Aug. 5, 1952 H. H. BELCHER 2,605,629

THREE ROLL PADDER OR THE LIKE

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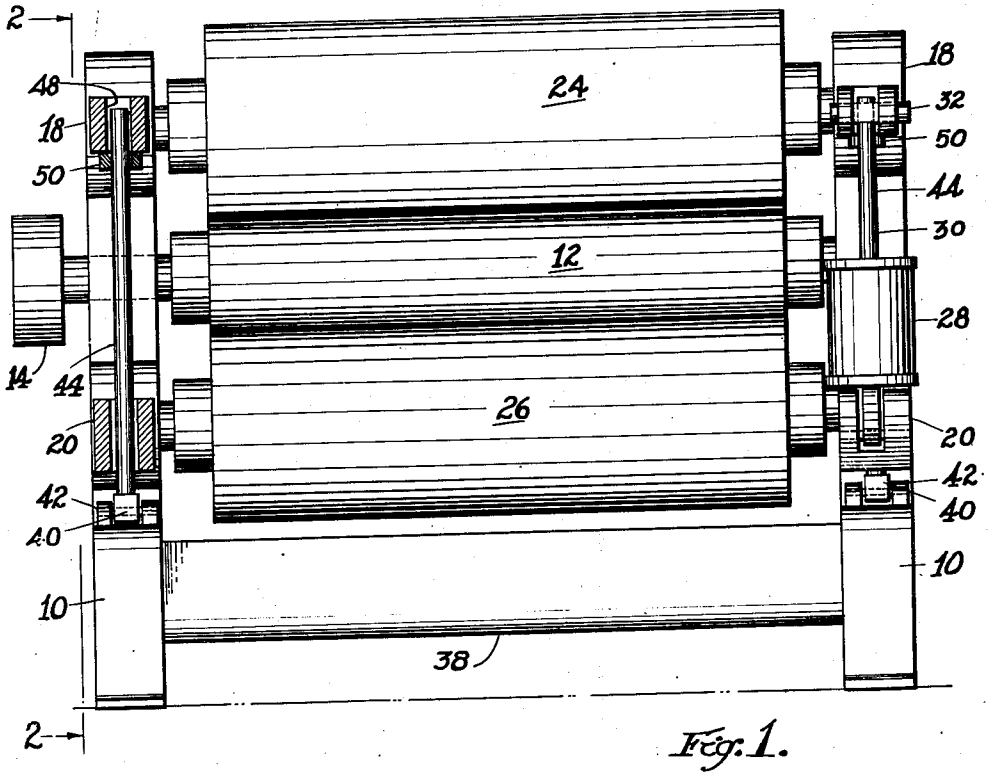


Fig. 1.

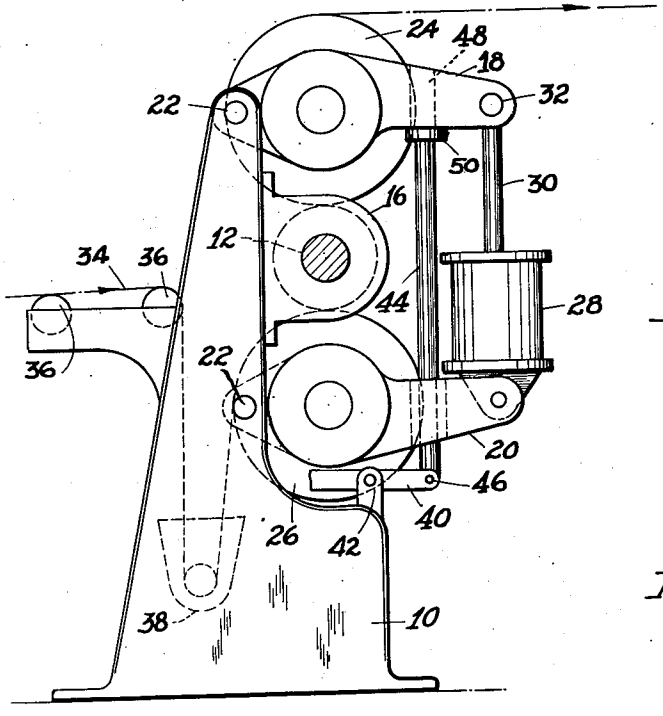


Fig. 2.

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THREE ROLL PADDER OR THE LIKE

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5 Claims. (Cl. 68—258)

1

This invention relates to improvements in squeeze roll constructions for padding machines, the invention, however, not being limited to padding machines but being useful in other relations as for instance in any kind of squeeze rolls for textiles.

In squeeze rolls of the class described pressure is exerted on the rolls to bring them together to form the nip and while the rolls are running they are not damaged except for ordinary wear. However, in the prior art the rolls must be propped apart when not in use to prevent flattening due to the weight or pressure of adjacent rolls. It is the principal object of this invention to provide a construction in a squeeze roll unit effectively eliminating the possibility of damage to the rolls through the operator's neglect to prop them apart over weekends or other shut down periods.

Further objects of the invention include the provision of a three roll unit constructed in such a manner that two of the rolls are forced toward a central roll to provide two nips in combination with means providing for automatic separation of the rolls by gravity without requiring any attention from the operator.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings by way of illustrating the nature of the invention and in which

Fig. 1 is a view in front elevation illustrating the invention, parts being in section; and

Fig. 2 is an end view of the apparatus of Fig. 1.

A pair of pedestals 10 are provided to support a plurality of rolls at their ends, the rolls as shown in this case being located in vertically arranged position and being three in number. There is a central roll 12 which is driven as by means of a pulley 14 and this roll is journalled at its ends in pedestals 10 by means of fixed brackets 16. Each pedestal pivotally mounts an upper lever 18 and a lower lever 20 on pins such as those at 22. These levers journal upper and lower rolls 24 and 26 respectively for movement in fixed position. The upper and lower levers are connected by means of pivoted fluid power cylinders (either liquid or gaseous) 28 each of which is provided with a piston rod 30 pivoted to the corresponding upper lever 18 at 32. Clearly these power cylinders can be actuated to draw the upper and lower rolls tightly against the central roll.

The cloth indicated at 34 passes over idler rolls 36 and through a dye pan 38 to the bottom roll 26. The cloth passes through the nip between

2

rolls 26 and 12, laps roll 12 and then passes through the nip between rolls 12 and 24. A second dye pan may be used as desired or the installation may be used without dyeing as for instance in liquid extraction rolls.

A rocker arm 40 is pivoted on each pedestal 10 in bosses 42. One end of each rocker arm extends under its corresponding lever 20 as clearly shown in Fig. 2 and the other end of the rocker arm has a lift rod 44 pivoted thereto as at 46. The lift rods extend through holes in levers 20 and are provided with slidable guides at 48 in levers 18 to allow relative motion of the levers with respect to the lift rods. A collar 50 is fixed to each lift rod in position to abut the undersides of the levers 18.

When pressure is exerted through cylinders 28 the piston is drawn down within the cylinder and the ends of the levers 18 and 20 are drawn together bringing the rolls 24 and 26 into contact with center roll 12, exerting pressure thereon in proportion to the pressure applied to the cylinder. When the pressure is released from the cylinders the weight of bottom roll 26 and levers 20 causes the bottom roll to drop from contact with the center roll. At the same time the undersides of levers 20 contact the rocker arms 40 and force the latter in a counter clockwise direction in Fig. 2 thereby lifting the lift rods 44. The collars 50 on lift rods 44 engage the undersides of levers 18 raising the latter and thereby raising upper roll 24. If each rocker arm has a 1 to 1 leverage ratio the upward thrust of lift rods 44 is about equal to the weight of the bottom roll. Since the lift rods 44 act on levers 18 at a distance from the lever pivots 22 approximately twice the distance from this pivot to the center of the roll, the upward thrust of lift rods 44 will be seen to be more than sufficient to raise the top roll 24 from the center roll 12 approximately one half the drop of the bottom roll. This is more than enough to separate roll 24 from roll 12 so as not to damage the same during idle periods.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A set of squeeze rolls comprising a standard, a lower lever pivoted thereto at one end of the lever, an upper lever similarly pivoted to the standard, a roll on each lever, the rolls being advanced toward each other as the levers are swung to mutually approach, means to swing the levers to move the rolls toward each other, the roll axes being arranged on a line, the pivots of

both levers to the standard being at the same side of the line, and means including a vertically disposed rod independent of and abutting the upper lever and actuated by the lower lever to rise as the lower lever drops, to raise the upper lever and thereby cause both rolls to move away from each other upon inactivation of said lever swinging means.

2. A squeeze roll assembly comprising a support, a first roll rotatably mounted on said support, a first arm pivotally mounted on said support above said first roll, a second roll rotatably mounted on said first arm above said first roll, a second arm pivotally mounted on said support below said first roll, a third roll rotatably mounted on said second arm, said rolls being in substantial vertical alinement, the pivotal axes of said arms being at one side of said rolls, a lever pivotally mounted adjacent its mid-point on said support with one end beneath said second arm for engagement by said second arm, a link pivotally connected to the other end of said lever and extending upwardly therefrom, means on said link for engaging said first arm to raise said first arm when the lever is actuated by the second arm and means for urging said arms and the rolls carried thereby toward said first roll.

3. A squeeze roll construction comprising a support, a roll rotatably mounted on said support, a lever pivotally mounted on said support above said roll for pivotal movement toward and from said roll, a second lever pivotally mounted on said support below said roll for pivotal movement toward and away from said roll, a roll carried by each of said levers, said rolls being in substantial alignment with each other, the roll on said lower lever being spaced from the pivot of said lever so that the weight of said roll urges the lower lever and the roll carried thereby away from said first named roll, a third lever pivotally mounted adjacent its midpoint on said support with one arm beneath the lower lever, a link connecting the other arm of said third lever with said upper lever whereby dropping of the lower lever raises the upper lever and the roll carried thereby away from the first named roll, and means operatively connected to both of said levers to move said levers toward each other.

4. A roll construction comprising three rolls arranged in a line in superposed relation, the uppermost and lowermost rolls being movable, a lever for movably mounting each movable roll, a fluid motor connecting the levers for causing the movable rolls to move toward each other, a rocking arm having a free end in position to be contacted by the lever of the lowermost roll as the latter drops by gravity, thus rocking the arm, a lift rod on the arm, and means on the rod to contact and raise the lever of the uppermost roll.

5. A squeeze roll construction comprising, a frame, a plurality of rolls mounted on said frame in substantially vertically superposed relation, the uppermost and lowermost of said rolls being supported for movement toward and away from each other, power means, means connecting said power means to said uppermost and lowermost rolls for moving said uppermost and lowermost rolls toward each other, and additional means operatively connected to said uppermost and lowermost rolls independently of said last-mentioned means and including a part pivoted about a fixed axis, said additional means being operative to impart upward movement to said uppermost roll upon downward movement of said lowermost roll.

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