June 11, 1929. F. D. FOWLER 1,716,375

FEED MECHANISM FOR SHEET MATERIAL

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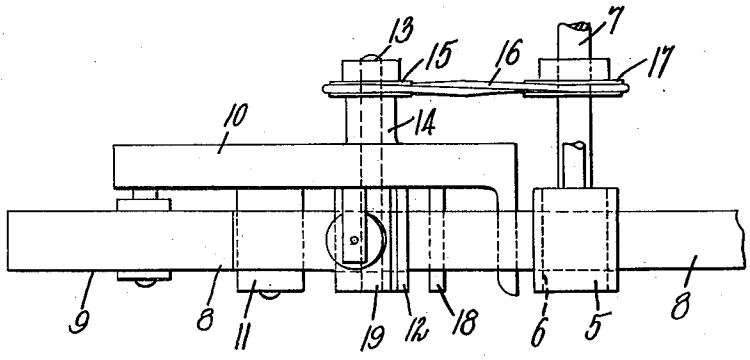


Fig. 1.

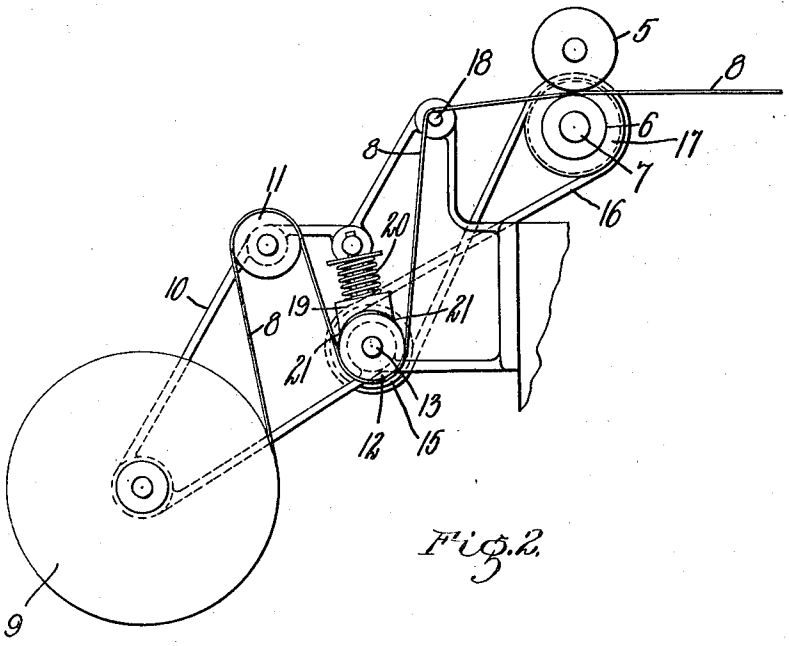


Fig. 2.

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FEED MECHANISM FOR SHEET MATERIAL.

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This invention relates to a mechanism for feeding sheet material and is particularly adapted for feeding uncured rubberized fabric, although it is to be understood that the invention can be utilized for feeding other kinds of sheet fabric than uncured rubberized fabric and that the claims are not limited to this particular use of the invention.

In feeding fabric from a roll of the same, especially rubberized fabric, there is considerable tension applied to the fabric due to the tackiness of the stock when the fabric is drawn from the supply roll, and this tension tends to stretch and narrow the strip, thus distorting it, especially is this the case where the textile fabric is cut on a bias. In order to overcome this difficulty the fabric is fed between a pair of feed rolls, and between the feed rolls and the supply of sheet material, which is preferably positioned on a roll, there is interposed an auxiliary feed roll, the surface speed of which is greater than the surface speed of the pair of feed rolls between which the sheet material is fed. This auxiliary feed roll is positioned with its bottom surface below a plane tangential to the pair of feed rolls and when the feed rolls have taken up enough of the fabric to cause the same to engage the under surface of the auxiliary feed roll, this auxiliary feed roll, which is rotated with a surface speed greater than the surface speed of the feed rolls, will pull a certain amount of the fabric from the supply roll, whereupon the fabric will drop below the auxiliary feed roll and the pair of feed rolls will then only need to pull the fabric with tension sufficient to lift the material until it again comes into contact with the auxiliary feed roll.

With very tacky material there is a tendency for the rubberized fabric to follow around with the auxiliary roll at certain times, and this is overcome by means of a spring-actuated doctor contacting with the periphery of the auxiliary feed roll.

The object of the invention, therefore, is to feed sheet material by means of a pair of feed rolls without the same being distorted by said feed rolls, and to these ends the invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims.

Referring to the drawings:

Figure 1 is a plan view of my improved feed mechanism for sheet material.

Fig. 2 is a side elevation of the same, certain parts being broken away and the figures of the drawings being somewhat diagrammatic.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5 and 6 are feed rolls, the rolls 6 being fastened to a driving shaft 7 which is driven by any suitable means, such as, gearing, not shown in the drawings. The roll 5 is an idler roll, but may be driven by gearing or any suitable means, if so desired. The sheet material 8 is rolled upon a supply roll 9, rotatably mounted upon the frame 10 and said material passes from the roll 9 to a guide roll 11, which is an idler roll rotatably mounted upon the frame 10. From the guide roll 11 the material 8 passes downwardly and beneath an auxiliary feed roll 12 which is fastened to a shaft 13 rotatably mounted in a bearing 14 on the frame 10. The shaft 13 is driven by a pulley 15 which is driven by a cross belt 16 and pulley 17, the pulley 17 being fastened to the shaft 7.

The sheet material 8 passes from the auxiliary feed roll 12 over another idler guide roll 18 and thence the material passes between the feed rolls 5 and 6.

The pulleys 17 and 15 and the diameters of the rolls 6 and 12 are relatively of such proportions that the surface speed of the auxiliary guide roll 12 is greater than the surface speed of the feed rolls 5 and 6.

A doctor 19 contacts with the upper portion of the periphery of the auxiliary feed roll 12 and is held there-against by a spring pressure by means of a spring 20, the bearing surface of the doctor being formed upon a radius shorter than the radius of the auxiliary guide roll, so that the edges 21 of the doctor contact with the periphery of the auxiliary feed roll.

The general operation of the feed mechanism hereinbefore specifically described is as follows:—The sheet material 8 passes from the supply roll 9 upwardly over the guide roll 11, then downwardly beneath the auxiliary feed roll 12, then upwardly and over the guide roll 18, and thence between the

feed rolls 5 and 6. Thus the material is fed downwardly from the guide roll 11 beneath the auxiliary feed roll 12 and upwardly therefrom over the guide roll 18.

Assuming now that the parts are in the relative positions illustrated in Fig. 2 and the material is in contact with the under side of the auxiliary feed roll 12, since the feed roll 12 is rotating at a greater surface speed than the surface speed of the feed rolls 5 and 6, the material will be pulled from the supply roll 9 at a greater speed than the feed rolls 5 and 6 can accommodate, accordingly the material becomes slack between the two guide rolls 11 and 18 and temporarily drops downwardly out of contact with the auxiliary feed roll 12 until such time as the feed rolls 5 and 6 take up the slack in the material and cause it to again contact with the under side of the auxiliary feed roll 12. This operation continues from time to time and enables the material to be fed with a very light pull from the rolls 5 and 6, that is, the tension on the material, due to the feeding of the rolls 5 and 6, will only be sufficient to lift the slack material until it contacts with the auxiliary roll 12.

When the material is pulled from the supply roll 9 by the auxiliary feed roll 12 it will be somewhat distorted and before it arrives at the feed rolls 5 and 6 it regains its normal shape, free of distortion, due to the fact that it hangs downwardly from the guide roll 18 in a slack condition and is enabled before it arrives at the feed rolls 5 and 6 to regain its normal shape.

If the material sticks to the auxiliary feed roll 12, it will tend to be carried along by said feed roll until it encounters one of the edges 21 of the doctor when it will be stripped from the periphery of the auxiliary feed roll.

I claim:

1. A mechanism for feeding sheet material having, in combination, a pair of feed rolls, an auxiliary feed roll positioned in advance of said pair of feed rolls, means to guide sheet material to said auxiliary feed roll, and means to rotate said auxiliary feed roll at a greater surface speed than that of said pair of feed rolls.

2. A mechanism for feeding sheet material having, in combination, a pair of feed rolls, an auxiliary feed roll positioned in advance of said pair of feed rolls, means to guide sheet material to said auxiliary feed roll and from said auxiliary feed roll to said pair of feed rolls, and means to rotate said auxiliary feed roll at a greater surface speed than that of said pair of feed rolls.

3. A mechanism for feeding sheet material having, in combination, a pair of feed rolls, an auxiliary feed roll positioned in advance of said pair of feed rolls, a horizontal plane tangent to the bottom of said auxiliary feed roll being lower than a horizontal plane tangent to the lower roll of said pair of feed rolls, means to guide sheet material to said auxiliary feed roll, and means to rotate said auxiliary feed roll at a greater surface speed than that of said pair of feed rolls.

4. A mechanism for feeding sheet material having, in combination, a pair of feed rolls, an auxiliary feed roll positioned in advance of said pair of feed rolls, means to guide sheet material downwardly beneath said auxiliary feed roll and upwardly therefrom to said pair of feed rolls, and means to rotate said auxiliary feed roll at a greater surface speed than that of said pair of feed rolls.

5. A mechanism for feeding sheet material having, in combination, a pair of feed rolls, an auxiliary feed roll positioned in advance of said pair of feed rolls, a guide roll interposed between the auxiliary feed roll and the pair of feed rolls, and another guide roll positioned in advance of the auxiliary feed roll, said guide rolls being positioned above the auxiliary feed roll, and means to rotate said auxiliary feed roll at a greater surface speed than that of said pair of feed rolls.

6. A machine for feeding rubberized sheet material having, in combination, a pair of feed rolls, an auxiliary feed roll in advance of said pair of feed rolls, a rubberized surface of said sheet material contacting with the auxiliary feed roll, a doctor contacting with the periphery of the auxiliary feed roll and adapted to detach the sheet material therefrom, means to guide the rubberized sheet material to said auxiliary feed roll, and means to rotate said auxiliary feed roll at a greater surface speed than that of said pair of feed rolls.

7. A machine for feeding sheet material having, in combination, a pair of feed rolls, a sheet material supply roll, an auxiliary feed roll interposed between said supply roll and said pair of feed rolls, a plane tangent to the bottom of the auxiliary roll being positioned below a plane tangent to the pair of feed rolls, a guide roll interposed between said pair of feed rolls and said auxiliary feed roll, another guide roll positioned in advance of said auxiliary feed roll, said guide rolls being positioned above the auxiliary feed roll, and means to rotate said auxiliary feed roll at a greater surface speed than that of said pair of feed rolls.

In testimony whereof I have hereunto set my hand.

FRED D. FOWLER.