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MACHINE FOR APPLYING PLASTIC MATERIAL TO FABRIC.

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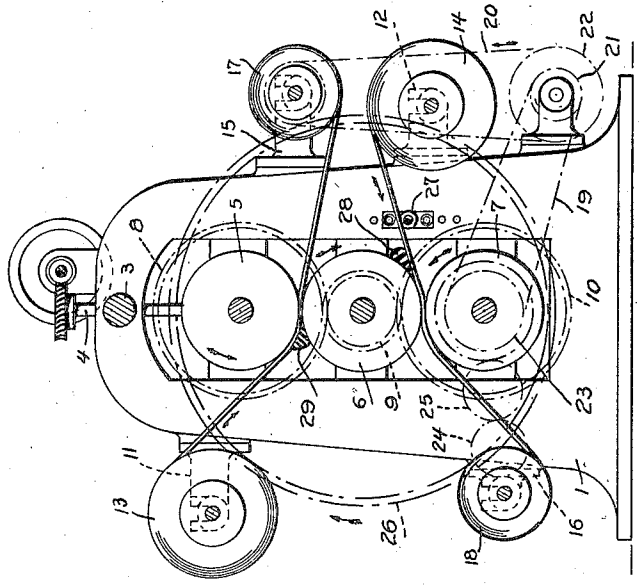


Fig. 2.

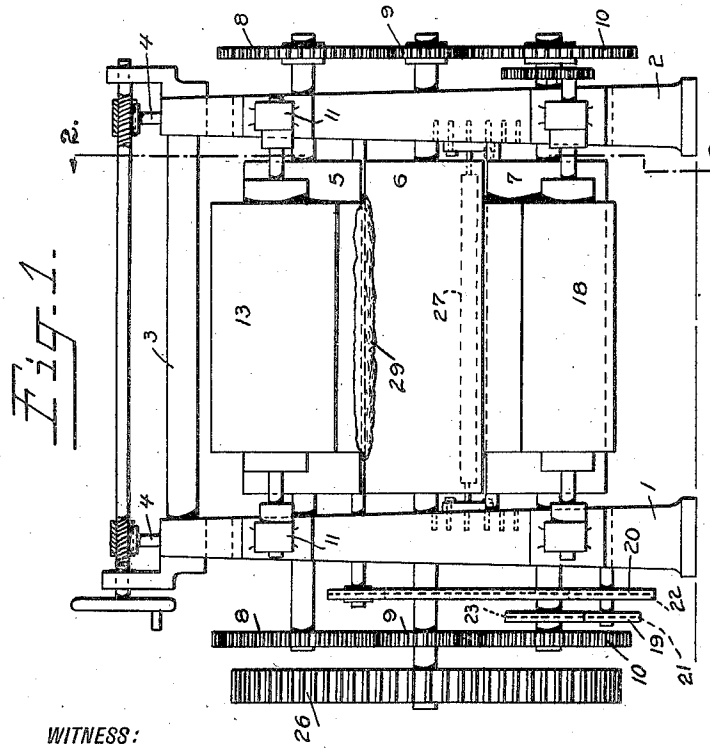


Fig. 1.

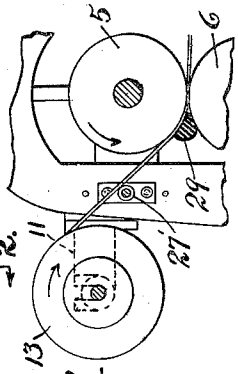


Fig. 3.

WITNESS:

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EDWARD H. SCRIBNER, OF BEACHMONT, AND HARRY A. BELL, OF REVERE, MASSACHUSETTS, ASSIGNORS TO REVERE RUBBER COMPANY, A CORPORATION OF RHODE ISLAND.

MACHINE FOR APPLYING PLASTIC MATERIAL TO FABRIC.

1,364,211. Specification of Letters Patent. Patented Jan. 4, 1921.

Application filed August 4, 1916. Serial No. 113,062.

To all whom it may concern:

Be it known that we, EDWARD H. SCRIBNER and HARRY A. BELL, both citizens of the United States, residing at Beachmont, county of Suffolk, State of Massachusetts, and Revere, county of Suffolk, State of Massachusetts, respectively, have invented certain new and useful Improvements in Machines for Applying Plastic Material to Fabrics, of which the following is a full, clear, and exact description.

This invention relates particulary to machines for coating cotton fabrics or similar material with rubber compounds, particularly such fabrics as those employed in the manufacture of pneumatic tire casings, raincoats, and other waterproof cloth. The object of the invention is to provide a machine which will expedite and improve the coating of such materials so that time, labor and expense is materially reduced. Prior to this invention it has been the practice to coat or impregnate fabric with rubber by passing the sheets thereof singly between pairs of friction rolls driven at slightly different speeds to thoroughly grind or rub the stock into the interstices of the fabric. This invention, however, contemplates the so-called "frictioning" or impregnating of a plurality of strips of fabric simultaneously by passing the same between the same tier of frictioning rolls.

For a detailed description of one form of this invention, which is at present deemed preferable, reference may be had to the following specification and to the accompanying drawing forming a part thereof, in which:

Figure 1 is a longitudinal elevation of the machine; and

Fig. 2 is a sectional view thereof taken substantially on the line 2—2, Fig. 1.

Fig. 3 is a sectional fragmentary view similar to the upper portion of Fig. 2, but showing the guiding roll 27′ for the upper pair of friction rolls.

Referring to the drawings, the numerals 1 and 2 indicate the ends of a frame of the usual type connected by a cross bar 3. The frame contains movable bearings (not shown) which are applied in the usual way practised in the construction of machines of this type, which bearings are provided with suitable pressure-regulating devices, such as the screws 4. The frictioning rolls consist of a vertical series of three rolls 5, 6 and 7, these rolls being driven by intermeshing gears 8, 9 and 10, respectively, so that the speed of the center or intermediate roll is slightly greater than the speed of the two outside rolls, thus producing the necessary grinding or rubbing action upon the fabric as concerns the outer rolls. The numerals 11 and 12 indicate brackets upon which are supported supply rolls of fabric 13 and 14, and the numerals 15 and 16 indicate brackets upon which are supported the rolls 17 and 18, upon which the coated fabric is re-wound. The latter rolls may be driven in any suitable manner, such as by friction belts, but it is preferable to drive the re-winding roll 17 by means of sprocket chains 19 and 20 acting through sprocket wheels 21 and 22, the sprocket chain 19 being connected with a sprocket wheel 23 on the shaft of the roll 7. The re-winding roll 18 may also be driven by a friction belt, but it is preferred to drive the same by a chain of gears driven by the axis of the roll 7, the intermediate gears of said chain being indicated by the numerals 24 and 25. Power may be applied to the rolls in any suitable way, such as by the main drive gear 26 carried on the shaft of the center roll 6. A tensioning and guiding roll 27 is provided to act upon either (or both) of the strips of fabric as it passes between the frictioning rolls. This is preferably made adjustable in any suitable way, as indicated in the drawings.

In Fig. 3 is illustrated a second guiding roll 27′ for the upper strip of fabric. This roll may be used, or not, as deemed desirable, depending upon the relative positions of the stock rolls 13 and the friction rolls 5 and 6. These guiding rolls preserve the angle between the fabric and the friction rolls independently of the variation of the diameter of the stock rolls as the fabric is unwound from them.

The operation of the apparatus will be apparent to one skilled in the art from a consideration of the above description and drawings. The bank of stock is applied at the points indicated at 28 and 29. It is obvious that it is not necessary that the center roll revolve at a greater speed than the outer rolls, but such relation is preferable

in view of the usual practice in frictioning fabrics. If the center roll revolves at a lower speed than the outer rolls, it is obvious that the bank of stock would have to be applied between the outer rolls and the fabric, instead of between the inner roll and the fabric.

What is claimed is:

1. In a machine for applying plastic material to fabric, in combination, a plurality of superposed frictioning rolls, means for driving said rolls alternately in opposite directions respectively, at different surface speeds, and means for feeding fabric in opposite directions between the successive rolls for applying thereto plastic material contained within the angles formed by the entering fabric and said rolls.

2. In a machine for applying plastic material to fabric, in combination, a plurality of vertically superposed frictioning rolls, means for rotating said rolls alternately in opposite directions respectively, at different surface speeds, and means for drawing a plurality of strips of fabric in opposite directions between the successive rolls, for applying thereto plastic material contained within the angles formed by the entering fabric and the respective faster rotating rolls.

3. In a machine for applying plastic material to fabric, in combination, a series of superposed frictioning rolls, means for rotating said rolls in opposite directions respectively, at different surface speeds, positively driven rewinding rolls connected with said frictioning rolls and located on opposite sides of said machine for drawing a plurality of strips of fabric in opposite directions between the successive rolls for applying thereto plastic material contained within the angles between the entering fabric and the respective faster rotating rolls.

4. In a machine for applying plastic material to fabric, in combination, a plurality of superposed rolls, means for rotating said rolls in opposite directions respectively at different surface speeds so that the center roll rotates at a higher relative speed than the outer rolls, rewinding rolls located on opposite sides of said machine for drawing a plurality of strips of fabric in opposite directions between the successive rolls for applying to said fabric plastic material contained within the angles between the entering fabric and the respective faster rotating roll.

5. In a machine for applying a plastic material to fabric in combination, at least three calendering rolls, means for rotating alternate rolls in opposite directions, and means for conducting fabric between the rolls at opposite sides of a single roll in such a way that plastic material may be simultaneously applied to oppositely moving portions of the fabric.

6. In a machine for applying a plastic material to fabric in combination, at least three calendering rolls, means for rotating contiguous rolls at different surface speeds, and means for conducting fabric in opposite directions and on opposite sides of at least one intermediately located roll, whereby fabric may be coated with plastic material and simultaneously on oppositely moving portions thereof.

7. In a machine for applying plastic material to fabric, in combination, three superposed calendering rolls stacked in coöperating relation, means for rotating said rolls in opposite directions and the central or intermediate roll with a greater surface speed than the outer rolls, and means for conducting fabric in opposite directions between each of said outer rolls and said central roll whereby plastic material may be applied simultaneously to the oppositely moving runs of fabric.

8. In a machine for coating fabric with plastic material, in combination, a plurality of rolls numbering at least three, means for rotating the rolls, and means for conducting the fabric in opposite directions and on opposite sides of a single intermediately located roll, whereby plastic material may be simultaneously applied to oppositely moving portions of the fabric.

9. In a machine for coating fabric with plastic material, in combination, three calendering rolls, means for rotating the rolls at relatively invariable angular velocities, and means for conducting fabric in opposite directions and on opposite sides of a common coating roll against which banks of plastic material may be applied at spaced points.

Signed at Chelsea, Massachusetts, July 31st, 1916.

EDWARD H. SCRIBNER.
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