

C. S. EMMERT.
 BINDING MACHINE.
 APPLICATION FILED MAY 31, 1911.

1,014,212.

Patented Jan. 9, 1912.

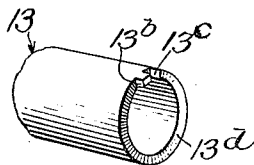
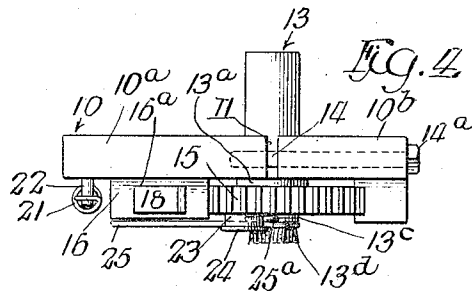
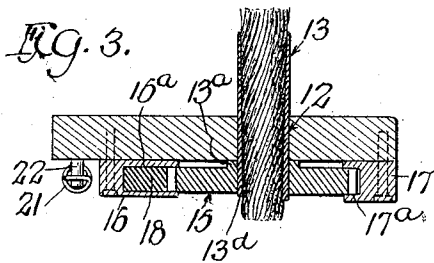
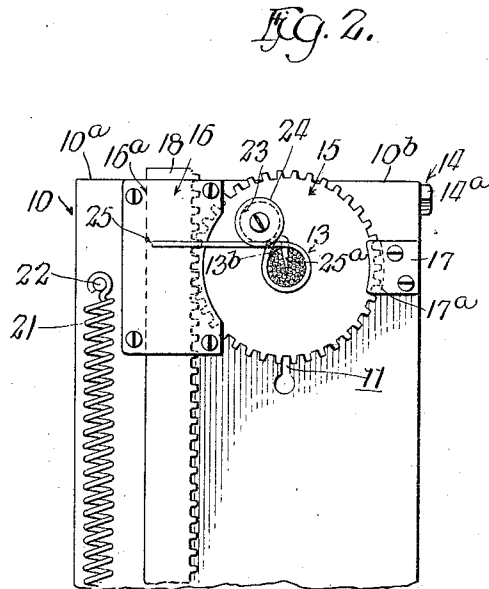
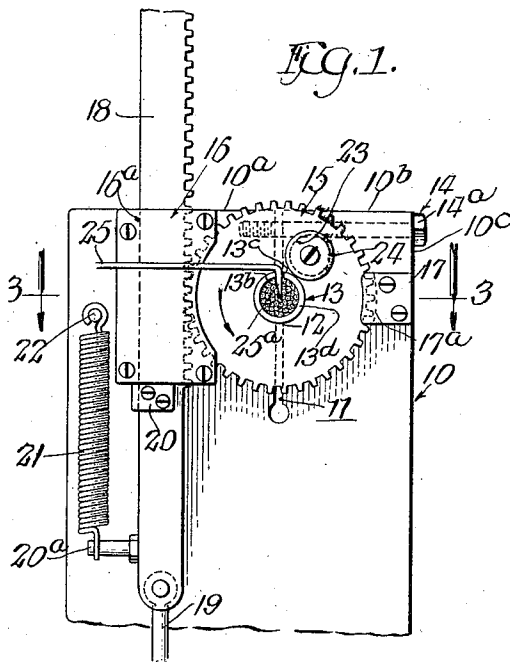


Fig. 5.

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UNITED STATES PATENT OFFICE.

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BINDING-MACHINE.

1,014,212.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES S. EMMERT, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Binding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in binding machines adapted to bend a length of wire about a member to be bound, as for example, a piece of cotton warp, a rope end, or the like, and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The improved machine is particularly adapted for making daubers of the kind used with shoe polish and the like consisting of a short length of cotton warp bound by a part of a length of wire, the other part of which constitutes the handle for the dauber or the member for attaching said dauber to the cork of the bottle containing the polish, in which case said cork is used as the handle for the dauber.

In the drawings: Figure 1 is a view representing a front elevation of my improved machine showing the binding wire in position ready to be bound about the cotton warp; Fig. 2 is a view representing a like front elevation of the machine with the parts thereof in their relative positions as they appear after the machine has been operated to bind the wire about the warp; Fig. 3 is a view representing a section through the machine in a plane indicated by the line 3-3 of Fig. 1; Fig. 4 is a view representing a top plan view of the machine with the parts in the relative positions shown in Fig. 2; Fig. 5 is a perspective view showing the end of the tube through which the cotton warp is fed.

Referring now to that embodiment of my invention illustrated in the drawings, 10 indicates a plate which carries the operating parts of the machine and which is supported preferably in an upright position by any convenient means (not shown). Said plate has a slot 11 extending from its upper edge downwardly and intermediate the ends of said slot an opening 12 is formed in the plate into which opening extends a circular

tube 13 which is adapted for the feed of the cotton warp to the binder. The said slot divides the upper end of said plate into parts 10^a, 10^b, which are adapted to be clamped against said tube by means of a long bolt 14 extending loosely through an aperture in the part 10^b of the table and being threaded into the part 10^a. Said bolt has a head 14^a adapted for engagement against the vertical edge 10^c of the part 10^b of the plate 10. The end of the tube 13 projects forwardly beyond the front face of the plate 10 and said tube is preferably tapered toward its front end (see Fig. 3) in order that the strands of the cotton warp may be drawn more closely together as they approach the front end of the tube just beyond which the binding wire is applied.

On the front projecting end of the tube 13 is rotatively mounted a carrier, in this case a gear 15 having on its rear face a boss 13^a which engages against the front face of the plate 10 while its peripheral margin, offset from the plate 10 by said boss, extends into vertical grooves 16^a, 17^a, in oppositely disposed plates 16, 17, which are bolted to the front face of the said plate 10. A vertically reciprocable rack 18 is mounted in the groove 16^a of the plate 16 with its teeth engaged with the teeth of the gear 15. A link 19 is pivotally connected to the lower end of the rack-bar 18 and may be connected to any suitable operating member, as for example, a foot treadle (not shown). A stop 20 secured to the front face of the rack bar in position for engagement with the lower edge of the plate 16, acts to limit the upward movement of the rack-bar, and a coiled spring 21 attached at its lower end to a lateral projection 20^a of the rack bar and at its upper end to a lug or pin 22 connected to the plate 10 normally holds the rack-bar in its uppermost position.

The front end of the tube 13 has its surface shaped to conform to a convolution of a helical curve the pitch of which is substantially equal to the diameter of the wire that is used to bind the strands of the cotton warp together. The convolution of the helix terminates in a longitudinal shoulder 13^b and a notch 13^c is cut in the end of said tube in advance of said shoulder 13^b, said notch being adapted for the reception of the end of the wire binder.

23 indicates a binder member which, as shown herein, consists of a roller rotatively

mounted on the front face of the gear 15 and adapted for engagement with the wire as it is revolved about the tube 13 by means of its carrier, the gear 15. Said roller is of such diameter and its center of rotation is so spaced from the central axis of the tube 13, that its peripheral bearing surface is spaced from the tube 13 a distance equal to the diameter of the binder wire. The said roller has a radial flange 24 which is located in a vertical plane and is spaced from the vertical plane extending through that part of the tube end which projects farthest a distance equal to the diameter of the binding wire.

The operation of the machine is as follows: A length of wire 25, preferably provided with a sharpened end 25^a is inserted through the notch 13^c at the front end of the tube 13 into the cotton warp or other member to be bound, which has first been drawn through the tube 13 until its end projects beyond the forward end of said tube, the required distance. The length of wire is then bent at right angles to the pointed end 25^a either by a hammer or in any other way. It is preferable to form this bend in the first instance before the end of the wire is inserted into the warp. In the normal position of the parts of the machine the binder or roller 23 is to the right of the notch 13^c of the tube 13, as shown in Fig. 1, while the length of binder wire 25 extends to the left thereof, that is to say, the binder is located on the side of the notch which is opposite to the side on which said wire 25 is located. The rack-bar 18 is now depressed by the treadle or other operating member, rotative movement in the direction of the arrow being thus imparted to the gear 15. This movement of the gear revolves the binder or roller 23 in a circular path about the tube 13, said movement being continued preferably through a little more than 360° of arc, so that said binder twice passes the notch 13^c in the end of the tube. In this movement the binder or roller 23 engages the wire 25 and carries it around with it. In this action of the binder it first bends the wire 25 against the shoulder 13^b, causing said wire to assume the position of a chord to the other circumference of the tube 13 so that it engages against the outer peripheral surface of the cotton warp. The continued movement of said binder about the tube swings the wire with it and bends said wire about the cotton warp. At the same time the helical end surface 13^d of the tube 13 properly guides the wire so that when it has been swung into a horizontal position again as shown in Fig. 2, it will lie closely adjacent to that part of its length forming the beginning of the bend, being held in said position by the radial flange 24 of the binder 23 which coacts with the end of the tube 13 to bring the parts into this

relation. The machine thus causes the wire to make a little more than one complete turn or convolution of a helical coil about the cotton warp. The extra length of wire may then be cut off, or in the case of the manufacture of daubers of the class described, the extra length may be used as part of the handle for the dauber, and the cotton warp drawn beyond the end of the tube and severed at a point spaced from the wire binder, in which case the severed piece of cotton warp will be attached to a length of wire which is bound about it intermediate of its ends.

While in describing my invention I have referred to certain details of mechanical construction and arrangement, it is to be understood that my invention is not limited thereby except as pointed out in the appended claims.

I claim as my invention—

1. A machine for applying a binding wire, comprising a tube adapted to support the member to be bound, the end of said tube being provided with a longitudinal shoulder and with a notch in advance of said shoulder, a binder member adapted for engagement with the wire, a carrier adapted to revolve said binder member in a circular path about said tube in engagement with the wire, means for guiding said wire as it is bound about the member to be bound, and means for rotating said carrier.

2. A machine for applying a binding wire, comprising a tube adapted to support the member to be bound, said tube having an end surface shaped to conform substantially to a helical curve the pitch of which is equal to the diameter of the wire, the end of said tube being provided with a longitudinal shoulder defining the beginning and the end of the convolution of the helical curve and with a notch in advance of said shoulder, a binder member adapted for engagement with said wire, a carrier adapted to revolve said binder member in a circular path about said tube in engagement with the wire, said binder member having a flange located in a plane at right angles to said tube adapted to coact with the end thereof to guide the wire about the member to be bound, and means for rotating said carrier.

3. A machine for applying a binding wire, comprising a tube adapted to support the member to be bound, said tube having an end surface shaped to conform substantially to a helical curve the pitch of which is equal to the diameter of the wire, the end of said tube being provided with a longitudinal shoulder defining the beginning and the end of the convolution of the helical curve and with a notch in advance of said shoulder, a rotative binding member adapted for engagement with the wire, a carrier adapted to revolve said binder member in a circular

path about said tube in engagement with the wire, said binder having a radial flange located in a plane at right angles to said tube adapted to coact with the end thereof to guide the wire about the member to be bound, and means for rotating said carrier.

4. A machine for applying a binding wire, comprising a tube adapted to support the member to be bound, said tube having an end surface shaped to conform substantially to a helical curve the pitch of which is equal to the diameter of the wire, the end of said tube being provided with a longitudinal shoulder defining the beginning and the end of the convolution of the helical curve and with a notch in advance of said shoulder, a rotative gear concentric with said tube, a roller rotatively carried by said gear and adapted for engagement with said wire, said roller having a radial flange located in a plane at right angles to said tube adapted to coact with the end thereof to guide the wire about the member to be bound, and means for rotating said gear.

5. A machine for applying a binding wire, comprising a tapered tube adapted to support the member to be bound, said tube hav-

ing at its smaller end an end surface shaped to conform substantially to a helical curve the pitch of which is equal to the diameter of the wire, said smaller end of the tube being provided with a longitudinal shoulder defining the beginning and the end of the convolution of the helical curve and with a notch in advance of said shoulder, a gear rotatively mounted on said tube, a reciprocable, spring-controlled rack bar adapted for operating said gear, a roller rotatively carried by said gear adapted for engagement with said wire, said roller having a radial flange located in a plane at right angles to said tube adapted to coact with the end thereof to guide the wire about the member to be bound, and means for operating said rack bar.

In testimony, that I, claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 22nd day of May A. D. 1911.

CHARLES S. EMMERT.

Witnesses:

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GEORGE R. WILKINS.