

(No Model.)

A. LEVEDAHL & F. YAGERMANN.
FABRIC WINDING MACHINE.

No. 510,034.

Patented Dec. 5, 1893.

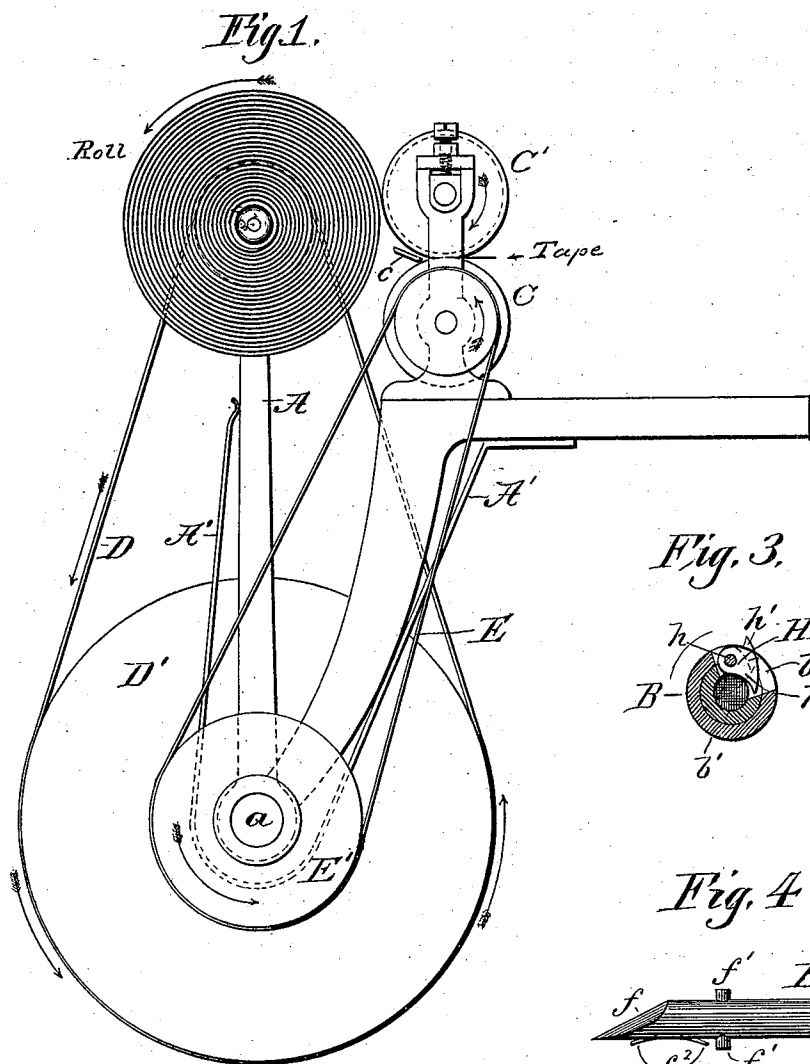


Fig. 3.

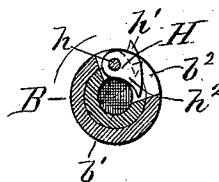
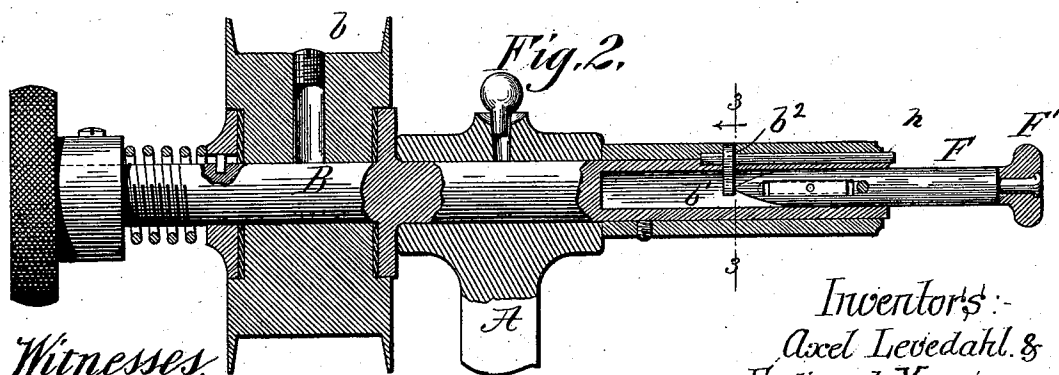
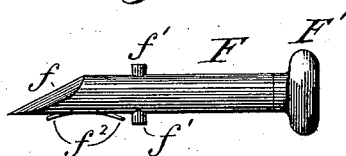


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

AXEL LEVEDAHL AND FERDINAND YAGERMANN, OF AURORA, ILLINOIS,
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PLACE.

FABRIC-WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 510,034, dated December 5, 1893.

Application filed April 21, 1892. Serial No. 430,080. (No model.)

To all whom it may concern:

Be it known that we, AXEL LEVEDAHL and FERDINAND YAGERMANN, both residents of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Fabric-Winding Machines; and we 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 the winding spindles of that class of machines by which tapes and other flat strips of fabric are wound into rolls.

The primary object of the invention is to provide means by which the advanced ends of the tape or strip to be wound shall be automatically engaged with the winding spindle while the latter is in rotation.

It is a further object of the invention, in its more complete form, to provide such a construction of the automatic engaging device that the roll may be readily disengaged therefrom after it has been wound, to facilitate its prompt removal from the spindle.

Another object of the invention is to obviate the use of guide flanges on the spindle, between which flanges, in previous constructions, the roll has been formed.

For the attainment of the objects above enumerated the invention consists in the several novel features of construction herein-after set forth and pointed out in the appended claims.

In the accompanying drawings which illustrate our invention: Figure 1 is a side elevation of a tape-winding machine embodying our invention. Fig. 2 is a side elevation, in partial section, of the winding spindle of such a machine provided with one form of our automatic tape-engaging device. Fig. 3 is a transverse section of the spindle on the line 3—3 of Fig. 2. Fig. 4 is a detached, side elevation of a wedge which is employed in the form of our invention shown in Figs. 2 and 3 for the purpose of projecting the tape-engaging device beyond the circumference of

the spindle and holding it projected while the winding operation proceeds.

In the said drawings A designates a spindle-carrying arm pivoted at its lower end upon a stationary axis as at *a*.

B designates the winding spindle mounted in a horizontal bearing at the upper and free end of said arm A, and C C' designate feed rollers between which the tape or other flat strip of fabric is advanced toward the winding spindle. The spindle is rotated at suitable speed by a belt D trained over the pulley *b* on the spindle B and over the driving wheel D' which rotates upon the axis *a* on which the arm A vibrates said axis being shown as located at the lower end of an arm A², pendent from a suitable bracket or support A³.

E designates a driving belt giving rotation to the lower feed roller C from a pulley E' which may be mounted either, as here shown, upon the axis *a* or upon an axis elsewhere located.

The arm A is adapted to swing on the axis *a* toward and from the feed rollers and is caused to bear toward said rollers by a U-shaped spring A' which is shown as secured at one end to the bracket or support A³ and as extending thence downward beneath the axis *a* and then upward against the outer side of the arm A; the length of the arm A being such that when the spindle B is empty the spring will cause the latter to bear against or closely proximate the lower part of the upper feed roller C'.

The winding spindle B, is provided with an open, longitudinal, axial orifice *b'* and also with a transverse slot *b*² situated at the point over which the roll is to be formed. In this radial slot is pivoted a hook H upon a pivot *h* arranged lengthwise of the spindle and located between the orifice *b'* and the periphery of the spindle, said hook being provided with a point *h'* which is intended to protrude beyond the periphery of the spindle to engage the tape and to recede within the slot to release the tape. To the central orifice *b'* is fitted a slide F the inner end of which is beveled on one side to form a wedge, as shown

at *f*. An inward movement of the slide F is intended to produce a partial rotation of the hook H and to project its point *h'*, by action of the wedge or inclined face *f* against the back of the hook, and to this end the hook is shown as being provided with a rear projection *h'* which, when the hook is retracted, extends into the orifice *b'* and into the path of the slide. The slide F is held in proper relation to the hook to insure its wedging action upon the latter by any suitable form of guide, as, for example, a pin or pins *f'* running in a groove or grooves arranged lengthwise of the orifice *b'*, as indicated by dotted lines in Fig. 2. As a convenient means of holding the slide in any position to which it may be moved, a spring *f'* is shown as attached to the slide so as to bear against the adjacent wall of the orifice *b'* and to form a friction holding device.

When the spindle is empty it is borne by the spring A', acting upon the arm A, toward the lower part of the upper feed roller C' which is provided with a circumferential groove, indicated by dotted lines, to allow the point of the hook to protrude while the surface of the spindle is in contact with said roller. When the spindle, having its hook projecting and occupying this position, is rotated and the end of a strip or tape is thrust between the rollers C C' said end of the tape is caught by the revolving point of the hook and is drawn forward thereby around the spindle, with the result of piling the strip in the form of a roll upon said spindle as the winding proceeds and the surface of the roll being formed on the spindle, continues to bear against the upper feed roller C' under the pressure of the spring A', the arm A receding from the feed rollers as the roll or pile of tape increases in size. In order to direct the end of the tape upwardly to insure its engagement by the revolving hook point which projects from the spindle, or to prevent its falling and thus escaping engagement with the spindle, an upwardly and outwardly inclined guide *c* is placed at the emerging side of the feed rollers, as clearly indicated in Fig. 1.

It is obvious that in the construction described it is not necessary to arrest the motion of the winding spindle in order to engage the tape therewith. It is also obviously not necessary to stop the spindle to remove the roll of tape therefrom. This is done by retraction of the wedge F by pulling upon the rotative button F' at its outer end and then seizing the roll with the thumb and fingers bearing on opposite sides of its periphery and drawing it toward the free end of the spindle. The roll being arrested by the hand while the spindle continues in motion, causes the hook to be pushed back into the slot of the spindle and out of engagement with the tape. It is also obvious that in the construction

described the usual guiding flanges between which to wind the tape may be dispensed with since the roll continually bears against the feed roller C' and there is at no time a space between the feed rollers and the spindle or the surface of the roll being formed thereon in which the tape will have a chance to be deflected or displaced laterally.

The rollers C C' are essentially a form of guiding mechanism for the proper delivery of the tape to the spindle and a guiding mechanism without motion may, manifestly, be substituted therefor. If the rotating rollers be employed their surface speed should not exceed that of the spindle, in order that there shall be no slacking of, but rather a tension upon, the tape or strip throughout the entire operation of winding.

Power is applied to the mechanism either by proper manipulations of a suitable crank-handle applied to the pulley D or by a belt trained over a pulley upon the axis *a*, or in any other suitable or preferred manner.

Any form of folding mechanism may obviously be located before the rollers or in their place for doubling or turning the edges of a strip as it proceeds to the winding spindle, and, of course, the spindle may be adapted to operate upon any desired width of strip or fabric. When a wide fabric is to be wound a plurality of engaging devices or hooks will be necessary.

We claim as our invention—

1. A fabric-winding machine, comprising an arbor or spindle having a longitudinal socket or cavity therein, a pivotally acting gripper mounted upon the arbor eccentrically thereto, and an actuating device movable longitudinally in the socket or cavity and engaging the gripper so as to project the same, substantially as set forth.

2. In combination with a winding spindle provided with a transverse slot and longitudinal orifice, a hook pivoted in the slot on an axis eccentric to the axis of the spindle, and a slide fitted to the longitudinal orifice of said spindle and adapted to advance the hook point beyond the circumference of the spindle.

3. A fabric-winding machine, comprising an arbor or spindle having a longitudinal socket or cavity, a pivotally acting gripper mounted upon the arbor eccentrically thereto, and an actuating device movable longitudinally in the socket or cavity and having a beveled portion to engage and protract the gripper, substantially as set forth.

4. A fabric-winding machine, comprising a feeding or guiding mechanism for the fabric, a swinging spring-pressed arm movable toward and away from the feeding or guiding mechanism, and a spindle journaled in said arm and having a longitudinal socket, a gripper pivoted upon the arbor eccentrically thereto, and an actuating device for the grip-

per movable longitudinally in the arbor-socket and engaging the gripper, substantially as set forth.

5 In combination with the rollers C C', and a laterally movable winding spindle B provided with means for automatically engaging a tape or strip, a deflector or guide c arranged to direct the advancing end of the tape toward the spindle.

In testimony that we claim the foregoing as our invention we affix our signatures in presence of two witnesses.

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Witnesses:

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