July 14, 1925. 1,545,945

F. L. CROCKETT

LAP WINDING MACHINE

Filed Jan. 16, 1923

Fig. 1,

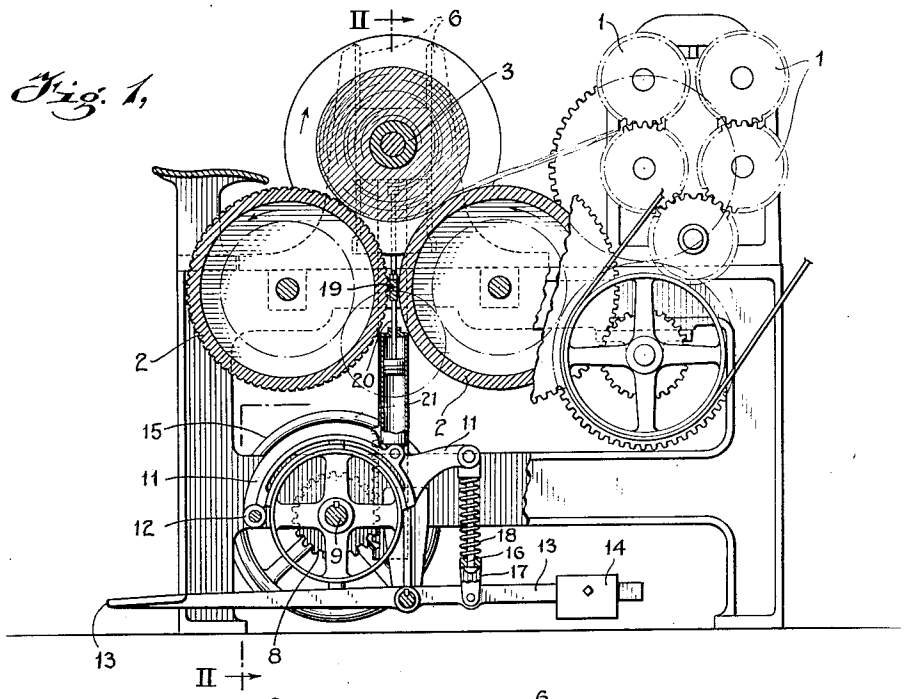
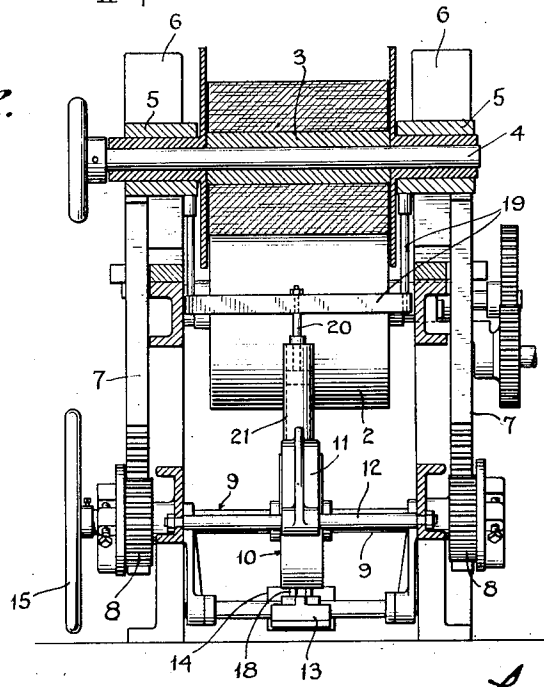


Fig. 2.



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UNITED STATES PATENT OFFICE.

FRANK L. CROCKETT, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO WHITIN MACHINE WORKS, OF WHITINSVILLE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

LAP-WINDING MACHINE.

Application filed January 16, 1923. Serial No. 612,884.

To all whom it may concern:

Be it known that I, FRANK L. CROCKETT, of Whitinsville, Massachusetts, a United States citizen, have invented the following described Improvements in Lap-Winding Machines.

The invention relates to machines for winding up strip-form materials into compact rolls, being herein exemplified in a cotton lap head which is adapted to roll up a lap of cotton fibres on a spool or core, so as to be suited for supplying other machines. The object of the invention is to control the return of the roll guiding and pressure producing mechanism back to its initial position after the full roll has been removed, so that such return may be made quickly and quietly without danger to the machine or to the operator. In the accompanying sheet of drawings, Figure 1 represents a partial vertical section of a cotton lap head of generally familiar design incorporating the invention and Figure 2 a cross-section thereof on line II—II of Fig. 1.

The lap or strip of material to be wound into roll form is delivered, by the pairs of calender or delivery rolls 1, into the crotch between the two adjacent, parallel winding cylinders, marked 2, wherein it is wound on the spool or wooden core 3 resting in the crotch. The winding cylinders 2 are rotated by appropriate gearing, not shown, in the same direction and thereby rotate the core and roll the lap up upon it. The core is mounted on an endwise removable spindle engaged by its opposite ends in cross-head slippers 5 which are guided for vertical movement in the ways 6, so that as the roll of lap grows in diameter, as the result of the winding, the spindle and cross head structure will be lifted thereby toward the upper ends of the ways. The specific construction of the winding means is of no consequence to this invention and may, therefore, be designed according to conditions. In the case of many materials, for instance cotton, it is desirable to restrain the upward movement of the roll carrier mechanism so as to press the roll upon the winding cylinders in addition to the gravitational pressure due to the weight of the parts. For this purpose a rack bar, or a pair of racks 7, is connected to the cross head structure or to any convenient part of the roll carrier mechanism and the rack teeth mesh with the pinions 8 on a shaft 9 which carries fast thereon a brake drum 10. The brake shoe 11 for the brake drum is pivoted to a cross rod fixed in the machine frame and connected at its opposite end with the weighted end of a lever or foot treadle 13, so that the weight 14 thereon causes the brake shoe to be pressed against the drum, In consequence of this braking friction applied to the ascent of the roll carrier, the pressure of the roll on the cylinders is very considerable and the lap is rolled very tightly on the carrier, The racks, pinions and brake shaft represent only one of several forms of possible mechanical connections whereby an appropriate restraint can be imposed on the increase of diameter of the roll when such additional restraint is considered necessary. When the roll has acquired its requisite diameter the roll spindle 4 is withdrawn endwise from the carrier mechanism and the roll is lifted out, leaving the carrier mechanism held in its elevated position, by reason of the brake. It must then be returned or lowered to its initial position before the next roll may be started, and for this purpose it has heretofore been the practice to release the brake and lower the mechanism by hand, by means of the hand wheel 15 on the end of the brake shaft. With his hand the operator retarded the rotation of the wheel while using the treadle to relieve the braking friction. As the carrier mechanism has considerable weight this operation had to be performed cautiously, else the too sudden descent was likely to result in injury.

According to this invention the descent of the carrier mechanism is automatically controlled, so that on the release of the brake it drops quickly but gently to its lower position. For this purpose the brake shoe is connected to the weighted treadle lever 13 by means of a headed rod or bolt 16, a shackle 17 and a spring 18, which parts are so arranged that the gravity of the weight 14 is positively transmitted to the brake shoe 11, but the opposite or brake-releasing movement of the treadle is imparted to the brake shoe only through the yielding connection afforded by the spring. By this arrangement it will be apparent that the brake shoe can be applied to the drum independently of the position of the treadle or operating lever, and it is ar-

ranged to be so applied, in the present case, by the roll carrier mechanism itself and preferably by means of a yielding connection therewith. For example, and preferably, such connection comprises a yoke 19 connected to the cross head structure 5 and to a plunger 20 working in a dash pot cylinder 21, which cylinder is connected to the brake shoe 11, so that the descent of the carrier mechanism will displace or compress the air or other fluid in the dash pot and the latter will transmit such pressure to the brake shoe. When the operator steps on the treadle he thereby releases the pressure of the weight 14 on the brake shoe and may more or less compress the spring. This allows the carrier mechanism to drop. By the compression of the air in the dash pot said mechanism overcomes the pressure of spring 18 and thereby applies the brake which in turn modulates the descent of the carrier, through the pinions 8 and racks 7, with the result that the descent takes place quietly and with a safe deceleration and the operator is not required to touch the hand wheel 15. The use of a brake-operating connection which includes an air cushion or an air dash pot is preferred because its operation can be easily correlated to the other parts to bring about a return of the cross-head structure at any desired rate, and because it is available to cushion the descent even on the failure of the brake or in the event that such brake is not employed for controlling the descent, and it will be apparent that any kind of dash pot can be employed with the same general effect.

It will be understood from the foregoing disclosure that the construction particularly described and shown in the drawing represents only one of the embodiments of which the principle of the invention is capable and that the same can be applied, in a variety of different ways, without sacrificing the benefits of the invention or departing from the scope of the following claims:

1. In a lap-winding machine, a roll-carrier vertically elevated by the increasing diameter of the roll, a brake, means for releasing the carrier and means associated with said releasing means for automatically modulating its descent.

2. In a lap-winding machine, a roll-carrier moved by the increasing diameter of the roll, a brake adapted to control return of the carrier and means whereby the returning carrier controls the brake.

3. In a lap-winding machine, a roll carrier, a brake and yielding means whereby the returning carrier controls the brake.

4. In a lap-winding machine, a roll carrier, a brake adapted to restrain movement of the carrier in both directions, and a brake-operating connection between said carrier and brake.

5. In a lap-winding machine a roll carrier raised by the increasing diameter of the roll, a brake for the descent of said carrier and a dash pot connection whereby the carrier controls the brake.

6. In a lap-winding machine, a roll carrier raised by the increasing diameter of the roll, a brake for the ascent of said carrier, a braking lever normally urged in a direction to apply the brake, and means for applying the brake independently of said lever to control the descent of said carrier.

7. In a lap-winding machine, a roll carrier raised by the increasing diameter of the roll, a carrier brake comprising a drum and shoe, and a braking lever connected to said shoe to move it positively in one direction and yielding in the other direction.

8. In a lap-winding machine, a roll carrier raised by the increasing diameter of the roll, a brake drum and shoe for applying resistance to the ascent of the carrier, means connected to said shoe for controlling said resistance, and a connection whereby the descent of the carrier controls the shoe independently of said means.

9. In a lap-winding machine, a roll carrier raised by the increasing diameter of the roll, a brake for the ascent of said carrier, a braking lever normally urged in a direction to apply the brake, and a dash pot controlling the descent of said carrier.

10. In a lap-winding machine, a roll carrier raised by the increasing diameter of the roll, a carrier brake comprising a drum and shoe, means connected to said shoe to move it positively in one direction and yieldingly, in the other direction, and a cushioned connection between said carrier and brake shoe.

11. In a lap-winding machine, a roll carrier raised by the increasing diameter of the roll, a brake applying resistance to the ascent of the carrier, means for controlling said resistance, and a yielding connection whereby the carrier controls the brake independently of said means.

In testimony whereof, I have signed this specification.

FRANK L. CROCKETT.