May 5, 1931. E. J. BERGER ET AL 1,804,366

YARN MOISTENING DEVICE

Filed March 21, 1929

FIG. I.

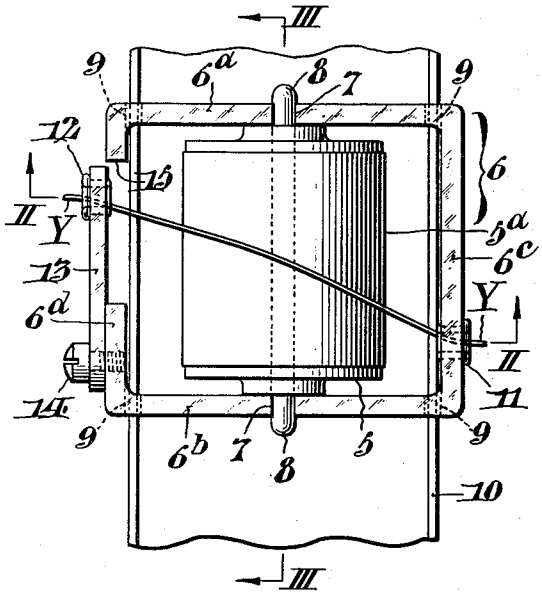


FIG. II.

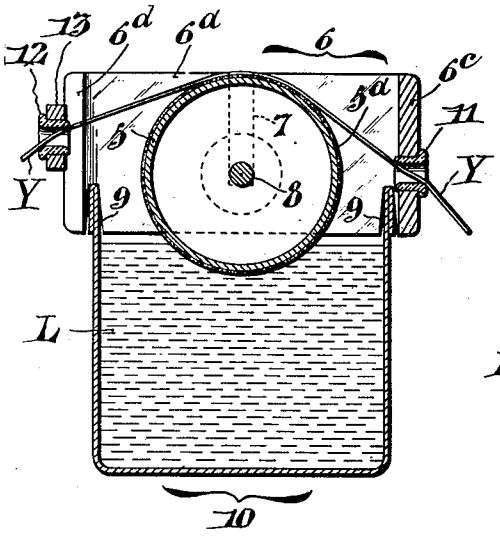
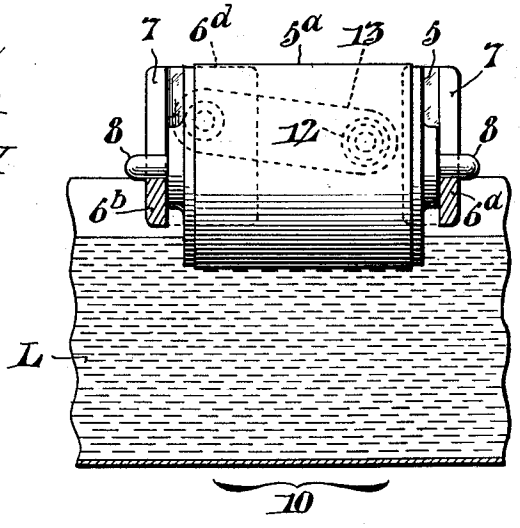


FIG. III.



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Patented May 5, 1931 1,804,366

UNITED STATES PATENT OFFICE

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YARN MOISTENING DEVICE

Application filed March 21, 1929. Serial No. 348,705.

This invention relates to yarn moistening devices, and has more particular reference to a type useful in connection with stocking knitting machines and the like.

In devices heretofore designed for the purpose referred to, moistening was effected by passing the yarns either directly through the moistening liquid, or between layers of felt saturated with the fluid. The first method was objectionable from the standpoint of over saturation of the yarns; while the latter method not only precluded maintenance of uniform tension on the yarns, but favored the formation of knots or "slugs" through segregation and packing of loose projecting fibre ends under the stripping action caused by friction of the yarn against the felt. In subsequent working of the yarns by the knitting instrumentalities of the machines such knots or slugs would either cause yarn rupture, or at best, appear as objectionable blemishes in the finished fabric. The latter method was moreover uneconomic in that it entailed frequent replacements of the felt.

The aim of our invention is to overcome the various recited drawbacks of previous practice; and this end we attain as hereinafter fully disclosed, through provision of a yarn conditioning device capable, in addition to supplying the requisite amount of moisture, of smoothing out the yarns to avoid the formation of the slugs, as well as of imposing and maintaining, under regulatory control, uniform tension on the yarns under all conditions of machine operation.

Other advantages inherent to our invention will appear from the following detailed description when taken in connection with the attached drawings, wherein Fig. I is a plan view of our improved yarn moistening device; and,

Figs. II and III are sectional views taken respectively as indicated by the arrows II—II and III—III in Fig. I.

As herein delineated, the yarn moistening device of our invention comprises a roller 5, which, in the present instance is made hollow from metal with provision of a hard circumferential surface suitable to the support of a thin covering 5*a* of soft bibulous material such as chamois skin. As shown, the roller 5 is disposed horizontally within a holder 6 fashioned to open rectangular configuration from metal, and having open topped slots 7 centrally of its opposite side walls 6*a*, 6*b* to receive the ends of the roller shaft 8. The roller 5 is thus freely sustained with capacity for ready removal upward from the holder 6 for cleaning and inspection and for facilitation of threading, as will be more fully understood from further disclosure. The holder 6 is moreover provided in its opposite side walls 6*a*, 6*b*, at the lower corners, with notches 9 to engage over the top edges of a trough 10 containing the liquid L which is to be used in moistening the yarn indicated at Y. By the described arrangement, the holder 6 is detachably supported against lateral displacement over the trough 10 with the lower portion of the roller 5 immersed in the liquid L as shown in Figs. II and III.

In traversing the device, the yarn Y is directed by guides 11, 12 which are so allocated as to determine a diagonal course for the yarn Y over the top portion of the roller 5. The guide 11 is illustrated as having the form of an eye of porcelain or the like set into an aperture through the rear wall 6*c* of the holder 6 adjacent the side wall 6*b*. The guide 12 is likewise in the form of an eye, but instead of being fixed like the guide eye 11, is carried in the free end of a finger 13 which is secured, with provision for adjustment, to the frontal wall 6*d* of the holder 6 by means of a screw 14 near the side wall 6*b*, said frontal wall being cut away as at 15 so as not to interfere with the passage of the yarn Y in different adjusted positions of the guide 12. The length of the finger 13, it will be noted, is such that the guide eye 12 is positioned near the side wall 6*a* of the holder 6; or, in other words, diagonally opposite the fixed guide eye 11 to define an angular course for the yarn Y over the roller 5 as aforesaid.

In operation of the device, the roller 5, by virtue of being freely journalled in the holder 6, responds readily to rotation under

the pull of the yarn Y to the end that the bibulous covering 5*a* is maintained in a saturated condition through continuous steeping in the liquid L. As a consequence of passing angularly over the top of the roller 5, the yarn Y is obliged to roll on its own axis to a small extent and thus readily and evenly absorbs its supply from the moisture carried up by the bibulous surfacing 5*a*. Now, under this rolling action attendant upon linear travel of the yarn Y over the roller 5, all loose fiber ends are not only smoothed out lengthwise of said yarn, but at the same time spiralized around the latter so that the possibility of slug formation is absolutely precluded. Rolling of the yarn Y as just explained is necessarily gentle in view of the softness of the roller covering 5*a*, and does not therefore effect the twist initially placed in the yarn Y incidental to spinning. Also, as a consequence of travelling a predetermined devious course through the device, the yarn Y is subjected to a certain amount of tension, which may be varied by adjusting the guide finger 13 up or down relative to the stationary guide 11 with corresponding decrease or increase in the extent of circumferential contact of the yarn Y with the roller 5 and therefore in the drag induced in said yarn.

Although adaptable to textile machinery generally, our improved yarn moistening device, in the form herein illustrated, is especially intended for use with flat full fashioned stocking knitting machines where structural simplicity, capability of ready detachment, ease in threading, accessibility of the parts for cleaning, and freedom from derangement over long periods are of prime importance from the standpoint of economic operation and maintenance.

Having thus described our invention, we claim:

1. A yarn moistening device of the character described comprising a freely revolving horizontally supported hard-surfaced roller having a soft bibulous covering and running with its lower portion immersed in the moistening liquid; and a stationary guide, and a movable guide adapted for adjustment in a plane paralleling the roller, said guide serving to vary the extent of circumferential contact of the yarn angularly over the top of the roller.

2. A yarn moistening device of the character described comprising a freely revolving horizontally supported hard-surfaced roller having a soft bibulous covering and running with its lower portion immersed in the moistening liquid; a plurality of guides, one of which is stationary and the other movable in a plane longitudinally paralleling the roller, said guide serving to direct the course of the yarn angularly over the top of the roller; and means whereby the movable guide may be adjusted vertically to vary the extent of circumferential contact of the yarn with the roller surface and correspondingly change the induced tension.

3. A yarn moistening device of the character described comprising a freely revolving horizontally supported hard-surfaced roller having a soft bibulous covering and running with its lower portion immersed in the moistening liquid; and a plurality of guides, one of which is fixed and the other vertically swingable in a plane paralleling the roller surface, said guides serving to vary the extent of circumferential contact of the yarn diagonally over the top of said roller.

4. A yarn moistening device of the character described comprising a freely revolving horizontally disposed hard-surfaced roller having a soft bibulous covering and running with its lower portion immersed in the moistening liquid, said roller being removably supported by an open rectangularly configured holder, a plurality of guides to direct the course of the yarn diagonally over the top of the roller; one of said guides being allocated proximate an angular corner of the holder, and means whereby the other of said guides may be adjusted vertically in parallelism with the roller surface and diagonally opposite the first mentioned guide to vary the extent of circumferential contact of the yarn with said roller surface and correspondingly change the induced tension.

5. A yarn moistening device of the character described comprising a hard surfaced roller with a soft bibulous covering; a trough containing a supply of moistening liquid; a holder detachably supported over the trough and affording the roller free journal support horizontally with its lower portion immersed in said trough; and a pair of diagonally opposed guides associated with the holder, one of which is fixed and the other vertically adjustable in parallelism with the roller, to direct the course of the yarn over the top thereof.

6. A yarn moistening device of the character described comprising a hard surfaced roller with a soft bibulous covering; a trough containing a supply of moistening liquid, a holder detachably supported upon the trough and affording the roller free journal support horizontally with its lower portion immersed in said trough; and a pair of diagonally-opposed guides on the holder, one of which is vertically swingable in longitudinal parallelism with the roller surface, and both instrumental in directing the yarn over the top of the roller.

7. A yarn moistening device of the character described comprising a hard surfaced roller with a soft bibulous covering; a trough containing a supply of moistening liquid; an open rectangularly-configured holder detachably supported upon the trough and af-

fording the roller free journal support horizontally with its lower portion immersed in said trough; a pair of diagonally-opposed guides associated with the holder to direct the course of the yarn diagonally over the top of the roller; one of said guides being in the holder wall proximate a corner thereof, and means whereby the other guide may be vertically swung in parallelism with the roller surface to vary the extent of circumferential contact of the yarn with said roller surface and correspondingly change the induced tension.

8. A yarn moistening device of the character described comprising a hard surfaced roller with a soft bibulous covering; a trough containing a supply of moistening liquid; a holder of open rectangular form with notches at the lower corners whereby it is detachably supported over the trough and having open-topped slots in the upper edges thereof affording the roller free journal support horizontally with its lower portion immersed in said trough; a pair of guides on the holder instrumental in directing travel of the yarn diagonally over the top of the roller; and means whereby one of the guides may be vertically swung in a plane parallel to the roller surface to vary the extent of circumferential contact of the yarn with said roller surface and correspondingly change the induced tension.

In testimony whereof, we have hereunto signed our names at Lansdale, Pennsylvania, this 14th day of March, 1929.

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