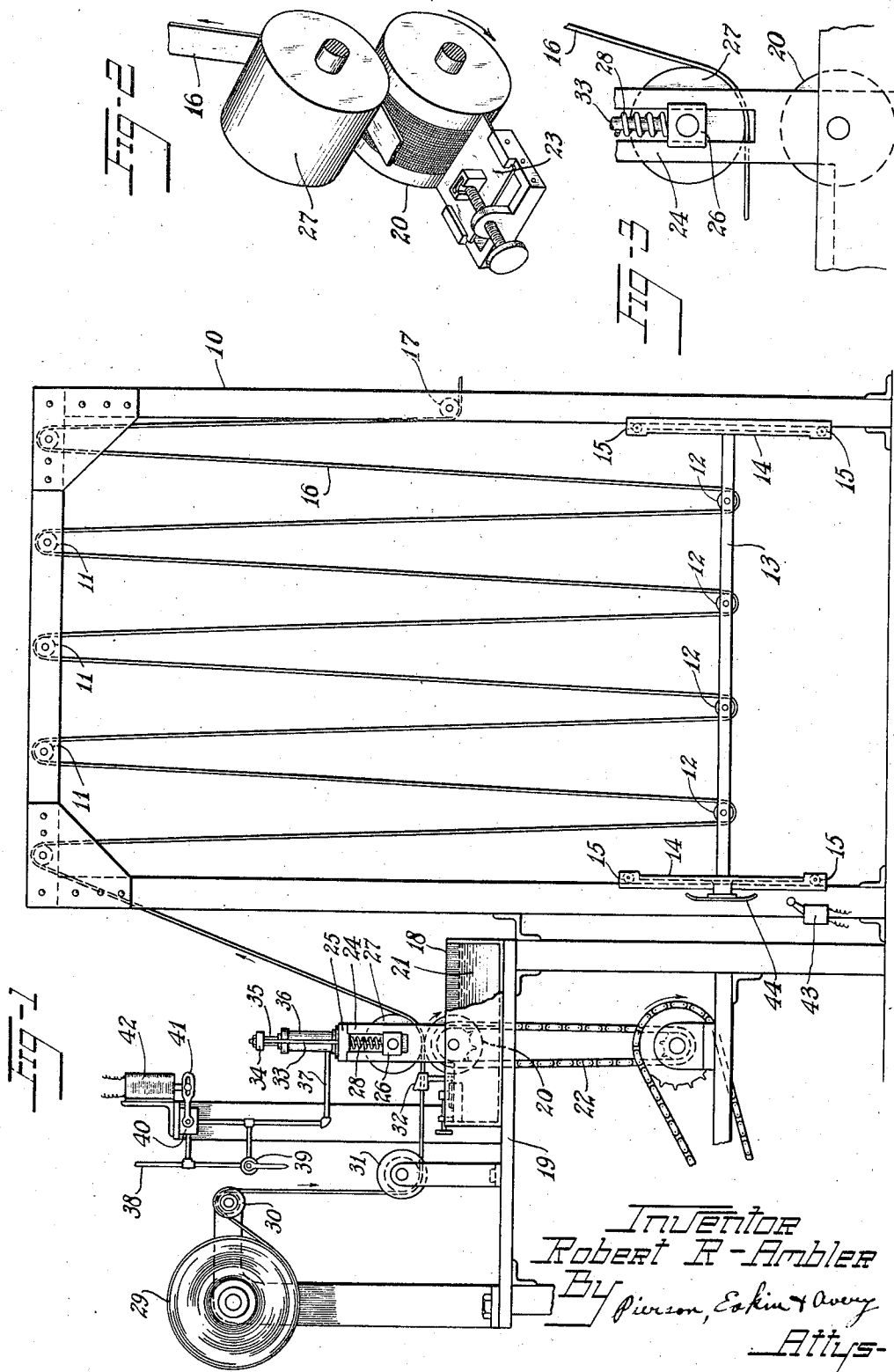


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R. R. AMBLER
STRIP COATING APPARATUS

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UNITED STATES PATENT OFFICE.

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STRIP-COATING APPARATUS.

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This invention relates to apparatus for applying a liquid such as rubber-cement to a continuous strip of material such as a strip of sheeted rubber compound or a strip of rubberized fibrous material.

My chief objects are to provide a strip-cementing apparatus in which the strip may be intermittently fed without excess absorption of the cement solvent at the cementing position during the intervals between feeding movements; to provide conveniently for intermittent feeding of the strip and for functioning of the coating means only during feeding movements of the strip; to provide for maintaining a variable supply of the coated strip such as to permit withdrawal from and replenishment of the storage-supply at different times or at different rates, the strip extending in continuous form through the storage-supply; to provide for an extended drying of the coated strip while it remains in the storage-supply; and to provide for automatic starting of the feed of the strip into the storage-supply when the supply falls below a determinate amount and for automatic stopping of such feeding of the strip when the supply is suitably replenished. A further object is to provide simple and inexpensive apparatus for coating and for otherwise manipulating the strip material.

Of the accompanying drawings:

Fig. 1 is a side elevation of a preferred embodiment of my invention.

Fig. 2 is a perspective view of parts of the same including a pair of coating or cementing rolls in operative relation.

Fig. 3 is a side elevation of parts of the apparatus including the coating rolls in operative relation.

Referring to the drawings, the cementing device here shown is associated with a festooning rack 10 provided with a series of upper rolls 11, 11 journaled on fixed axes in the upper part of the frame and a set of lower rolls 12, 12 journaled in a floating frame 13 provided at its ends with guide-brackets such as those shown at 14, 14 adapted to run in vertical guide-ways formed in the frame, each guide-bracket being provided with a pair of anti-friction rollers 15, 15 spaced a sufficient distance vertically from each other to prevent cramping of the floating frame and to compel it to maintain a

horizontal position while rising and descending in the frame of the rack, the frame being of such weight as to maintain of equal length the loops of a strip of material 16 threaded in alternation over the upper rolls 11 and under the lower rolls 12, when the strip of material is drawn from the rack, about a guide-roll 17, or is fed to the rack from the cementing device.

The cementing device comprises a cement container 18 mounted upon a table 19 adjacent the in-feed end of the festooning rack, a knurled lower cementing roll 20 journaled with its lower part extending into a supply of cement 21 in the tank 18, and means including a sprocket chain 22 for continuously driving the said lower or cementing roll. An adjustable scraper 23 (Fig. 2) preferably is provided for removing excess of cement from the rising face of the roll. Rising from the sides of the container 18 is a pair of brackets such as the bracket 24, which are connected at their tops by a cross-member 25, each bracket being formed with a vertical guide-way for a slidable journal block 26, in which blocks are journaled the trunnions of an upper, presser roll 27 urged downward toward the lower, cementing roll 20 by compression springs such as the spring 28 interposed between the respective journal blocks 26 and the cross-member 25, the presser roll 27 and the cementing roll 20 being adapted to coact as a pair of pinch rolls to draw the strip material 16 from a stock roll 29 and about guide-rolls 30 and 31 and through a guide 32 and to feed the strip to the festooning rack 10. The lower roll 20, running in the cement is adapted to apply a coating of cement to the under side of the strip as the latter passes between the two rolls.

To lift the roll 27 from the roll 20, to the position in which it is shown in Fig. 3, so that the roll 27 and strip will cease to be driven by contact of the strip with the lower roll, each journaled block 26 has secured thereto a pull rod 33 extending upward through the spring 28 and the cross-member 25 and having its upper end secured to a yoke 34, the yoke being connected at its middle to the piston rod 35 of a fluid pressure cylinder 36 mounted upon the cross-member 25 and provided at its lower end with a fluid supply and exhaust pipe 37.

A pipe 38 leading from a suitable source of pressure fluid such as a compressed-air line has connection with the pipe 37 by way of a three-way, hand-operable valve 39 adapted for charging and venting the cylinder 36, and also by way of an automatic three-way charging and venting valve 40 having its operating lever 41 connected with a solenoid 42, the solenoid being in circuit with a switch 43 mounted on the frame of the festooning rack near the bottom of the latter and adapted to be opened by contact of a cam shoe 44 mounted upon the floating frame 13, when the loops of material in the rack have attained their maximum length, so that the cylinder 36 will be charged and the feeding of the strip material to the rack will be stopped until such time as the floating frame 13 is lifted, by withdrawal of the strip material from the rack, the switch 43 being adapted automatically to close as the cam shoe 44 passes out of contact with its actuating lever, to cause the cylinder 36 to be vented and the feeding of the material to the rack to be resumed by pressure of the rolls 27 and 20 thereon under the force of the springs 28.

In the operation of the apparatus, the strip 16 being threaded through the apparatus as shown and the cementing roll 20 being continuously driven, the strip is fed to the rack by the rolls 27 and 20 and is cemented on its under side, by the roll 20, as it passes to the rack, until such time as the rack has been so filled that the cam shoe 44 opens the switch 43 and thereby charges the cylinder 36 and so lifts the presser roll 27 to the position in which it is shown in Fig. 3.

This not only causes the feeding of the material to the rack to stop but also causes the strip 16 to be lifted out of contact with the cementing roll 20, the weight of the floating frame 13 being sufficient to maintain the strip taut about the presser roll 27, and this avoids such continued contact of the strip with the cementing roll 20 as to cause the strip to absorb an excessive amount of solvent from the surface of the cementing roll

or as to cause a congestion and drying of cement at a local position on the strip.

As soon as a sufficient length of strip 16 has been withdrawn from the rack to lift the floating frame 13 so that the cam shoe 44 leaves the switch 43 the switch 43 automatically closes, which causes the actuating lever 41 of the valve 40 to be lifted by the solenoid 42 and vents the cylinder 36, permitting the feeding and cementing of the strip to be resumed.

This arrangement is such that the festooning rack may be kept filled or almost filled at all times, so that a large quantity of the strip 16 is exposed at all times for drying of the cement and each part of the strip is consequently given a relatively long drying period.

Alternatively, or at such times as the floating frame 13 is in an intermediate position, the feeding and cementing of the strip can be controlled by means of the hand-operable valve 39, as for substituting a new stock roll for the roll 29.

The construction is such as to provide the several advantages set out in the above statement of objects and it may be variously modified without departure from the scope of my invention as defined in the appended claim.

I claim:

Strip-coating apparatus comprising means for supporting a variable storage-supply of a continuous strip of material in a series of loops and for drawing the strip into the said supply by yieldingly maintaining the loops taut, hold-back means for giving off the strip to the drawing means, the hold-back means comprising a driven coating roll and a loosely journaled presser roll mounted for movement into and out of coating relation to the coating roll, and means for so guiding the strip about the presser roll that the tension of the strip will cause it to leave the coating roll when the presser roll is moved away from the coating roll.

In witness whereof I have hereunto set my hand this 30th day of April, 1927.

ROBERT R. AMBLER.