

May 20, 1930.

F. C. SCHOLLER

1,759,326

OILER FOR THREADS

Filed May 7, 1926

2 Sheets-Sheet 1

Fig. 1.

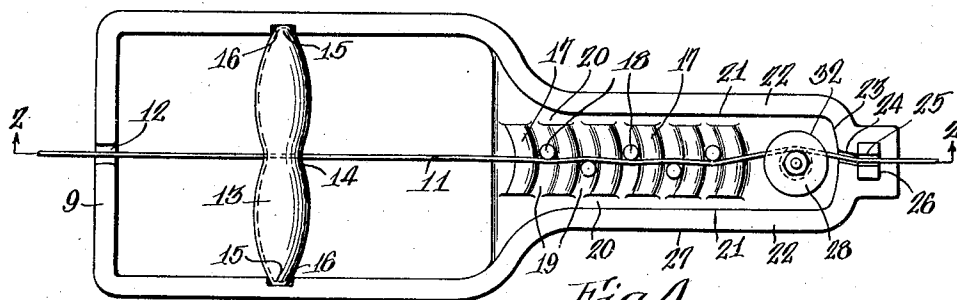


Fig. 4.

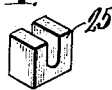


Fig. 2.

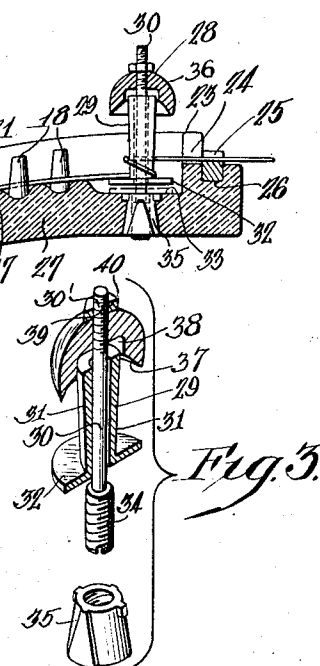
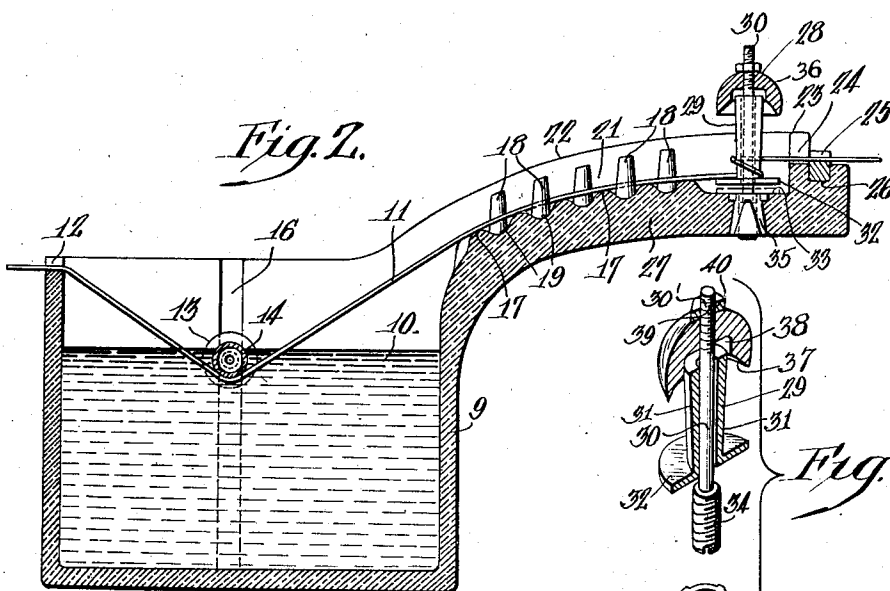


Fig. 3.

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2 Sheets-Sheet 2

Fig. 5.

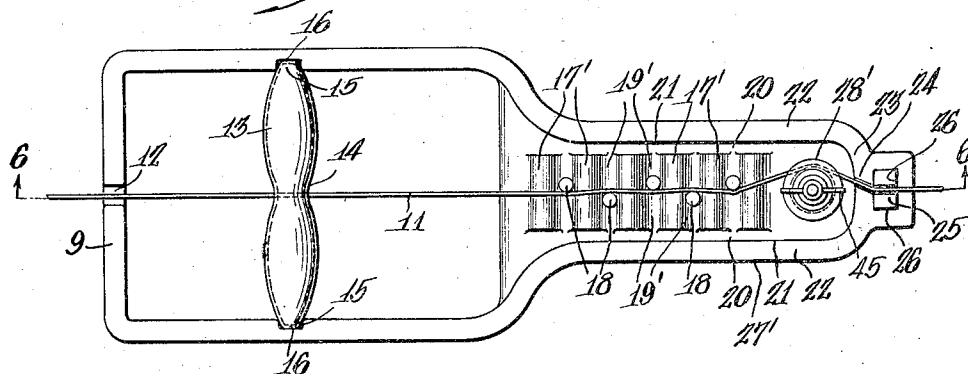
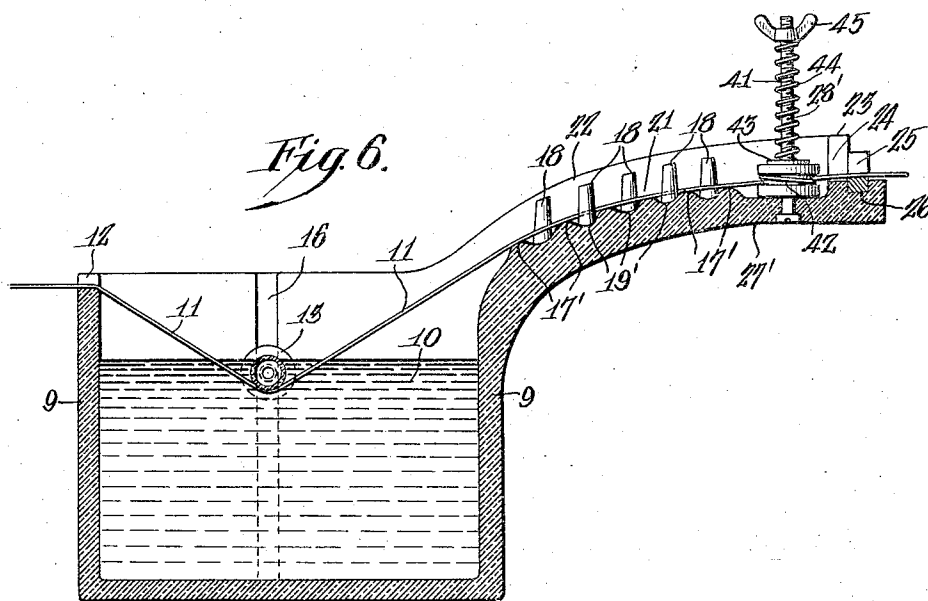


Fig. 6.



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UNITED STATES PATENT OFFICE

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OILER FOR THREADS

Application filed May 7, 1926. Serial No. 107,315.

My invention relates to devices for impregnating a thread with the liquid, usually oil or water, prior to textile use.

The main purpose of my invention is to throw off excess liquid from the thread by centrifugal force.

A further purpose is to combine a centrifugal device with wiping devices to remove excess liquid from a thread.

10 A further purpose is to submerge a thread uniformly for the oiling or wetting operation and permissibly to wipe it, removing surplus liquid from its surface by centrifugal means.

15 A further purpose is to use a centrifugal drier as a drag to prevent over throwing of the thread.

A further purpose is to reduce splashing from a thread which has been oiled or wet.

20 A further purpose is to provide a hollow glass float for thread submergence.

Further purposes will appear in the specification and in the claims.

25 I have preferred to illustrate my invention by one general type only in slightly different specific showings among many types in which it may appear, selecting this type because it is simple, practical and inexpensive and because at the same time it well illustrates the principles of my invention.

Figure 1 is a top plan view of one structure embodying my invention.

Figure 2 is a section of Figure 1 taken upon line 2—2 thereof.

35 Figure 3 is a partially assembled sectional perspective of parts of Figures 1 and 2.

Figure 4 is a perspective of a further part shown in Figures 1 and 2.

40 Figure 5 is a top plan view and Figure 6 is a section upon line 6—6 thereof, showing a slightly different embodiment of my invention.

In the drawings similar numerals indicate 45 like parts.

In both embodiments I provide a container 9 for a pool of liquid 10 by which a thread 11 is to be wet or oiled. The thread is passed through the liquid from a guide 12 beneath a float 13 to devices by which the excess liquid

is removed so as to prevent splashing of the liquid.

The float is made preferably of hollow glass, giving an extremely smooth guiding surface at 14 and smooth ends 15 which are 55 guided at whatever height of the pool by the walls of a slot 16 so that the float will remain in central position but will raise and lower according to the level of the oil.

From beneath the float in the illustrations 60 the thread passes over or about wiping devices shown as ribs 17 or 17' (Figures 1 and 2 or 5 and 6) and pins 18. The latter extend upwardly from the grooves 19 or 19' between the ribs.

65 The ribs and grooves are shown as curved in Figures 1 and 2 and as straight in Figures 5 and 6, but in either event the grooves drain into spaces 20 forming channels for return flow of liquid between the ribs and a rim or border 21, 22. This rim or border affords an extension of or may be connected with the sides 22 of the container and at and near the 70 right hand end it is used for a further purpose hereinafter described.

75 The portion 23 of the rim is diagonally apertured at 24 and the thread passing through it is directed by a removable guide 25 resting in an opening 26 within the end of the drain and guide board 27 or 27'. This 80 guide is subject to considerable wear and has therefore been made replaceable.

85 As thus far described the device functions in much the same way as that of my application for patent for thread oiler or moistener, filed February 20, 1926, Serial Number 89,529. However, I find it desirable in many places to remove a larger amount of the liquid from the thread than is removed by the wiping operation of this application in order to prevent spraying of the excess liquid carried 90 through by the thread.

95 Though it may be quite desirable to oil or wet the thread thoroughly any liquid carried by it merely upon the surface is not useful to condition the thread and unnecessarily oils or dampens the article being knit. The excessive amount of liquid carried through is 100 sprayed over the machine which is being fed, objectionable both because of the waste and

because of the untidyness and injury caused by the spraying.

In both of my embodiments I show centrifugal means 28 or 28' for removing the excess liquid from the thread before it leaves the device and in which liquid is conserved by the simple expedient of catching the oil sprayed centrifugally. The axis of the centrifugal device need not of course be vertical to perform the function. Any other direction of extension will answer but a vertical spindle permits the spray from it to be caught easily and completely by the protecting side and end rim and provides for return of the spray caught to the pool.

In the embodiment shown in Figures 1-3 the centrifugal drier comprises a spool 29 mounted upon a spindle 30 and having a preferably tapered surface 31 about which the thread is turned. I show a single turn only but by experiments have found that a plurality of turns is entirely practicable and secures a more complete removal of surplus liquid from the thread than does a single turn.

The tapering of this spool results in a tendency of the thread to climb the spool, for the same reason that causes a belt to ride on the larger diameter of a pulley. This separates the convolutions of the thread quite satisfactorily.

The lower part of the spool is flanged at 32 for the purpose of providing a drag against excessive turning of the spool after the pull upon the thread has ceased. This is particularly desirable in feeding full-fashioned machines where the feed is intermittent and where as the pull ceases the friction of the flange upon the base 33 stops the rotation of the spool quickly. There is a tendency of the spool to lift during the feeding to some such position as that shown in Figure 2, in which position the drag is not effective. The use of a drag all the time or a part of the time or not at all will be guided, of course, by the need in the use made of the device. The drag of course initially delays starting of the spool.

The spindle 30 is shown as threaded at 34 so as to fit into a nut 35 which is cast in the glass and which is provided with projections so that it will hold securely within the glass. The spindle is extended above the spool at 30' to provide a mount for a cap 36 into which the spool projects so as to protect the thread from accidental whipping into the space above the spool and from catching between it and the top. I prefer to concave the under side of the cap at 37 and further recess it at 38 to give space for the spool to rotate within it without engagement with or without undue friction with the top. The top is threaded upon the spindle at 39 and is locked in position by nut 40.

In the form shown in Figures 5 and 6 the

spindle 41 is mounted in any suitable manner within the glass and carries a spool 42 about which the thread is passed. Overthrow of the thread is controlled by placing a drag upon the spool which in the illustration is accomplished by means of a washer 43 pressed against the spool by a spring 44 surrounding the spindle and held to its duty by thumb nut 45 threaded upon the spindle. The position of the thumb nut determines the amount of pressure and hence the amount of drag upon the spool.

In operation the greater part of the excess liquid is removed by centrifugal force and all of it could be removed in this way. However, for the purpose of getting additional "drag" easily I find it desirable to combine this centrifugal action with preliminary wiping of the thread which also drains off excess liquid, using both the centrifugal device and the wiper to cause a drag upon the thread so as to prevent excess throwing of the thread and relieving the splashing both by removal of the excess liquid and by the reduction or prevention of whipping of the thread such as would take place with overthrow.

I find that I can sufficiently saturate the body of the thread with the liquid in which it is submerged to effectively prepare the thread for the next textile operation—whatever it be—and without interference with this "conditioning" can remove the surplus liquid from the surface of the thread.

A considerable portion of the excess liquid drains from the thread upon the ribs and any remaining excess is removed by centrifugal force as the thread follows the circular path about the spool one or more times according to the need and desire of the designer or operator. One turn about the spool provides a freer running mechanism with less drag but with less removal of excess whereas two or more turns of the thread about the spool increase the drag but secure a larger percentage of liquid removal.

The amount of drag desirable will depend of course upon the operation in which the conditioning is taking place; very little drag being desirable in continuous feed to a machine or any winding or back winding operations and considerable drag being needed where the conditions of feed are likely to cause overthrowing.

I have made tests by weight which show that the amount of liquid carried by the thread can be controlled very exactly and can be varied within wide limits, securing the best possible results with a minimum of liquid and without splashing or spraying between the drier and the machine.

I have found that the friction flanges at the bottom of the spool serve also to guard against the thread getting under the spool and that the drag of the wipers serves not only to drag the thread but, through it, to

drag the spool also. The combined drags must of course be kept less than the permissible pull.

I recognize that my invention is applicable quite widely to all feeding operations where a thread is oiled or otherwise conditioned by liquid treatment by contact, submergence or otherwise, whether the feed be continuous or intermittent and that the benefit of my invention is greatest where the conditions are most difficult.

It will be evident that making the spindle guide rotary greatly reduces the friction of the thread but that primarily my invention comprises giving a thread circular movement at a relatively high rate of speed to cause the thread to throw off liquid by centrifugal force.

In view of my invention and disclosure variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain part or all of the benefits of my invention without copying the structure shown, and I, therefore, claim all such in so far as they fall within the reasonable spirit and scope of my invention.

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

1. The method of removing excess liquid from a moving liquid-treated thread which consists in guiding the thread about a circular path and in utilizing the centrifugal force secured to throw off excess liquid.

2. The method of removing excess liquid from a moving liquid-treated thread passing about a support which consists in causing rotation of the support by pull upon the thread and in utilizing the centrifugal force secured to throw off excess liquid.

3. The method of removing surplus liquid from a thread which has been liquid-treated and which is being fed, which consists in giving the thread circular movement about a relatively small axis to throw off excess water by centrifugal force.

4. The method of removing excess liquid from a moving liquid treated thread which consists in guiding the thread about a circular path of larger diameter in one part than another of that within the turns of the thread, causing the thread to separate axially of the path by the difference in diameters and to throw off surface liquid by the centrifugal force produced.

5. A centrifugal drier for thread comprising a rotatable guide providing a circular path for the thread and means for pulling the thread about the path, and a drag for the drier to control overthrow.

6. A centrifugal drier for thread comprising a rotatable guide providing a circular path for the thread and means for pulling the thread about the path, a drag for the drier

to control overthrow and a drag for the thread wiping liquid from its surface.

7. In a device for conditioning liquid treated thread, a guide for the thread directing it about a complete circumference so as to throw off liquid from its surface by centrifugal force.

8. A mechanism for conditioning thread, a centrifugal device for removing excess liquid from the thread guiding the thread about an upright axis and a guard above and about the centrifugal device adapted to catch and conserve the liquid.

9. In a device for conditioning thread carrying a surplus of liquid, a rotary guide for the thread adapted to throw off excess liquid by centrifugal force and dragging means tending to restrain rotation and reduce overthrow of the thread.

10. In a device for conditioning thread carrying a surplus of liquid, a rotary device about which the thread is adapted to pass and a friction drag for the spool.

11. In a device for conditioning thread carrying a surplus of liquid, a rotary spool about which the thread is adapted to pass and an adjustable friction drag for the spool.

12. In a conditioning device for thread carrying a surplus of liquid, a rotatable device about which the thread is turned and by which liquid is thrown from the thread centrifugally.

13. In a conditioning device for thread carrying moisture in excess of that required for the operation in which the thread is to be used, a guide about which the thread is coiled and by which the thread is given circular movement to throw off the water by centrifugal force and means for pulling the thread.

FREDERICK C. SCHOLLER.