J. F. HOUSTON.

PROCESS OF AND APPARATUS FOR WAXING THREADS.

APPLICATION FILED JAN. 10, 1916.

1,230,714. Patented June 19, 1917.

Fig. 1.

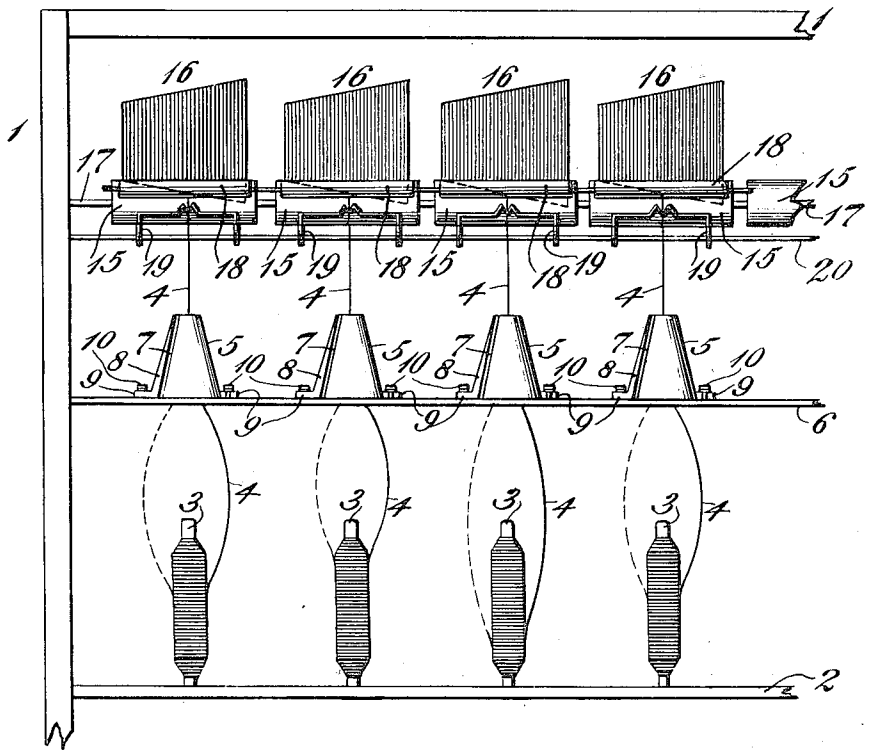


Fig. 2.

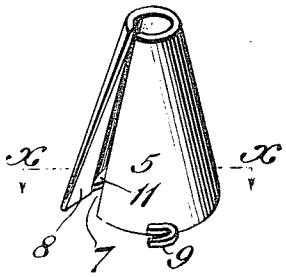


Fig. 3.

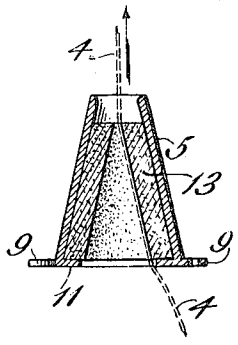


Fig. 4.

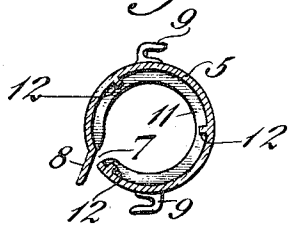


Fig. 7.

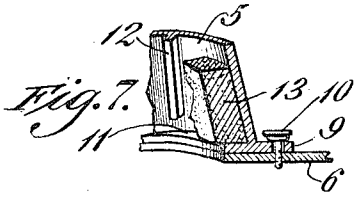


Fig. 6.

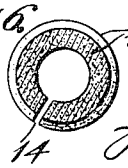
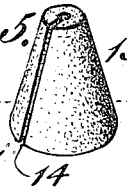


Fig. 5.



WITNESSES

L. Douville.

H. F. Osterloh

INVENTOR

Joseph F. Houston.

BY Rodenheiser Fairbanks.

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOSEPH FREDERIC HOUSTON, OF PHILADELPHIA, PENNSYLVANIA.

PROCESS OF AND APPARATUS FOR WAXING THREADS.

1,230,714. Specification of Letters Patent. Patented June 19, 1917.

Application filed January 10, 1916. Serial No. 71,251.

To all whom it may concern:

Be it known that I, JOSEPH FREDERIC HOUSTON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Process of and Apparatus for Waxing Threads, of which the following is a specification.

My invention relates to the art of waxing threads or yarn, and its object is to thoroughly coat with wax the exterior of a completed thread and to wind it in its waxed condition upon a cone, spool, bobbin or kindred tubular or other carrier.

A further object of my invention is to so apply the thread to the wax that its surface shall be evenly coated and unnecessary waste of wax avoided.

My invention, broadly considered, comprehends an apparatus for accomplishing the foregoing result a typical embodiment of which is illustrated in the accompanying drawings and hereinafter described, and also a process which may be conveniently carried out by the utilization of the apparatus referred to or of one of generally equivalent type.

For the purpose of illustrating my invention, I have shown in the accompanying drawings a certain type and embodiment of it which is at present preferred by me, since in practice it gives satisfactory and reliable results. It is to be understood, however, that the various instrumentalities in which my invention is embodied can be variously arranged and organized and that my invention is not therefore limited to the precise arrangement and organization of the devices typified in the construction represented in the accompanying drawings and hereinafter described.

In the drawings,

Figure 1 represents in side elevation an apparatus conveniently embodying my improvements so far as they are concerned with apparatus, and well adapted for the practice of my process.

Fig. 2 represents in perspective one of the wax-carrying cones of which I make use.

Fig. 3 represents a cone in central, vertical, sectional elevation, illustrating in place the core or mold of wax or other waxing medium which it contains.

Fig. 4 represents a top plan, sectionally on the dotted lines x—x of Fig. 2, of the wax-carrying cone with the wax core removed.

Fig. 5 represents in perspective the core or mold of wax removed from the carrying cone.

Fig. 6 represents a top plan through the core of wax represented in Fig. 5, sectionally on the dotted line y—y of said figure, and representing also in section the walls of the carrying cone within which the wax core is inserted.

Fig. 7 represents in fragmentary perspective a portion of the wax-carrying cone and of the core of wax.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:—

1 designates a carrying and supporting framework of any preferred character, referably to which the component elements of my apparatus are mounted and sustained.

Upon the base plate 2 of the framework are mounted a plurality of bobbins, cops, spools or thread carriers 3, of any desired character, upon which the thread to be waxed is wound. For convenience of description I designate these devices as primary bobbins.

4 designates the threads upon the primary bobbins which are to be waxed.

5 designates a plurality of hollow wax-carrying cones or wax containers, which, in the organization under discussion, are fastened base downward upon a cone-carrying bar 6, being a part of the framework.

The cones 5 are, as stated, hollow and are made of any material,—but preferably as a casting of glass,—and each is formed with a vertical slot extending from its base to its apex, which as to one of its sides is formed or provided with what I term a lip or flange 8, outwardly extending and preferably wide at the base and vanishing at the apex of the cone. The function of this flange is to serve as a guide for the initial throw or introduction of the thread within the hollow interior of the cone.

9 designates lugs of any desired number, preferably two, which are cast to extend radially outward from the base of the cone so as to serve as holding devices through which screws or bolts 10 may pass to secure the cones to their carrying bar 6. These lugs are simply devices of convenience, and their equivalent would be a circumferential outwardly-extending basal web by means of holes in which attachment of the cones may be secured.

11 designates an internal basal flange within the cone, the function of which is to re-

tain the core of wax when in place within the cone against the possibility of dropping out.

12 designates internal, vertically-extending ribs formed or applied within the carrying-cone, the function of which is to retain the core of wax against possible circumferential displacement.

13 designates a hollow core or body of wax or equivalent material, preferably cast within the carrying cone and serving as a lining to it, against the conical internal hollow surface of which the thread in its passage through the core and cone in the practice of my process, is "ballooned" or centrifugally thrown into contact. The core is slotted at 14 to correspond with the slot 7 in the cone.

It being of the essence of the construction that the cone should be lined with wax, it is immaterial whether the wax in a molten condition be poured into the cone,—of course against some temporary core as in any molding operation,—or whether it be cast as an entirety and forced into place in the carrying cone.

Obviously, however, if the latter method be resorted to, the basal flange 11 would not be necessary. I prefer to cast the wax core within the cone.

15 designates a plurality of very rapidly rotated driving rolls each of which serves to draw a thread with regard to which it operates, upwardly off its basal bobbins, and through its wax-carrying cones 5, in a manner well understood in the operation of winding machines for cones and tubes, and so to permit of the feeding and wrapping of said thread upon a cone carrier 16 which is typical merely of any type of carrying and receiving spool, bobbin, tube or beam, which serves as the ultimate carrier for the waxed and finished thread.

The driving rolls are shown as mounted upon a driving shaft 17 mounted in the framework, and guide or feed rolls which coöperate with said driving rolls are shown and designated 18.

19 designate traverses of the type generally embodied in cone and tube winders, shown as mounted upon a traverse bar 20, and to which are assumed to be imparted their usual movement of longitudinal reciprocation relative to the cone carriers, by any usual means, not necessary to illustrate.

Such being a description of an apparatus which I find it convenient to employ, its operation which involves the practice of my process will be easily understood:—

Assuming the primary bobbins,—and a plurality of them is of course supposed,—supplied with finished thread to be waxed:—

The thread will then be inserted into the wax-carrying cones through the slots in the cones and cores, which the lip or flange of the cone renders easy,—and will be then carried up through the hollow interiors of the carrying cones, passing through the traverses, and will be connected with the ultimate carriers.

The driving shaft will then be set in action to occasion the very rapid rotation of said ultimate carriers,—and the thread will be drawn up through the wax core of the carriers, and in its passage or act of being drawn up, will be, to use the technical expression, "ballooned" or thrown out centrifugally to cause it to be, so to speak, "whipped" against the waxed surface,—with the result that in the very rapid combined movement of longitudinal passage through the waxed core and rotary whipping or "ballooning" against its surfaces, the thread will be uniformly and thoroughly coated with wax.

The typical representation of Fig. 1 of the drawing indicates the outward throw or outwardly curved position which the thread 4 in its passage between the primary bobbin and the wax-carrying cones is caused to assume,—the dotted lines opposite the full-lines generally indicating the so-called "ballooning" shape imparted to the thread in its travel.

This "ballooning" is due entirely to the conjoint action of the rapidly revolving cone-carriers 16,—which, as explained, serve as the ultimate carriers for the waxed and finished threads,—in the drawing off or unwinding of the thread from the primary bobbins,—and is a necessary concomitant of the two actions.

It is, moreover, to be understood that the apparatus as an entirety may be disposed in other than a vertically-operating position, although in all machines of this general character it is usual and most advantageous to lead the threads upwardly rather than laterally or downwardly.

It will now be apparent that I have devised and explained an apparatus which embodies the features of advantage referred to as desirable and which is well adapted for the practice of my process. I wish it, however, to be understood that the apparatus may be materially modified in various details without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In an apparatus for waxing thread, a tubular wax-carrier internally conical and slotted through its wall, and a waxing substance lining the carrier and having a slot alined with the slot of the carrier.

2. In an apparatus for waxing thread, a tubular wax-carrier internally conical and

slotted through its wall, a waxing substance lining the carrier and formed with a slot alined with the slot of the carrier, and means for retaining the waxing substance within the carrier.

3. In an apparatus for waxing thread, a hollow conical tubular carrier formed with a vertical slot through its wall and having a directing flange or lip extending outwardly from it, an internal lining of wax within said carrier having a slot alined with the slot of the carrier, and means for retaining the lining within the carrier.

4. An apparatus for waxing thread which comprises in combination,—a primary bobbin upon which thread to be waxed is wound,—an axially hollow, internally conical, open-ended, wax-carrier, the side of which is slotted throughout its entire length in order to permit of the introduction of the thread from the primary bobbin into one of its ends from the side and throughout its entire hollow interior, through which the thread when introduced extends,—a receiving spool or ultimate carrier to which the thread is led from the other end of the wax-carrier,—and means for revolving said receiving spool.

5. An apparatus for waxing thread which comprises in combination,—a primary bobbin upon which thread to be waxed is wound,—an axially hollow, internally conical, open-ended, wax-carrier, the side of which is slotted throughout its entire length and formed with a directing lip or flange extending outwardly from said slot, in order to permit of the introduction of the thread from the primary bobbin into one of its ends from the side against the lip and throughout its entire hollow interior, through which the thread when introduced extends,—a receiving spool or ultimate carrier to which the thread is led from the other end of the wax-carrier,—and means for revolving said receiving spool.

6. The process of waxing a thread, which consists in rapidly drawing it from a primary bobbin, through a hollow wax-carrier, to an ultimate carrier, and, in so drawing it, "ballooning" it between the primary bobbin and the wax-carrier and within said wax-carrier, so as to cause it to make centrifugal contact with the wax of the carrier.

7. The process of waxing a thread, which consists in rapidly drawing it from a primary bobbin, through a hollow body of wax, to an ultimate thread carrier, and, in so drawing it, "ballooning" it between the primary bobbin and the body of wax and within said body, so as to cause it to make centrifugal contact with the body of wax.

8. A process of waxing yarn which consists in drawing the yarn through a perforation in a cake of wax and causing the yarn to balloon within said perforation and rub against the surrounding wax by centrifugal action.

9. A device for waxing yarn, comprising a holder having an open top and bottom and upright walls separated by a lateral opening, one of said walls being extended outwardly beyond the opening in a substantially tangential direction, and a cake of wax located in said holder and provided with a perforation extending from top to bottom and with a slot leading therefrom through one side of the cake to the lateral opening in the holder.

In testimony whereof I have hereunto signed my name this sixth day of January, 1916

JOSEPH FREDERIC HOUSTON.

In the presence of—
J. BONSALL TAYLOR,
C. D. MCVAY.