

Aug. 31, 1926.

1,597,697

A. H. SAXTON ET AL

BUNDLE WRAPPING AND TYING MACHINE

Filed Dec. 19, 1925

2 Sheets-Sheet 1

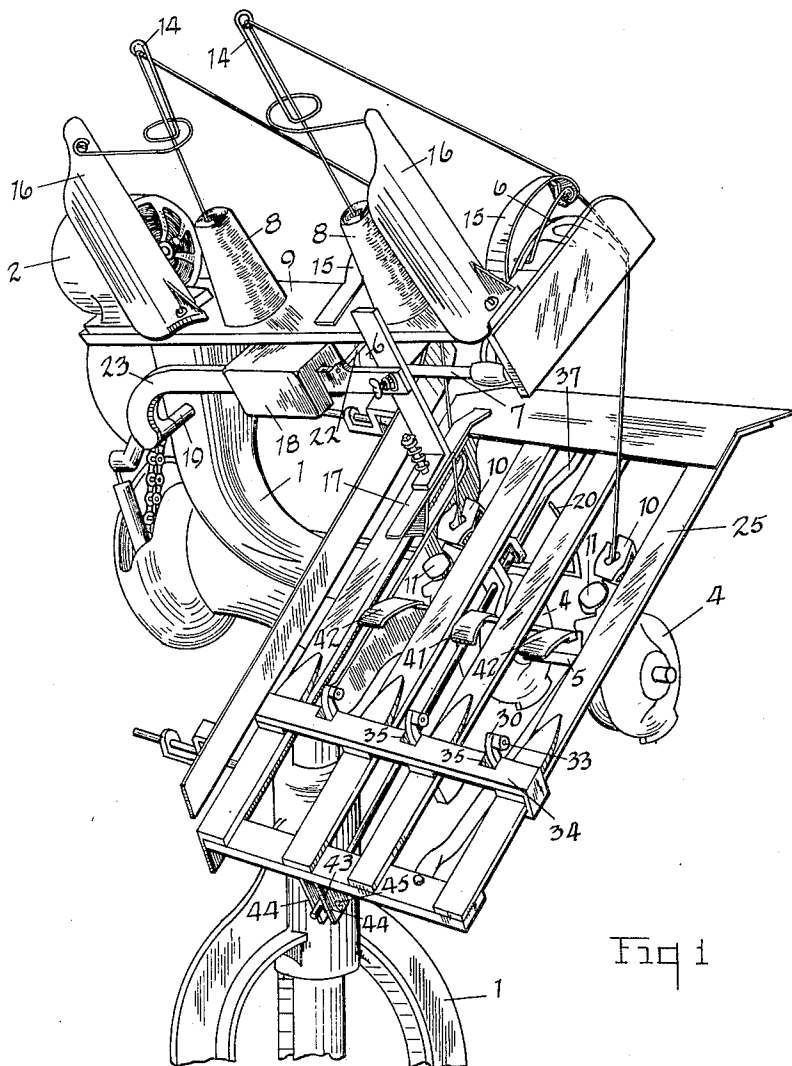


Fig 1

Inventors
Albert H. Saxton, James B. Saxton
& Joseph J. Bachmayer

By *Faust Crampton*

Attorney

Aug. 31, 1926.

1,597,697

A. H. SAXTON ET AL

BUNDLE WRAPPING AND TYING MACHINE

Filed Dec. 19, 1925

2 Sheets-Sheet 2

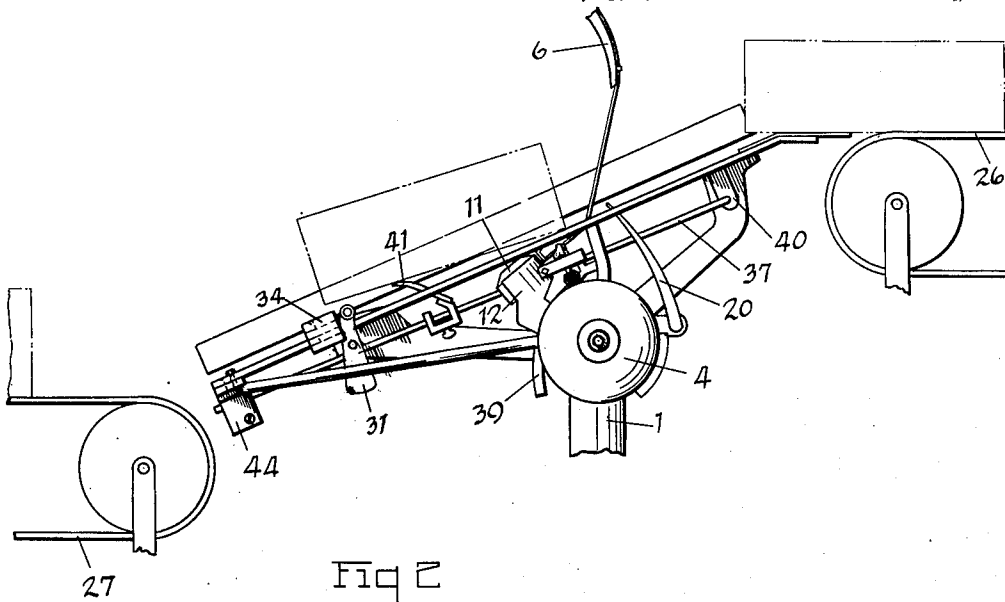


Fig 2

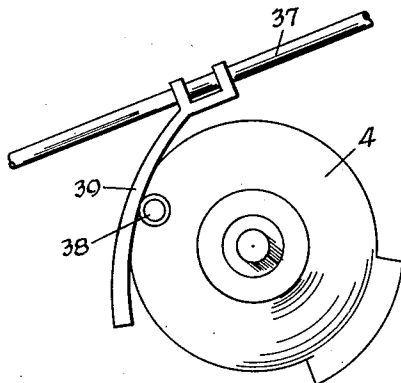


Fig 4

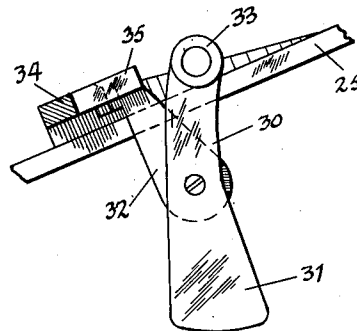


Fig 3

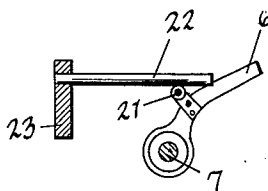


Fig 5

Inventors.
Albert H. Saxton, James J. Saxton
& Joseph J. Bachmayer
By *Faust G. Sampson*
Attorney

UNITED STATES PATENT OFFICE.

ALBERT H. SAXTON, JAMES B. SAXTON, AND JOSEPH J. BACHMAYER, OF BLISSFIELD, MICHIGAN, ASSIGNORS TO THE NATIONAL BUNDLE TYER COMPANY, OF BLISSFIELD, MICHIGAN, A CORPORATION OF MICHIGAN.

BUNDLE WRAPPING AND TYING MACHINE.

Application filed December 19, 1925. Serial No. 76,368.

Our invention has for its object to provide a continuously operated bundle tying machine wherein the machine is tripped by the movement of the package or bundle, the package or bundle being brought to a stop and again started in its further movement through the machine. The machine is preferably controlled by the gravity or weight of the bundles.

The invention may be contained in bundle tying machines of different forms. To illustrate a practical application of the invention we have selected a bundle tying mechanism as an illustration of tying machines containing our invention. The tying machine selected as an example is shown in the accompanying drawings and is described hereinafter.

Figure 1 of the drawings is a perspective view of the tying machine. Fig. 2 is an end view of the machine. Fig. 3 illustrates a yielding stop for engaging the bundles in advance of bringing the bundles to a full stop. Fig. 4 is a view of a part of the mechanism used to raise the bundles clear of the stop to permit them to continue in their movement through the machine. Fig. 5 illustrates a means for raising a weighted package presser foot.

Except for the improvements constituting our invention and hereinafter specifically described and more or less broadly claimed in the claims, the form of construction shown in the drawings and the operative mechanism is structurally the same as that shown in application Ser. No. 726,708 filed by Albert H. Saxton. The particular construction shown is provided with a supporting standard or frame 1 for supporting the operative mechanism that is driven by the motor 2, driving connection with which is established by means of a clutch member of the form described in the said application Ser. No. 726,708. A pair of cam sectors 4 that operate the tying mechanism and cord cut off are connected to and driven by the shaft 5. A pair of needles 6 are operated by the shaft 7 and a pair of spools 8 of cord are located on the shelf 9 and are threaded to a pair of guides or cut offs 10 and in position to be engaged by the needles

6 to make a double wrap about the bundle and to cooperate in the tying of the knots. The needles loop the cords about the bundle and into the locking heads 11 where the loops are temporarily held between the locking heads 11 and the locking plates 12 during the knotting of the cords. The above described mechanism except for the duplication of parts that produce the double wrap of the bundles are set forth in detail in the said application Ser. No. 726,708 and forms no part of our invention.

Mechanical variations in the structure from that described in detail in said application, namely, that that resides in the elastic guiding wires 14 and the elastic goose necks 15 through which the cords are threaded to locate them in good operative relation with respect to the needles 6. The wires 14 are secured to brackets 16 and the goose necks 15 are secured to the shelf 9. Also a presser foot 17 is weighted by the weight 18 and is raised and lowered by the inner needle 6 to release and engage the bundle while it is being wrapped and tied. Also a trip finger 20 is operated by the momentum produced by the movement of the bundle as distinct from the weight alone to cause the clutch to connect the bundle tying mechanism with the motor. This starts the needles 6 downward to wrap the bundle. A roller 21 is located on the inner needle 6 and a pin 22 is connected to a pivoted bar 23. The bar 23 is pivotally supported by the rod 19. The bar 23 carries the presser foot 17 and the weight 18, so that when the needle 6 is lowered the presser foot is lowered to engage the bundle in advance of the wrapping operation and is raised after the wrapping and tying operation have been completed.

Our invention particularly resides in the means whereby the mechanism may be automatically controlled by bundles that are continuously fed and delivered from the machine whereby an exceedingly efficient and rapid operation may be produced. A guiding bed or rack 25 is so inclined to the horizontal as to cause bundles placed thereon to readily slide down the rack by their own weight. The bundles are delivered to the

top of the rack by suitable means such as the belt 26 and are preferably received on a suitable conveyor 27 which delivers them from the machine.

5 The trip finger 20 that connects the mechanism with the motor 2 is located slightly in advance of the portions of the cords that extend between the guides and cut offs 10 and the needles 6 when the needles are in 10 their raised positions and it protrudes slightly above the rack 25 as to be engaged by the bundles as they slide down the rack before the bundles strike the said portions of the cords. This marks the connection 15 between the motor 2 and the operating mechanism so as to cause the needles 6 to immediately descend and permit the bundle to slide down the rack carrying before it the said portions of the cords. The movement of each bundle brings its lower edge 20 against the levers 30 with some force. The levers 30 are weighted at their lower ends, such as at 31, and they yieldingly resist further movement of the bundles and consequently gradually arrest the movement. 25 The levers 30 are pivoted to the depending ears 32 that are secured to the rack 25. The upper ends of the levers 30 are provided with rollers 33 on which the bundles may be permitted to roll when it is 30 raised so as to bring its lower side above the rollers. A cross bar 34 is located on the rack 25 and forms a positive stop for the bundles in their movement down the rack which movement, however, is cushioned by the weighted levers 30. The bar 34 may be provided with recesses 35 into 35 which the ends of the levers 30 and the rollers 33 may be pressed by the bundle as it comes against the stop formed by the bar 34. The bar 34 not only affords a positive stop as against further movements of the bundles caused by their weight but it also affords a stop for the bundles as against 40 any movement that may be produced by the cord and the swinging needles 6 and in the wrapping and tying operation that follows.

When the tying operation is completed in the manner described in connection with the 50 machine shown in the said application No. 726,708, the bundle is lifted so that it may clear the cross bar 34 and hence by reason of its own weight it will continue its downward movement along the inclined rack 25. 55 It is raised by the operation of a rod 37 which is actuated by a pin 38 that is connected to one of the cam sectors 4. An arm 39 is secured to the bar 37 which engages the pin 38 so that as the pin 38 is pressed 60 against the arm 39 the lower end of the bar 37 will be raised, the upper end of the bar 37 being pivotally connected to the depending ear 40. The bar 37 has a forked member 41 having a plurality of fingers 42 and 65 when the rod 37 is raised by the opera-

tion of the pin 38 and the arm 39, the fingers 42 are pressed against the bottom of the bundle so as to raise the bundle above the bar 34. The forward bottom edge of the bundle is thus free to move over the top 70 of the bar and consequently it will roll over the rollers 33 and continue in its movement down the inclined plane 25 to be delivered into any suitable receptacle or if desired on to the belt 27. In order to prevent the bar 75 37 from being lowered too far by its own weight when the pin 38 has passed the arm 39 the lower end of the bar is located in a stirrup 43 which will limit the downward movement of the bar. The stirrup 43 may 80 be formed of two plates 44 and the movements of the bar 37 may be limited by the screw 45 that connects the plates 44.

We claim:

1. In a bundle wrapping and tying mechanism, a guide rack located at an angle to 85 cause the bundles to slide down the rack, a stop for engaging the bundles while being wrapped and tied, means for releasing the bundles from the stop when tied, to cause 90 them to continue their sliding movements down the rack.

2. In a bundle tying mechanism, a guide rack located at an angle to cause the bundles 95 to slide down the rack, a knotting mechanism and a cord extending to the knotting mechanism, a needle for looping the cord about the bundle and delivering a loop of the cord to the knotting mechanism, a motor, a trip finger located in advance of the 100 cord and means controlled by the trip finger for connecting the tying mechanism to the motor to cause the needle to loop the cord about each bundle as the bundle slides down the guide. 105

3. In a bundle tying mechanism, a guide rack located at an angle to cause the bundles 110 to slide down the rack, a knotting mechanism and a cord extending to the knotting mechanism, a needle for looping the cord about the bundle and delivering a loop of the cord to the knotting mechanism, a motor, a trip finger located in advance of the 115 cord and means controlled by the trip finger for connecting the tying mechanism to the motor to cause the needle to loop the cord about each bundle as the bundle slides down the guide, a stop for engaging the bundles while being tied, means for releasing the bundles from the stop when tied to 120 cause them to continue their sliding movements down the rack.

4. In a bundle wrapping and tying mechanism, a guide rack located at an angle to 125 cause the bundles to slide down the rack, a stop for engaging the bundles in bundle tying position, a plurality of levers located in proximity to the stop, rollers supported on the ends of the levers and engaged by the bundles, means for raising the bundles to 130

enable them to ride on the rollers and for releasing the bundles from the stop to cause the bundles to continue the sliding movements down the rack. 15

5 5. In a bundle wrapping and tying mechanism, a guide rack located at an angle to cause the bundles to slide down the rack, a yielding stop for engaging the bundles while

being wrapped and tied, means for releasing the bundles to free them from the stop. 15
In testimony whereof we have hereunto signed our names to this specification.

ALBERT H. SAXTON.
JAMES B. SAXTON.
JOSEPH J. BACHMAYER