(No Model.)

W. DUCHEMIN.

METHOD OF AND APPARATUS FOR WINDING COPS TO BE USED IN SEWING MACHINES

No. 515,489. Patented Feb. 27, 1894.

FIG. 1.

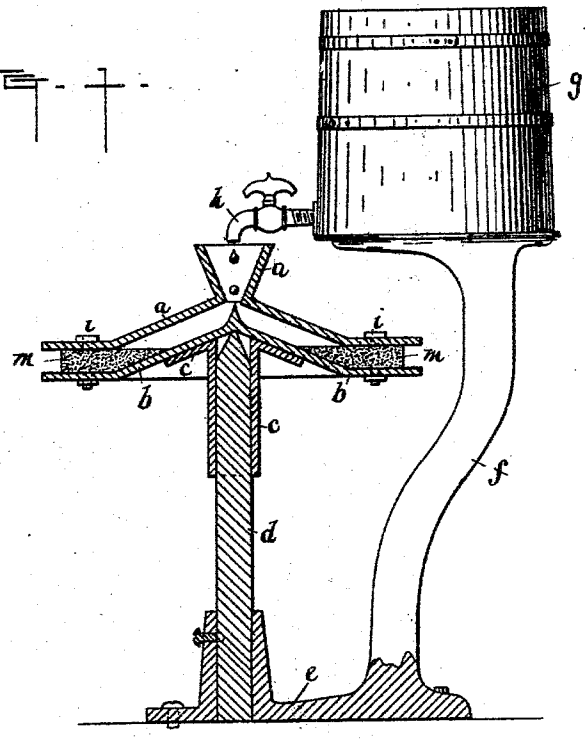
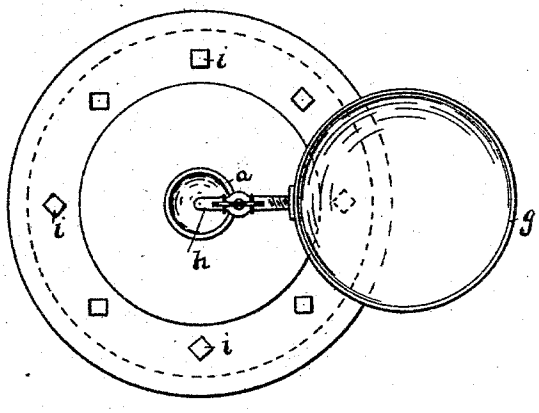


FIG. 2.



WITNESSES

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WILLIAM DUCHEMIN, OF NEWBURYPORT, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF FIVE-EIGHTHS TO HENRY W. BLAIR, OF MANCHESTER, NEW HAMPSHIRE, AND JOHN W. DREW, OF BOSTON, MASSACHUSETTS.

METHOD OF AND APPARATUS FOR WINDING COPS TO BE USED IN SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 515,489, dated February 27, 1894.

Original application filed August 4, 1890, Serial No. 360,958. Divided and this application filed April 2, 1891. Renewed August 3, 1893. Serial No. 482,306. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DUCHEMIN, a subject of Her Britannic Majesty, residing at Newburyport, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Methods of and Apparatus for Winding Cops to be Used in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the mode of winding cops to be used in sewing machines, the cops being of that class that give out the thread from the interior, and that are wound from thread that has been finished and wound on spools or in skeins, and is a division of my pending application Serial No. 360,958.

My invention consists in the manner of treating the thread during and after the operation of winding the cop; to wit, in moistening the thread during the operation of winding the cop, and the further treatment of the same after the cop has been wound, which I do in the manner set forth in this specification and by the mechanical means illustrated in the accompanying drawings, in which—

Figure 1 is in part a front elevation of the water tank and in part a vertical transverse view in section showing the construction of the moistening apparatus; and Fig. 2, is a top view in plan showing the relative position of the parts.

Similar letters refer to similar parts throughout both views.

The process consists as follows: The thread is moistened just sufficiently to soften the fiber, and the finishing preparation thereof as it is being wound, so that it will yield readily to the form of the winding spindle of the machine, and to the action of the pressure roller thereof, thus insuring more solid winding, as will be shown farther on.

When the cop has been wound, and removed from the spindle, as explained in the above named application, it is placed in a drying compartment which is heated to 100° more or less, and kept therein until it is thoroughly dried.

The practical benefit of moistening the thread is, that all threads used in sewing machines intended for domestic or factory uses have to be prepared in a manner that will qualify the thread to resist the friction of passing through the eye of the needle, and also impart thereto enough elasticity to insure the entrance of the shuttle into the needle loop during the operation of sewing. For these reasons it is obvious that coils wound therefrom cannot be wound so compactly or be made to conform so closely to the shape of the spindle as coils formed of thread from which the elasticity has been removed and the fiber thereof softened, nor will the layers adhere so closely together. And for this reason in the unwinding of the cops, thread that has been wound in a dry state will assert its elasticity, and as, by reason of the hard smooth finish of the thread, there is no adhesive connection between the layers, a half, and at times a full layer of coils will be prematurely loosened, thus causing a tangle that destroys the cop. These defects are entirely removed by my process, for the reason that the fiber of the thread being moistened conforms readily to the form of the winding spindle. The finishing preparation being also softened presents no resistance to the pressure roller of the machine. Thus the layers of coils are laid more compactly one over the other, so that when the cops are removed from the winding machine and subjected to the drying process before named the layers of coils, which have been pressed in close contact by the action of the pressure roller of the winding machine, by reason also of the slightly adhesive action of the finishing preparation of the thread cling together in such a manner that a slight pull will be necessary to unwind each spiral; and for the same reason the cops present a more solid article for ordinary handling and packing purposes.

The moisture is applied to the thread in

the following manner. The thread is drawn from a spool that is placed in any convenient position near the machine and passed around the periphery *m* of the moistening roller, Fig. 1, and thence to the winding spindle of the machine; and as the thread is wound round the spindle the moistening roller is revolved thereby. The roller is composed of two disks which at the desired distance from their peripheries project upward in the form of a flat cone. The lower disk *b*, is provided on its upper surface with a central pointed boss, and on the under surface with a socket *c*, which passes over and revolves on an upright shaft *d* that is secured in a bracket *e*. The upper disk *a* is made in the same form and at the center is provided with a funnel shaped hole. Secured between the disks *a*, and *b*, by means of screw bolts *i* is a ring of felt *m*, of the form and proportion shown at *m m* Fig. 1. On the end of the bracket *e*, is an upright arm *f*, which terminates in a circular shaft on which is placed a small water tank *g* which is supplied with a faucet *h* by which water is supplied to the moistening roller. In practice, when the faucet is open the stream, or if so required, drops of water falling therefrom drop directly on the pointed boss which divides the stream equally and the water is sent into the felt ring *m* by the centrifugal force created by the revolving of the moistening roller. The stream of water is regulated by the action of the faucet. Thus the thread is moistened by the water that oozes through the felt ring *m*. The bracket *e* may be secured on the table of the winder or be made in such a form as will permit of its being secured to the thread guide carriage thereof, or in any other suitable position.

The drying compartment may be made of any desired dimensions from a cubic foot upward, and heated by any known agency, steam however being the best for the reason that the more equally and regularly the heat is distributed and applied in drying the cop, the better and more perfect it will be, and also because a greater degree of heat can be more safely applied by means of superheated steam passing through steam tight coils placed therein than can be by any other means, and it will be noted that the drying of the cop in the manner explained after it is wound is equally as important as the moistening of the thread during the operation of winding thereof, for the reason that the heat sets the coils in the position in which they have been placed by the winding spindle in the same or similar manner as the folds are set in moist linen by the action of a heated iron.

I do not bind myself to the exact construction of the moistening roller, the gist of the invention thereof being, the felt ring *m*, or other suitable porous material and forcing the water through the same for the purpose of moistening the thread as set forth. I desire it also to be understood that I do not claim a process of spinning and winding and drying yarn as disclosed in British patent to Mather No. 488 of 1866, as such method of preparing unsized linen yarn to be used as a weft is now well known, but my invention is directed to the winding of sized or dressed sewing thread whereby it is made to conform readily to the shape of the winding spindle and is compactly wound.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The within described method of winding dressed or sized thread to be used in sewing machines which consists of simultaneously moistening and winding the thread and then drying the same by the action of heat after it has been wound in the manner and for the purposes specified.

2. The combination with a suitable water supply and delivery means, as a faucet, of a hollow disk having a peripheral porous surface, a central funnel for receiving and a central pointed boss for scattering water supplied thereto, said disk being revolved by the action of the thread in the manner and for the purposes specified.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WILLIAM DUCHEMIN.

Witnesses:
ARCH. M. CATLIN,
S. G. HOPKINS.