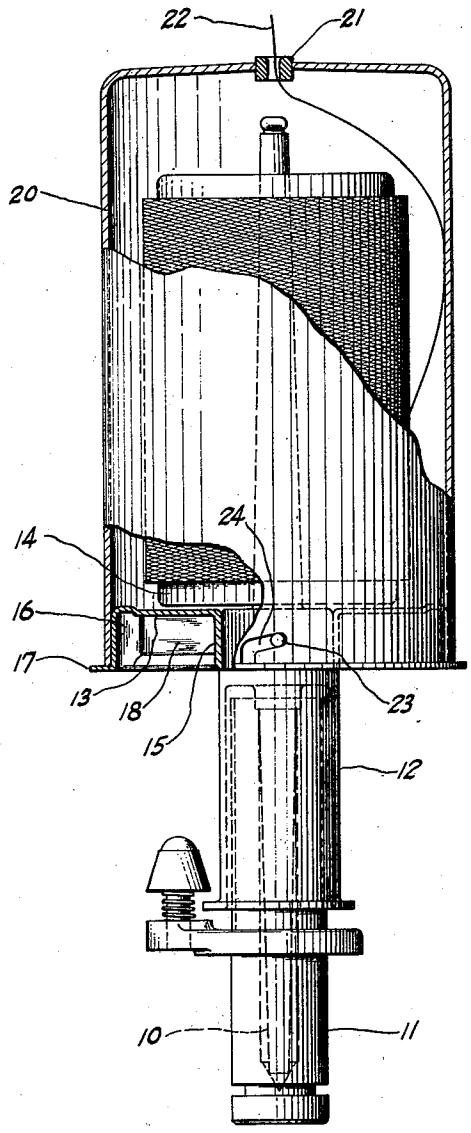
Dec. 15, 1936. I. R. ROWE 2,064,270

ANTIBALLOONING SPINDLE FOR TWISTING MACHINES

Filed Sept. 10, 1935



INVENTOR.

I. R. Rowe

BY Joseph F. Schofield

ATTORNEY

Patented Dec. 15, 1936

2,064,270

UNITED STATES PATENT OFFICE

2,064,270

ANTIBALLOONING SPINDLE FOR TWISTING MACHINES

Irving R. Rowe, Stonington, Conn., assignor to The Atwood Machine Company, Stonington, Conn., a corporation of New Jersey

Application September 10, 1935, Serial No. 39,935

3 Claims. (Cl. 117—23)

This invention relates to spindles for textile twisting machines and particularly to a spindle provided with a housing enclosing the spool or bobbin for the yarn being spun or twisted.

An object of the present invention is to provide an enclosure in the form of an inverted cup fitting over the spool or bobbin and detachably retained centrally upon the spindle so that it may rotate therewith.

Another object of the invention is to provide a flange forming the spool supporting surface on the spindle having a cylindrical surface to properly retain the housing in central and vertical position on the spindle, there being locking means provided for the housing so that during operation the housing may be securely retained in position but which will permit ready removal thereof whenever desired.

And finally it is an object of the invention to provide a central eyelet forming an opening in the top of the housing through which the material being twisted may be withdrawn from the bobbin.

With the above and other objects in view my invention includes the features of construction and operation set forth in the following specification and illustrated in the accompanying drawing.

In the accompanying drawing annexed hereto and forming a part of this specification, I have shown my invention embodied in a twisting machine for silk or rayon upon spools, but it will be understood that the invention can be otherwise embodied and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims appended to this specification being relied upon for that purpose.

In the drawing:

The figure represents a complete spindle partly in section, showing the retaining housing for the material being twisted in position thereon.

In the above mentioned drawing, I have shown but one embodiment of the invention which is now deemed preferable, but it is to be understood that changes and modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

In the operation of twisting machines in which the closely spaced spindles are rotated at extremely high speeds the yarn being twisted tends to "balloon" or extend a material distance radially outward between the spool and the take-up rolls. With the spindles spaced relatively close together and rotating at the extremely high speeds called for by modern practice the yarn being twisted upon adjacent spindles may become entangled. To prevent this entanglement and still permit the same extremely high rotative speeds and close spacing of the spindles, a thin metal housing is provided having a small eyelet in the centre of the closed top. The housing or cup rotates with the spindle, the yarn being twisted being forced against and prevented from "ballooning" by the inside cylindrical wall of the cup along which the yarn travels prior to leaving the spindle through the eyelet at the centre of the top of the cup.

By means of the inverted cup the air immediately surrounding the spindle and yarn being twisted is enclosed and forced to revolve with the spindle and yarn. The yarn therefore does not revolve rapidly through air but directly with the air revolving within the cup.

Referring more in detail to the figure of the drawing, I provide a spindle having a standard form of journal portion 10 fitting a standard spindle step 11. A driving pulley 12 of usual form is also provided directly secured in fixed position to the spindle. Directly above the driving pulley or whirl 12 there is provided a thin metal flange 13 forming the supporting surface for the spool 14. This flange 13 may be forced on to the spindle so that it is frictionally retained thereon. A hub 15 on the flange 13 enables the flange to be held securely to the spindle rigidly and permanently by this frictional engagement. At the periphery of the flange 13 there is a downwardly turned portion 16 forming a short cylindrical portion terminating at its lower end in an outwardly turned edge 17 forming a ledge. Between the hub 15 and the downwardly turned portion 16 are radial ribs 18 reinforcing the flange 13.

Entirely enclosing and housing the yarn containing spool 14 is a cup 20 having its lower end closely fitting over the downwardly extending portion 16 of the flange 15. The lower edge of the cup rests upon the outwardly extending edge 17. Preferably the cup 20 is cylindrical in form and has a substantially flat top in the centre of which is a small eyelet 21 through which the yarn 22 being twisted may pass. The cup 20 may preferably be made of light weight metal finished on its inner cylindrical surface smooth enough to prevent undue friction upon the yarn 22. As the yarn 22 passes upward from the spool 14 to the eyelet 21 it is forced against this inner surface of the cup 20 by centrifugal force.

To lock the cup 20 in position upon the flange 13, studs 23 may be provided radially outstanding from the cylindrical portion 16 of the flange. Slots 24 cut into the cup 20 from the lower edge thereof having an oblique portion engaging the studs 23 serve to retain the cup 20 against removal during operation. To renew a spool 14 it is only necessary to rotate a cup 20 relative to its spindle and lift it over the end of the spindle.

The spindle and cup 20 while the machine is operating form a unitary assembly rotating together and serving to retain the yarn being twisted against entanglement with yarn being twisted on adjacent spindles.

The cup 20 is locked firmly on the spindle and forced downward against the ledge 17.

The enclosing cup 20 also entraps the air surrounding the spindle and forces this air to revolve with the spindle and bobbin. The yarn being twisted therefore is not revolved at high velocities through air but revolves with and at the same speed as the air immediately surrounding it. There is no tendency therefore of the yarn being injured or broken by being subjected to the blast of air encountered by yarn in the unenclosed forms of twisters and higher twisting speeds may be employed.

I claim:—

1. A spindle assembly for textile twisting machines comprising in combination, a spindle, a yarn carrying spool thereon, a pulley on said spindle, a flange secured on said pulley and forming the spool supporting surface therefor, a cup enclosing said spool having a small opening in the top thereof, a cylindrical surface formed on said flange at its outer edge and forming the centering and retaining means on said flange for said cup, and means on said cylindrical surface to detachably retain said cup thereon.

2. A spindle assembly for textile twisting machines comprising in combination, a spindle, a yarn carrying spool thereon, a flange on said spindle forming the spool supporting surface therefor, a pulley on said spindle, said pulley having the flange secured directly thereto, a cup enclosing said spool having a small central opening within its top surface through which yarn being twisted may pass, a downwardly extending cylindrical surface on said flange having an outward extending ledge at its lower end, and means on said cylindrical surface engaging slots in said cup, whereby said cup may be retained on said spindle and forced firmly against said ledge.

3. A spindle assembly for textile twisting machines comprising in combination, a spindle, a yarn carrying spool thereon, a flange on said spindle forming the spool supporting surface therefor, a pulley on said spindle, a substantially cylindrical cup enclosing said spool having a small central opening within its top surface through which yarn being twisted may pass, said flange having a cylindrical surface at the outer periphery of said flange over which the lower portion of said cup when in position may fit, and interengaging means on said flange and cup whereby said cup may be locked in central position on said flange.

IRVING R. ROWE.