R. FISHER.

BOBBIN.

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1,217,429.

Patented Feb. 27, 1917.

FIG. I.

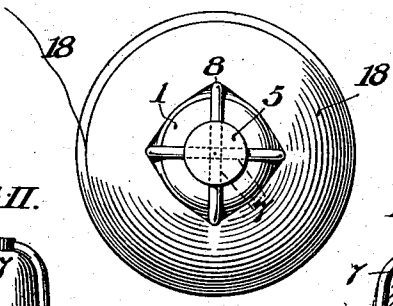


FIG. II.

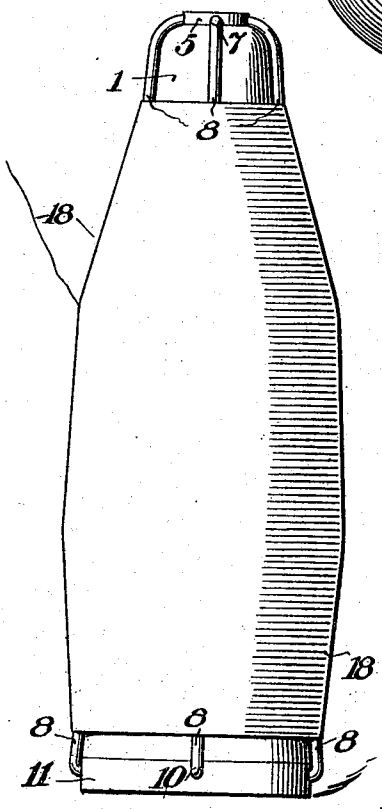


FIG. III.

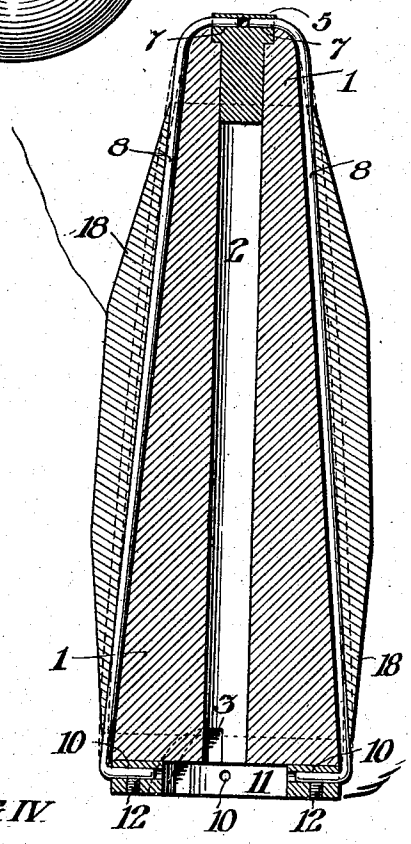
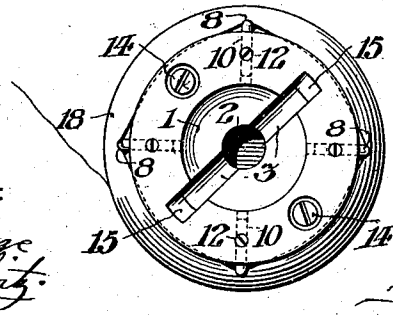


FIG. IV.



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BOBBIN.

1,217,429. Specification of Letters Patent. Patented Feb. 27, 1917.

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To all whom it may concern:

Be it known that I, RAYMOND FISHER, a citizen of the United States, residing at Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Bobbins, whereof the following is a specification, reference being had to the accompanying drawing.

My invention is designed for use with threads which are so far hygroscopic that increase in the humidity of the atmosphere, beyond that at which they are wound, causes them to expand and thus become loose on bobbins of ordinary construction. Such variation in tension is so far characteristic of artificial silk filaments that it is practically impossible to use the entire contents of a bobbin thereof without either rewinding it or discarding the remnant left upon the bobbin when it is so far relaxed that it is impossible to continue to operate the bobbin. Moreover, the aforesaid variations in tension cause the thread to frequently break; so that there is a considerable loss of both time and material in the use of the ordinary bobbins, which have no means for compensating for variations in the tension of the thread which they carry. Therefore, it is the object and effect of my invention to provide a bobbin having automatically operative means to compensate for such variations in the tension of the thread carried thereby, which may be occasioned by changes in the humidity or temperature of the atmosphere in which the thread is used, as compared with that in which the bobbins are wound.

As hereinafter described, my invention includes the provision upon an ordinary bobbin or cop of a circumferential series of rods, extending lengthwise thereon and capable of being resiliently constricted by the thread. For instance, a wooden bobbin body, of ordinary construction, may be provided at its axially opposite ends with metal members to support the ends of said rods so that the intermediate portions of said rods are normally presented in spaced relation with the outer surface of the body but are constricted toward the latter as the thread is wound thereon and thus continually tend to expand against the tension of the thread and compensate therefor so as to automatically continually hold the convolutions of thread in proper operative connection with the bobbin until the thread is entirely unwound from the bobbin.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawing:—Figure I is a plan view of a bobbin conveniently embodying my invention, with thread thereon.

Fig. II is an elevation of the bobbin shown in Fig. I.

Fig. III is a vertical sectional view of said bobbin.

Fig. IV is an inverted plan view of said bobbin.

In said figures; the bobbin body 1 is of the ordinary shape employed with hosiery machines and has the axial opening 2 to receive the driving spindle having lugs for engagement in the recesses 3 at the bottom of said body. Said bobbin body 1 has at the upper end thereof the metallic central bearing member 5 having the radial openings 7 to receive the upper ends of the spring rods 8, which are removably fitted therein. The lower ends of said spring rods 8 are removably fitted in the radial openings 10 in the metal annular plate 11, at the bottom of said bobbin body 1, in which they are conveniently secured by the set screws 12. Said plate 11 is secured in concentric relation with said bobbin body 1 by the screws 14, (extending into said body through said plate, in which their heads are countersunk) and has radial notches 15 registering with said recesses 3 in said body 1 and adapted to engage the radial flange of the driving spindle aforesaid.

It may be observed that when the bobbin is empty, the rods 8 extend in the spaced relation, with respect to the bobbin body, indicated by dotted lines in Fig. III; but, when the bobbin is charged with thread 18, as shown in Figs. I and II, said rods are constricted toward said body under tension of the thread and continually tend to expand in engagement therewith and to compensate for variations in the tension of the thread.

Although I find it convenient to detachably connect the resilient rods 8 with the bobbin, as above described, to facilitate the replacement of said rods if they become bent or scarred so as to interfere with their proper use, however, it is obvious that they may be

otherwise detachably engaged or permanently connected with the bobbin body, the only essential being that said body shall have means for automatically expanding in opposition to the tension of the thread so as to maintain a proper frictional engagement between the bobbin and the thread. Moreover, although I have shown a bobbin body of the ordinary truncated conical form, it is to be understood that my invention may be embodied in a thread carrier of any convenient shape or construction.

Therefore, I do not desire to limit myself to the precise details of construction or arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

I claim:—

1. In a thread carrier, the combination with a conical wooden body having an axial opening for a driving spindle; of a metallic bearing member at the apex of said body, having radial openings; an annular plate at the base of said body, having radial openings, diametrically opposite notches to receive a projection from said driving spindle, and openings for attaching means, extending longitudinally with respect to said body; screws extending through said longitudinal openings in said plate, rigidly connecting it with said body; a circumferential series of resilient metallic rods, each extending longitudinally with respect to said body and having its ends fitted in the radial openings, respectively in said bearing member and said plate; said rods normally extending in spaced relation with the outer surface of said body but adapted to be constricted toward the latter by the tension of the thread encircling said carrier; and set screws in said ring detachably holding the respective ends of said rods in said ring.

2. In a thread carrier, the combination with a tubular axial body having an axial opening for a removable driving spindle; of a metallic bearing member at the apex of said body, having radial openings; an annular plate at the base of said body, having radial openings, diametrically opposite notches to receive a projection from said driving spindle, and attaching means, rigidly connecting said plate with said body; a circumferential series of resilient metallic rods, each extending longitudinally with respect to said body and having its ends fitted in the radial openings, respectively in said bearing member and said plate; said rods normally extending in spaced relation with the outer surface of said body but adapted to be constricted toward the latter by the tension of the thread encircling said carrier; the intermediate portion of said body serving as a stop support for said rods; and means detachably holding the ends of said rods in said ring.

3. In a thread carrier, the combination with a body of circular cross section; of a metallic bearing member at one end of said body, having openings; a plate at the other end of said body, having openings; a circumferential series of resilient metallic rods, each extending longitudinally with respect to said body and having its ends stationarily fitted in the openings, respectively in said bearing member and said plate; said rods normally extending in spaced relation with the outer surface of said body but adapted to be constricted toward the latter by the tension of the thread encircling said carrier, without movement of the ends of said rods.

4. In a thread carrier, the combination with a body; of a circumferential series of resilient metallic rods, each extending longitudinally with respect to said body and having its ends rigidly connected thereto; said rods normally extending in spaced relation with the outer surface of said body but adapted to be constricted toward the latter by the tension of the thread encircling said carrier, without movement of the ends of said rods.

5. In a thread carrier, a rotary body having a circumferential series of rods extending longitudinally thereon, adapted to be resiliently constricted and thereby automatically radially moved intermediate of their ends by the thread encircling said carrier; and means rigidly holding both ends of said rods in stationary relation to the axis of said carrier during such movement.

6. In a rotary thread carrier; automatically expansible means adapted to be resiliently constricted by the tension of the thread encircling said carrier, including a series of rods which are thus automatically radially movable intermediate of their ends, while held in invariable relation with the axis of said carrier at their ends; and means arranged to hold the ends of said rods in stationary relation to the axis of said carrier during such movement.

7. In a rotary thread carrier; a series of conically arranged rods, each normally outwardly curved, in a radial plane, and radially movable intermediate of its ends; and a tubular axial body having means arranged to hold the ends of said rods in immovable relation with the axis of said carrier during such movement; said axial body having an axial opening and means to rotatably engage a driving spindle detachably fitted to said axial opening.

8. In a rotary thread carrier; a series of conically arranged rods, each normally outwardly curved, in a radial plane, and radially movable intermediate of its ends; and a tubular axial body having means ar-

ranged to hold the ends of said rods in immovable relation with the axis of said carrier during such movement.

9. In a rotary thread carrier; a series of conically arranged rods, each normally outwardly curved, in a radial plane, and radially movable intermediate of its ends; a conical axial body forming a stop limiting the inward movement of said rods; and means on said body rigidly supporting the ends of said rods.

10. In a rotary thread carrier; a series of conically arranged rods, each normally outwardly curved, in a radial plane, and radially movable intermediate of its ends; a conical axial body forming a stop limiting the inward movement of said rods; and means on said body detachably supporting the ends of said rods.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this twenty-fourth day of November, 1915.

RAYMOND FISHER.

Witnesses:
ROBERT E. BECK,
JOHN A. LAFFERTY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."