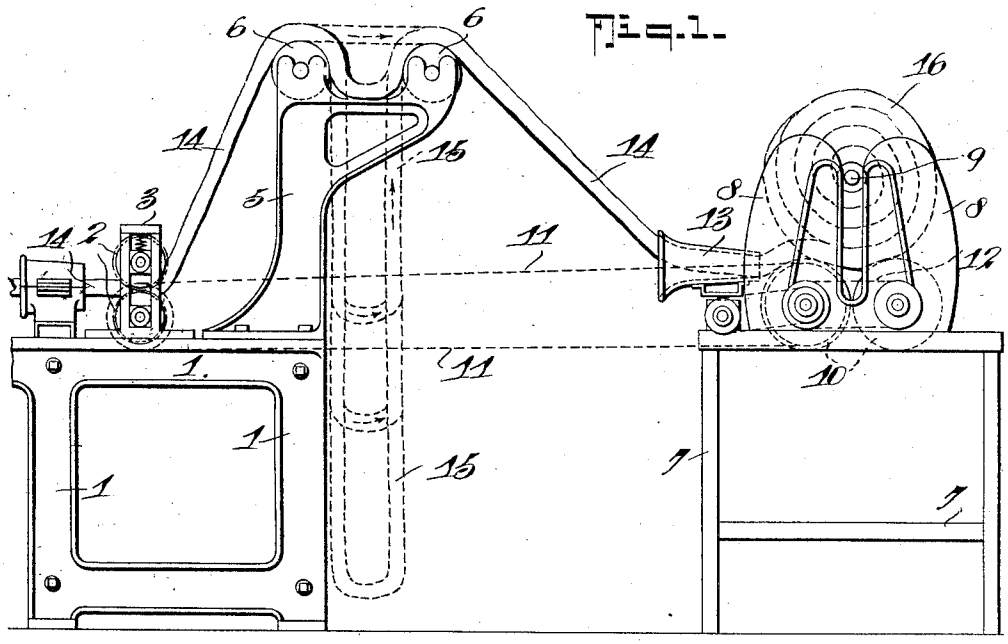
June 12, 1928. 1,672,960

M. J. STACK

FEEDING AND ROLL WINDING APPARATUS

Filed Aug. 1, 1927

Fig. 1.



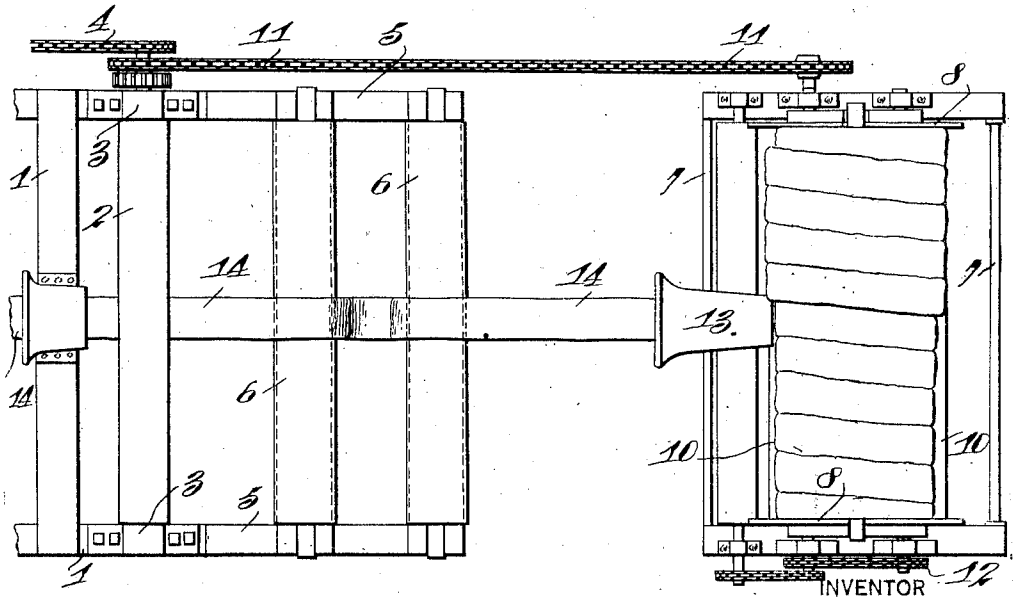


Fig. 2.

INVENTOR
Maurice J. Stack.

BY
Albert G. Dieterich
ATTORNEY

Patented June 12, 1928. 1,672,960

UNITED STATES PATENT OFFICE.

MAURICE J. STACK, OF COHOES, NEW YORK, ASSIGNOR TO BRINTNALL MANUFACTURING COMPANY, INC. OF DELAWARE, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

FEEDING AND ROLL-WINDING APPARATUS.

Application filed August 1, 1927. Serial No. 209,849.

The invention primarily has for its object to provide certain new and useful improvements in apparatus for feeding and winding cotton batting in rolls without subjecting it to any appreciable pull or stretching tendency so that the efficiency of the batting as an upholstering medium will in nowise be impaired.

As the continuous length of batting is fed from the final pressing and feeding rolls of the forming machine, it is commonly rolled into a roll of suitable size for convenient use. Due to slippage and the rate of speed at which the winding rolls are driven because thereof, the peripheral speed of the roll being formed constantly varies relatively to the constant linear speed at which the batting is being fed, the said peripheral speed being much greater than the said linear speed at or near the completion of the rolling action, causing a pull on the batting which either greatly strains the fibres thereof or breaks the continuous length of batting being rolled. Some efforts have been directed to the solution of this problem and complicated change speed transmission gearing has been devised to gradually alter the speed of rotation of the winding roll mandrel in an effort properly to balance the feeding and winding speeds. Such mechanisms have solved the problem but partially, and due to their cost of production and use and the impracticability and difficulty of making adjustments of the mechanism constantly to accord with the adjusted speeds of the forming and feeding mechanisms, I do not find them practical for the uses herein explained.

Therefore, in its more detailed nature, the invention seeks to provide a simple, inexpensive and efficiently operable apparatus to wind the batting in a roll, including a slack loop forming means to form a slack loop during the first stage of the winding operation and to dissipate that loop during the final stages of the said winding operation, said apparatus being so timed in cooperative relation that the whole of the slack loop will be dissipated just at the completion of the roll forming action and without imparting any stretch or pulling action to the batting. This apparatus eliminates all complicated and expensive variable change speed gear mechanisms.

With the above and other objects in view that will hereinafter appear, the invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, then be particularly pointed out in the appended claims, reference being had to the accompanying drawing, in which:—

Figure 1 is a somewhat diagrammatic side elevation illustrating the invention.

Figure 2 is a plan view of the parts shown in Figure 1.

In the forming of cotton batting in continuous lengths, and the winding of such batting into rolls for shipment and convenient use, care must be exercised to avoid subjecting the batting to any appreciable tension or distending pull so that the fibres will not be distended or strained and the resilient upholstering qualities of the batting impaired. In the machines for forming such batting the batting is passed through feeding and pressing rolls so cooperatively arranged and timed that they do not subject the batting to strain and press the same just enough to interlock the fibres of the layers or folds without compacting or matting the same. In my Patent No. 1,589,667 issued June 22, 1926, a bat forming machine of the general type mentioned is disclosed and in my Patent No. 1,558,059 issued October 20, 1925 a winding unit such as is referred to above is disclosed.

This application is directed to a combination of the delivery rolls of the forming machine and the winding devices of the winding unit and means between the machine and unit to form a compensating loop which will compensate for differences of speed of travel of the batting during the winding operation in a manner assuring against subjecting the batting to pull or tension and without the employment of complicated and expensive change speed gearing.

In the drawing, in which like numerals of reference indicate like parts in all the figures, 1 generally designates the framing of any suitable type of bat forming machine and 2 the delivery feed and presser rolls

which are shown as mounted in the usual bearing standards 3. The rolls 2 are rotated at the desired speed through the medium of the power chain or belt 4 from any suitable source of power on or near the machine.

Bearing standards 5 are mounted upon the delivery end of the machine framing in parallel spaced relation and serve to support a pair of idler rollers 6 projecting transversely of the forming machine delivery end and in spaced parallel relation. The purpose of these idler rollers will be explained later.

The winding stand or unit, which may also be of any approved type such as that referred to above, is generally indicated at 7. The unit includes vertically slotted end plates or wings 8, the slots of which are adapted to receive the winding mandrel 9 adapted to be rolled by and positioned above and between the pair of power and support rollers 10.

Power is imparted to one of the rollers by the transmission chain 11 which also takes over a sprocket on the shaft of one of the rolls 2 so that the rollers 10 and the rolls 2 will always rotate at constant relative speeds regardless of the adjustment of speed of the forming machine mechanisms. The other roller 10 is rotated through the transmission connections 12 at like speed with its companion roller 10.

The winding unit may be equipped with any suitable traversing guide 13, and as such a guide is described in detail in the patent above referred to, further detailed description thereof is deemed unnecessary.

In operation, as the continuous length of batting 14 leaves the delivery feed and presser rolls 2 it passes over the idler rollers 6, through the guide 13 and around the mandrel 9 upon which the roll is being wound. The roll being wound rests upon the rollers 10 and is rotated by the said rollers, it being understood that these rollers rotate at a constant speed relative to the speed of rotation of the rolls 2. During the first portion of the rolling operation, the roll being relatively small, the peripheral speed of the roll or the winding speed of the batting is much less than the linear speed or travel speed of the batting through the rolls 2 and consequently a compensating loop 15 will form between the idler rollers 6, the said loop gradually increasing in length until the maximum length is reached at the moment when the winding speed of the batting or the peripheral speed of the roll being formed approximates the travel speed of the batting through the feed rolls 2. From this time on the peripheral speed of the roll being formed will be in excess of the linear speed of the batting or travel speed through the rolls 2 in gradually increasing ratios and the compensating loop will be gradually dissipated until the roll is completed or wound to its predetermined diameter when the loop will have been completely dissipated and the batting will pass flatly over the rollers 6.

During the first portion of the rolling operation, the roll being relatively small and relatively light in weight will exert little pressure or frictional resistance to the rotating rolls 10 and this, in addition to the soft fluffy nature of the material, causes a certain amount of slippage between the rolls 10 and the roll being wound.

It should be explained that in order to compensate in a measure for the slippage of the batting roll during the first portion of its formation, the rolls 10 are rotated at a greater peripheral speed than that at which the rolls 2 are rotated. Thus as the roll being formed increases in size and weight and frictionally bears upon the rolls 10 in gradually increasing degree, its peripheral speed will at a time equal the linear speed of feed of the batting, at which time the formation of the loop 15 will cease, and then exceed that speed, at which time the dissipation of the loop will start.

In the disclosure the idler rolls 6 are shown at a considerable elevation to assure plenty of room for the formation of the loop. When the rolls 6 are thus positioned, the formation of the loop 15 may be aided by hand at the start to overcome the weight of the batting between the rolls 2 and the first one of said rolls. It should be understood, however, that the said advance roll 6 may be positioned at or below the line of feed of the batting if desired.

As soon as the loop is completely flattened out the roll is immediately cut off so that no strain or pull is imparted to the travelling batting. Obviously, also this spending of the compensating loop serves as an indicator of the reaching of the proper diameter and weight of the wound bat.

From the foregoing description, taken in connection with the accompanying drawing, it is thought that the novel details of construction, the manner of use and the advantages of my invention will be readily apparent to those skilled in the art to which it relates.

What I claim is:

1. In apparatus of the character described, the combination with the delivery feed rollers, of a winding unit including a winding mandrel to receive the batting, means to rotate the mandrel, and loop supports between the said feed rollers and the said winding unit to receive and support a batting loop formed by reason of speed variations in the travel of the batting through the feed rollers and around the mandrel.

2. In apparatus of the character described, the combination with the delivery feed roll-

ers, of a winding unit including a winding mandrel to receive the batting, means to rotate the mandrel, and loop supports between the said feed rollers and the said winding unit to receive and support a batting loop formed by reason of speed variations in the travel of the batting through the feed rollers and around the mandrel, said loop supports constituting a pair of independent spaced idler rollers over which the batting passes.

3. In apparatus of the character described, the combination with the delivery feed rollers, of a winding unit including a winding mandrel to receive the batting, means operative at constantly relative speeds to rotate the feed rollers and the mandrel, and loop supports between the said feed rollers and the said winding unit to receive and support a batting loop formed by reason of speed variations in the travel of the batting through the feed rollers and around the mandrel.

4. In apparatus of the character described, the combination with the delivery feed rollers, of a winding unit including a winding mandrel to receive the batting, means operative at constantly relative speeds to rotate the feed rollers and the mandrel, and loop supports between the said feed rollers and the said winding unit to receive and support a batting loop formed by reason of speed variations in the travel of the batting through the feed rollers and around the mandrel, said loop supports constituting a pair of independent spaced idler rollers over which the batting passes.

5. In apparatus of the class described, the combination with the delivery feed rollers of a bat forming machine and the bat winding rollers of a bat winding machine, means for driving the winding machine rollers in timed relation with the delivery feed rollers of the bat forming machine and means interposed between the rollers of the forming machine and those of the winding machine for supporting the bat in transit at separated places to permit the formation of a slack loop in the batting material for the purposes specified.

6. In apparatus of the character described, the combination with constant speed delivery rollers of a bat forming machine and constant speed winding rollers of a bat winding machine of the type embodying a pair of winding rollers and a vertically movable mandrel associated therewith; means for driving said rollers at constant speeds with reference to each other, means for supporting the bat in transit from the delivery rollers to the winding rollers and including provisions for the formation of a slack loop during the early portion of the winding of the bat and the taking up of the slack during the latter portion of the winding of the bat substantially as specified.

7. In apparatus of the class described, the combination with a bat forming machine and a bat winding machine, said bat forming machine including delivery rollers, and means for supporting the bat between said delivery rollers and said bat winding machine, and means for driving said feed rollers and said winding machine whereby to cause the bat to be retarded at the winding machine during the early part of the winding operation thereby to permit said feed rollers and said supporting means to form the bat into a loop in transit from the bat forming machine to the winding machine, and thereafter increasing the speed of movement of the bat in the winding machine during the latter part of the winding operation to take up the slack so formed by the time the bat has been completely wound, substantially as shown and described.

MAURICE J. STACK.