable part of the clutch, all of which may be of any desired construction, no part of the invention residing therein.

The cross shaft 83, has cut thereon or secured thereto, a worm 86, meshing with which is a worm wheel 87, secured to a longitudinally arranged shaft 52, rotating in bearings on the support 2. On the outer end of the shaft 52, is a mutilated gear wheel 88, with which meshes a mutilated pinion 89, on a stub shaft 90, rotating in bearings 91, on the end support 2. The inner end of the stub shaft 90, is connected by a universal joint to a telescoping shaft 92, said shaft comprising a tubular part 94, provided with a groove, and a solid part 92', sliding in said tubular part, and provided with a spline or feather 93, to correspond with said groove. The telescoping shaft 92, is connected at its upper end by a second universal joint with a stub shaft 95, journaled in a sleeve 96, secured to the bearing 13, and is provided at its upper end with a bevel gear 97, meshing with a bevel gear 17, on the shaft 14. By this combination it will be evident that the shaft 92' may be adjusted perpendicularly to and from said shaft 52, and may also be adjusted in a direction parallel or transverse thereto.

Secured to the shaft 52, intermediate the mutilated gear 88, and the worm wheel 87, is a cam 67, having in its periphery a cam groove 99, in which runs a friction roll on the short arm of a rock shaft 100, mounted in bearings 101, on a bracket 102, rising from the base of the machine. Connected to the long arm of the rocking lever is a link 103, pivoted to a sliding block 104, sliding on a fixed bar 105, supported by a bracket 105', rising from the table 1. The block 104, is provided on its front face with a lug 106, adapted when the block is moved toward the rotating element, to engage the lugs 22, on the bar 18, and move said bar in the same direction.

The cam 98, and the mutilated gear 88, are so arranged

5 ranged and timed with reference to each other, that the toothed part of the mutilated gear will engage the toothed part of the pinion 89, immediately on the conclusion of the movement of the sliding block to the right, and the teeth of the mutilated gear and of the pinion, are so arranged with reference to each other, as regards number and location, that one complete rotation of the mutilated gear imparts a half turn to the pinion. These parts are also so arranged and timed, 10 that there will be a dwell or pause between each succession of acts, or briefly stated; a reciprocation, a rotation and a pause.

In order to aid in applying or affixing the covering strip to the box during the movement of the form, I 15 provide what may be called an abutment block or plate 30, which latter is located at a point between the shaft 14, and the glue applying device, and in such a position as to be engaged by the form blocks as they are alternately shifted from front to rear during the movement of the bar 18. The said abutment block 30 is preferably, but not necessarily yieldingly supported from a support 31, carried by upwardly and forwardly extending brackets 32, which latter are bolted to the table 1. The support 31, has rising therefrom, four hol- 25 low projections 33, through each of which a bolt 34, passes, said bolts being attached to and supporting at their lower ends the abutment block or plate 30, and each bolt having its upper end threaded and carrying a nut 35. A coiled spring 36, surrounds each bolt, and 30 bears at its upper end against the upper interior wall of the hollow projections 33, and at its lower end against the upper face of the abutment block or plate. By adjusting the nuts 35, the tension of the springs 36, may be varied to impart a greater or less yield to said plate or block, as desired. In the operation of the machine 35 the covering strip is fed along beneath the abutment plate, and as the box support is rotated against the abutment, the covering strip is pressed firmly against the box between the support and the abutment.

40 As it is necessary that the covering strip or band be severed at a point intermediate the two box supports, and since such point is in the line of travel of the support, I provide a cutting mechanism adapted to move into and out of operative position during the dwell be- 45 tween the rotary and longitudinal movements of the forms.

Referring to Figs. 1, 3 and 4, the numeral 37 designates a sliding block, mounted on a rod 38, having a stop 38' at its inner end and secured to one of the abutment plate supporting brackets, said block being adapted to slide on said rod. To the block 37, is fixed, by any suitable means, a fixed blade 39, and pivoted to and co-acting with the fixed blade, is a movable blade 40. Projecting upwardly from the rear end of the movable blade and integral therewith, is a lug 41, adapted to contact with a lug 43, on a link 42, provided with a slot 44, in which works a pin 45, on the fixed blade 39, thus securing lost motion between the fixed blade and the link. A coil spring 46, is attached at one end to the 60 link, and at the other to the pin, and is adapted to normally retain the pin at the end of the slot. Pivoted to the outer end of the link 42, is the long arm of a rock shaft 48, mounted in a bearing 47', secured to one of the legs of the machine, the short arm of said rocking shaft 65 being provided with a friction roll 50, running in a cam

groove 50' on the face of a cam 51, on the main shaft 52. The cam groove 50', is throughout the great part of the extent concentric with the shaft, but is provided with a depression which at a predetermined time, draws downward the short arm of the rock shaft, and through 70 the long arm moves the link 42, on the sliding block 37, forwardly. By reason of the coil spring 46, the block and the link move together, until the block strikes the stop 38', when the motion of the block ceases. The pin and slot connection between the block and the link 75 allows the link to continue its motion against the resistance of the spring the lug 43, presses against the lug 41, and rocks the movable blade 40, downward, making the cut. As the friction roll commences to rise the link is withdrawn, the sliding block is restrained for a mo- 80 ment by the spring, the pressure on the lug 41, is relieved, and the blade 40, is elevated by a second coil spring 47, attached at one end to the lug 41, and at the other end to the sliding block. After the strip is severed, the free ends are affixed to the end walls of the 85 boxes, and I have devised the following described mechanism for that purpose, reference being had to Figs. 1, 6 and 7.

The numeral 53 designates a bracket secured to the rear of the table, having a groove or dovetail 54 therein. 90 In the groove slides a vertically reciprocable bar 55, provided with a collar at either end. To the upper collar 57, is rigidly attached a forwardly and downwardly projecting bracket 58. Secured to or integral with the lower end of said arm, is a grooved and slotted bar 59, 95 extending longitudinally of the machine. Secured in said groove by a bolt 62, passing through the slot, is the shorter arm of an angle bar 61, the long arm of said bar extending transversely of the machine and having attached thereto a brush 60. It will be evident that by 100 loosening the nut 62', of the bolt 62, that bar 61, may be adjusted in the groove of the slotted bar, or may be removed entirely. Secured to the lower collar 57', of the sliding bar 55, is a link 63, connected to one arm of a rock shaft 64, mounted in bearings 65, in a bracket 99, 105 rising from the base of the machine. The short arm of the rock shaft is provided with a friction roll running in a cam groove 66, on the periphery of the cam 67 on the shaft 52. Sliding in bearings in a bracket 68, fixed on the abutment supporting plate 31, are pins 69, con- 110 nected at their upper ends by a cross bar 70, and attached at their lower ends to a U-shaped bar 71, the depending arms of which are resilient and are provided with bearings, in which is mounted a roller 72. Coil springs 69', encircle the pins 69, bearing at one end 115 against the cross-head 70, and at the other against the bearing 68, thus holding the roller normally elevated above the box supporting member. An arm 73, attached to forwardly projecting brackets 58, is arranged, when the sliding bar 55, is depressed, to strike the cross 120 head 70, and depress the said cross head, thus depressing the roller 72, against the end of the box upon the rear supporting member. The cam 51, and the cam 98, are so timed with reference to each other that the bar 55, may begin its downward reciprocation immediately 125 at the conclusion of the cutting operation, and before the shears are withdrawn, this saving of time being made possible by the peculiar construction of the brush supporting member.

I have found it advisable to provide means for hold- 130

ing the boxes upon the forms during the covering operation, such means being best shown in Figs. 1 and 2, in which the numeral 107 designates a rod supported at one end by the bracket 4, and having its lower end secured 5 to the base of the machine. Mounted upon the said rod is an elongated sleeve 108, provided at either end thereof with projecting arms 109 and 110. To the arm 110, is attached a rod 111, connected to the short arm of the rock shaft 100. The arm 109, is connected by 10 means of a telescoping rod 112, to one arm of a rock shaft 113, mounted in a bearing 114, in the end of a telescoping rod 116, secured to and projecting longitudinally from the glue tank 9. The other arm of the rock shaft 113, is curved outwardly, and carries on the end a plate 15 116, adapted, when the shaft 113, is rocked in one direction to clamp the box upon the form, and when rocked in the opposite direction to be turned outwardly and backwardly, to release the pressure on the form. Mounted upon the tubular part of the telescoping rod, is a substantially U-shaped clamp 115^a, of desirable length and 20 of resilient material, and having its terminals wrapped around said rod in such manner as to act as coil springs. When adjusting the box supporting member toward and from each other, it is desirable that the clamping 25 members preserve their relative positions with regard to the boxes. I provide for this by making the clamping member 115^a, of considerable length, and by employing the telescoping rods 112 and 115. These rods may be extended or contracted to adjust the clamp 116, 30 to or from the clamp 115^a, and when so extended or contracted, may be retained in said adjusted position by means of the thumb screws 112' and 115', or any other suitable means.

Although not essential to the operation of the machine, I find it advisable to provide a means for maintaining pressure upon the covering strip, while it is being wound about the box during the rotation thereof. To this end I provide one or more rollers 74, mounted 40 in bearings in the U-shaped arm 75, pivoted centrally to a bent lever 76, said lever being pivoted intermediate the ends to a forked upright 77, secured to the bearing 13. In order to vary the pressure of the rollers, I provide a sliding weight 78, on the upper end of the bent lever 76. To prevent lateral motion of said lever I 45 pivot thereto a brace 79, provided with an open slot 80, in which slot moves a pin on the uprights 77. By this construction the rolls will not be displaced during their elevation and depression by the rotation of the box.

I will now describe the means by which the box supporting members are adjusted with reference to the table. The shaft 14, as before stated, is mounted in bearings 13, in a Y-shaped sliding member 117, having a part 118, adapted to slide in a groove or dovetail in 55 an L-shaped bracket 119, secured to the table top 1, by means of a bolt 119', passing through a slot in the table. In the part 118, of the sliding member 117, is a slot (not shown) and through the slot and the bracket 119, passes a bolt 120. Bearing against the lower end of the part 60 118, is a screw-threaded rod 121, provided with a hand wheel 122, and supported in a bracket 123, extending downwardly from the table, said bracket having an internally screw threaded bearing 124, adapted to receive the rod. In the method of adjustment for this machine, I have shown the cutting device as the fixed

point toward and from which the other parts are adjusted, but it is evident that other parts might be so taken.

Having described the construction of the machine, I will now give a brief description of the operation. 70 Boxes having been placed upon the forms, the covering strip is drawn forward, and affixed to the side and end of the box on form A. The clutch is thrown into operation and the machine started. The rotation of the cam 98, rocks the shaft 100, and by means of the links 103, 75 move the block 104, to the right. The lug 106, on the block, engages the lug 22, on the sliding bar 18, and moves the box supports to the right. Through the link 111, rocking sleeve 108, and telescoping shafts 112, the rock shaft 113 partakes of the movement, lifting the 80 clamp 116, from the support B. Figs. 9 and 10, show diagrammatically the change of position undergone by the supports during the above movement. By the reverse movement of the rocking shaft 100, the clamp 116, is again closed on the support, the teeth on the mutilated 85 gear engage the pinion, the telescoping shaft 94, is rotated, and the rotary element 20 is given a half turn, bringing the supports to the position shown in Fig. 11, in which it will be seen that the box on form A, has the covering strip applied on three sides, and the box on 90 form B has the covering strip applied to one side. The movement of rotation swings the box on form B, against the covering strip and the abutment, thus pressing the strip firmly against the box. The friction roll 50, on the rock shaft 47, drops into the depression in the cam 51, 95 rocking the shaft and moving forward the cutting device, until the sliding block 37, strikes the stop 38'. The link 42 continues its motion and actuates the movable blade 40, to sever the strip. The cutting device commences its reverse movement, and the cam 98, 100 actuates the rock shaft 64, to depress the sliding bar 55, and with it the brush 60, which completes the covering of the box on form A, by affixing the severed strip to the end of said box. Before the completion of the movement of the bar 55, the stop 73, strikes the cross 105 bar 70, depressing the roller 72, and affixing the other end of the covering strip to the end of the box on the form B. The cutting device has meanwhile retired, and the bar 53, is again elevated. The supports are now in the position shown in Fig. 12, one box being en- 110 tirely covered and the other having the strip affixed to one side and partially to one end. The longitudinal movement is repeated and when the supports are again in the position shown in Fig. 10, the completed box is removed. 115

What I claim is:-

1. In a box covering machine, a supply roll carrying the covering web, a box form for supporting the box to be covered, and means for imparting to said form alternate movements of translation and rotation to first with- 120 draw an excess quantity of covering web, and then wrap said web about the box on the form.
2. In a box covering machine, a plurality of box supports arranged parallel to each other in the same plane and adapted to carry boxes to be covered, said supports 125 having a similar movement, and means for moving one support in the proper direction to feed the covering strip into position to be engaged by the wall of another box.
3. In a box covering machine, a glue applying device, two box supports, means for moving said supports to- 130 gether in a direction away from the glue applying device, and means for moving them singly in a reverse direction to change the position thereof.

4. In a box covering machine, two box supports, means for moving them together in one direction, and means for moving them reversely, one at a time.
5. In a box covering machine, two box supports, means for moving them together over the same path in one direction and means for moving them reversely singly over another path.
6. In a box covering machine, two box supports, and means for moving the said supports in a rectilinear and a reversely directed curved path alternately.
7. In a box covering machine, two box supports, a stationary axis and means for moving said supports alternately in a rectilinear path and for rotating them about said axis.
8. In a box covering machine, two box supports one located in advance of the other, said supports having movements of translation and rotation, a stationary axis, and means for alternately shifting the position of said supports relatively to said axis.
9. In a box covering machine, a bodily movable element, means to move the same in one direction over a rectilinear path, means to rotate said element, and a plurality of box supports carried thereby.
10. In a box covering machine, a bodily movable element, means to move the same, over a rectilinear path in one direction means to reverse its direction of movement over another path and a plurality of box supports carried thereby.
11. In a box covering machine, a rotatable element, means to rotate the same, a carrier slidably mounted thereon, and two box supports carried by the carrier.
12. In a box covering machine, a rotatable element, means to rotate the said element, a carrier slidably mounted thereon, means to move the carrier in one direction, and two box supports mounted on the carrier.
13. In a box covering machine, a rotatable element, a carrier slidably mounted thereon, means to move the carrier in one direction and two box supports carried by the carrier.
14. In a box covering machine, a rotary shaft, means to rotate the shaft, a head on said shaft, a bar slidably mounted on said head, means to move the bar in one direction, and two box supports carried by the bar.
15. In a box covering machine, a rotatable shaft, means to rotate the shaft, a carrier bodily movable relatively to said shaft, means to move the carrier, and two box supports mounted on the carrier.
16. In a box covering machine, a rotatable shaft, means for rotating the shaft, a carrier mounted thereon and movable transversely to the axis of said shaft, means to move the carrier, and two box supports mounted on the carrier.
17. In a box covering machine, a rotatable shaft, means to rotate the shaft, a bodily movable carrier mounted thereon, and two box supports mounted on the carrier.
18. In a box covering machine, a carrier, means for actuating said carrier, two box supports adjustably mounted upon said carrier, and means for locking said supports in their adjusted position.
19. In a box covering machine, means for applying glue to a covering strip, a rotary element, means to rotate said element, a rectilinearly movable element carried by said rotary element, and a plurality of box supports mounted upon said rectilinearly movable element.
20. In a box covering machine, means for applying glue to a covering strip, a rotary element, means to rotate said element, a rectilinearly movable element, means to move said last named element, and a plurality of box supports mounted upon said rectilinearly movable element.
21. In a box covering machine, a reel for the covering strip, a glue applying device, a rotary element, means to rotate said element, a rectilinearly movable element carried by the rotary element, and two box forms adjustably mounted upon said rectilinearly movable element.
22. In a box covering machine, a reel for the covering strip, a glue applying device, a rotary element, means to rotate said element, a rectilinearly movable element carried by the rotary element, means to move said element, and two box forms adjustably mounted upon said rectilinearly movable element.
23. In a box covering machine, an abutment, two box supports, means for advancing said supports perpendicularly against said abutment, and means for moving said supports away from said abutment, parallel to the plane of a wall of said abutment.
24. In a box covering machine, an abutment, two box supports, means for advancing said supports to said abutment on a line perpendicular to its length and means for retracting the supports on a line parallel to the plane of a wall thereof.
25. In a box covering machine, an abutment, two box supports, means for rotating said supports perpendicularly against said abutment, and means for retracting the supports therefrom in a right line.
26. In a box covering machine, an abutment, two box supports, means to rotate said supports against said abutment, and means to withdraw said supports therefrom in a right line.
27. In a box covering machine, an abutment, two box supports, one located in advance of the other, and means to impart to both supports alternate rectilinear and rotary movements, whereby said supports will be brought into engagement alternately with the abutment.
28. In a box covering machine, a yielding abutment, two box supports having alternate rectilinear and reversely directed rotary movements away from and toward the abutment and means for imparting said movements to bring the said supports into engagement alternately with said abutment.
29. In a box covering machine, an abutment, two box supports, means for moving said supports bodily in a rectilinear direction away from said abutment, and means for moving said supports perpendicularly toward said abutment.
30. In a box covering machine, an abutment, two box supports, means for moving said supports toward said abutment and means for moving said supports away from said abutment at a right angle to the line of their approach.
31. In a box covering machine, a glue applying device, for applying glue to a covering strip, a rotary element, means for rotating said element, an abutment located at a point intermediate the said glue applying device and rotary element, a carrier movable in a right line on said rotary element, and two box forms carried by the carrier.
32. In a box covering machine, a glue applying device for applying glue to a covering strip, a rotary element, means for rotating said element, an abutment located at a point intermediate the said glue applying device and rotary element, a carrier movable in a right line on said rotary element, means for moving said carrier, and two box forms carried by said carrier.
33. In a box covering machine, an abutment block, two box supports for supporting boxes to be covered, means to move said supports bodily in a direction away from the abutment and reversely into engagement alternately with said abutment.
34. In a machine for applying a covering strip to the outer side and end walls of boxes, means for applying glue to the covering strip, two box supports mounted on a common support, means to move said common support in a direction away from said glue applying device to draw the covering strip over said glue applying device, an abutment located in front of the glue applying device, and means for bringing the box supports alternately into engagement with the abutment during the covering operation, whereby said operation may be carried on continuously.
35. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element two box forms carried by the movable element slidably mounted on said rotatable element, means to move said movable element and means whereby said first named means is actuated in timed relation to said last named means.
36. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element slidably mounted on said rotatable element, two box forms carried by the movable element means to move said movable element and means actuating said first named means and said last named means in proper sequence.

37. In a box covering machine, a rotary element, means to rotate said element, a rectilinearly movable element mounted upon said rotary element, two box forms carried by the movable element means to move said movable element, and means actuating said first named and said last named elements alternately, and in timed relation one with the other.
38. In a box covering machine, a rotary element means to rotate said element, a rectilinearly movable element, mounted upon said rotary element, two box forms carried by the movable element means to move said movable element, and means actuating said first named means and said last named means, alternately and in proper sequence.
39. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element mounted on the rotatable element, two box forms carried by said movable element means to move the said movable element, and means actuating said first named means immediately following the conclusion of the cycle of operation of said second named means.
40. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element mounted on the rotatable element, two box forms carried by said movable element, means to move the said movable element, and means actuating said second named means following the conclusion of the cycle of operation of said first named means.
41. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element, two box forms carried thereby means to move said movable element, and means actuating said first named means and said second named means successively and in timed relation one with the other.
42. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element mounted upon the rotatable element and having a plurality of box supports thereupon, means to move said movable element, and means actuating said first named means and said second named means to reverse the respective positions of the box supports.
43. In a box covering machine, an abutment, a rotatable element, means to rotate said element, a rectilinearly movable element mounted on the rotary element, and provided with a plurality of box supports, means to move said movable element, and means actuating said first named and said last named means to alternately advance the supports toward and withdraw them from the said abutment.
44. In a box covering machine in combination, a glue applying device, a rotatable element, means to rotate said element, a rectilinearly movable element mounted on the rotatable element, and provided with a plurality of box supports, means to move said movable element and means actuating said first named means and said last named means to advance the supports toward and to withdraw them from the said glue applying device.
45. In a box covering machine, in combination, a reel for supporting a paper strip, a rotatable element, means to rotate said element, a rectilinearly movable element having a plurality of box supports thereupon, means to move said movable element, and means actuating said last named means to withdraw a strip of paper from the reel and said first named means to partially wrap the strip around the support.
46. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element mounted thereon, and provided with a plurality of box supports, means to move said movable element in one direction and means actuating said first named means and said last named means to reverse the longitudinal axis thereof.
47. In a box covering machine, two box supporting members, means for imparting alternate movements of translation and rotation to said supports to feed a covering strip from one to the other, and means for severing the strip at a predetermined point between the supporting members.
48. In a box covering machine, two box supporting members arranged one in advance of the other, means for applying a covering strip to the last supporting member, means for moving said supporting members together in one direction to withdraw the covering strip, means for rotating the first support into position against the covering strip, and means to sever the covering strip between the supports.
49. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element mounted thereon and provided with two box supporting members, means to move said movable element, cutting means, means to actuate said cutting means, and means for advancing and retiring said cutting means from between the box supporting members.
50. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element mounted thereon and provided with a plurality of box supporting members, means to move said movable element, cutting means, and means for advancing and retiring said cutting means from between the box supporting members during an intermission in their movement.
51. In a box covering machine, two box supporting members, means for moving the said members together in a right line, a cutting device, and means for introducing said device between the supporting members, and retiring the same preceding the movement of the supporting members.
52. In a box covering machine, two box supporting members, means for moving the said members together in a right line, a cutting device intermediate the box supports, and means to actuate said device preceding the longitudinal movement thereof.
53. In a box covering machine, a rotatable element, means to rotate said element, a cutting device, means to actuate said cutting device, a rectilinearly movable element mounted upon said rotary element, carrying two box forms means for moving said movable element, and means for actuating each of said means in the order named.
54. In a box covering machine, a rotary element means to rotate said element, a cutting device, means for operating said cutting device, a rectilinearly movable element, carrying two box forms mounted on said rotary element means for moving said longitudinally movable element, and means for actuating each of said means in timed relation to each other.
55. In a box covering machine, a rotary element, means for rotating said element, a cutting device, means for actuating said cutting device, a rectilinearly movable element carrying two box forms mounted upon said rotary element, means for moving said longitudinally movable element, and means for actuating each of said means in regularly recurring cycles.
56. In a box covering machine, a rotary element, means for rotating said element, a cutting device, means for operating said cutting device, a rectilinearly movable element carrying two box forms mounted upon said rotary element, means for moving said longitudinally movable element, and means for actuating each of said means in succession and in regularly recurring cycles.
57. In a box covering machine, a rotatable element, means for rotating said element, a cutting device, means for operating said cutting device, means for attaching a covering strip to a box, a rectilinearly movable element carrying two box forms mounted upon said rotatable element, means for moving said longitudinally movable element, and means actuating each of said means in the order named.
58. In a box covering machine, a rotatable element, means for rotating said element, a cutting device, means for operating said cutting device, means for attaching a covering strip to a box, a rectilinearly movable element carrying two box forms mounted upon said rotatable element, and means actuating each of said means successively and in regularly recurring cycles.
59. In a box covering machine, a rotatable element, means for rotating said element, a cutting device, means to actuate said cutting device, means for attaching a covering strip to a box, a rectilinearly movable element carrying two box forms mounted upon said rotatable element, means for moving said longitudinally movable element, and means actuating each of said means in regularly recurring cycles.
60. In a box covering machine, a sliding bar, two box supporting members mounted thereon and each adapted to

support box to be covered, means for moving said bar longitudinally, means for rotating said bar on its longitudinal axis, and means for retaining the boxes on said supports.

61. In a box covering machine, a sliding bar, two box supporting members mounted thereon and adapted to support boxes to be covered, and means for retaining the boxes thereon.

62. In a box covering machine, a sliding bar, two box supporting members carried thereby and adapted to support boxes to be covered, a clamp for retaining boxes on said supports and means to close and release said clamp.

63. In a box covering machine, a rotatable element, a longitudinally movable element mounted thereon, two box supports mounted on said longitudinally movable element, and means for retaining boxes on said supports.

64. In a box covering machine, a rotatable element, a rectilinearly movable element mounted thereon, two box supporting members mounted on said movable element, means for retaining boxes on said supporting members and means for actuating said retaining means.

65. In a box covering machine, a rotatable element, a rectilinearly movable element mounted thereon, two box supporting members carried by said movable element, means for retaining a box upon said supporting members and means for releasing said retaining means.

66. In a box covering machine, a rectilinearly movable element, two box supports adjustably mounted thereon, and adapted to support a box to be covered, means independent of said supports for clamping a box thereupon, and means for adjusting the position of said clamping means.

67. In a box covering machine, a longitudinally movable bar, two box supporting members mounted thereon, means whereby said member may be adjusted longitudinally of said bar, means for clamping a box upon said supports, and means to adjust said clamping means for different positions of said box supporting members.

68. In a box covering machine, a longitudinally movable bar, two box supporting members thereon, means for clamping boxes on said supporting members, and means for closing and releasing one of said clamps.

69. In a box covering machine, a rectilinearly movable element, two box supporting members carried thereby, fixed means for clamping a box upon one of said supporting members, and movable means for clamping a box upon the other supporting member.

70. In a box covering machine, a rotatable element, means to rotate said element, a rectilinearly movable element mounted on said rotatable element and having two box supporting members mounted thereon, means to move said movable element, means to clamp a box on one of said supporting members during the action of said rotating means, and to release the box during the action of said moving means.

71. In a box covering machine, a rotary element, means for rotating said element, a rectilinearly movable member mounted thereon, and provided with two box supporting members, means to move said members rectilinearly, box clamping means independent thereof and means for actuating said clamping means intermittently.

72. In a box covering machine, a box supporting member, means for moving said members in a rectilinear direction, means for clamping a box on said supporting member during said motion, means for partially rotating said member, and intermittently acting means for clamping a box on said member during such partial rotation.

73. In a box covering machine, a rectilinearly movable element, two box supporting members mounted thereon, means for adjusting said supports toward and from each other, a two part clamping means for clamping boxes upon said supporting members, and means for adjusting said clamping means to correspond with the box supports.

74. In a box covering machine, a rectilinearly movable element, two box supporting members mounted thereon and adjustable toward and from each other, box clamping means comprising a fixed and a movable clamp and means whereby they may be adjusted to correspond with the position of the supporting members.

75. In a box covering machine, a table, a bracket adjustably mounted thereon, a bearing sliding in said bracket,

a rotatable element carrying two box forms mounted in said bearing, a rectilinearly movable element mounted on said rotatable element, and means for adjusting said bearing to and from the table.

76. In a box covering machine, a table, a bracket secured thereto, means for adjusting said bracket longitudinally of the table, a bearing slidably mounted in said bracket, means for adjusting said bearing vertically in said bracket, a rotatable element journaled in said bearing, a rectilinearly movable element mounted on said rotatable element, two box supporting members carried thereby, and means whereby said members may be adjusted to and from each other.

77. In a box covering machine, a driving shaft, a rotatable element, two box supporting members carried thereby, power transmitting means for connecting said driving shaft and said rotatable element, comprising a telescoping shaft, and a universal joint connection interposed between said shaft and said rotatable element.

78. In a box covering machine, a driving shaft, a rotatable element, two box supporting members carried thereby and power transmitting means comprising a telescoping shaft having a universal joint connection with said driving shaft and with said rotatable element.

79. In a box covering machine, a continuously rotating driving shaft, a rotatable element, two box supporting members carried thereby, means comprising a mutilated gear and pinion connecting said driving shaft and said rotatable element whereby said element is rotated intermittently.

80. In a box covering machine, a rotatable element, a longitudinally movable bar mounted thereon and provided with lugs at either end, two box supporting members carried by said bar, a sliding block adapted to engage with one of said lugs when the block is moved in one direction, and means for reciprocating said block.

81. In a box covering machine, a rotatable element, means for rotating said element, a longitudinally movable bar mounted thereon, two box supporting members carried by said bar, a rod supported independently of said bar, a sliding block on said rod, means for reciprocating said block, and means for engaging said block with said bar during the forward reciprocation of said block.

82. In a box covering machine, a longitudinally movable bar, two box supporting members mounted thereon, a fixed clamp and a movable clamp supported independently of such supporting members, and means for engaging the supporting members alternately with the clamps.

83. In a box covering machine, a box supporting member capable of rectilinear and rotary motion, means for imparting such motion, a fixed clamp for engaging the supporting member during its movement and a movable clamp for engagement therewith during the rotary movement.

84. In a box covering machine, a box supporting member moving between fixed points, means for moving said member, a fixed clamp for engaging the supporting member at one of said points and a movable clamp for engaging thereof with at another point.

85. In a box covering machine, a plurality of box supporting members moving over a fixed path, means for moving said members, a fixed clamp for engaging said member at one point in said path and a movable clamp for engagement therewith at another point.

86. In a box covering machine, two box supporting members, two clamping members for cooperating with said supports and mounted independently thereof, one of said clamps being fixed, and means for moving the other clamp to and from said supporting members.

87. In a box covering machine, two box supporting members, clamps for holding boxes on said supporting members, means for holding one of said clamps in fixed relation to said supporting members, and means for moving the second clamp to and from the box upon the support.

88. In a box covering machine, a rectilinearly movable element, two box supporting members carried thereby, means to move said element longitudinally, a cutting device, and means to advance and return said cutting device to and from between the box supporting members.

89. In a box covering machine, a longitudinally movable bar, two box supporting members carried thereby and

- adapted to support a box to be covered, means for moving said bar, means for feeding a covering strip to the boxes carried by the supporting members, means for cutting the strip between the supporting members, means for affixing one end of the severed strip to one box, and means for affixing the other end of the strip to the second box.
90. In a box covering machine, a plurality of box supporting members, a cutting device, means for moving said members and means for reciprocating said cutting device transversely of the line of travel of said supporting members at predetermined intervals.
91. In a box covering machine, a plurality of box supporting members for supporting boxes to be covered, means to move said members in one direction intermittently, means for affixing a covering strip to the ends of the boxes carried on the supporting members, and means for moving said affixing means into and out of the path of travel of the supporting members during an intermission in their travel.
92. In a box covering machine, a rotatable element, means for rotating said element, a rectilinearly movable element, box supporting members carried thereby, intermittently acting means for moving said element in one direction, a cutting device, means for moving said cutting device into and out of the path of movement of said supporting members, during an intermission in the movement thereof, pressing means for one support, and pressing means for the other support, actuated by the movement of the first named pressing means.
93. In a box covering machine, two box supporting members mounted one in advance of the other, means for affixing a covering strip to the first box, means for actuating said means and means for affixing a covering strip to the second box actuated by the movement of the first named means.
94. In a box covering machine, two box supporting members for supporting boxes to be covered, means for affixing a covering strip to one box, and means for affixing a covering strip to the other box actuated by said first named means.
95. In a box covering machine, two box supporting members, two covering strip affixers, means to actuate one of said affixers to affix the strip to one box and means whereby such movement may actuate the other affixer to affix the strip to the second box.
96. In a box covering machine, two box supporting members, two covering strip affixers, means to actuate one of said affixers, and means whereby said means may actuate the other affixer.
97. In a box covering machine, two box supporting members arranged one in advance of the other, means for applying a covering strip to one of the boxes, and means actuated by said first named means for applying the covering strip to the other box.
98. In a box covering machine, an abutment, two box supporting members movable towards and from said abutment, and adapted for supporting boxes to be covered, means mounted upon the abutment for applying a covering strip to the end of the box, and means for actuating said cover applying means.
99. In a box covering machine, an abutment, a rectilinearly movable element, two box supporting members mounted on the said movable element, means for adjusting the box supports toward and from each other, means for applying a covering strip to the ends of the boxes and means for adjusting the position of said means to correspond with the position of the box supporting member.
100. In a box covering machine, a rotatable element, means for rotating said element, a rectilinearly movable element mounted on the rotatable element, two box supporting members mounted on the said movable element for supporting boxes to be covered, means for applying a covering strip to the boxes, and means for pressing the strip upon the box during such operation.
101. In a box covering machine, a rectilinearly movable box supporting member, a clamp for retaining boxes on the supporting member, means for moving said supporting member, and for opening said clamp simultaneously.
102. In a box covering machine, two box supporting members, a common support upon which they are carried, a clamp for retaining boxes upon said supporting members, means for actuating said common support when moved in one direction, and for opening said clamp when moved in a reverse direction.
103. In a box covering machine, a rectilinearly movable element, two box supporting members carried thereby, means for moving said movable element, means for retaining boxes upon the supports, means for opening said clamp during the rectilinear movements of said supporting members and for closing said clamp while said supporting members are at rest.
104. In a box covering machine, a rectilinearly movable element, two box supporting members carried thereby, a vibrating lever for moving said element rectilinearly, a clamp adapted to engage the supporting member alternately and means whereby the vibrating lever may impart an opening and closing movement to the clamp.
105. In a box covering machine, two box supporting members arranged one in advance of the other, a box retaining member supported adjacent the rear supporting member and fixed relatively thereto, a box retaining member supported adjacent the forward supporting member and movable relatively thereto, and means whereby said second named retaining means may be adjusted to and from said first named retaining means.
106. In a box covering machine, a plurality of rectilinearly movable box supporting members, a cutting device comprising a slidable member, a fixed cutting blade secured thereto, a movable blade pivoted to the fixed blade, a link for moving said slidable member and having a yielding connection therewith, means for restraining said slidable member in its forward motion and means whereby said link may actuate said movable blade in its continued motion.
107. In a box covering machine, a plurality of rectilinearly movable box supports, means for moving the same intermittently, a cutting device comprising a fixed blade, a movable blade pivoted thereto, means for moving said cutting device, and having a yielding connection therewith, means for restraining the advance of the cutting device relatively to the moving means, and means whereby the continued motion of the moving means may actuate the movable blade.
108. In a box covering machine, a plurality of box supporting members movable in a right line, means for moving the same intermittently, a cutting device comprising a fixed and a movable blade, means for moving said cutting device transversely of the path of travel of the box supporting members, a yielding connection between said moving means and said cutting device, means for restraining the motion of the cutting device relative to the moving means and means whereby the continued motion of the moving means may actuate said movable blade.
109. In a box covering machine, a plurality of box supporting members movable in a right line, means for moving the same intermittently, a cutting device, means for moving said cutting device transversely of the path of travel of the box supporting members, means for restraining the travel of the cutting device relative to the moving means and means whereby the continuous motion of the moving means may actuate said cutting device.
110. In a box covering machine, two box supporting members capable of rectilinear movement, means to move the same, a cutting device comprising a fixed blade and a movable blade, means to move said cutting device into and out of the line of travel of the box supporting members, said moving means having a yielding connection with the fixed blade, and moving in contact with the movable blade, and means to restrain the travel of the cutting device relatively to the moving means whereby the further movement of the moving means actuates the cutting device to sever the covering strip.
111. In a box covering machine, two box supporting members capable of being moved in a right line, means to move the same, a cutting device comprising a fixed blade, a movable blade pivoted thereto, means to move the cutting device into and out of the line of travel of the box supporting member, said moving means having a sliding connection with the fixed blade, and moving in contact with the movable blade, means for restraining the move-

ment of the cutting device relatively to the moving means whereby the further movement of the moving means actuate the cutting device and the covering strip.

- 5 112. In a box covering machine, two box supporting members adapted to be moved in a right line, means for moving the same, a cutting device comprising a fixed blade, a movable blade pivoted thereto, a link having a sliding connection with the fixed blade, and moving in contact with the movable blade, means for moving said link and
- 10 said cutting device into a position between the box support and means for restraining the motion of the cutting device relatively to the link, whereby the further motion of the link actuates the movable blade.

- 15 113. In a box covering machine, two box supporting members adapted to be moved in a right line, means for moving the same, a cutting device comprising a fixed blade,

a movable blade pivoted thereto, a spring for retaining said movable blade out of operative position, a link having a slidable connection with said fixed blade, and moving in contact with said movable blade, means for moving said link and said cutting device into and out of a position between the box supports and means for restraining the motion of the cutting device relatively to the link, whereby the further motion of the link actuates the cutting device to sever the covering strip. 20

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 25

PHILIP S. SMITH.

Witnesses:

J. STYDELL STOKES,

J. GRANVILLE MEYERS, JR.