April 5, 1932. A. E. COLLINS 1,852,801

RIBBON FEED MECHANISM

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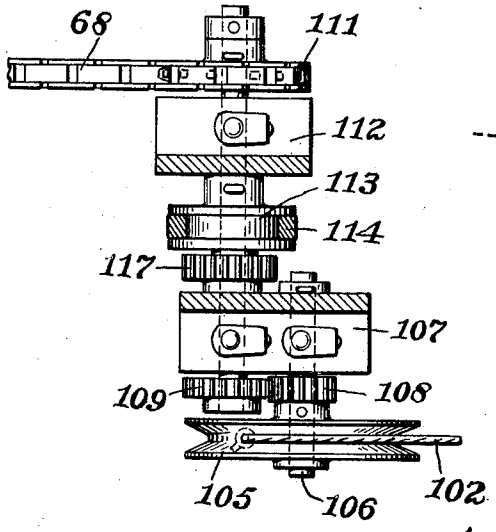
Fig. 2.



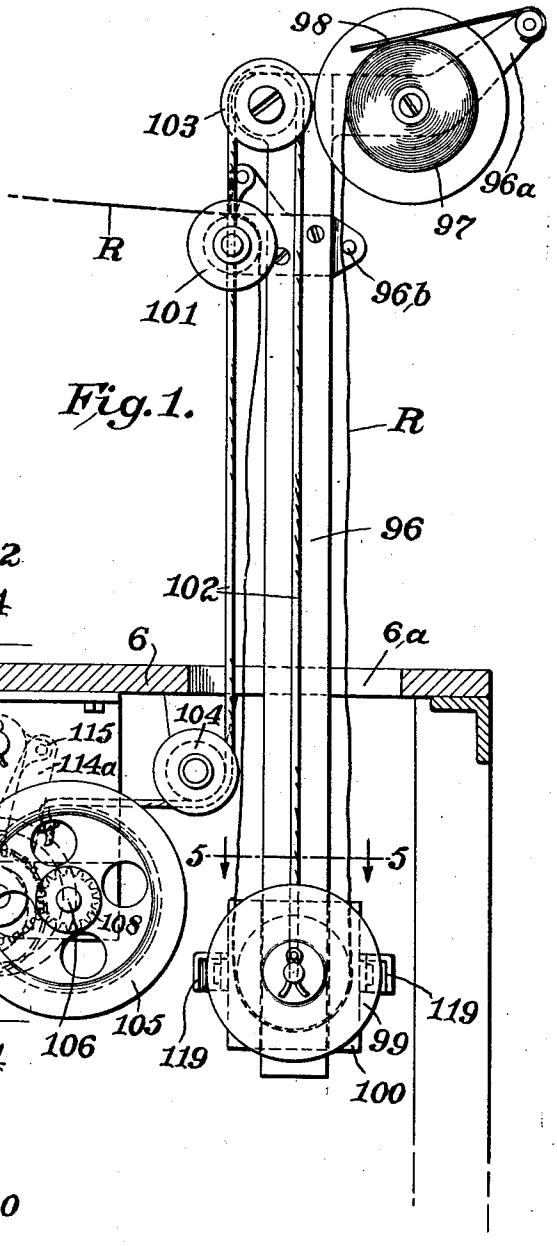


Fig. 1.

Fig. 5.

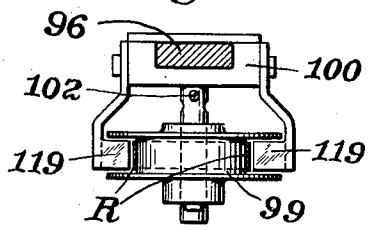


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Fig. 3.

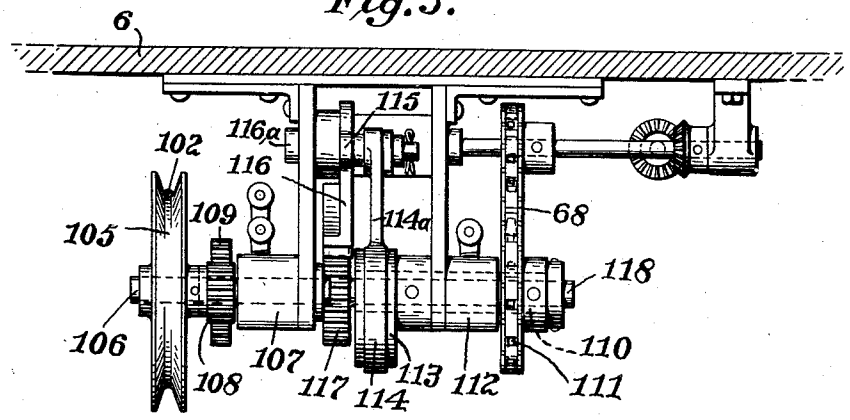


Fig. 4.

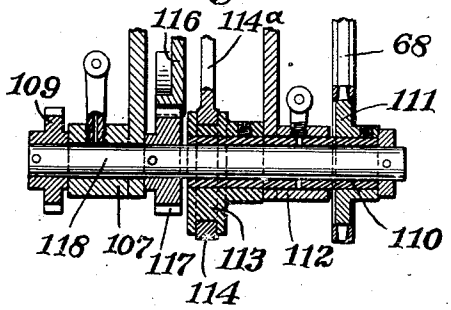


Fig. 6.

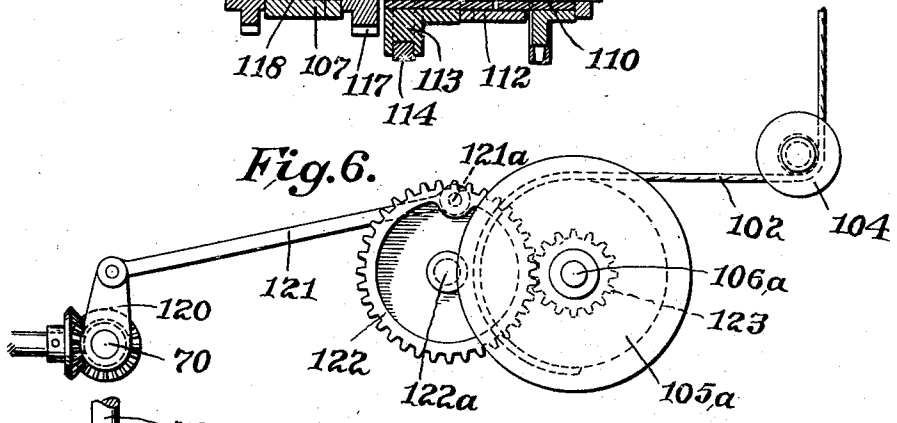
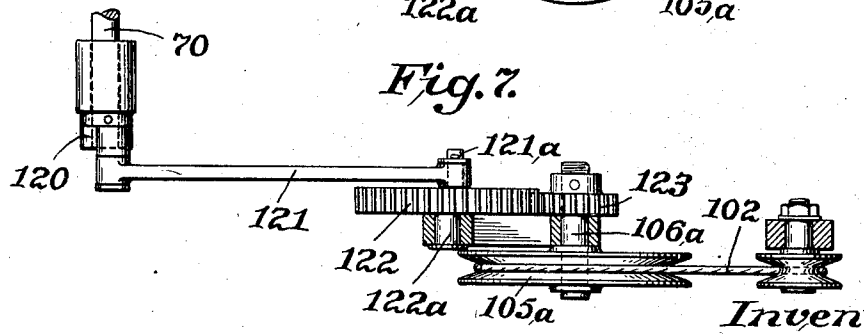


Fig. 7.



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Patented Apr. 5, 1932 1,852,801

UNITED STATES PATENT OFFICE

ARTHUR E. COLLINS, OF CUYAHOGA FALLS, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MILLER RUBBER COMPANY INC., OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE

RIBBON FEED MECHANISM

Application filed March 24, 1930. Serial No. 438,553.

My said invention relates to improvements in ribbon feed mechanism intended to supply ribbon from a supply spool to intermittently acting ribbon applying means.

It is designed more especially for supplying ribbon or tape of unvulcanized rubber to mechanism designed to successively apply such tapes to the cut together seams of articles made from unvulcanized rubber sheets and subsequently vulcanized, and is particularly adapted for use in connection with seam reinforcing means such as disclosed in an application filed by me in the United States Patent Office on the 20th day of December, 1929, Serial Number 415,545, now Patent No. 1,828,997.

The invention aims to provide ribbon feed mechanism which will be strong and durable in construction and which will permit the ribbon to be conducted to the work with a minimum amount of resistance.

The invention also aims to provide means by which the ribbon will be drawn from a supply roll in successive loops of predetermined length which loops are successively drawn upon for application to the seams.

With these and other objects in view, the invention includes the novel features of construction and arrangement and combination of parts hereinafter described, the invention being defined by the claims appended hereto.

In order that the invention may be more readily understood, reference is made to the accompanying drawings in which:

Figure 1 is a side elevation of my improved feed mechanism with a portion of the table top of the applying machine of my aforesaid application shown in section.

Fig. 2 is a plan view of the drive mechanism for the cable operating drum.

Fig. 3 is an end elevation.

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

Fig. 5 is a section on line 5—5 of Fig. 1.

Figs. 6 and 7 are detail views in side elevation and plan respectively of a modified form of drive.

Referring by reference characters to these drawings, the numeral 6 designates the table top of the ribbon or tape applying machine referred to in the aforesaid application which carries a vertical standard or column 96 which also depends downwardly through an opening 6*a* in the table. This standard supports, by means of bracket 96*a*, a spool 97, or drum for the ribbon or tape (designated R), which spool is capable of being removed when empty and replaced by a fresh one in the ordinary or any desired manner. A friction spring brake member 98 tends to retard the unwinding action of the ribbon. From the spool or drum 97 the ribbon is passed downwardly through the opening in the table to and around a floating idle roller 99 rotatably carried by a slide member 100 vertically guided by the standard 96, from which idle roll the ribbon passes upward to and around the idle guide roller 101 carried by a bracket 96*b* fast on the standard in the vicinity of the supply spool but on the opposite side of the standard. From this idle guide roll the ribbon is conducted to the ribbon applying means as disclosed in said application.

A pivoted pawl-like device 101*a* acting in conjunction with the guide roll 101 serves to prevent any retrograde movement of the ribbon under the action of the floating roller 99 as hereinafter described.

In such action, the roller is drawn downwardly during the time the ribbon applying means is at rest or is inactive thereby forming a depending loop, the extent of movement of the roller being such that exactly the amount of ribbon required for a single article or applying operation, is formed into such loop. While the ribbon is drawn upon for application with the article, the floating roller is raised in such a manner as to relieve the loop of all resistance and the tape is thereby fed to the work from a slack loop. In order to effect this vertical rectilinear movement of the floating roller, I connect to the slide 100 thereof the one end of a cable or like flexible element 102 which passes upward to and over an idle pulley 103 journaled at the top of the standard, from which idle pulley the cable descends through opening 6*a* to and around idle pulley 104 journaled in bearings carried by the standard. From pulley 104, the cable passes to the winding drum 105, preferably of pulley form, to which the end

of the cable is attached. This winding pulley 105 is designed to oscillate, and to have imparted thereto an alternating rotary movement, rotating first in one direction through nearly a complete rotation and then in the reverse direction, and its periphery is of such extent as, in the winding action, to draw sufficiently on the cable to raise the slide the required height.

Said drum 105 is fast on a stub shaft 106 journaled in a bearing bracket 107. Also fast on this shaft is a spur gear 108 which meshes with a spur gear 109 to provide amplified movement from the driving mechanism, said gear 109 being fast on shaft 118.

Motion is derived from the chain 68 of my aforesaid application which passes around pulley 111 fast on sleeve 110. This sleeve passes through a bearing bracket 112 and has secured to its other end the hub of an eccentric member 113, the strap 114 of which is connected by pitman 114*a* to a pivot pin carried by an ear 115 of a gear segment 116 mounted to oscillate on fixed stub shaft 116*a*. By this arrangement, the gear segment 116 is oscillated and thereby oscillates gear 117 with which it is in mesh. As this gear 117 is fast on shaft 118 to which pinion 109, previously referred to, is secured, it will be seen that the oscillating movement of the gear segment will impart corresponding alternating rotary movement to the pulley or drum 105.

Instead of using the transmitting mechanism above described, I may use the modified form shown in Figures 6 and 7 in which a shaft 70 of the ribbon applying machine carries a crank arm 120 designed to make a complete rotation during the active cycle. This crank arm is connected by pitman 121 to the gear (or gear segment), 122 by offset pivot 121*a*, whereby the rotation of the crank imparts alternating rotary movement to said gear or gear segment which is journaled to rotate about fixed axis 122*a*. Gear member 122 meshes with a pinion 123 fast on shaft 106*a* (similar to shaft 106 in the form first described), which shaft carries a winding and unwinding pulley or drum 105*a* to which the slide operating cable 102 of the floating roll 104 is attached.

Having thus described my invention, what I claim is:

1. Ribbon feed mechanism for feeding ribbon to intermittently operating ribbon applying means, said mechanism comprising a rotatable supply spool, a guide roll adjacent the same, means for preventing rotation thereof in one direction, a vertically movable roll located below said spool and guide roll, said ribbon passing from said drum around said movable roll to said guide roll, and means for raising said movable roll out of contact with the ribbon during rotation of the guide roll and for permitting descent thereof to withdraw a loop of ribbon from said supply spool.

2. Ribbon feed mechanism for intermittently supplying ribbon applying means said mechanism comprising a frictionally retarded supply spool, a ribbon guide roll adjacent the same, a vertically movable idle roll located below said spool and guide roll, said ribbon passing from said spool around said movable idle roll and over said guide roll, means associated with said guide roll for preventing retrograde movement of the ribbon, and means for raising said guide roll out of contact with the ribbon during operation of the ribbon applying means and for permitting descent thereof to withdraw a supply of ribbon from said supply spool.

3. Apparatus for supplying a ribbon to applying mechanism, said apparatus comprising a supply roll, an idler roll rotatable only in one direction, a looper roll engaging the ribbon between said supply roll and said idler roll, gravitationally actuated means for causing said looper roll to withdraw a loop of ribbon from said supply roll, and power-actuated means for retracting said looper roll during the feeding of the looped ribbon over said idler roll and in advance of said loop.

In testimony whereof, I affix my signature.

ARTHUR E. COLLINS.