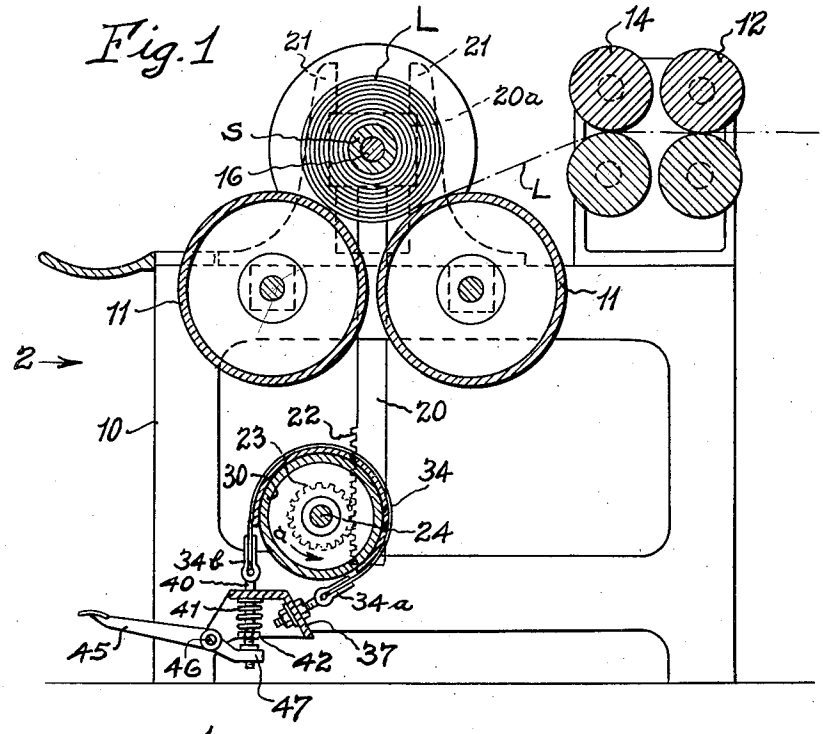
April 4, 1950 O. W. SCHLUMS 2,502,894

LAP WINDING MACHINE

Filed May 24, 1947

Fig. 1



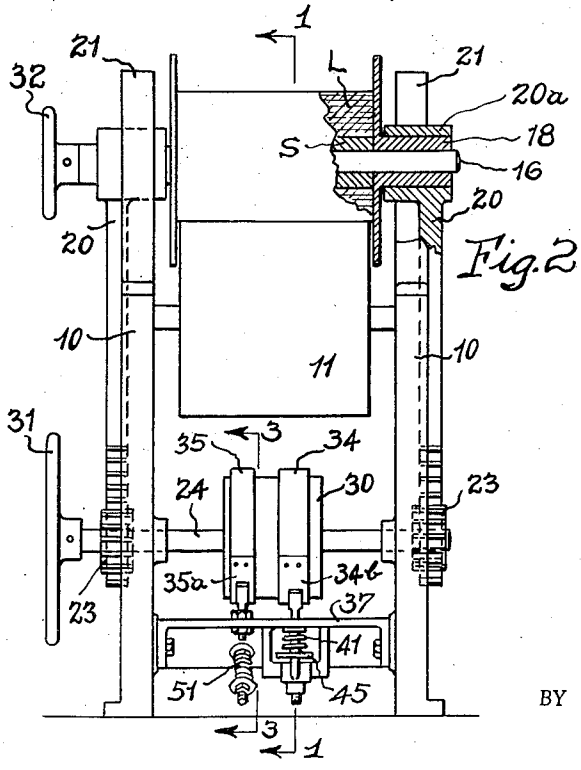
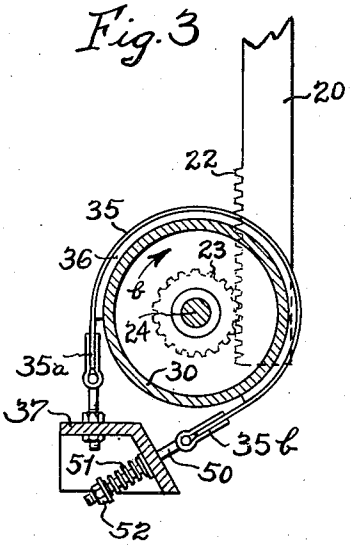


Fig. 2

Fig. 3



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LAP WINDING MACHINE

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2 Claims. (Cl. 19—162)

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This invention relates to machines used for winding laps of cotton or other textile fibers. In such machines, the lap of fibers is wound on a spool rotatable on a roll shaft, and is firmly pressed downward against supporting rotated drums during the winding operation. The shaft on which the lap is wound is commonly mounted in bearings at the upper ends of guide or rack bars having rack teeth engaged by pinions associated with a relatively large friction drum. Braking pressure is applied to this drum to yieldingly resist upward motion of the rack bars as the winding of the lap proceeds. By regulating the braking pressure, the desired lap density may be achieved.

When the lap roll has reached its full diameter, the roll shaft is withdrawn endwise from the winding mechanism to release the roll, but the rack bars are still held in their elevated positions by the drum friction. It is then necessary to release the braking pressure on the drums and to allow the rack bars to return to their original lowered positions.

Where the pressure is applied by a heavy counter-weight, as in Owen Patent No. 983,306, heavy foot pressure must be used to release the brake friction, and the descent of the rack bars must also be manually controlled to prevent damage.

It is the general object of this invention to provide improved means for applying and releasing friction on the drum associated with the rack bars of a lap winder.

A further object is to provide improved means for automatically regulating the rate of downward travel of the rack bars after the drum friction is released.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a sectional side elevation of parts of a lap winder embodying my improvements, taken along the line 1—1 in Fig. 2;

Fig. 2 is a front elevation, partly in section, and looking in the direction of the arrow 2 in Fig. 1; and

Fig. 3 is a detail partial sectional side elevation, taken along the line 3—3 in Fig. 2.

Referring to the drawings, I have shown parts of a lap winder comprising a frame 10 in which a pair of winding drums 11 are mounted and rotated. The lap L is supplied by pairs of feed rolls 12 and 14 and is wound on a spool S which

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is mounted on a shaft 16. The shaft 16 is supported in flanged bearings 18 rotatably mounted in the upper ends of guide or rack bars 20.

The upper end 20*a* of each rack bar 20 is slidable between fixed guide arms 21 projecting upward from the frame 10, and the lower end of each rack bar is provided with rack teeth 22 which engage a pinion 23 on a brake shaft 24. The shaft 24 is rotatable in fixed bearings in the frame 10, and a drum 30 is secured to the shaft 24 between the sides of the frame. The shaft 24 is also provided with a hand wheel 31, and the shaft 16 is provided with a hand wheel 32.

Brake-bands 34 and 35 partially encircle the drum 30 and may be provided with leather or any other usual brake linings 36.

The brake-band 34 (Fig. 1) has one end 34*a* anchored to a cross bar 37 fixed in the frame 10. The other end 34*b* is connected to a threaded eye-bolt 40 which extends through an opening in the cross bar 37 and which is yieldingly drawn downward by a spring 41 engaging a nut 42 threaded on the bolt 40. The tension of the spring 41 may be adjusted to provide the desired braking pressure by turning the nut 42. A foot lever 45 is pivoted at 46 and has an arm 47 positioned to engage the lower end of the eye-bolt 40. The pressure of the brake-band 34 may be conveniently relieved by applying foot pressure to the lever 45.

One end 35*a* (Fig. 3) of the brake-band 35 is anchored in the cross bar 37 and the other end 35*b* is connected to an eye-bolt 50 on which a spring 51 is adjustably secured by a nut 52.

Having described the details of construction of my improved braking apparatus, the operation and advantages thereof are as follows:

During the winding of the lap, the relatively heavy spring 41 applies braking pressure to the drum 30 and thus yieldingly resists upward movement of the rack bars 20 and of the shaft 16 supported thereby. The desired pressure is thus applied to the fiber, so that a lap of the desired density is secured, and this density may be varied by adjusting the position of the spring-engaging nut 42.

At the same time, some slight additional friction will be applied by the brake-band 35, but this pressure is relatively small, as the drum 30 is rotating counterclockwise during the winding operation, as shown by the arrow *a* in Fig. 1, and this will tend to compress the relatively light spring 51 enough to largely release the friction of the band 35.

When the winding of the lap is completed, the

shaft 16 may be pulled out by use of the hand wheel 32, after which the lap is removed but the rack bars 20 and bearings 18 are left in raised position.

Foot pressure is then applied to the lever 45 to compress the spring 41 and thus relieve the friction of the brake-band 34. The rack bars 20 and supported parts then tend to move downward to their lowered positions, but this reverse movement in the direction of the arrow *b* (Fig. 3) is regulated and controlled by the relatively light friction of the brake-band 35.

I thus provide convenient means for releasing the winding friction and for automatically controlling the downward travel of the rack bars and associated parts.

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. In a lap winding machine, a pair of rack bars elevated by increase in lap roll diameter, pinions engaging said bars, a shaft on which said pinions are fixed, a drum fixed on said shaft, a brake band effective to apply relatively heavy brake friction to said drum to resist forward rotation of said drum in a direction corresponding to elevation of said rack bars, means to release said brake friction, and an additional brake band automatically applying a relatively light additional brake friction to said drum to yieldingly resist rotation of said drum in a reverse direction during downward return movement of said rack bars by gravity but said additional band being ineffective to apply any substantial braking pressure during forward rotation of said drum, and said two brake-bands being oppositely anchored with respect to the rotation of said drum.

2. In a lap winding machine, a pair of rack bars elevated by increase in lap roll diameter, pinions engaging said bars, a shaft on which said pinions are fixed, a drum fixed on said shaft, means to apply relatively heavy friction to said drum to resist rotation of said drum in a forward direction corresponding to elevation of said rack bars, means to release said friction, an auxiliary brake-band partially encircling said drum and substantially ineffective against normal forward rotation but automatically applying a relatively light additional friction to said drum to yieldingly resist rotation of said drum in a reverse direction for downward return movement of said rack bars, and means to adjust said additional friction.

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