H. A. INMAN.

MACHINE FOR APPLYING GUM AND TAPE TO PAPER BOX BLANKS.

APPLICATION FILED FEB. 13, 1913.

1,098,385.

Patented June 2, 1914.

4 SHEETS—SHEET 1.

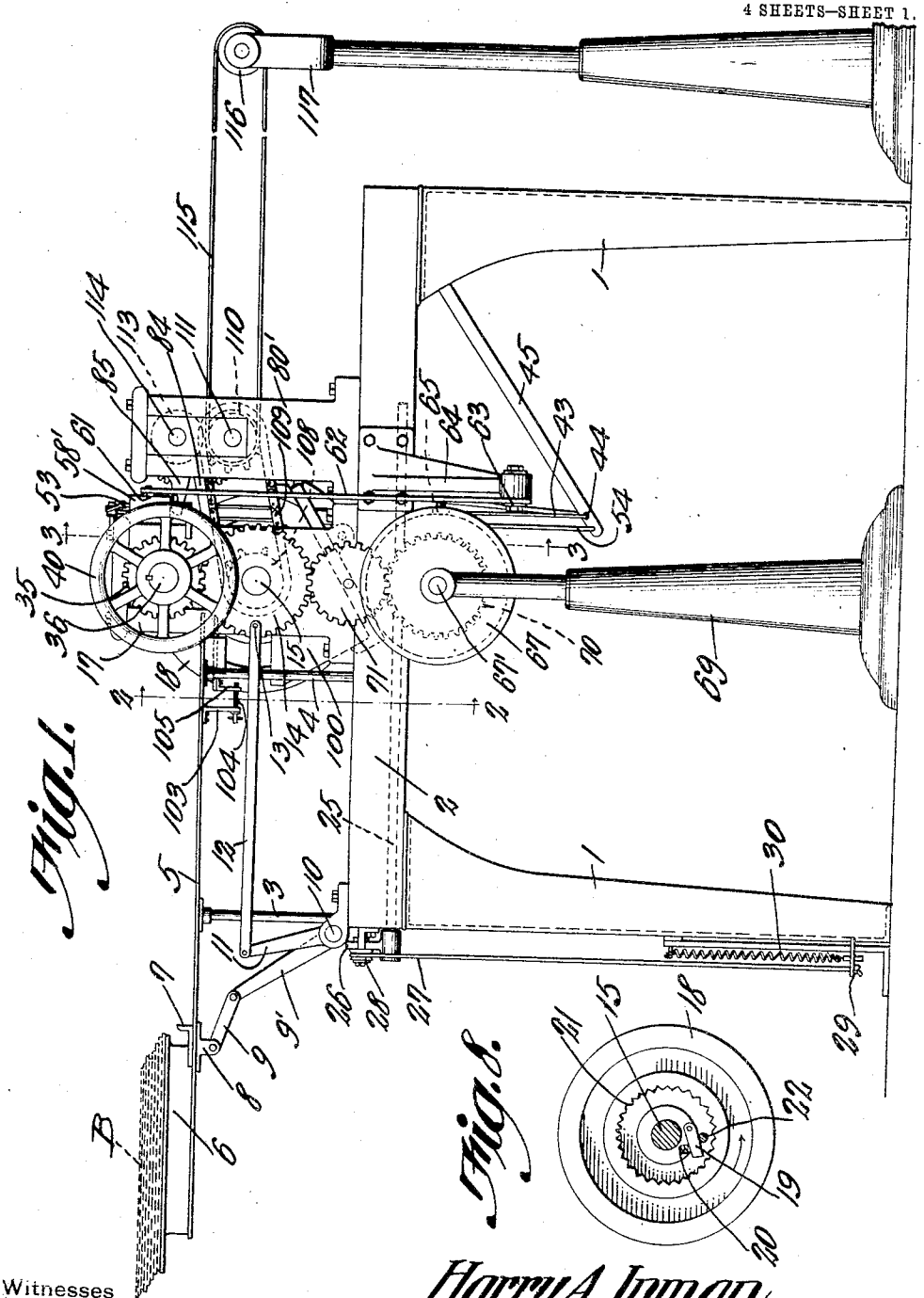


Fig. 1.

Fig. 3.

Witnesses

J. R. Tomeis

A. Willson

Harry A. Inman

Inventor

by C. A. Snow & Co.

Attorneys

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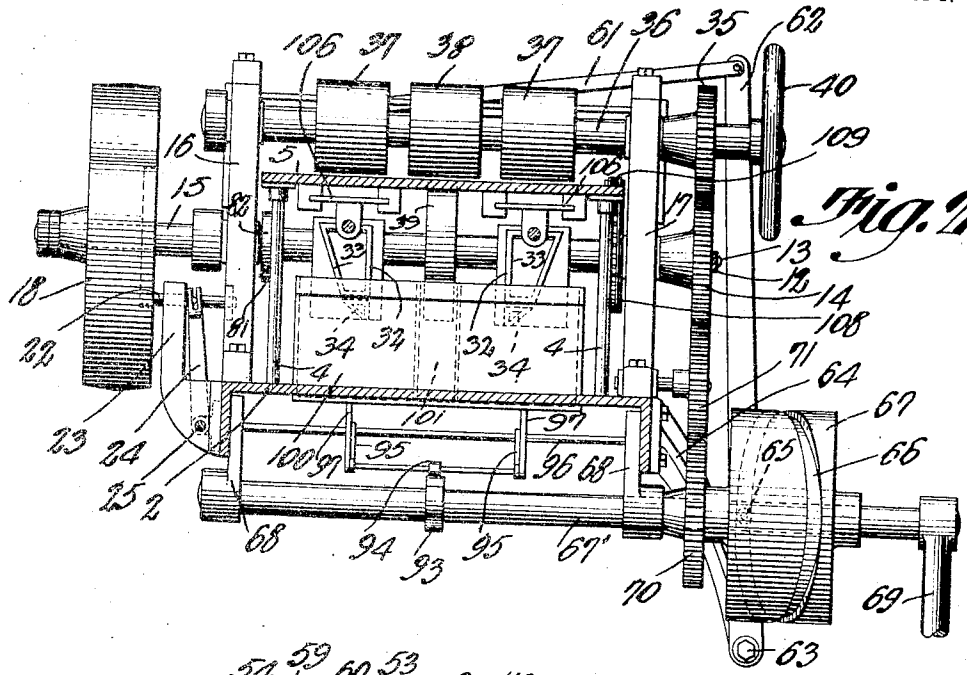


Fig. 2.

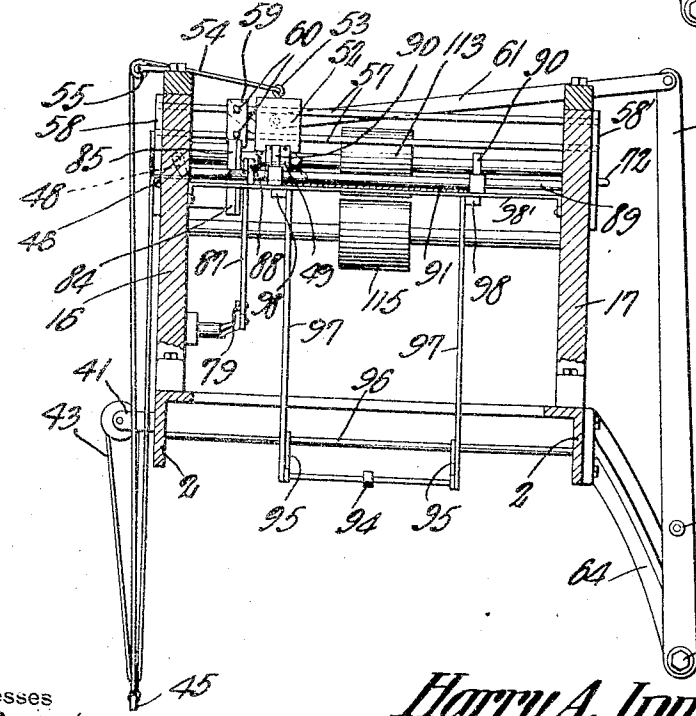


Fig. 3.

Witnesses

J. Ames

S. Willard

Harry A. Inman Inventor

by C. A. Snow & Co.

Attorneys

H. A. INMAN.

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4 SHEETS—SHEET 3.

Fig. 4.

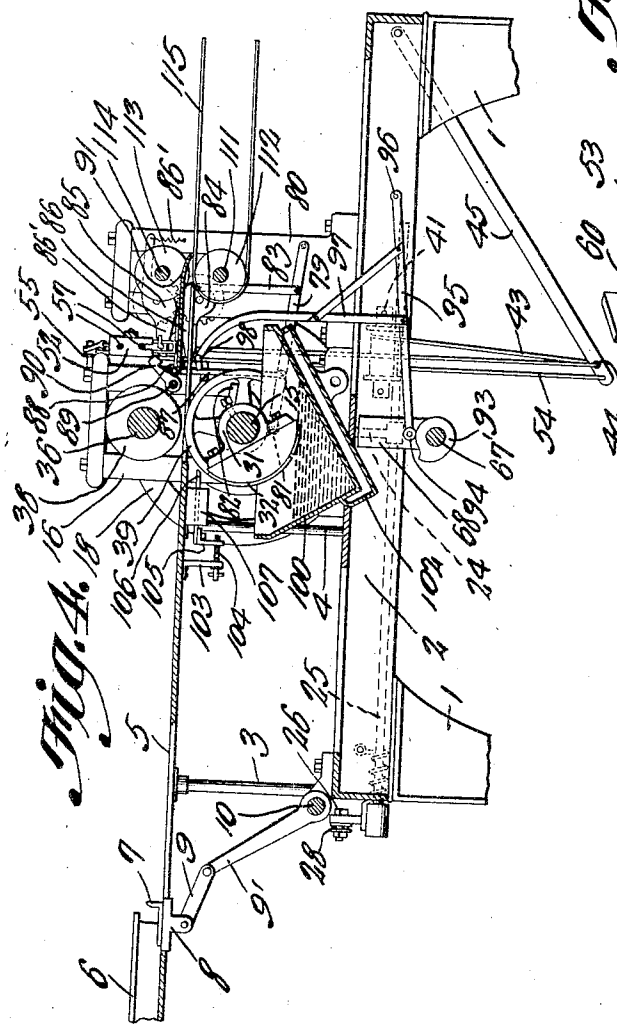


Fig. 7.

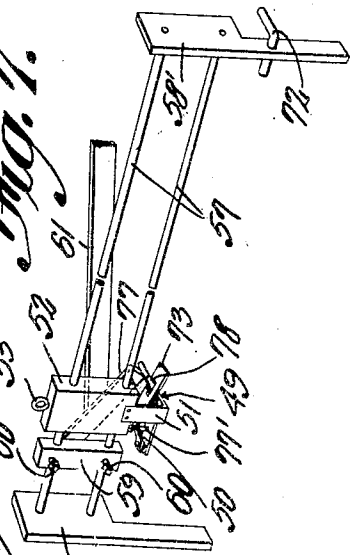
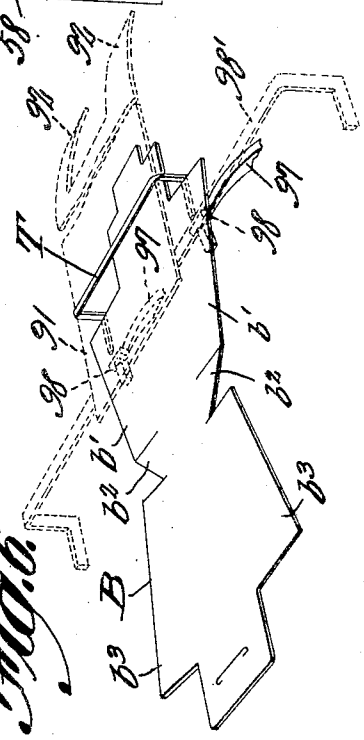


Fig. 6.



Witnesses

J. R. Jones

S. Willard.

Harry A. Inman Inventor

by C. A. Snow & Co.

Attorneys

H. A. INMAN.

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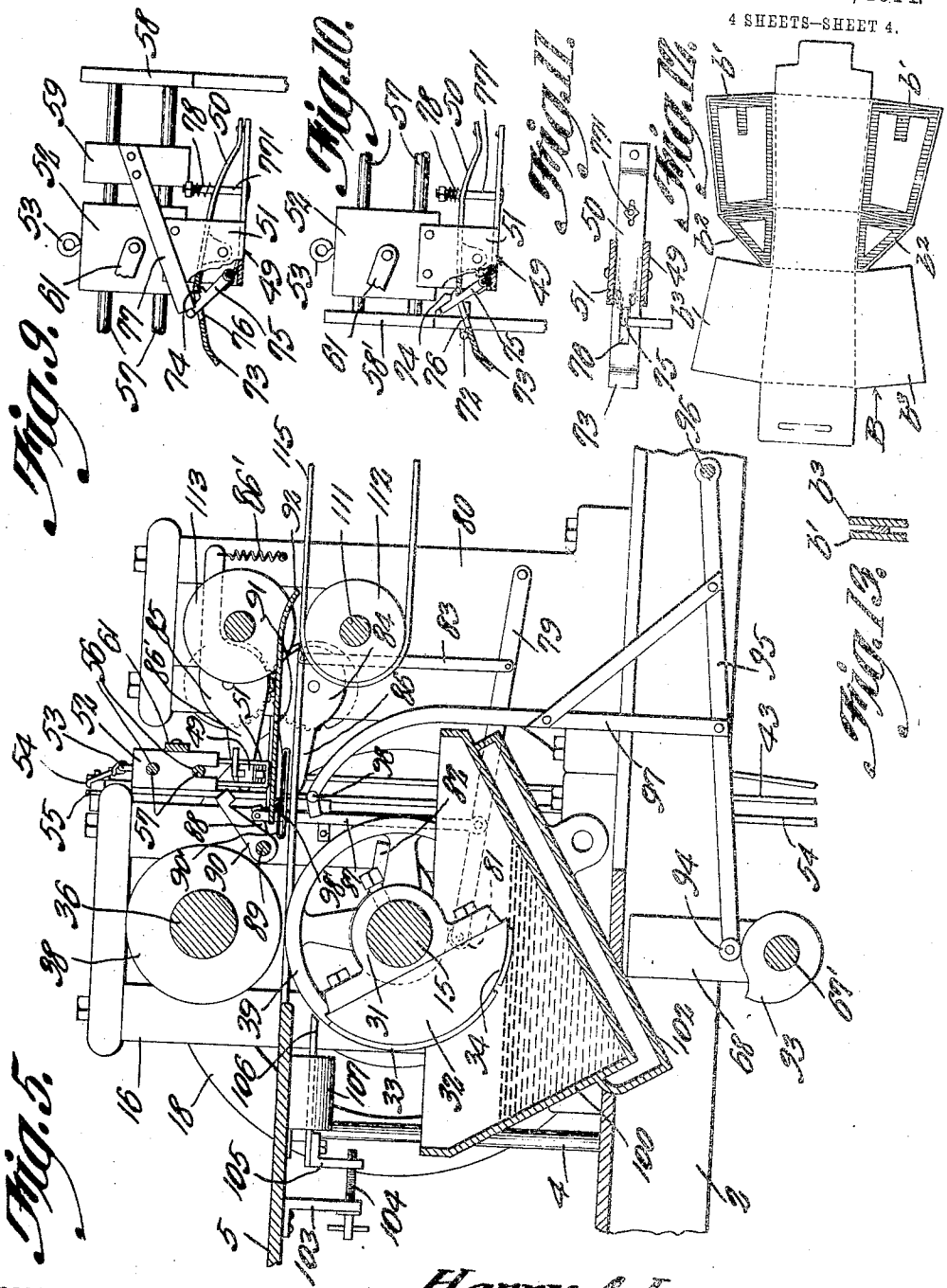


Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

Fig. 5.

Witnesses

J. Tomein

E. Willwood

Harry A. Inman Inventor

by Cushman & Co.

Attorneys

UNITED STATES PATENT OFFICE.

HARRY A. INMAN, OF AMSTERDAM, NEW YORK.

MACHINE FOR APPLYING GUM AND TAPE TO PAPER-BOX BLANKS.

1,098,385. Specification of Letters Patent. Patented June 2, 1914.

Application filed February 13, 1913. Serial No. 748,166.

To all whom it may concern:

Be it known that I, HARRY A. INMAN, a citizen of the United States, residing at Amsterdam, in the county of Montgomery and State of New York, have invented a new and useful Machine for Applying Gum and Tape to Paper-Box Blanks, of which the following is a specification.

The present invention relates to improvements in machines for applying gum and tape to paper box blanks, the primary object of the present invention being the provision of means whereby a predetermined length of tape which forms a flexible handle for a paper box is applied, such box being designed as an oyster or ice cream box, the gum being previously applied to the blank for retaining the tape and also for securing the overlapping portions of the blank in the finally folded box.

A further object of the present invention is the provision of a machine which gums the necessary flap of a box blank for the proper positioning thereto of the ends of the tape which constitutes the handle therefor, and simultaneously applies a sufficient amount of the gum to permit of the proper assembling and securing of the overlapping portions of the blank to produce the finished box.

A still further object of the present invention is the provision of novel means for retaining the cut tape properly positioned relatively to the blank, so that when the same is attached to the blank, the necessary amount of slack is provided to form the finished flexible handle to the box.

A still further object of the present invention is the provision of a novel means for directing the end of the tape against the gummed side of the box and maintaining the tape in such position without wiping or moving the ends relatively to the box, so that the blank after leaving the present machine will have the tape adhesively secured thereto and be ready for folding and finishing, the ends of the tape being folded between the overlapping portions of the box so as to be entirely concealed and be retained in place by the meeting or overlapping portions.

Heretofore in applying tapes to boxes, the tape has been positioned, the handle slack produced by the moving mechanism, the terminals of the tape punched through or placed in position relatively to the blank, and finally gummed thereagainst. This mode of operation is objectionable in that it is not continuous, and necessitates the placing by hand of the blank in position for receiving the punches and handle carrying members which finally position the terminals of the tape to be gummed against the blank, thus rendering it necessary to remove the blank by hand from the machine and also tending to gum the parts so that the next succeeding tape will not be properly poistioned by the punching mechanism. In the present instance, it is proposed to previously gum the blank, and while the same is being fed through the machine, to position thereabove by a relatively fixed slack maintaining device, a predetermined length of tape, the tape being cut so that the free terminals will depend across the slack maintaining means and in position to be finally wiped as the blank continues in its passage through the machine upon the gummed portion thereof, the continued movement of the blank out of the machine causing the slack handle to be moved over the maintaining device without the danger of the handle being pulled therefrom, and thus rendering it unnecessary to provide separate mechanisms for operating the slack maintaining device to and from the blank as is the ordinary practice.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a side elevation of the complete machine taken from the right hand side thereof. Fig. 2 is a section taken on line 2—2 of Fig. 1. Fig. 3 is a section taken on line 3—3 of Fig. 1. Fig. 4 is a longitudinal sectional view through the frame and the complete mechanism, portions of the frame and the blank holding table being broken away. Fig. 5 is a view upon an enlarged scale of the main mechanisms of the machine. Fig. 6 is a perspective view of a blank demonstrating the positioning of the tape thereupon. Fig.

7 is a perspective view of the tape feeding mechanism. Fig. 8 is an enlarged view showing the means for connecting and disconnecting the power wheel from the power shaft of the machine. Figs. 9, 10 and 11 are other views thereof. Fig. 12 is a bottom plan view of a gummed blank previous to the attachment of the tape thereto. Fig. 13 is a section through the portion of the blank when folded showing the position of the tape therebetween.

Referring to the drawings, the numeral 1 designates the standards or legs, which support the open bed plate or platform 2, which has upstanding therefrom at one end the four posts 3 and 4, which support the blank guiding shelf 5, there being positioned at the extreme end of the shelf 5, the blank holding table 6, from which the blanks B are fed one at a time by hand upon the shelf 5 in front of the feeding plate or follower 7. This feeding plate or follower 7 is mounted for longitudinal movement upon the shelf 5 and is provided with the apertured lug 8, which is connected through the link 9 to the arm 9′ of the rock shaft 10. The rock shaft 10 is journaled upon the base 2 at one end thereof and is provided with the crank 11 which is connected through the link 12 and pin 13 to the gear 14, which is rotatable with the main drive shaft 15 of the machine. By this means the rotation of the gear 14 will impart the desired reciprocatory movement to the follower 7 and thus feed the blank B upon the shelf 5 to the gumming and tapping mechanism, as will presently appear.

The drive shaft 15 is journaled intermediate of the two standards 16 and 17, said standards being supported from the base plate 2 and as clearly shown in Fig. 2 receives its motion from the pulley 18, which is connected to the shaft 15 through the pawl 19 and ratchet teeth 21, said pawl and ratchet teeth constituting a clutch mechanism, whereby the wheel 18 may be disposed to rotate freely or transmit rotation to the drive shaft 15. The stop 20 provides a limiting means for the pawl 19, while the reciprocatory pin 22, which is mounted in the standard 16 and the bracket 23, provides a means for actuating the pawl 19 into and out of engagement with the teeth 21, there being provided an arm 24, which is keyed upon and operated by the rock shaft 25. This rock shaft 25 has keyed upon its free end at the forward portion of the bed plate 2 an arm 26, which is operated through the flexible connection 27 guided over the guide pulley 28 by the foot treadle 29, there being provided a spring 30, to normally elevate the foot treadle 29, and thus hold the pin 22 in pawl engaging position so that as soon as the foot treadle 29 is released, the pawl 19 will be moved from engagement with the teeth 21 so that the drive pulley 18 may rotate freely without affecting the drive shaft 15.

Keyed upon for rotation with the drive shaft 15, in spaced relation and between the standards 16 and 17, are the sleeves 31 of the two gumming members 32, each one of which is provided with the segmental gum-receiving surface and constitutes a cam shaped member, as clearly illustrated in Fig. 4. Set in the outer surface of the segmental portion of each of the members 32, are the two gumming strips 33 and 34, as clearly illustrated in Fig. 2, which constitute means for receiving the gum to apply the same in conformity to the outline of the strips 33 and 34 to tape-receiving side wings b' and the two bottom flaps b^2 of the blank B as clearly illustrated in Fig. 12.

Meshing with the gear 14 at the same side of the machine therewith is an upper gear 35, which is keyed upon the upper shaft 36, said shaft 36 being journaled in the standards 16 and 17 above the shaft 15, and having mounted thereon the two outer rollers 37 and the central roller 38, said outer rollers 37 coacting with the gumming members 32 to assist in holding the flaps of the blank downwardly upon the gumming members as the blank is fed through the machine through the instrumentality of the central roller 39 of the shaft 15 and the rollers 37 and 38 of the upper shaft 36. Keyed upon the outer end of the shaft 36 is a hand wheel 40, by means of which the mechanism may be operated manually when necessary, as for instance when receiving a misplaced blank or a blank which is maintained between the rollers at the stoppage of the machine.

In order to provide a means for supplying the necessary tape to form the tape bail T, as illustrated in Fig. 6, a pair of apertured brackets 41 are disposed at one side of the bed plate 2, as illustrated in Figs. 3 and 4, the tape 43 being led therefrom and through the aperture 44 in the lower end of the pivoted arm 45, said arm 45 being normally held in the position as shown in Figs. 1 and 3 by gravity and thus unwinds the tape 43 as desired during the various operations necessary to deliver and cut the tape. The tape 43 is led upwardly as illustrated in Fig. 3 over the roller 46 and through the aperture 47 of the standard 16, and below the gravity clamping device 48, which is pivoted in the standard 16 within the aperture 47.

In order to provide a means for feeding the free end of tape transversely of the machine, the clamp 49 is employed and has coactively disposed thereto the pivoted jaw or plate 50, which as shown is carried in the depending member 51 of the slidable block 52. This block 52 is provided with the two parallel bores 56, which fit upon and surround the two parallel rods 57 disposed in

the plates 58—58′ on each side of the machine, said rods 57 being disposed to the rear of and in parallel with the shafts 15 and 36.

In order to provide a means for imparting the necessary elevating movement to the arm 45, an eyed member 53 is carried upon the upper end of the block 52 and has connected thereto, one terminal of a flexible connection 54, said terminal being trained over the guide pulley 55 and secured in the extreme free end of the arm or lever 45, said lever 45 being of sufficient weight to, when released, as will presently appear, fall and pull a length of tape from the reel while the free end is being gripped by the gravity clamp 48.

In order to adjust the movement of the block upon the rods 57, an adjustable block 59 is provided and is maintained in the necessary adjustment by means of the set screws 60, as clearly illustrated in Fig. 3, while in order to reciprocate the block 52 transversely of the machine, as viewed in Fig. 3 and thus to feed the tape transversely of the machine for positioning above the blank B, a link 61 is pivotally connected to the rear face of the block 52 and has its outer free end pivotally connected in the upper end of the lever 62, said lever 62 having its lower end pivoted as at 63 to the depending arm 64, said arm 64 being connected to and supported from the bed plate 2 of the machine. This lever 62 is provided with the anti-frictional pin 65, which is disposed to slide within the cam groove 66 of the wheel 67, said wheel 67 being keyed upon and rotatable with the shaft 67′ which, as shown, is journaled in the two brackets 68 and in the upper end of the supporting pedestal 69. This shaft 67′ is provided with a gear 70, which receives motion from the gear 14 through the intermediate gear 71 so that the shaft 67′ is rotated in consonance with the drive shaft 15, and the necessary movement is imparted to the lever 62 to reciprocate the block 52 transversely of the machine from tape feeding to tape receiving position. Secured by a set screw to the plate 58′ is a stop 72, which coacts with the free end 73 of the pivoted jaw 50 of the clamping device to depress the free end and thus elevate the gripping end of the clamping plate 50 to release the end of the tape when disposed in the necessary position above the blank B, said plate 73 being provided with an aperture 76, through which projects the hooked upper end of the spring catch 75, said catch 75 being also provided with the projections 74, which is disposed to fit within the slot 76 of the plate 73 when the same is depressed by the stop 72 and thus maintain the clamp in open position when moved from right to left or from tape releasing to tape receiving position. In order to provide a means for releasing the catch so that the end of the tape at the left hand side of the machine may be gripped by the clamp, when the block 52 is in extreme return position, an arm 77 is carried by the block 59 and is disposed in the path to engage the hooked end of the catch 75 so as to move the same from the position Fig. 10 to the position Fig. 9 and thus permit the spring 78 disposed upon the guiding pin 77′ to move the clamping end of the movable jaw 50 into coactive relation and upon the tape within the jaws 49 and 50.

The operation of the tape feeding clamp and the slack forming lever 45 is clearly apparent, but it will be noted that when the lever 62 is actuated to be moved to the right as viewed in Fig. 3, that the block 52 will be moved to the right and carry with it the clamp which has engaged the free end of the tape 43, thus carrying the tape transversely of the machine and over to a point beyond the center of the right hand gum applying member 32, this action causing through the pulling upon of the flexible connection 44 the elevation of the slack forming and taking up lever 45, thus elevating such lever so that as soon as the tape has been cut, as will presently appear and the block returned through the lever 62 to its extreme left position, the lever 45 will fall by gravity, and as the catch 48 has gripped the free end of the tape 43, at the point of passage through the aperture 47, due to the cam action thereof and the slight retrograde movement of the tape, said lever 45 will slide downwardly upon the tape and tend to unwind a certain amount from the spool 42 so that the parts will be in the next proper position for feeding the next length of tape. The stop 72 at or shortly after the cutting of the tape will operate the clamp to release the end of the tape so that the clamp will be returned in open position as before described to be released to engage the free end of the tape which is held by the clamp 48 in the path to be engaged by the clamp carried by the block 52, the arm 77 as described releasing the clamp carried by the block 52 so as to engage such free end of the tape and thus permit the proper feeding of a predetermined length for the next bail or handle.

The mechanism for cutting the tape after the same has been fed transversely of the machine in the position for being connected to the blank B, consists of a lever 79, which is pivoted to the inner face of the standard 80, and carries upon its free end the antifrictional roller 81, which is disposed in the path to be engaged by the cam 82 keyed upon and rotatable with the main drive shaft 15. By this means the free end of the lever 79 is depressed at the proper time, and de-

presses the link 83, which is connected to the lower cutting member 84 which is geared to the upper cutting member 85, so that the two blades 86—86′ are brought into coaction upon each side of the tape T so as to sever the end at the extreme left of the blank as viewed in Fig. 3, the spring 86ª connected to the upper cutting member 85 returning the cutting members to open position and at the same time elevating the lever 79 after being released by the cam 82. The cutting of the tape by the cutters 86—86′, frees the end adjacent the aperture 47, but as the catch 48 is actuated by gravity and is normally in the position as shown in Fig. 3, the slight retrograde movement imparted to the tape due to the severance thereof will cause the catch 48 to move to the left as viewed in Fig. 3 and thus clamp the tape downwardly upon the adjacent portion of the standard 16 and thus hold the free end in the position to be again engaged by the clamp carried by the block 52.

The mechanism for properly disposing the tape so that the terminals thereof as shown in Fig. 6, will fit astride of the slack maintaining plate 91, for proper position upon the flaps b', consists of an arm or link 87 carried by and operable from the lever 79, said link 87 having its upper end connected to the crank arm 88 of the rock shaft 89. This rock shaft 89 is provided with the two fingers 90, one to each terminal of the tape T, and so disposed that at the proper time, they move the terminals downwardly upon each side of the opposite edges of the slack maintaining plate 91 so that such terminals will be presented in the path of the forward edges of the flaps b' of the blank B, during the passage of the blank through the machine and after the action of the gumming members 32 upon the under side of the flaps b'. In order to provide a means for wiping or disposing the extreme terminals in such dependent position up against the under side of the flaps b' and against the gummed portion thereof, a cam 93 is keyed upon and rotatable with the lower shaft 67′, and acts upon the anti-frictional roller 94 carried in the free end of the levers 95. These levers 95 are pivoted at 96 to the bed plate 2, and carry the two upstanding arms 97, whose terminals 98 are offset to abut the depending ends or terminals of the tape T and move the same upwardly and against the under side of the flaps b', said terminals being held in such position so that as the blank B is moved toward the outlet of the machine, the offset ends 98 will press the tape securely against the under side of the flaps b', but at not such a pressure as to cause the tape to be pulled or slid toward the flaps b^2, said offset 98 being not released from the blank until the terminals of the tape have been moved beyond the bridging piece 98′ disposed transversely of the machine and beyond the offset ends 98. Two rods 90′ are disposed above the transverse rod 98′, upon each side of the roller 115 and at a point before the blank reaches such roller and thus provides a means to hold the blank downwardly upon the open frame portion or shelf of the machine and insure the delivery of such blank below the slack maintaining plate 91. These rods 90′ are constructed to form an open loop of flat metal, the under face of which is parallel to the upper face of the blank guiding shelf or portion of the frame. It will thus be seen that the terminals of the tape are wiped against the gummed portion of the flaps b', and that to a certain extent the gum or adhesive is caused to be compressed through the body of the tape so that the tape adjacent the flaps b' is saturated with the gum and will when the blank is finally formed into box shape, engage the adjacent face of the flaps b^3 (Fig. 13), so that the ends of the tape will be securely fastened between the flaps b' and b^3 while the remaining gummed portion of the flaps b' will be disposed coextensive with and adhesively to the flaps b^3.

Disposed between the posts 16 and 17 is a reservoir or tank 100, which as shown is provided with the central empty compartment 101 into which the roller 39 projects, the adhesive receiving members 32 being disposed to be immersed within the fluid adhesive or gum carried in the outer compartments of the tank, the lower wall of the tank being inclined and being provided with the steam jacket 102, whereby the gum or adhesive is maintained at the desired fluidity.

In order to provide a means for wiping the surplus gum or adhesive from the gum applying portions 33 and 34 of the gumming members 32, two brackets 103 are connected to the under side of the guiding shelf 5, and each has mounted therein a pin 104, which carries the bracket 105, said bracket 105 having attached thereto the wiping member 106, which is guided in its movements into flexible or yielding engagement with the gumming member 32 through the medium of the sleeve or plate 107, all as clearly illustrated in Figs. 4 and 5.

Keyed upon the drive shaft 15 adjacent one face of the standard 17, is a sprocket wheel 108, which has trained thereover a sprocket chain 109, which transmits motion from the sprocket wheel 108 to the sprocket wheel 110 keyed upon the shaft 111, said shaft 111 being mounted between the posts 80—80′ and constituting a means for carrying the gummed and tape blank away from the machine.

A roller 112 is keyed upon and rotatable with the shaft 111 between the standards 80 and 80′ and has disposed thereabove and in coactive relation thereto, a roller 113 mount-

ed upon the shaft 114, said shaft 114 being disposed within the upper ends of the standards 80—80′ and is normally held downwardly by gravity, the same fitting between the cut-out ends 92 of the resilient tape maintaining plate 91 and of such a width as to engage the central portion of the blank B without interfering with the gum carried thereby. The roller 111 is of the same width as the roller 113, and engages the under side of the blank B.

To carry the gummed blank away from the machine, an endless belt 115 is disposed about the roller 112, and the roller 116 carried in the upper end of the pedestal 117, the said belt 115 being thus moved due to the rotation of the roller 112 and carrying the blank away from the machine to be placed in the final folding and finishing machine.

From the foregoing description, taken in connection with the drawings, the operation of the present device is readily understood, but briefly stated it is as follows:—The uppermost blank B upon the table 6 is fed by hand and disposed upon the shelf 5 in front of the follower 7, said follower 7 being moved upon the shelf 5 to feed the blank forwardly and between the rollers 38 and 39 which constitute the main feeding rollers, said main feeding rollers being disposed in the path to engage the central portion of the blank B and thus feed the same so that the gumming members 32 will at the proper time deliver the gum to the under side of the flaps b'—b^2, the portion 33 supplying the gum to the flaps b', while the portion 34 supplies the gum to the smaller flap b^2. As the members 32 are only segmental members, they recede from the blank B as the flaps b^3 approach so that no gum is placed upon the flap b^3. The rollers 37 coact with the member 32 to maintain the flaps b'—b^2 downwardly and upon the gumming members 32, so that the proper amount of gum is applied thereto. The continued movement of the blank to the right of the machine as viewed in Fig. 1, causes the same to pass below the supported end of the tape receiving and slack maintaining plate 91, at which time the tape T is fed transversely of the machine so that the main body thereof is disposed above the plate 91 as viewed in Fig. 6, so that when the cutters 86—86′ are operated to sever the tape, the terminals of the tape will fall and be pushed downwardly by the arms 90 and be in a position to be wiped against the under side of the flaps b', as before described. The continued movement of the blank carries with it the tape over the inclined resilient supporting plate 91, inclined toward the outlet end of the machine, so that when the tape is delivered to the lower recessed end 92 thereof, and passes between the belt 115 and roller 113, the tape will be properly secured to the flaps b' and will not be pulled therefrom in the passage of the blank between the rollers 112 and 113 and upon the delivery belt 115.

As before described, the cutting members 86—86′ and the tape maintaining finger 98 are operated at the proper time, the cutting members 86—86′ acting before the full depression of the fingers 90 and 98 so that the terminals of the tape T are properly wiped and held against the gummed portion of the flaps b' and for a sufficient period to insure the proper saturation of such terminals and the adhering thereof to the flaps b'.

What is claimed is:

1. In a machine of this character, the combination with mechanism for applying gum to a blank and feeding the blank through the machine, of tape applying mechanism, including means for receiving the cut tape and suspending the free terminals thereof in alinement with the gummed portion of the moving blank, and means for wiping the free terminals of the cut tape against the gummed portion of the blank in transit.

2. In a machine of this character, the combination with mechanism for applying gum to a blank and for feeding the blank through the machine, of tape feeding mechanism for placing the tape transversely across the blank, means for receiving the cut tape and maintaining the central portion thereof spacedly above the blank, tape cutting mechanism for severing the tape and permitting the free ends to depend one upon each side of the slack maintaining device, and means for wiping the free terminals of the tape upon the gummed portions of the blank while in transit.

3. In a machine of this character, a bed plate, a main drive shaft mounted upon the bed plate, gum carrying and applying members mounted upon the main drive shaft, a second shaft journaled above and operably connected to the drive shaft, coöperating feed rollers carried by both of said shafts, tape feeding mechanism operably connected to the drive shaft, tape cutting mechanism also operably connected to the drive shaft, and mechanism for attaching the cut tape at two points to the blank also operably connected to the drive shaft.

4. In a machine of the character described, a bed plate, a main drive shaft mounted upon the bed plate, gum carrying and applying members mounted upon the main drive shaft, a second shaft journaled above and operably connected to the drive shaft, cooperating feed rollers carried by both of said shafts, tape feeding mechanism operably connected to the drive shaft, tape cutting mechanism also operated from the drive shaft, mechanism for attaching the cut tape at two points to the blank also operably connected to the drive shaft, and mechanism

for feeding the taped and gummed blanks away from the machine also operably connected to the drive shaft.

5. In a machine of the character described, a bed plate, a main drive shaft mounted upon the bed plate, gum carrying and applying members mounted upon the main drive shaft, a second shaft journaled above and operably connected to the drive shaft, coöperating feed rollers carried by both of said shafts, tape feeding mechanism operably connected to the drive shaft, tape cutting mechanism also operably connected to the drive shaft, mechanism for attaching the cut tape at two points to the blank also operably connected to the drive shaft, mechanism for feeding the taped and gummed blanks away from the machine also operably connected to the drive shaft, and means for receiving the cut tape to maintain a handle slack therein during the passage of the blank from the gumming members to the last mentioned means.

6. In a machine of this character, the combination with a blank gumming and tape applying mechanism, of a tape feeding and cutting mechanism, including a transversely reciprocatory tape engaging and releasing device, adjustable means for releasing the same at a predetermined point and after the feeding thereof across the blank, a fixed slack forming and tape suspending means, a cutting mechanism operated to cut the tape after the tape has been disposed across the slack forming and suspending means and the blank, gravity actuated means for preventing a retrograde movement of the free end of the tape after the length has been severed therefrom, and means for operating the tape engaging and releasing device to engage the free end for the next feeding operation.

7. In a machine of this character, the combination with blank feeding gumming and tape applying mechanisms, of a tape feeding and cutting mechanism, including a transversely reciprocatory tape engaging and releasing device, means for releasing the same at a predetermined point and after the feeding thereof across the blank, a cutting mechanism operated to cut the tape after the tape has been disposed across the blank, means for preventing a retrograde movement of the free end of the tape after the length has been severed therefrom, means for operating the tape engaging and releasing device to engage the free end for the next feeding operation, and coöperating means operated after the cutting of the tape to press the terminals of the cut tape into engagement with the blank during the movement of the blank through the machine.

8. In a machine of this character, the combination with a blank feeding, gumming and tape applying mechanism, of a tape feeding and cutting mechanism, including a transversely reciprocatory tape engaging and releasing device, means for releasing the same at a predetermined point and after the feeding thereof across the blank, means to receive and maintain a handle slack in the tape, with the terminals thereof depending and free, a cutting mechanism operated to cut the tape after the tape has been disposed across the slack maintaining means and the blank, means for preventing a retrograde movement of the free end of the tape after the length has been severed therefrom, and means for operating the tape engaging and releasing device to engage the free end for the next feeding operation.

9. In a machine of this character, the combination with blank feeding, gumming and tape applying mechanisms, of a tape feeding and cutting mechanism, including a transversely reciprocatory tape engaging and releasing device, means for releasing the same at a predetermined point and after the feeding thereof across the blank, a cutting mechanism operated to cut the tape after the tape has been disposed across the blank, means for preventing a retrograde movement of the free end of the tape after the length has been severed therefrom, means for operating the tape engaging and releasing device to engage the free end for the next feeding operation, coöperating means operated after the cutting of the tape to press the terminals of the cut tape into engagement with the blank during the movement of the blank through the machine, and means disposed in the path to receive the cut tape to maintain a handle slack therein during the attaching of the tape to the blank and the feeding of the blank from the machine.

10. In a machine of this character, the combination with a blank feeding, gumming and tape applying mechanism, of a tape feeding and cutting mechanism, including a transversely reciprocatory tape engaging and releasing device, means for releasing the same at a predetermined point and after the feeding thereof across the blank, a handle slack forming means disposed in the path to receive the tape after being released, a cutting mechanism operated to cut the tape after the tape has been disposed across the handle slack forming means and the blank, means for preventing a retrograde movement of the free end of the tape after the length has been severed therefrom, and means for operating the tape engaging and releasing device to engage the free end for the next feeding operation.

11. In a machine of this character, the combination with a blank feeding, gumming and tape applying mechanisms, of a tape feeding and cutting mechanism including a transversely reciprocatory tape engaging

and releasing device, means for releasing the same at a predetermined point and after the feeding thereof across the blank, a cutting mechanism operated to cut the tape after the tape has been disposed across the blank, means for preventing a retrograde movement of the free end after the length has been severed therefrom, means for operating the tape engaging and releasing device to engage the free end for the next feeding operation, coöperating means operated after the cutting of the tape to press the terminals of the cut tape into engagement with the blank during the movement of the blank through the machine, and resilient means disposed in the path to receive the cut tape to maintain a handle slack therein during the attaching of the tape to the handle and the feeding of the blank from the machine.

12. In a machine of this character, a supporting frame, a drive shaft journaled therein, a second shaft operably connected to the drive shaft, coöperative gum supplying and blank feeding means carried by both shafts, tape feeding mechanism operably connected to the drive shaft for feeding the tape transversely to the machine, a tape cutting mechanism also operated from the drive shaft, and tape applying mechanism also operated from the drive shaft, said tape applying mechanism being operated to apply the cut tape during the passage of a blank through the machine.

13. In a machine of this character, the combination with a blank feeding mechanism, a gumming mechanism and tape feeding and cutting mechanism, of means for receiving the tape and maintaining a handle slack therein, and means for wiping the terminals of the tape upon the gummed portion of the blank during the passage of the blank through the machine.

14. In a machine of this character, the combination with a blank gumming mechanism and tape feeding and cutting mechanism, of fixed means for receiving the tape and maintaining a handle slack therein with the terminals depending and free, and coöperative means disposed to engage both sides of the blank and the free ends of the tape for wiping the free ends of the tape against previously gummed blank.

15. In a machine of this character, the combination with a blank feeding mechanism, a gumming mechanism and tape feeding and cutting mechanism, of resilient means for receiving the tape and maintaining a handle slack therein, and means disposed for wiping the terminals of the tape upon the gummed portion of the blank during the passage of the blank through the machine.

16. In a machine of this character, the combination with a gumming mechanism and tape feeding and cutting mechanism, of relatively fixed resilient means for receiving the tape and maintaining a handle slack therein with the two ends depending and free, and coöperative means disposed to engage both sides of the blank and the free ends of the tape for wiping such ends into adhesive engagement with the gummed blank.

17. In a machine of this character, the combination with a blank feeding mechanism, a gumming mechanism and tape feeding and cutting mechanism, of means for receiving the tape and maintaining a handle slack therein, means for wiping the terminals of the tape upon the gummed portion of the blank during the passage of the blank through the machine, and means for gripping the blank and feeding the same through the machine after the attachment of the tape to the blank.

18. In a machine of this character, the combination with a frame, a main drive shaft, a blank feeding means operably connected to the drive shaft, blank gumming and feeding mechanism operably connected to and carried by the drive shaft, tape feeding mechanism operably connected to the drive shaft, tape cutting mechanism also operably connected to the drive shaft, mechanism for attaching two ends of a cut tape to the blank, and mechanism operably connected to the drive shaft for feeding the taped blank away from the machine.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HARRY A. INMAN.

Witnesses:
CHAS. E. HARDIES,
W. H. INMAN.