W. L. JACOBIE.

BACKING STRIP APPLYING MACHINE.

APPLICATION FILED DEC. 27, 1905.

960,332. Patented June 7, 1910.

6 SHEETS—SHEET 1.

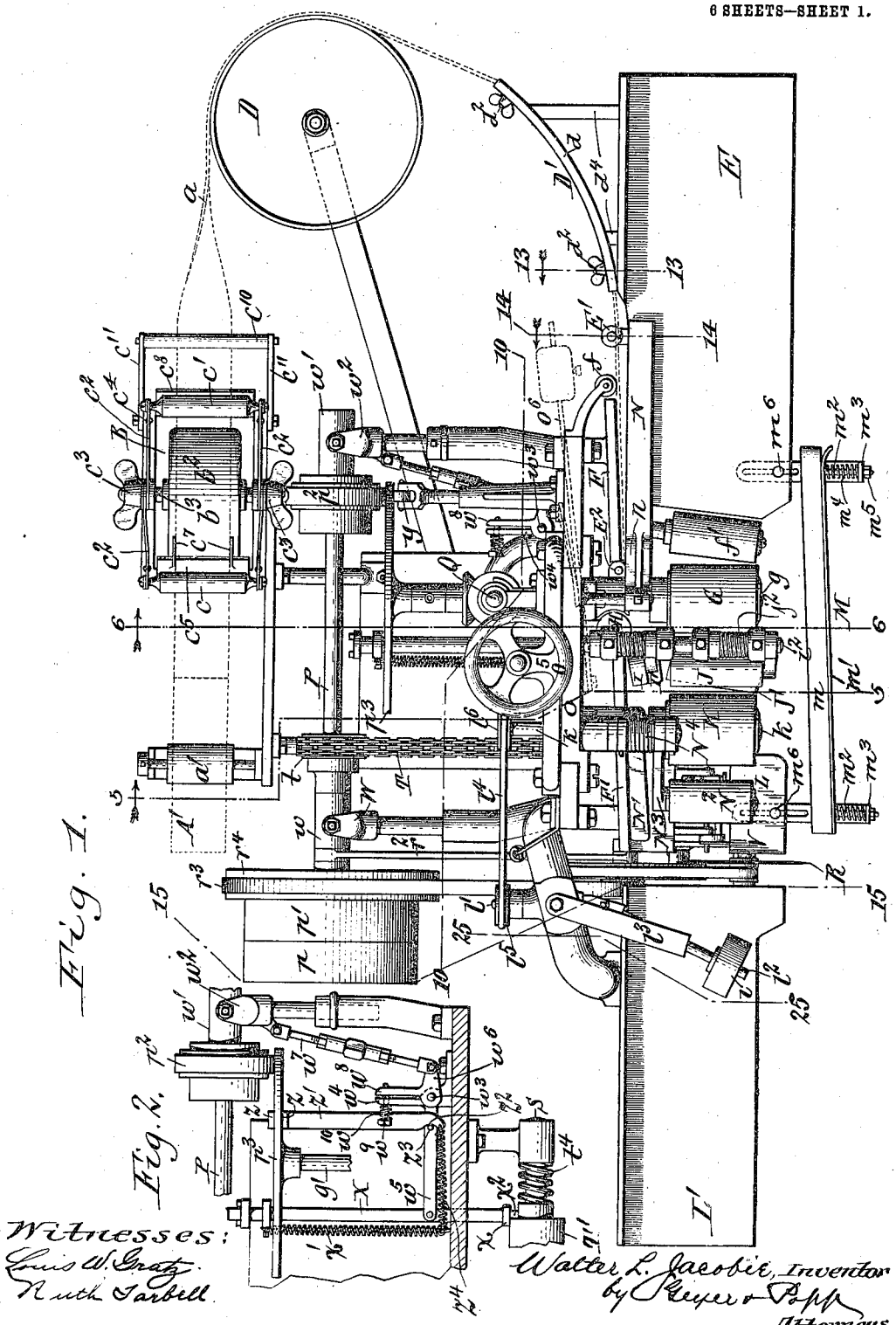

Fig. 1.

Fig. 2.

Witnesses:
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6 SHEETS—SHEET 2.

Fig. 3.

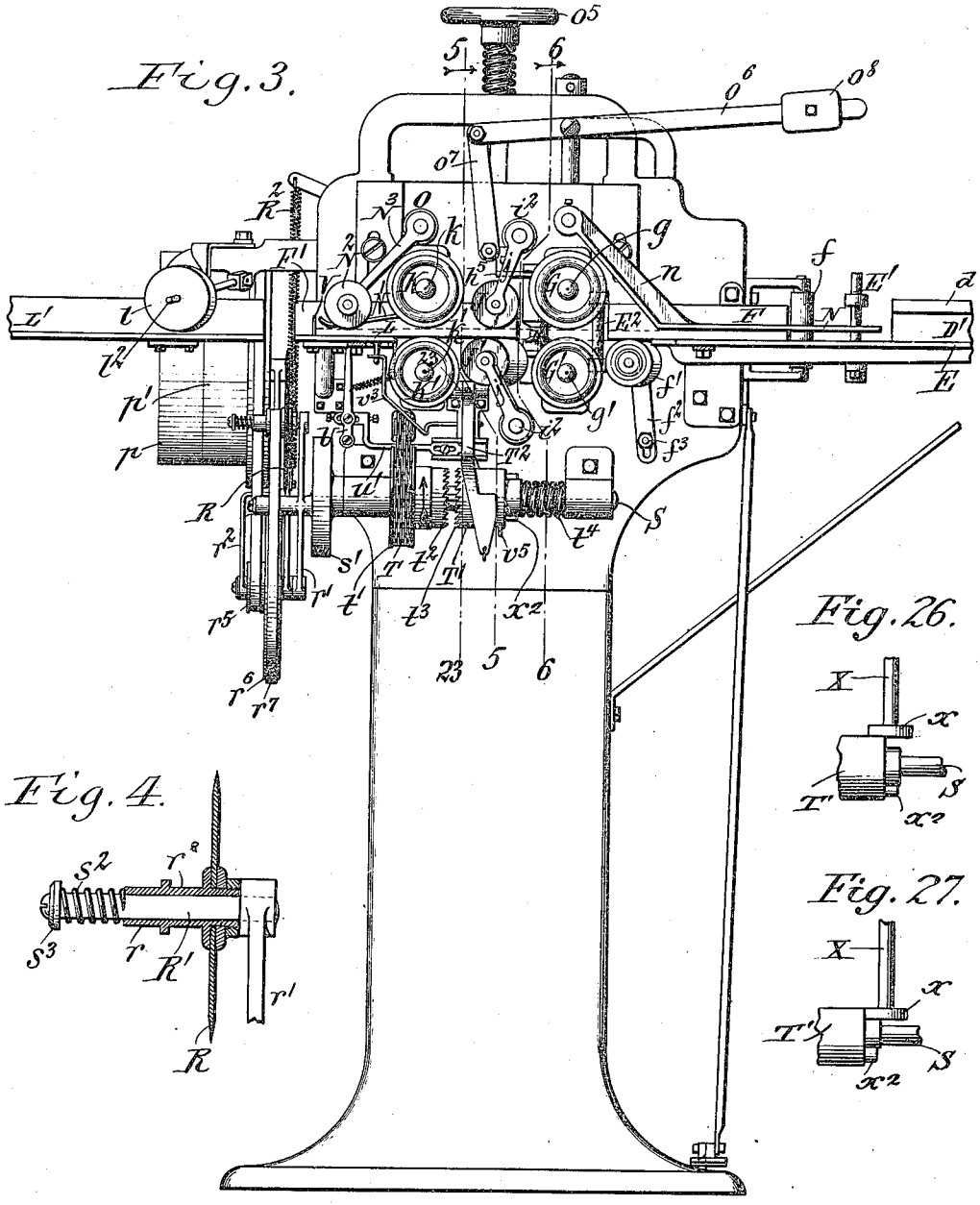

Fig. 26.

Fig. 4.

Fig. 27.

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6 SHEETS—SHEET 3.

Fig. 5.

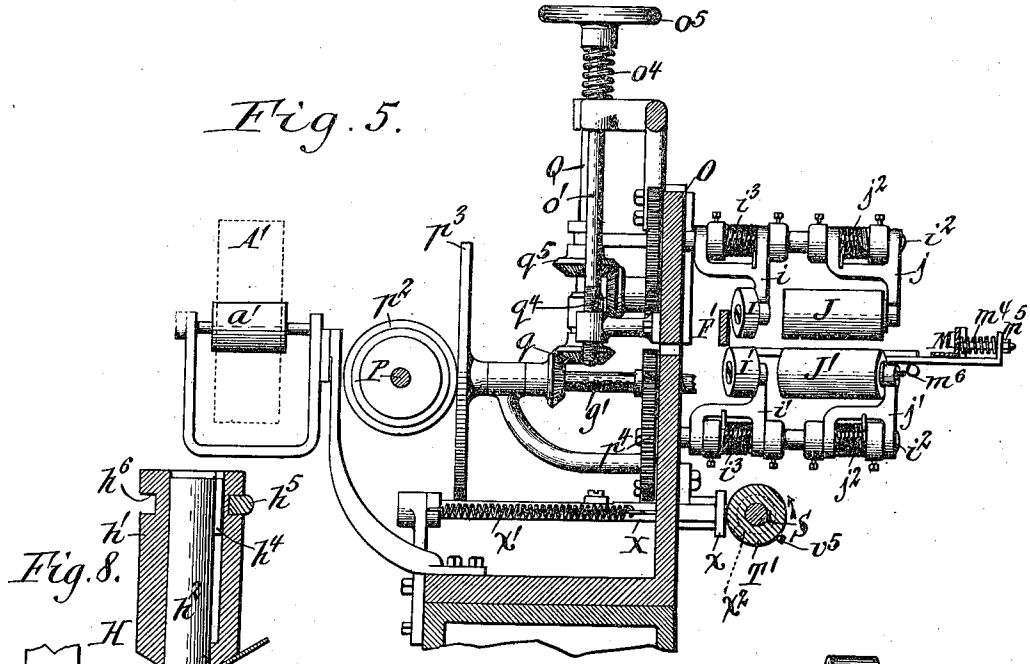


Fig. 8.

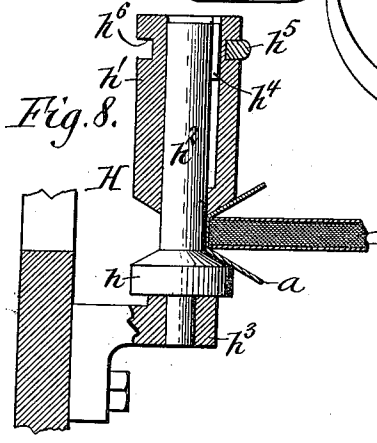


Fig. 7.

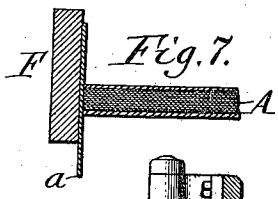


Fig. 9.

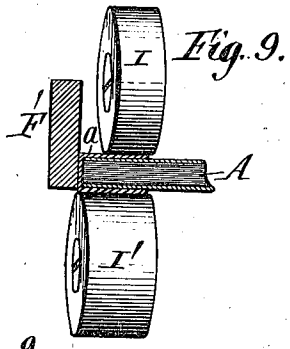
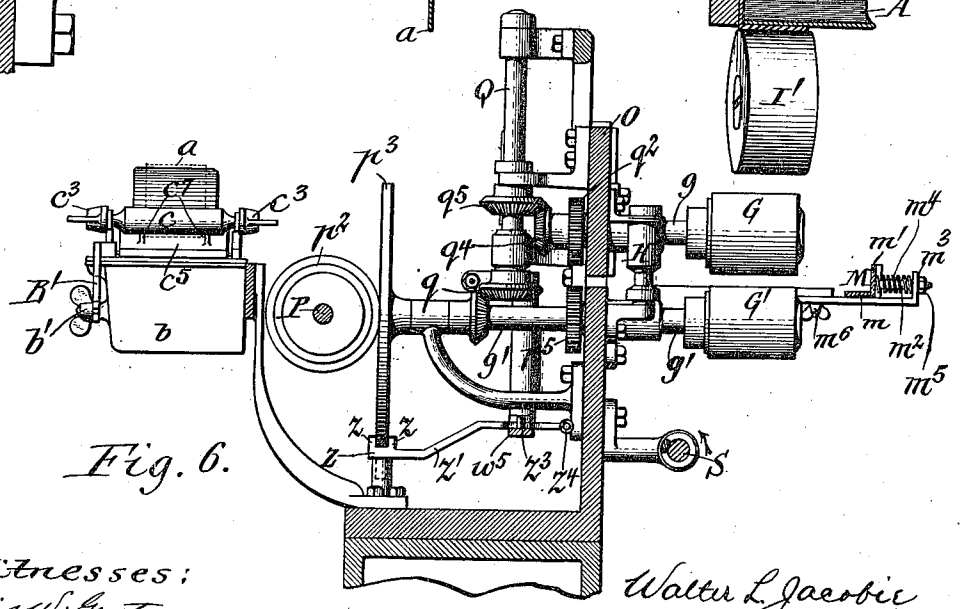


Fig. 6.



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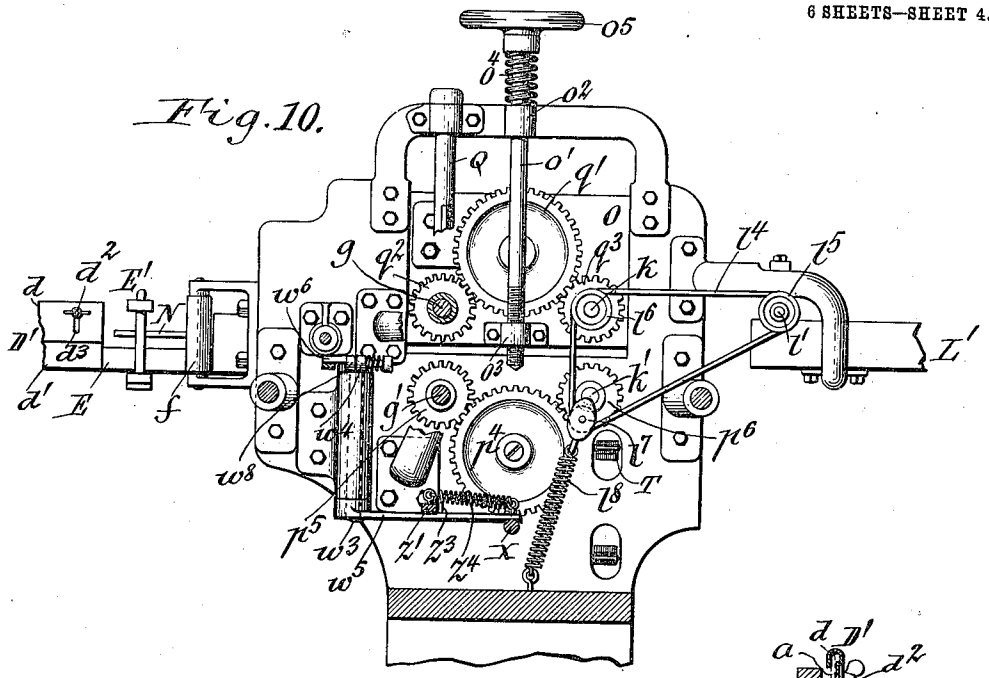
6 SHEETS—SHEET 4.

Fig. 10.



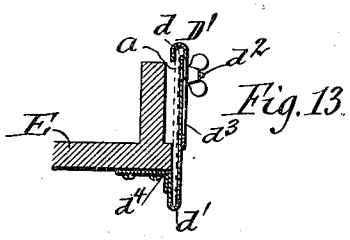
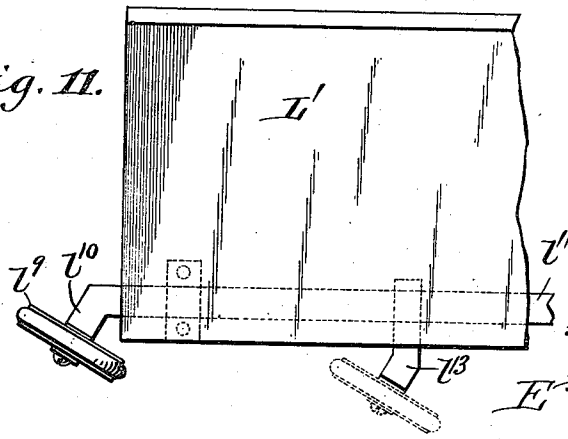


Fig. 13.

Fig. 11.



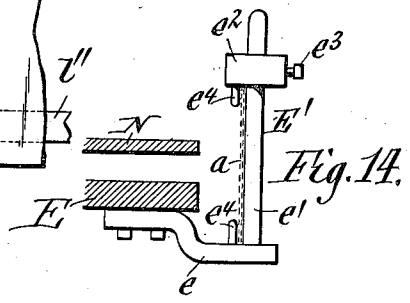
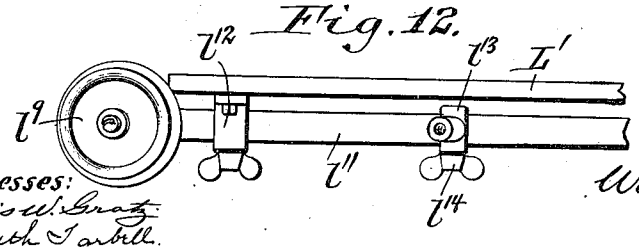


Fig. 14.

Fig. 12.



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APPLICATION FILED DEC. 27, 1905.

960,332. **Patented June 7, 1910**

6 SHEETS—SHEET 5.

Fig. 15.

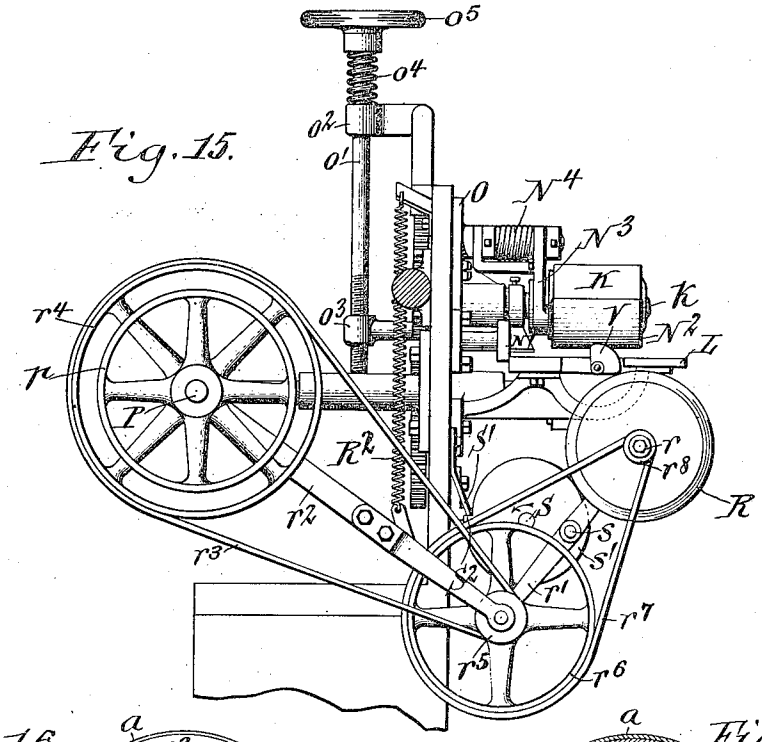


Fig. 16.

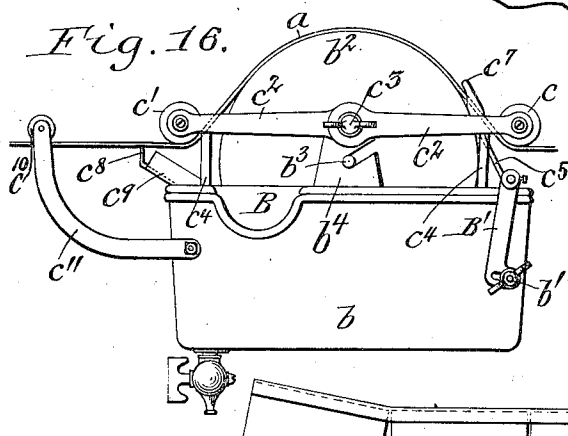
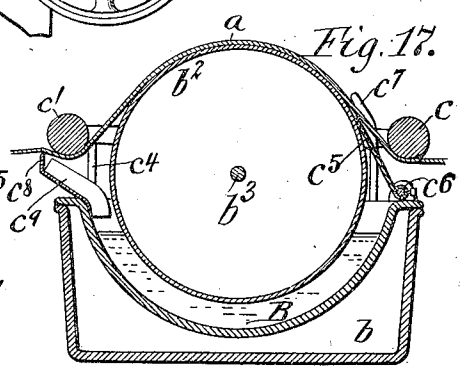


Fig. 17.



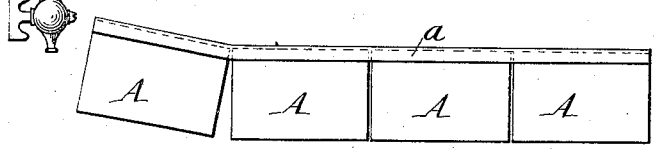


Fig. 18.

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BACKING STRIP APPLYING MACHINE.

APPLICATION FILED DEC. 27, 1905.

960,332. Patented June 7, 1910.

6 SHEETS—SHEET 6.

Fig. 22.

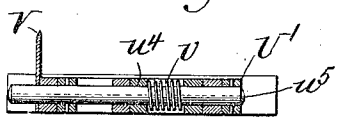


Fig. 21.

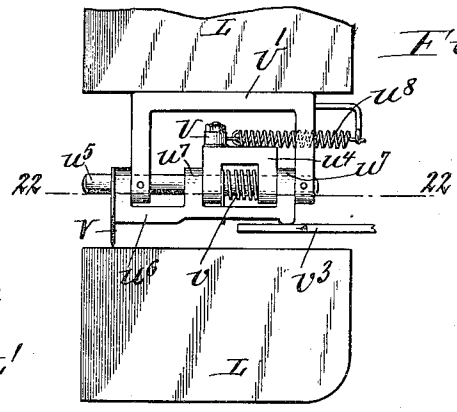


Fig. 25.

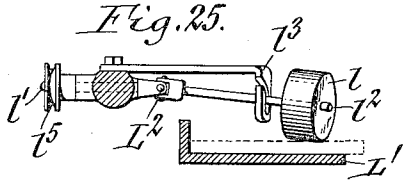


Fig. 19.

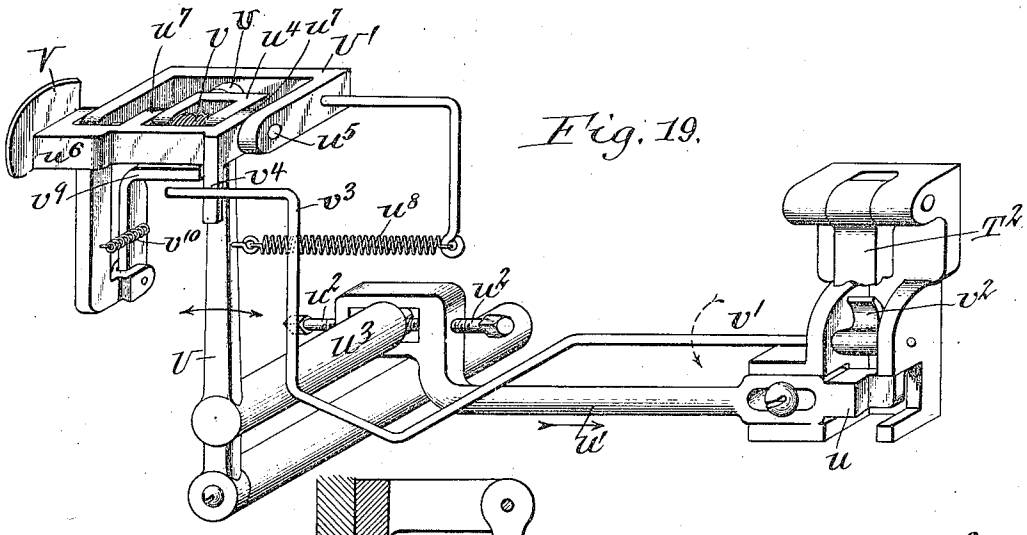


Fig. 20.

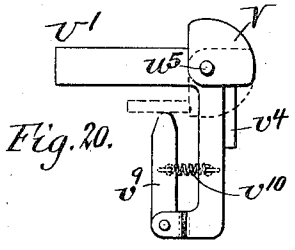


Fig. 23.

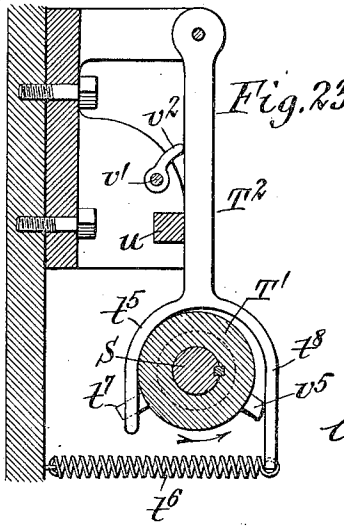
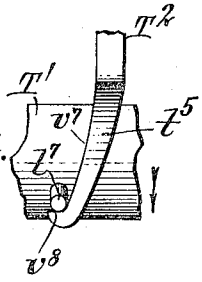


Fig. 24.



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UNITED STATES PATENT OFFICE.

WALTER L. JACOBIE, OF GLENS FALLS, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CHARLES W. JACOBIE, OF GLENS FALLS, NEW YORK.

BACKING-STRIP-APPLYING MACHINE.

960,332. Specification of Letters Patent. Patented June 7, 1910.

Application filed December 27, 1905. Serial No. 293,509.

To all whom it may concern:

Be it known that I, WALTER L. JACOBIE, a citizen of the United States, residing at Glens Falls, in the county of Warren and State of New York, have invented a new and useful Improvement in Backing-Strip-Applying Machines, of which the following is a specification.

This invention relates to a machine for applying binding or backing tapes, bands or strips of cloth or similar material to the backs of books, pamphlets, tablets, pads &c. which for convenience will hereafter be referred to generally as blanks. A machine for this purpose is shown and described in Letters Patent of the United States granted to myself, May 3, 1904, No. 758,657.

The construction of the machine shown in this patent is such that the blanks pass vertically or on-edge through the machine, which construction does not permit of feeding the blanks to nor discharging the same from the machine in the most desirable manner.

The object of the present invention is the production of an improved machine of this character in which the blanks pass in a horizontal position through the machine so as to avoid the above stated objection and in which the pasting of the strip, the application thereof to the blank, and the severing of the strip between the adjacent blanks is effected more reliably, efficiently and expeditiously.

In the accompanying drawings consisting of 6 sheets: Figure 1 is a top plan view of my improved backing strip applying machine. Fig. 2 is a fragmentary sectional top plan view of the mechanism whereby the feeding of the blank is controlled. Fig. 3 is a fragmentary front elevation of the machine. Fig. 4 is a fragmentary vertical section of the strip cutter and its support. Figs. 5 and 6 are vertical cross sections in lines 5—5 and 6—6, Figs. 1 and 3, respectively. Fig. 7 is a fragmentary section, on an enlarged scale, showing the relative position of the backing strip and the blank when the same are first brought together. Fig. 8 is a vertical section, on an enlarged scale, of the former or edge turner showing the manner in which the edges of the backing strip are bent over the opposite sides of the blank. Fig. 9 is a fragmentary section, showing the means whereby the edges of the backing strip are pressed against opposite sides of the blank and drawn out smoothly thereon. Fig. 10 is a fragmentary vertical longitudinal section in line 10—10, Fig. 1, showing the driving mechanism of the machine from the rear side. Fig. 11 is a fragmentary top plan view showing the means for deflecting long blanks in order to permit the cutter to sever the strip between adjacent blanks. Fig. 12 is a front elevation of the same. Figs. 13 and 14 are fragmentary vertical sections, on an enlarged scale, in line 13—13 and 14—14, Fig. 1, respectively. Fig. 15 is a vertical cross section in line 15—15, Fig. 1. Fig. 16 is a rear elevation of the mechanism whereby the adhesive is applied to the backing strip. Fig. 17 is a vertical longitudinal section of the same. Fig. 18 is a diagrammatic top plan view, showing the manner in which several blanks are connected by the backing strip and the foremost one is deflected to permit the severing blade to enter between the rear end of the foremost blank and the next following one. Fig. 19 is a fragmentary perspective view of the trip mechanism which controls the operation of the strip cutter. Fig. 20 is a fragmentary end view of the same. Fig. 21 is a fragmentary top plan view of the same. Fig. 22 is a vertical longitudinal section in line 22—22, Fig. 21. Fig. 23 is a vertical cross section in line 23—23, Fig. 3, on an enlarged scale, showing the clutch of the trip mechanism and adjacent parts. Fig. 24 is a fragmentary rear view of the same. Fig. 25 is a fragmentary cross section in line 25—25, Fig. 1. Figs. 26 and 27 are two fragmentary top plan views of the mechanism which controls the operation of the cutter.

Similar letters of reference indicate corresponding parts throughout the several views.

In its general organization, the machine comprises means for applying paste to one side of the strip; means for guiding the paste coated strip to the place where the operator feeds the blank against the strip; means for feeding the blank forwardly and pressing it back against the strip; means for turning or folding the opposite edges of the pasted strip toward opposite sides of the blank and pressing or smoothing the same out thereon; means for deflecting the foremost blank out of its normal course; so as to form a gap between the same and the

next following one into which the band cutter enters; means for severing the strip between adjacent blanks; and means for intermittently stopping the forward feed of the blanks while the cutting operation is effected.

For compactness, the devices for applying the paste to the strip are arranged in rear of the mechanism which applies the strip to the blank. The strip a which is to be applied to the backs of the blanks A may consist of any suitable material, but a woven fabric is the material most generally used. This strip is supplied from a roll A′ mounted on a mandrel or core a' on the rear part of the frame and passes thence to the paste applying device which is best shown in Figs. 1, 6, 16, and 17 and constructed as follows:

B represents a pot, reservoir or receptacle containing glue, paste, or other adhesive which is retained at the proper temperature best suited for making the strip stick well to the blanks by supporting its lower part in a jacket tank or heating chamber b containing water of the desired temperature. The glue pot is provided with a marginal flange which rests upon the upper edge of the heating chamber and the same is held in place by means of a latch B′ pivoted at its upper end on the glue pot and provided at its lower end with a slotted head which receives the shank of a clamping bolt b' on the heating chamber.

b^2 represents the glue delivery wheel which rotates with its lower part in the glue contained in the pot B and is pivotally supported by means of an axle or shaft b^3 the ends of which are journaled in slotted bearings formed in lugs b^4 which rise from the glue pot on opposite sides of the delivery wheel.

c c' represent two guide rollers which are arranged transversely adjacent to the receiving and delivery sides of the pasting wheel b^2 and below the uppermost part thereof. The backing strip passes from the supply roll A′ forwardly underneath the front guide roller c, thence upwardly and downwardly over the upper side of the paste wheel b^2 and thence underneath the rear guide roller c'. For convenience in threading or drawing the backing strip between these guide rollers and the paste delivery wheel in starting the machine and also to permit of readily dismembering these parts for cleaning and other purposes, each of these rollers is journaled at its ends on a pair of arms c^2, the arms of both rollers on the same side of the paste wheel b^2 projecting toward each other and being secured to the upper end of the adjacent supporting lug b^4 by a thumb screw c^3. The guide rollers c c' are supported in their lower operative position preparatory to being secured in place by stops or pins c^4 rising from the glue pot and engaging with the arms c^2 near their outer ends.

c^5 represents a scraper on blade which engages with the front side of the paste wheel immediately below the place where the backing strip is fed upon the same and which serves to remove the surplus glue from the periphery of the paste wheel before the same engages the backing strip. This scraper is secured to a transverse rod or bar c^6 which is supported at its ends on the adjacent part of the glue pot. In order to prevent the backing strip from moving laterally on the periphery of the pasting wheel, the scraper c^5 is provided with two side guides or fingers c^7 which engage with the opposite edges of the strip as the same passes from the front guide roller to the paste wheel, thereby insuring proper application of paste to the strip.

After the backing strip leaves the rear guide roller c' the same passes with its pasted underside or surface over a scraper c^8 which is formed on the upper edge of a chute c^9 leading into the rear part of the paste pot. The surplus paste on the backing strip is removed by the scraper c^8 and delivered by the chute back into the glue pot.

In order to hold the backing strip down on the scraper c^8 a retaining roller c^{10} is provided in advance of the scraper c^8 which roller is journaled in brackets c^{11} secured to the heating chamber and bears against the upper side of the strip, as shown in Fig. 16. From the roller c^{10} the backing strip passes around a horizontally rotating guide wheel D on the main frame, whereby a quarter twist is produced in the strip in passing from the pasting device to said guide wheel. Upon leaving the guide wheel D the backing strip passes through a curved guide D′ with its pasted side facing forwardly. This guide preferably consists of upper and lower channels d d' which have their open sides facing each other and which have short front flanges and wide rear flanges which latter are adjustably connected by means of bolts d^2 secured to one of the rear flanges and passing through vertical slots d^3 in the rear flange of the other channel as shown in Figs. 1, 3 and 13. This permits of adjusting the height of this guide to the width of the backing strip which is being applied to the blank. The guide D′ is supported by means of brackets or arms d^4 secured to its lower section and connecting the same with any suitable stationary part of the machine but preferably with a horizontal feed table E which is arranged in front of this guide and upon which the operator successively places the blanks preparatory to engaging the same with the backing strip. After the backing strip leaves the curved guide D′ it passes another guide E′ consist-

ing of a lug e projecting rearwardly from the table E and supporting the backing strip at its lower edge, an upright post e' rising from the lug e and supporting said strip at its back, a collar e^2 adjustably secured to the upper end of the post by means of a set screw e^3 and engaging the upper edge of the strip and pins e^4 projecting upwardly from the lug e and downwardly from said collar in front of said strip as shown in Figs. 1 and 13. This last-mentioned guide holds the strip exactly in the position which it should occupy when engaged by the blank to which the same is to be applied.

In order to control the backing strip between the front section of the back guide and the former, a guide E^2 is provided at this location which operates and is constructed substantially like the guide E' and the same description and letters of reference will therefore apply to both.

F F' represent the front and rear sections of a back guide or gage bar along which the backing strip moves with its uncoated rear side during the operation of applying the same to the back of the blank which is bearing against the strip at this time. As the pasted backing strip passes from the guide E' over the front section F of the back guide, the operator places a book, pamphlet or other blank flatwise upon the feed table E and pushes the same with its back against the pasted front side of the strip which is supported by the front section of the back guide, whereby the central part of the strip is attached to the back of the blank while its upper and lower edges or marginal portions project above and below the blank, as shown in Fig. 7.

In order to cause the backing strip to be drawn tightly and uniformly against all parts of the back of the blank as the latter is applied thereto, a vertical deflector roller f is arranged upon the main frame immediately in advance of the front section F of the back guide in such position that its front end is slightly forward of the face of said guide, whereby the backing strip is held out of contact with the section of the back guide at the front end thereof when not engaged by a blank, thereby sustaining the backing strip in a loose condition which enables the same to adapt itself freely to the back of the blank when the same is shoved against the strip by the operator.

As the operator pushes the blank on the table so as to engage the back thereof with the pasted backing strip the blank is also moved forwardly over a horizontal supporting roller f' and between upper and lower horizontal feed rollers G G', the arrangement of the rollers f' G G' being such, the blank is engaged by them only in front of its rear longitudinal margin.

The supporting roller f' is arranged horizontally and at such an angle relatively to the back guide sections that the plane of the face of said guide and the plane of rotation of said roller converge forwardly or in the direction in which the blanks move, whereby the blanks in moving forwardly, are carried laterally toward the right of the line of movement against the back guide section F, thus insuring a proper engagement of the blank with the pasted side of the strip. The supporting roller f' is secured to the upper end of a bracket or arm f^2 which is adjustably secured to the adjacent stationary part of the frame by means of a bolt f^3 passing through a slot in said arm, as shown in Fig. 3.

The axis about which the feed rollers G, G' rotate and the face of the back guide are arranged at such an oblique angle relatively to each other that the blank is constantly pushed laterally against the back guide at the same time that it is being propelled forwardly.

As the blank enters between the feed rollers G G' the same is fed forward to the devices which fold or turn the upper and lower marginal portions or edges of the backing strip toward opposite sides of the blank and cause these parts to be drawn out smoothly and firmly against the blank. For this purpose the upper and lower edges of the backing strip are first folded or turned partially toward opposite sides of the blank by a former or edge turner H as shown in Fig. 8. This former is arranged in a gap or space between the back guide sections and consists of a lower vertical roller h having a tapering upper side, an upper vertical roller h' facing the lower roller h and having a lower tapering end, and a central vertical spindle h^2 projecting upwardly from the lower roller into a central opening in the upper roller, as shown in Fig. 8. The opposing tapering ends of the turning rollers and the periphery of the spindle form the sides and bottom of an inwardly-tapering groove on the former which receives the backing strip and the back portion of the blank. As the strip and blank enter this groove, the back of the blank and the central part of the strip engage with the bottom of the groove while the upper and lower edge portions engage with the beveled upper and lower sides of said groove, whereby these edge portions of the strip are turned or folded partially toward opposite sides of the blank. As the blank and strip advance, they rotate the former by frictional contact with its groove, so that the former engages successively with all portions of the strip and folds the edges thereof toward successive blanks. The lower roller or section h of the former is preferably journaled at its lower end on a bracket h^3 secured to the adjacent stationary part of the frame.

The upper section or roller is adjustable vertically on the shank to permit of varying the size of the forming groove to suit the thickness of the blanks to which backing strips are to be applied. The upper and lower sections or rollers of the former are compelled to turn in unison, although capable of axial adjustment with reference to each other by means of a spline h^4 connecting the upper section with the spindle, as shown in Fig. 8.

In order to adjust the width of the groove in the former H simultaneously with the rollers on opposite sides of the path of the blanks and backing strip, the upper roller h' of the former is coupled with the slide by means of a finger h^5 secured to the slide and engaging with a peripheral groove h^6 in the upper part of the upper turning roller, as shown in Figs. 3, 6 and 8.

After the marginal or edge portions of the backing strips have been turned partly toward opposite sides of the blank, the movement of these edge portions against the blank is completed by a pair of coöperating upper and lower finishing or smoothing rollers I I′ which engage with the edges of the backing strip immediately in rear of the former, as shown in Figs. 1, 3, 5 and 9. These rollers are yieldingly held in engagement with the edges of the strip by means of upper and lower rock arms, i, i' supporting the upper and lower finishing rollers, respectively, upper and lower horizontal arbors i^2 upon which these arms are pivoted and springs i^3 interposed between the arbors and said arms and operating to turn the latter constantly in the direction for moving the finishing rollers into the path of the backing strip. The axis about which the finishing rollers rotate and the face of the back guide are arranged at such an oblique angle relatively to each other that the finishing rollers are caused to exert a lateral pull upon the edges of the backing strip from the back of the blank toward the front edge thereof, whereby all parts of the strip are drawn tightly against the blank and a smooth and even finish of the same is produced. The lower finishing roller I′ is somewhat wider than the upper roller I, so as to serve as a support for the blank and strip in addition to finishing the application of the strip to the blank.

At the same time that the finishing rollers are exerting an outward pull upon the backing strip, the blank is pushed inwardly, so as to hold its back firmly against the back guide by means of a lower oblique retaining roller J′ supporting the blank on its underside beyond the backing strip, and an upper oblique retaining roller J bearing against the upper side of the blank above the roller J′ and beyond the upper edge of the backing strip. The axis of the lower retaining roller J′ is arranged at the same angle or substantially so, as the initial supporting roller f', so as to offset or counteract any tendency of the finishing rollers to move the back of the blank away from the back guide bars F F′. If desired, the upper retaining roller J may also be arranged at the same angle as the lower retaining roller J′ but it has been found in practice that it is not necessary, and the same has therefore been so mounted that its axis is parallel to that of the front feed rollers G G′ and therefore exerts a less pronounced lateral moving effect on the blank than the lower retaining roller J′. The retaining rollers are held yieldingly in contact with opposite sides of the blank by means of upper and lower arms j j' pivoted loosely upon the upper and lower arbors i^2, and springs j^2 interposed between these arms and their respective arbors and operating to move the same yieldingly into the path of the blank.

After the blank and strip have cleared the finishing and retaining rollers, the blank is received between a pair of upper and lower horizontal feed rollers K K′ which feed the same forward over a stationary delivery table L. These rollers are arranged at the same angle as the feed rollers G G′ and operate to press the blank and strip against the back guide while feeding the same forwardly. This action of the feed rollers G G′, K K′ and retaining rollers J J′ to hold the back of the blank against the back guide is further supplemented by an L-shaped presser bar M which is arranged adjacent to the front longitudinal edge of the blank and has a lower horizontal portion m which supports the underside of the blank, and a vertical outer portion m' which engages with the outer edge of the blank. This presser bar is yieldingly moved toward the back guide by means of transverse guide rods m^2 projecting from the outer part of the presser bar through brackets m^3, springs m^4 interposed between said brackets and the outer side of said presser bar and operating to move the bar inwardly, and stops m^5 arranged on the guide rods and adapted to bear against the outer side of said brackets for limiting the inward movement of the bar. The front end of the presser bar is beveled or rounded, as shown in Fig. 1, in order to direct the front end of the blank past the same.

For permitting the presser bar M to be adjusted laterally to different sizes of blanks the brackets m^3 are connected with the feed and delivery tables E L by bolts or screws m^6 arranged on said tables and passing through slots in said brackets, as shown in Figs. 1, 5 and 6. In its normal position this presser bar is arranged slightly inside of the path of the blank and is deflected outwardly so as to clear the path of the blank by the

front end of the blank engaging with the same, whereby said bar exerts a constant lateral pressure against the blank while the same is in engagement with the back guide.

It has been found in practice that the operator, in the absence of any provision to the contrary, is liable to present the blank in a slightly tilted position to the backing strip and feed rollers and thus cause the backing strip to be applied out of center or irregularly to the blank. To avoid this a guard bar N is provided which is arranged horizontally and lengthwise over the feed table adjacent to its inner side. In feeding a blank to the strip it is necessary for the operator to shove the back edge of the same over the table and underneath this guard bar in order to bring the same into engagement with the paste coated backing strip and in moving the blank forwardly with the strip until the blank is within the control of the front feed rollers G G′ the operator is prevented by the guard bar from tilting the blank, thus insuring retention of the blank in its proper position relatively to the backing strip and preventing imperfect workmanship. As the blank leaves the rear feed rollers K K′ the same is held down in place upon the delivery table by means of a spring finger N′ bearing against the upper side of the backing strip and a retaining roller N^2 bearing against the top of the blank in front of the backing strip. The retaining finger N′ is secured to the bearing of the upper rear feed roller K while the retaining roller N^2 is mounted on an arm N^3 which is pivoted on the slide O and pressed downwardly by a spring N^4, as shown in Figs. 1, 3 and 15. The guard bar N is also secured to this slide by means of an arm n so that the space between the underside of the same and the top of the feed table is adjusted simultaneously with the other parts mounted on the slide for adapting the machine to different thicknesses of blanks.

The bearings in which the shafts g^1 k^1 of the lower feed rollers G^1 K^1 are journaled, the lower arbor i^2 carrying the lower finishing and retaining rollers I′ J′ and the bracket f^2 carrying the initial supporting roller f' are mounted on the lower stationary part of the main frame; but the bearings in which the shafts g k of the upper feed rollers G K are journaled and the upper arbor i^2 supporting the upper finishing and retaining rollers I J are mounted on a vertically movable slide O so as to permit the space between the rollers on opposite sides of the path of the blanks and the backing strip to be varied in accordance with the thickness of the blanks. This slide moves vertically in guide ways formed on the adjacent part of the main frame and its vertical adjustment together with the parts mounted thereon is effected by means of a vertical screw o' journaled at its upper end in a bearing o^2 on the stationary part of the frame while its lower end engages with a screw nut o^3 on the rear side of the slide. A spring o^4 surrounds this screw between the upper side of the bearing o^2 and a hand wheel o^5 applied to the upper end of the screw. The spring is sufficiently stiff that it ordinarily forms practically a rigid abutment for the hand wheel to bear against, so that upon turning the screw in one direction or the other, the slide and the parts mounted thereon will be raised and lowered. The slide is so adjusted to each particular thickness of blanks that when the latter enter between the upper and lower rollers of the machine the slide and the parts mounted thereon will be lifted by the blank passing between the upper and lower front feed rollers and these parts remain in this position as long as the operator continues to feed the blanks to the machine. When the feeding of blanks ceases, the slide and parts mounted thereon drop slightly as the rear edge of the last blank clears the rear feed rollers. During this slight drop of the slide, jarring of the machine is prevented by the interposition of the spring o^4 between the bearing o^2 and the hand wheel o^5. This construction also permits of slight variations in the thickness of the blanks without affecting the operation of the machine. For ease in adjusting the slide, the weight of the same and connecting parts are counterbalanced by means of a vertically swinging rock lever o^6 pivoted on the upper stationary part of the main frame and connected with one of its arms by means of a link o^7 to said slide while its other arm is provided with a weight o^8 as shown in Fig. 3.

P represents the main driving shaft of the machine which is arranged horizontally and lengthwise in the rear part thereof and to which power may be applied in any suitable way but preferably by means of pulleys p p' arranged at the rear end of the shaft and adapted to receive a driving belt. Near its front end this driving shaft is provided with a friction pinion p^2 which engages with the face of a friction disk or wheel p^3 secured to the rear end of the shaft g' which supports the lower front feed roller G′. p^4 represents a lower intermediate gear wheel journaled on the rear side of the main frame and meshing with gear pinions p^5 p^6 on the shaft g' of the lower front feed roller and the shaft k' of the lower rear feed roller K′.

Q represents a vertical shaft journaled in bearings on the stationary part of the main frame and operatively connected with the horizontal shaft g' by a pair of intermeshing bevel gear wheels q, as shown in Figs. 5 and 6. q' represents an upper intermediate gear wheel journaled on the rear side of the slide O and meshing on opposite sides with gear pinions q^2 q^3 on the rear ends of the shafts

g k which support the upper feed wheels G K. The shaft g of the upper front feed wheel is provided at its rear end with a bevel gear wheel q^4 meshing with a similar wheel q^5 which is splined on the vertical shaft Q. As the slide O is raised or lowered for adapting the machine to different thickness of blanks, the splined gear wheel q^5 shifts its position on the vertical shaft accordingly without disturbing the driving connection between the upper feed rollers and the main shaft.

In the operation of applying the strip to the backs of the blanks, the operator places the front of each blank near the rear end of the preceding blank, so that the several blanks form practically an unbroken or continuous surface and the blanks issue from the rear feed rollers thus connected. As the rear edge of each blank passes beyond the delivery table L a cutter R enters between the foremost blank and the next following one and severs the strip connecting the same, the separated or finished blank at this time being supported upon a receiving table L′ arranged in rear of the delivery table and separated therefrom by an intervening space or gap through which the cutter moves vertically and transversely. In order to enable the cutter to enter freely between two adjacent blanks, means are provided for deflecting the foremost blank sufficiently to form a gap between the same and the next following blank into which the cutter can enter freely and be guided thereby to the backing strip which it is to sever. This deflecting device in case comparatively short blanks are being bound by backing strips consists of a roller or wheel l adapted to bear against the upper side of the blank near the front longitudinal edge thereof, the plane of rotation of this deflecting roller and the plane of the guide face on the back guide converging forwardly, whereby the foremost blank upon being engaged by this roller is caused to be shifted obliquely rearward. The position of the foremost blank relatively to the succeeding blanks is indicated in Fig. 18. The deflecting roller l is free to move up and down and adapt itself to blanks of varying thickness, and is driven by means of a rear transverse shaft l' journaled in a fixed bearing on the main frame, a front oblique shaft l^2 carrying the deflecting roller l, a universal joint L^2 connecting the front shaft l^2 and the rear shaft l', a bracket l^3 provided with a vertical guide slot through which the oblique shaft passes and a driving belt l^4 passing around pulleys l^5 l^6 on the rear ends of the rear shaft l' and the shaft k of the upper rear feed roller and also around the roller of a pulley block l^7 connected by a spring l^8 with the main frame and serving as a belt tightener, as shown in Figs. 1, 10 and 25.

When blanks of considerable length are operated upon by this machine, the deflecting roller l and its driving mechanism are removed from the machine or rendered inoperative, and a supplemental roller l^9 is arranged obliquely either at the rear end of the receiving table, as shown in full lines in Fig. 11, or on the front side thereof near its rear end, as shown by dotted lines in the same figure. In either case the plane of rotation of the deflecting roller l^9 and that of the guide face on the back guide converge forwardly, causing each blank as it moves forwardly in engagement with the upper side of the roller l^9 to be deflected laterally rearward so as to form a gap between the rear end of the foremost blank and the next following one. When a deflecting roller l^9 is used, the same is not rotated by power but it is turned simply by contact with the underside of the blank which moves over the same, the friction between these parts being increased by placing a rubber facing on the periphery of the deflecting roller l^9 as shown. When the deflecting roller l^9 is arranged at the rear end of the receiving table, it is mounted on a laterally projecting lug l^{10} at the rear end of a longitudinal bar l^{11} which is adjustably secured to a bracket l^{12} on the underside of the receiving table. When this roller is to be used on the front side of this table near the delivery end thereof, said roller is pivoted on a bracket l^{13} which is adjustably secured to the bar l^{11} by means of a thumb screw l^{14} or otherwise, as shown in Figs. 11 and 12.

The preferred form of cutter consists of a disk which rotates in a vertical plane and is mounted on a hub or sleeve r arranged parallel with the line of movement of the blanks. This hub is journaled on a horizontal spindle R′ arranged on the upper end of a link r' which has its lower end pivoted on the front end of a rock arm r^2. The rear end of the latter is hung loosely on the main shaft. Motion is transmitted from the main shaft to the cutter by means of a belt r^3 passing around a driving pulley r^4 on the main shaft and small pulleys r^5 mounted on the pivot connecting the rock arm and the link, a large pulley r^6 also mounted on said pivot and operatively connected with the small pulley r^5, and a belt r^7 passing around the large pulley r^6, and a small pulley r^8 formed on the hub of the cutter. The central part of the link r' is connected by a crank or wrist pin s to a disk s' arranged at the rear end of a horizontal countershaft S which is journaled on the front part of the main frame below the blank supporting and propelling mechanism. During each rotation of this shaft, its crank s moves the cutter upwardly and rearwardly between two adjacent blanks and crosses the strip between

the same so that it is severed and then recedes again into a position below the path of the blanks to permit of feeding the same forward another space or length. For this purpose, the countershaft is rotated intermittently and remains at rest while the cutter is retracted a sufficient length of time to permit one step of the feeding operation of the blanks to take place, this retracted position of the cutter being indicated in Fig. 15. In order to permit the cutter to pass freely between the blanks regardless of any slight variation in the location of the gap between the same, the hub of the cutter is mounted on the spindle R′ so as to be capable of a limited lengthwise movement therein. The hub is yieldingly held in its foremost position against the link r' by means of a spring s^2 interposed between the rear end of said hub and a head s^3 at the rear end of said spindle as shown in Figs. 3 and 4. If this cutter in entering the gap between two adjacent blanks should engage with the front edge of the second blank the same would be deflected toward the backing strip which is to be severed during which deflection the spring s^2 yields the required extent without disarranging the driving mechanism of the cutter. The weight of the rock arm r^2 and the parts mounted thereon is counterbalanced by a spring R^2 connecting this arm with the main frame, as shown in Fig. 15, thereby relieving the crank s from undue wear.

The mechanism whereby the cutter is moved intermittently back and forth across the backing strip is so constructed that this movement is effected automatically and occurs whenever the joint between two adjacent blanks reaches the severing position regardless of the length of the blanks which are being operated upon. The means for this purpose is best shown in Figs. 1, 2, 3, 6, 10, 19 to 24 and is constructed as follows:

T represents a chain belt passing around a driving pulley t secured to the driving shaft P and a driven pulley t' mounted loosely on the countershaft S. The last mentioned pulley is rotated continuously in the direction of the arrow, Fig. 5 and is provided on its front side with a toothed or clutch face t^2 and is adapted to be coupled with or uncoupled from the countershaft by a clutch collar or sleeve T′ which is splined on the countershaft and provided on its rear side with a toothed or clutch face t^3 which is movable lengthwise into and out of engagement with the clutch face of the pulley t'.

t^4 represents a spring surrounding the countershaft between the rear side of the longitudinally movable clutch and the adjacent bearing of the countershaft and tending constantly to move said clutch collar into engagement with the driven pulley t'. The longitudinally movable clutch sleeve T′ is held in its retracted or inoperative position by means of the rear arm of a bifurcated clutch lever T^2 which straddles the clutch sleeve and which is adapted to engage by its rear arm t^5 with the side of an uncoupling pin t^7. The lever is pivoted at its upper end on the adjacent part of the main frame, so as to be capable of swinging transversely of the countershaft. A spring t^6 connecting the front arm of the clutch lever with the adjacent stationary part of the frame tends constantly to swing such lever rearwardly but this movement of said lever at the time the cutter is held in its inoperative position is prevented by means of a longitudinal and horizontally movable locking or stop block u which engages with the rear side of this lever. This stop block is guided in a bracket on the adjacent part of the main frame and is connected by a locking rod or bar u' with the central part of an upright rock or trip lever U the connection between said bar and lever being adjustable by means of screws u^2 arranged on the rear part of the bar and bearing against opposite sides of a rearwardly projecting pin u^3 on the lever. The trip lever is pivoted at its lower end on the stationary part of the frame and its upper end is pivotally connected with a horizontally and longitudinally movable carriage or slide u^4 which is guided on a stationary longitudinal rod u^5 below the path of the blanks. This guide rod is supported in a U-shaped bracket U′ which is arranged in a longitudinal slot formed by dividing the delivery table into two sections, as shown in Fig. 21.

u^6 represents a rocking frame or yoke which is capable of swinging vertically on the guide rod u^5 in a direction transversely of the movement of the blanks and which is provided with lugs u^7 which straddle the slide or carriage u^4 so as to compel the frame and carriage to move lengthwise together on the guide rod u^5 but permit the frame or yoke to rock vertically independent of the slide.

u^8 represents a spring which connects the trip lever U with the bracket U′ and which constantly tends to move the trip lever U, the carriage u^4, the yoke u^6 and the locking bar u' backwardly in the direction of the full arrow in Fig. 19, so as to retain the locking block u in the rear of the clutch lever T^2 so that the latter in turn engages with the side of the detent or uncoupling pin t^7 on the clutch sleeve and holds the latter in its retracted or inoperative position.

V represents a segmental trigger secured to the front end of the yoke and adapted to engage with the front edge of each blank as the same is moved forwardly past the trigger. This trigger together with the yoke are constantly turned by a spring v in the direction for raising the trigger into the

path of the blanks. The downward movement of the trigger and its yoke are effected by means of a trip or rock shaft v' journaled lengthwise in a stationary part of the frame and provided at one end with a short trip arm v^2 which is arranged in rear of the clutch lever T^2 and at its opposite end with a long angular trip arm v^3 which engages with a depending finger v^4 on the yoke.

While the body of a blank is passing over the trigger the latter and its yoke are held in a depressed position but the instant the joint between the foremost blank and the next following blank registers with the trigger, the latter is raised by the spring v into this joint so that it engages with the shoulder presented by the front end of the second blank. During the continued forward movement of the blanks the trigger, yoke, carriage, rocklever, shifting rod and locking block are moved forwardly with the blanks. When these parts have moved in this direction sufficiently to move the locking block out of engagement with the rear side of the clutch lever T^2, the latter is instantly pulled rearwardly by the spring t^6, thereby disengaging the detent arm t^5 from the detent or uncoupling pin t^7 and permitting the spring t^4 to push the clutch sleeve into engagement with the driven pulley t'. The countershaft is now operatively connected with the driving mechanism, whereby this shaft is rotated in the direction of the arrow and the cutter is carried across the gap between the first and second blanks and severs the backing strip connecting the same. At the same time that the clutch lever swings rearwardly for releasing the clutch sleeve this lever engages the short arm v^2 of the trip shaft v' and rocks the same in the direction for causing its angular arm v^3 to engage the depending finger v^4 on the yoke and turn the same downwardly so as to disengage the trigger from the front edge of the second blank and move the same out of the path thereof.

v^5 represents a restoring pin, lug or cam, arranged on the clutch-sleeve and adapted at the end of one rotation of the countershaft to engage with the front arm t^8 of the clutch lever T^2 and move the latter forwardly so as to bring its rear or uncoupling arm t^5 into the path of the uncoupling pin t^7 on the clutch sleeve. This uncoupling arm is provided with an inclined face or cam v^7 and shoulder v^8 at the lower end of said inclined face, as shown in Fig. 24. After the pin or cam v^5 has engaged the front arm of the clutch lever and shifted the latter forwardly, the inclined face on the rear arm of this lever stands in the path of the uncoupling pin f^7 so that the latter by engaging this incline is moved rearwardly together with the clutch sleeve and disengages the same from the clutch face of the driven pulley t' thereby arresting the further rotation of the countershaft at the time when the cutter has been retracted below the path of the blanks, as shown in Fig. 15. If the momentum of the parts should tend to rotate the countershaft and the clutch sleeve connected therewith after such an uncoupling has been effected, the continued rotation of the clutch sleeve and the parts connected therewith is positively arrested by the uncoupling pin t^7 engaging with the shoulder v^8 on the rear clutch arm, as shown in Fig. 24.

The instant that the clutch arm t^5 has been moved forwardly the spring u^8 moves the trigger V, yoke u^6 carriage u^4, lever U, connecting rod u' and locking block u backwardly, so that the locking block u stands behind the clutch lever and holds the same against backward movement. As the clutch sleeve is moved backwardly by engagement of its pin t^7 with the incline on the rear arm of the clutch lever, the restoring cam or pin v^5 in moving with the clutch sleeve is carried longitudinally rearward to one side of the front arm of the clutch lever, as shown in Fig. 3, so as not to interfere with the next following backward movement of the clutch lever when released by the locking block. At the same time that the clutch lever is moved forwardly, the trip shaft v' is turned in the direction of the dotted arrow in Fig. 19 by the preponderating weight of the angular arm v^3 thereby moving the free end of this last mentioned arm out of the path of the finger v^4, so that the yoke and trigger when free can be again raised into an elevated position by the spring v.

Ordinarily when the blanks are presented with perfectly square corners or front ends to the trigger, the latter will be held in a depressed position by the under side of the blank from the time the trigger clears one joint and the blanks have been fed forward until the next joint is presented to the trigger when the same is again elevated by the spring v for tripping the cutter controlling mechanism. It has been found in practice however that the front ends of the blanks are sometimes irregular and present more than one shoulder in the form of steps. This occurs most frequently when covers are applied to opposite sides of the books, pads, or tablets, and the lower cover becomes displaced lengthwise. In a case of this kind the trigger, in the absence of any provision to the contrary, would not only engage with the first shoulder which it reaches and trip the cutter mechanism, but would immediately ascend and engage with another following shoulder of the blank and cause the cutter mechanism to be tripped again, thereby causing another operation of the cutter. This cutting operation would be repeated as many times as shoulders are presented to the trigger at the front end of the blank, which

results not only in producing imperfect work but it is also liable to injure the mechanism. For the purpose of avoiding this, means are provided for retaining the trigger after it has been once depressed in this position a sufficient length of time until the front end of the blank has safely cleared the trigger and the same is no longer liable to engage with any extra shoulders on the same. This is effected by means of a vertically and transversely swinging latch v^9 which is pivoted on the underside of the bracket U′ and yieldingly held in the path of the finger v^4 by means of a spring v^{10}. As the yoke and trigger are depressed, the finger first rises and deflects the latch until it clears the same and then the latch is carried by the spring v^{10} into the path of the finger, so that the latter is retained in its elevated position and the trigger in its depressed position, as shown by dotted lines in Fig. 20. The trigger and yoke are retained in this position until the same have been carried backwardly by the spring u^8 together with the carriage and other parts until the finger has cleared the front end of the latch at which time the finger is released and the spring v is again permitted to elevate the trigger into engagement with the underside of the moving blank ready to enter the joint, gap or space between the same and the next blank. The engaging surface of the latch with which the finger engages is of such length that the front end of the blank safely clears the trigger before the latter is again liberated. The retaining finger N′ and roller N² hold the blanks down so that the same cannot jump over the trigger V but are compelled to engage the front side thereof and thus operate the cutter controlling mechanism. The rotation of the countershaft S is preferably arrested while the crank s is on the front side of the shaft and nearly horizontally in line therewith, as shown in Fig. 15, whereby the cutter is enabled to enter promptly between the blanks and sever the strip connecting the same. In order to hold the parts in this position while the cutter mechanism is at rest and prevent the weight of the link r' and parts connected therewith from turning the countershaft backwardly after being uncoupled from the driving mechanism a detent device is provided which preferably consists of a spring pawl S′ arranged on the main frame and engaging with a shoulder S² on the periphery of the crank disk s'.

While the cutting of the backing strip is being done, the forward feed of the blanks and strip is arrested and again resumed after the cutting of the strip has been effected. The means for this purpose is best shown in Figs. 1, 2, 5, 6 and 10 and is constructed as follows: Primarily, the connection between the blank and strip feeding mechanism and the driving mechanism is effected by moving the friction pinion p^2 laterally into and out of engagement with the face of the friction disk or wheel p^3. For this purpose the bearing w at the rear end of the driving shaft adjacent to the pulleys p, p^1 is pivoted in a bracket W on the main frame so as to be capable of oscillating or swiveling in a horizontal plane while the bearing w^1 at the front end of this shaft and adjacent to the friction pinion p^2 is pivotally mounted on a horizontally movable slide w^2 which is guided on the adjacent part of the main frame. w^3 represents an upright rock shaft journaled in bearings on the rear side of the frame and provided at its upper and lower ends with rock arms w^4, w^5 at right angles to each other. On the upper part of the rock shaft w^3 is also loosely mounted an elbow lever one arm w^6 of which is connected by a link w^7 with the slide supporting the bearing w^1 while its other arm w^8 is yieldingly connected with the upper rock arm w^4 of the shaft w^3 by a bolt w^9 secured to the elbow arm w^8 and passing loosely through the upper rock arm w^4 and a spring w^{10} surrounding the bolt w^9 between its head and the arm w^4 and tending constantly to press the arms w^4 w^8 toward each other. X represents a horizontal shipper rod which is guided transversely in the lower part of the main frame and provided at its front end with a shifting head x which is arranged adjacent to the clutch sleeve. This rod is connected in rear of the frame with the arm w^5 at the lower end of the rock shaft w^3 and also with the main frame by means of a spring x^1 which tends constantly to move the shipper rod forwardly.

x^2 represents a shifting pin or cam arranged on the rear end of the clutch sleeve adjacent to its periphery and adapted to shift the rod X by engaging with the head thereof.

While the operation of cutting the backing strip is being effected and the clutch sleeve is in its rearward position and coupled with the driven pulley t^1, the shifting pin x^2 is disengaged from the shifting head x, thereby permitting the spring x^1 to pull the shifting rod forwardly, so that the periphery of its head is arranged in rear of the clutch sleeve as shown in Fig. 27 which movement of the shifting rod causes the rock shaft w^3 to be turned in the direction for moving the main driving shaft P and its friction pinion away from the friction wheel by means of the intermediate devices which connect the rock shaft w^3 with the shifting rod and the driving shaft, thereby causing the movement of the feeding rollers to be arrested. During the last portion of each rotation of the countershaft and after the cutting operation of the backing strip has been effected by the cutter mechanism, the

shifting pin x^2 engages with the head of the shifting rod X and pushes the latter rearwardly so that the face of the shifting head is in line with the periphery of the clutch sleeve at the time this sleeve is retracted by the cam face or incline of the arm t^5, thereby causing this sleeve to be moved in front of the shifting head and engage its periphery therewith as shown in Fig. 26 the shifting rod X is positively held in its rearward or retracted position.

In moving the shifting rod rearwardly, the driving shaft P is moved forwardly by means of the intermediate connecting mechanism, thereby engaging the friction pinion with the friction disk or wheel and causing the blank feeding rollers to resume their operation. The link w^7 is preferably constructed in the form of a turn buckle so as to permit of adjusting the friction pinion relatively to the friction wheel. The throw of this shifting mechanism is preferably so adjusted that the friction pinion bears against the friction wheel before the rearward movement of the shifting rod X has been completed, which causes the spring w^{10} which yieldingly connects the arms w^4 w^8 to be compressed. By this means a yielding pressure of the friction pinion against the friction wheel is produced and the necessity for a fine adjustment of these parts is avoided. The parts remain in this position until the blanks have been fed forwardly another space and the next joint between the two adjacent blanks has arrived at the strip severing position, when the clutch sleeve T^1 is again released by the trigger controlled trip mechanism and moved forwardly into engagement with the driven pulley t^1 by means of the spring t^4; when this occurs the rear end of the clutch sleeve clears the shifting head x thereby permitting the spring x^1 to move the shifting rod forwardly and causing the friction pinion to be moved rearwardly out of engagement with the friction wheel by the intermediate connection between the shifting rod and the driving shaft. In order to permit the friction pinion to engage the friction wheel with a firm grip the wheel is supported in rear of said pinion by a thrust roller y which is mounted on the adjacent part of the main frame. At the same time that the friction pinion is disengaged from the friction wheel, a brake is applied to the latter for causing the blank feed mechanism to stop promptly. The preferred construction of brake for this purpose shown in Figs. 2 and 6 consists of a brake head Z pivoted vertically on the rear part of the main frame and provided with two jaws z z arranged on opposite sides of the lower part of the friction wheel, a rock arm z^1 projecting forwardly from the brake head and provided with a cam face z^2 which is engaged by a pin or lug z^3 on the lower rock arm and a spring z^4 operating to hold this brake arm yieldingly in contact with said pin. During the forward movement of the shifting rod X, the pin z^3 engages with the cam face of the brake arm and turns the brake arm and turns the brake head so that its jaws engage with opposite sides of the friction wheel, thereby arresting the rotation thereof at the same time that the friction pinion is disengaged therefrom. During the backward movement of the shifting rod, the pin z^3 moves toward the base of the cam on the rock arm w^3, permitting the spring z^4 to move the brake arm in the direction for turning the brake head so that its jaws are disengaged from opposite sides of the friction wheel, thereby permitting the latter to be rotated by the friction pinion which at the same time is engaged therewith.

I claim as my invention:

1. A machine for applying a backing strip comprising a glue delivery wheel over which the strip passes, a glue pot into which the lower part of said wheel dips, front and rear guide rollers for said strip arranged on opposite sides of said wheel, movable arms supporting said rollers at opposite ends and the arms at the corresponding ends of the rollers projecting toward each other and clamping screws whereby said arms are secured to lugs on said pot, substantially as set forth.

2. A machine for applying a backing strip having a guide for the strip which consists of two channels arranged with their open sides facing each other, and means for adjustably connecting the rear flanges of said channels, substantially as set forth.

3. A machine for applying a backing strip having a guide for the strip which consists of two channels arranged with their open sides facing each other, and means for adjustably connecting the rear flanges of said channels, consisting of a clamping bolt arranged on one of said channels and passing through slots in the other channel, substantially as set forth.

4. A machine for applying a backing strip having a guide for the strip which consists of a post, a lug supporting the lower end of said post, a collar adjustably secured to the upper end of the post, and pins arranged on said lug and collar in front of said post and projecting toward each other, substantially as set forth.

5. A machine for applying a backing strip to a blank comprising means for propelling a blank, means for feeding a strip in a flat condition against the back of the blank, means for coating the inner side of the strip with an adhesive before the same reaches the blank, preliminary folding means for turning the edges of the strip from their

straight position into an angular position and partway toward opposite sides of the blank, and comprising two rollers having inclined faces which diverge toward the blank and engage with the opposite edges of the strip, and a final folding means independent of the preliminary folding means for completing the turning of the edges of the strip against opposite sides of the blank, substantially as set forth.

6. A machine for applying a backing strip to a blank comprising means for propelling a blank, means for feeding a strip in a flat or straight condition against the back of the blank, means for coating the inner side of the strip with an adhesive before the same reaches the blank, preliminary folding means for turning the edges of the strip from their straight position partway toward opposite sides of the blank, said preliminary folding means comprising two roller sections having their opposing ends tapered and capable of axial adjustment one relatively to the other but compelled to turn together, and separate final folding means for completing the turning of the edges of the strip and pressing the same against opposite sides of the blank, said final folding means comprising two rollers arranged in rear of the preliminary folding means, substantially as set forth.

7. A machine for applying a backing strip to a blank comprising propelling rollers engaging with opposite sides of the blank, means for supplying and coating a strip with adhesive, an adjustable slide supporting the propelling rollers on one side of the path of the blank, an edge turner for bending the edges of the strip toward opposite sides of the blank and consisting of two roller sections, a fixed support on which one of said sections is pivoted, a coupling arm or fork arranged on said slide and engaging with an annular groove in the other section and a shank arranged axially on one of said sections and engaging with an axial opening in the other section, substantially as set forth.

8. A machine for applying a backing strip to a blank comprising blank propelling rollers having horizontal axes and engaging with opposite sides of the blank, a back guide for the blank and strip having two sections which are separated by a gap, and an edge turner arranged in said gap and constructed to bend the edges of the strip toward opposite sides of the blank, substantially as set forth.

9. A machine for applying a backing strip to a blank comprising blank propelling rollers engaging with opposite sides of the blank, strip pressing rollers engaging with opposite sides of the strip, rock arms supporting said strip pressing rollers, and springs operating to turn said arms in the direction for moving the strip pressing rollers against opposite sides of the strip, substantially as set forth.

10. A machine for applying a backing strip to a blank comprising blank-propelling rollers engaging with opposite sides of the blank, strip-pressing rollers engaging with opposite sides of the strip, blank-pressing rollers bearing against opposite sides of the blank adjacent to the strip-pressing rollers, rock-arms supporting said pressing rollers, and springs operating to turn said arms in the direction for moving said pressing rollers against opposite sides of the strip and blank, substantially as set forth.

11. A machine for applying a backing strip to a blank comprising horizontal feed rollers, a back guide bar adapted to be engaged by the back of the blank and a front presser bar having an upright flange for engaging the front edge of the blank and a horizontal flange for engaging the underside of the blank, and means for holding the front presser bar yieldingly in position consisting of guide rods projecting laterally from said vertical flange, brackets in which rods are guided and springs interposed between said brackets and said upright flange, substantially as set forth.

12. A machine for applying a backing strip to a blank comprising blank propelling rollers arranged above and below the path of the blanks, fixed bearings in which the shafts of the lower rollers are journaled, a vertically movable slide carrying bearings in which the shafts of the upper rollers are journaled, a vertical adjusting screw engaging at its lower end with a nut on said slide, a bearing on the stationary part of the frame in which the unthreaded part of said screw turns, and a spring surrounding said screw between said bearing and a hand wheel on said screw, substantially as set forth.

13. A machine for applying a backing strip to a blank comprising blank propelling rollers arranged above and below the path of the blanks, fixed bearings in which the shafts of the lower rollers are journaled, a vertically movable slide carrying bearings in which the shafts of the upper rollers are journaled, a counterbalancing lever pivoted on the stationary part of the machine, a link connecting one end of said lever with said slide, and a weight connected with the other arm of said lever, substantially as set forth.

14. A machine for applying a backing strip to a blank comprising a horizontal blank-feed table, horizontal blank-feed rollers arranged above and below the path of the blanks in rear of said table, a vertically adjustable slide carrying the upper feed rollers, and a horizontal guard bar arranged

lengthwise above the table and connected with said slide, substantially as set forth.

15. A machine for applying a backing strip to a blank comprising means for feeding the blanks, means for supplying the strip and attaching the same continuously to a plurality of blanks arranged end to end, means for deflecting each blank laterally as it reaches the foremost position relatively to the remaining blanks forming a gap between the same and the next following blank and a cutter operating to enter said gap and sever the strip connecting the adjacent blanks, substantially as set forth.

16. A machine for applying a backing strip to a blank comprising means for feeding the blanks, means for supplying the strip and attaching the same continuously to a plurality of blanks arranged end to end, a deflecting roller arranged obliquely in the path of said blanks and adapted to be engaged by each blank as the same reaches the foremost position relatively to the remaining blanks whereby this blank is deflected laterally and a cutter operating to enter between the foremost blank and the next following and sever the strip connecting the same, substantially as set forth.

17. A machine for applying a backing strip to a blank comprising means for feeding the blanks, means for supplying the strip and attaching the same continuously to a plurality of blanks arranged end to end, a deflecting roller arranged obliquely in the path of said blanks and adapted to be engaged by each blank as the same reaches the foremost position relatively to the remaining blanks whereby this blank is deflected laterally, a vertically movable shaft carrying said deflecting roller, a driving shaft, and a flexible connection between said driving shaft and said roller shaft, substantially as set forth.

18. A machine for applying a backing strip to a blank comprising means for feeding the blanks, means for supplying the strip and attaching the same continuously to a plurality of blanks arranged end to end, a rotary cutter movable transversely between adjacent blanks for severing the strip connecting the same a transversely movable support provided with an arbor on which said cutter is pivoted, and a spring whereby said cutter is yieldingly held on the front part of said arbor, substantially as set forth.

19. A machine for applying a backing strip to a blank comprising a blank feeding mechanism, a strip attaching mechanism a cutter movable transversely between adjacent blanks for severing the strip connecting the same, a link supporting said cutter on one of its ends, a rock arm connected with the other end of said link, and a crank connected with the central part of said link, substantially as set forth.

20. A machine for applying a backing strip to a blank comprising a blank feeding mechanism, a strip attaching mechanism, a rotary cutter movable transversely between adjacent blanks for severing the strip connecting the same, a link on the upper end of which the cutter is pivoted, a rock arm pivotally connected at its front end with the lower end of the link, a driving shaft upon which the rear end of said rock arm is pivoted, a pair of connected pulleys mounted on the pivotal connection between the rock arm and link, a pulley secured to the driving shaft, a belt passing around one pulley of said pair and the pulley of the driving shaft, a pulley secured to the cutter, a belt passing around the other pulley of said pair and the pulley of said cutter, substantially as set forth.

21. A machine for applying a backing strip to a blank comprising a blank feeding mechanism, a strip attaching mechanism, a rotary cutter movable transversely between adjacent blanks for severing the strip connecting the same, a link on the upper end of which the cutter is pivoted, a rock arm pivotally connected at its front end with the lower end of the link, a driving shaft upon which the rear end of said rock arm is pivoted, a pair of connected pulleys mounted on the pivotal connection between the rock arm and link, a pulley secured to the driving shaft, a belt passing around one pulley of said pair and the pulley of the driving shaft, a pulley secured to the cutter, a belt passing around the other pulley of said pair and the pulley of said cutter, and a shaft having a crank connected with the central part of said link, substantially as set forth.

22. A machine for applying a backing strip to a blank comprising a blank feeding mechanism, a strip attaching mechanism, a rotary cutter movable transversely between adjacent blanks for severing the strip connecting the same, a link on the upper end of which the cutter is pivoted, a rock arm pivotally connected at its front end with the lower end of the link, a driving shaft upon which the rear end of said rock arm is pivoted, a pair of connected pulleys mounted on the pivotal connection between the rock arm and link, a pulley secured to the driving shaft, a belt passing around one pulley of said pair and the pulley of the driving shaft, a pulley secured to said cutter, a belt passing around the other pulley of said pair and the pulley of said cutter, a rotary shaft, a disk arranged on said shaft and having a shoulder, a crank connecting said disk with the central part of said link, and a detent spring secured to a stationary part and adapted to engage said shoulder for

preventing backward movement of the disk and the parts connected therewith, substantially as set forth.

23. A machine for applying a backing strip to a blank comprising means for feeding the blanks end to end, means for supplying the strip and attaching the same continuously to the backs of said blanks, a transversely movable cutter adapted to enter between adjacent blanks and sever the strip connecting the same, a shifting mechanism for said cutter, a driving mechanism for said shifting mechanism, a clutch for coupling and uncoupling said shifting and driving mechanisms, a trigger adapted to enter between adjacent blanks and to be moved lengthwise thereby, and means controlled by the longitudinal movement of the trigger and operating to couple said clutch, substantially as set forth.

24. A machine for applying a backing strip to a blank comprising means for feeding the blanks end to end, means for supplying the strip and attaching the same continuously to the backs of said blanks, a transversely movable cutter adapted to enter between adjacent blanks and sever the strip connecting the same, a shifting mechanism for said cutter, a driving mechanism for said shifting mechanism, a clutch for coupling and uncoupling said shifting and driving mechanisms, a trigger operating to engage with the front end of each blank and to be moved lengthwise thereby, a clutch lever controlling said clutch, a locking block adapted to engage said lever and hold the same in position for opening said clutch, and means operating to transmit the forward longitudinal movement of said trigger to said locking block for releasing said lever and closing the clutch, substantially as set forth.

25. A machine for applying a backing strip to a blank comprising means for feeding the blanks end to end, means for supplying the strip and attaching the same continuously to the backs of said blanks, a transversely movable cutter adapted to enter between adjacent blanks and sever the strip connecting the same, a shifting mechanism for said cutter, a driving mechanism for said shifting mechanism, a clutch for coupling and uncoupling said shifting and driving mechanisms, a trigger operating to engage with the front end of each blank and to be moved lengthwise thereby, a clutch-lever controlling said clutch, a locking block adapted to engage said lever and hold the same in position for opening said clutch, means operating to transmit the forward longitudinal movement of said trigger to said locking block for releasing said lever and closing the clutch, and means controlled by said lever and operating to depress the trigger out of the path of the blank and hold the same in this position until the front end of the blank has cleared the trigger, substantially as set forth.

26. A machine for applying a backing strip to a blank comprising means for feeding the blanks end to end, means for supplying the strip and attaching the same continuously to the backs of said blanks, a transversely movable cutter adapted to enter between adjacent blanks and sever the strip connecting the same, a shifting mechanism for said cutter, a driving mechanism for said shifting mechanism, a clutch for coupling and uncoupling said shifting and driving mechanisms, a trigger movable transversely into and out of engagement with the front end of each blank and also lengthwise therewith to a limited extent, a spring operating to move the trigger transversely into engagement with the front end of the blank, a transversely movable clutch lever controlling said clutch, a locking block which holds the clutch lever in position to open the clutch, means operating to transmit the forward longitudinal movement of the trigger to said block for releasing said lever and closing the clutch, and means operating to transmit the releasing movement of said clutch to said trigger for moving the same transversely out of engagement from the front end of the respective blank, substantially as set forth.

27. A machine for applying a backing strip to a blank comprising means for feeding the blanks end to end, means for supplying the strip and attaching the same continuously to the backs of said blanks, a rotary cutter adapted to move transversely between adjacent blanks and sever the strip connecting the same, a link supporting said cutter, a shaft provided with a crank connected with said link, a driven wheel mounted loosely on said shaft and provided with a clutch face, a clutch sleeve splined on said shaft and provided with a clutch face for cooperating with that of the driven wheel, a spring tending to move the clutch sleeve forward for closing the clutch, a transversely movable clutch lever having a rear arm and a front arm, a clutch releasing pin arranged on the clutch sleeve and adapted to engage an incline on said rear arm for opening the clutch, a restoring pin arranged on the clutch sleeve and adapted to engage with said front arm for shifting the clutch lever into engagement with the releasing pin so as to open the clutch, a spring tending to move the clutch lever into its closing position, a locking block adapted to hold the clutch lever in its open position, a trigger movable transversely into and out of engagement with the front ends of the blanks and also lengthwise therewith to a limited extent, a

rocking and reciprocating yoke carrying said trigger, a spring operating to turn the yoke and trigger in the direction for bringing the latter into the path of the blanks, a rock lever connected with said yoke and with said locking block, a spring operating to move the rock lever and connecting parts backwardly, a rock shaft having one arm arranged to be engaged by the clutch lever during its releasing movement and another arm which operatively engages said yoke for turning the same so that the trigger is retracted out of engagement from the front end of the respective blank, and a latch arranged to be engaged by a finger on the yoke and operating to hold the latter for a time in its depressed position independent of the position of the clutch lever, substantially as set forth.

28. A machine for applying a backing strip to a blank comprising a feed mechanism for propelling the blank and strip, a cutter mechanism for severing the strip between adjacent blanks a friction wheel operatively connected with said feed mechanism, a driving shaft provided with a friction pinion, a countershaft connected with said cutter mechanism, a clutch arranged between said driving shaft and countershaft, and means for operatively engaging said friction wheel and pinion and the members of said clutch alternately, substantially as set forth.

29. A machine for applying a backing strip to a blank comprising a feed mechanism for propelling the blanks and strip, a cutter mechanism for severing the strip between adjacent blanks, a friction wheel operatively connected with said feed mechanism, a driving shaft provided with a friction pinion, a counter shaft connected with said cutter mechanism, a driven pulley mounted loosely on said countershaft and operated from the driving shaft, a clutch sleeve splined on the counter shaft and movable into and out of engagement with said driven pulley, a shifting pin arranged on the end of said sleeve, a shifting rod provided with a head adapted to be moved backwardly by said pin and to be held in this position by the periphery of said sleeve, a spring operating to move said rod forward when its head is released by said sleeve, and intermediate mechanism connecting said shifting rod and driving shaft for causing the friction pinion and wheel and the members of said clutch to be operatively engaged alternately, substantially as set forth.

30. A machine for applying a backing strip to a blank comprising a feed mechanism for propelling the blanks and strip, a cutter mechanism for severing the strip between adjacent blanks, a friction wheel operatively connected with said feed mechanism a driving shaft provided with a friction pinion, a countershaft connected with said cutter mechanism, a driven pulley mounted loosely on said countershaft and operated from the driving shaft, a clutch sleeve splined on the countershaft and movable into and out of engagement with said driven pulley, a shifting pin arranged on the end of said sleeve, a shifting rod provided with a head adapted to be moved backwardly by said pin and to be held in this position by the periphery of said sleeve, a spring operating to move said rod forward when its head is released by said sleeve, an intermediate rock shaft provided with two fixed rock arms, one of which is connected with said shifting rod, an elbow lever mounted loosely on said rock shaft and having one of its arms yieldingly connected with the other arm of said rock shaft and a link connecting the other arm of said elbow lever with a laterally movable bearing in which said driving shaft is journaled, substantially as set forth.

31. A machine for applying a backing strip to a blank comprising a feed mechanism for propelling the blank and strip, a cutter mechanism for severing the strip between adjacent blanks a friction wheel operatively connected with said feed mechanism, a driving shaft provided with a friction pinion, a countershaft connected with said cutter mechanism, means for operatively engaging said friction pinion and wheel and said clutch members alternately, and a brake constructed to engage said friction wheel when the friction pinion is disengaged therefrom, substantially as set forth.

32. A machine for applying a backing strip to a blank comprising a feed mechanism for propelling the blanks and strip, a cutter mechanism for severing the strip between adjacent blanks, a friction wheel operatively connected with said feed mechanism, a driving shaft provided with a friction pinion, a countershaft connected with said cutter mechanism, a driven pulley mounted loosely on said countershaft and operated from the driving shaft a clutch sleeve splined on the counter shaft and movable into and out of engagement with said driven pulley, a shifting pin arranged on the end of said sleeve, a shifting rod provided with a head adapted to be moved backwardly by said pin and to be held in this position by the periphery of said sleeve, a spring operating to move said rod forward when its head is released by said sleeve, an intermediate shaft provided with two fixed rock arms one of which is connected with said shifting rod while the other is operatively connected with said driving shaft, a pin arranged on one of said rock arms, a pivoted brake head provided

with two brake jaws adapted to bear against opposite sides of the friction wheel at the periphery thereof, a brake arm connected with said brake head and having an inclined or cam face which engages with said pin and a spring for holding said brake yieldingly against said pin, substantially as set forth.

Witness my hand this 21st day of December, 1905.

WALTER L. JACOBIE.

Witnesses:
THEO. L. POPP,
RUTH TARBELL.