C. GESS.

CONE TUBE.

APPLICATION FILED JAN. 3, 1911.

986,379. Patented Mar. 7, 1911.

Fig. 3.

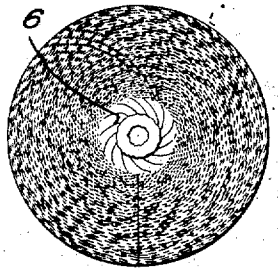


Fig. 1.

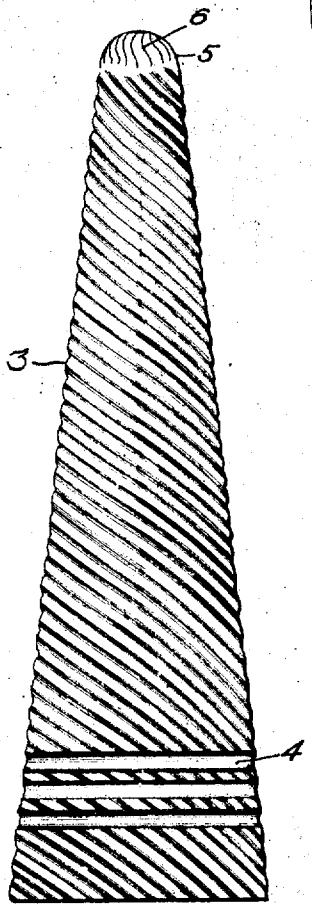


Fig. 2.

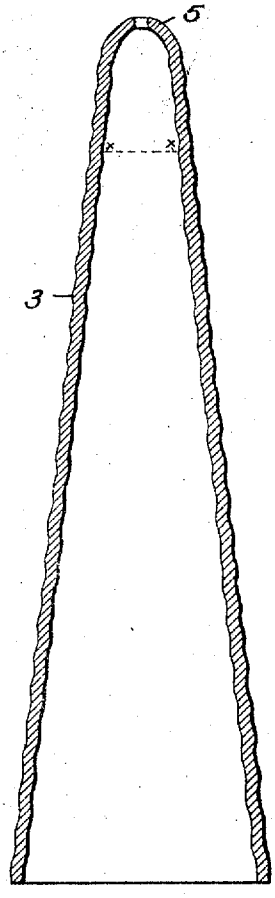


Fig. 4.

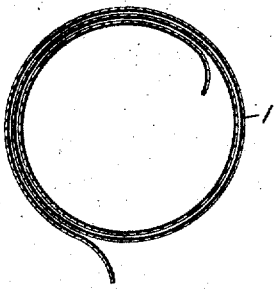


Fig. 5.

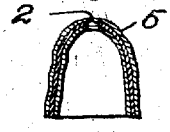
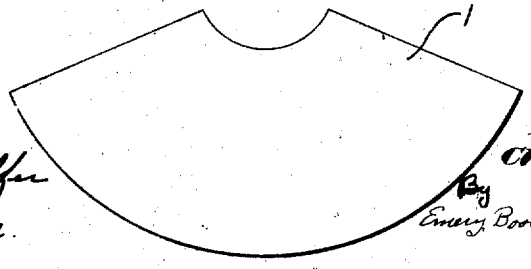


Fig. 6.



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UNITED STATES PATENT OFFICE.

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CONE-TUBE.

986,379. Specification of Letters Patent. Patented Mar. 7, 1911.

Application filed January 3, 1911. Serial No. 600,521.

To all whom it may concern:

Be it known that I, CHARLES GESS, a citizen of the United States, and a resident of St. Joseph, in the county of Berrien and State of Michigan, have invented an Improvement in Cone-Tubes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to cone tubes adapted to receive or to have wound thereon yarn, thread or the like, of the commonly known cone winding form, and from which the yarn, etc., is drawn off axially or substantially so.

In order that the principles of the invention may be readily understood, I have disclosed a single embodiment thereof in the accompanying drawing, wherein—

Figure 1 is a side elevation of a cone tube embodying my invention; Fig. 2 is a vertical central section thereof; Fig. 3 is a plan view of the tube shown in Fig. 1; Fig. 4 is a cross sectional view thereof; Fig. 5 is a sectional view of the tip end of the tube; and Fig. 6 is a plan view of the blank from which the cone tube is wound.

Cone tubes adapted to receive or have yarn or thread wound thereon and from which said yarn or thread is drawn off axially when in upright position, are customarily formed of paper rolled in one or more layers or coils into conical form. These tubes are adapted to be mounted for winding upon tapering arbors of the general shape of the tubes and extending through said tube to within an inch or two of the tip end thereof. The ends of these conical tubes generally protrude somewhat from the complete yarn or thread mass.

I have ascertained that, owing to the marked taper of the conical tubes to facilitate the unwinding and by which I mean a taper materially exceeding that of the usual spinning spindle and such that the yarn or thread package is materially tapered throughout, it is exceedingly important that said tubes be superficially roughened so as to prevent the slipping or displacement of the yarn or thread as the first series or layers thereof are wound upon the tube and subsequently. This tendency to displacement, particularly of the first laid layers, exists to a marked degree in a cone having a decided taper, but in order to permit the yarn or thread to pay off properly from the mass when in upright position, it is important that the said mass be of decided or markedly tapered form. Preferably I impart the described roughening to the tubes by providing them with longitudinal ridges inclined from bottom to top; that is, toward the top in the direction in which the yarn or thread is wound upon the tube. The paper or other blank from which the tube is formed may be and preferably is roughened as described prior to the coiling thereof into tube form. When the tube is coiled as described the longitudinal ridges extend from the bottom of the tube to substantially the extreme tip. In accordance with my invention I remove the said roughening ridges from the tip portion of the tube so that they will afford no obstruction to the yarn or thread as the latter and especially the first laid layers are being unwound from the tube in use. In other words, the tube embodying my invention is roughened by preferably diagonal ridges throughout substantially the entire body portion thereof, but has its tip end contrasting therewith because of the removal of said ridges therefrom. While the tip end of the tube may be treated in any suitable manner to remove said ridges therefrom or while in roughening the tube or blank the ridges may be made to terminate short of the tip end of the tube, I preferably provide a die or socket rotated at a suitable speed and wherein I may place the tip end of the cone, so that the material of the tip is not only deprived of the said roughening ridges, but the said material of the tip is actually twisted or circumferentially displaced as clearly indicated in Figs. 1 and 3.

When the tube is in its normal condition and before the tip end thereof is treated as described, the tip end of the tube acts as an arch and is substantially unyielding to inward pressure. When, however, the material of the tube has been circumferentially displaced, then the arch effect is materially lost and the twisted portions of the edge, because of their displacement, will more readily yield inwardly. While a superficial polish is imparted to the material of the tip end, yet the said tip end yields more readily than does the body of the cone, so that as the first layers of the yarn are drawn off, the tip

edge of the cone cannot offer such an unyielding resistance to the yarn or thread as to chafe or break it. In other words, the tip end of the cone is more yielding than the body thereof, although it is superficially polished and smooth. Moreover, the said tip end of the tube is relatively softer than the body of the tube in spite of the superficial polish imparted thereto in the inward displacement of the tip.

The circumferential displacement of the tip end of the cone is preferably in the direction of the inclination of the roughening ridges toward the tip of the tube; that is, in the direction of the winding of the yarn or thread upon the tube so as still further to prevent breakage or chafing of the yarn or thread in the unwinding of the first laid layers from the tube.

The cone or tube is formed from a segmental sheet of paper pulp, papier-mâché or other suitable fibrous material coiled upon itself into a plurality of coils or turns. In forming the tube, I so roll the blank that the upper edge of the tube does not in any of the folds project beyond any other part thereof. In other words, the upper edges of the several coils are flush with each other, so that the edge of the tip is uniform and without protruding parts to engage the yarn.

If desired, the cone or tube may be provided with one or more circumferential scores not herein claimed, to assist in preventing the displacement of the yarn or thread when being unwound; that is, to prevent the yarn sliding bodily toward the tip of the cone.

Referring more specifically to the drawings, the blank from which the cone or tube is formed is represented at 1 in Fig. 6, it being preferably of the segmental shape there shown. The said blank is coiled as indicated in Fig. 4 into a suitable number of contacting layers and the upper edges of the said layers should terminate flush with each other as indicated at 2 in Fig. 5. The material from which the cone or tube is formed is roughened either before or after the formation of the tube, but preferably while the material is in its flat form. While this roughening may be of any suitable character, preferably the material is provided with roughening ridges 3 which are formed or inclined from the bottom toward the tip end thereof in the direction in which the yarn or thread is wound upon the tube. In addition the tube may be provided with one or more circumferential scores 4 to prevent the yarn mass or a portion thereof sliding toward the tip end of the tube in the unwinding thereof. The blank 1 is provided with a suitable adhesive applied in suitable quantities, but preferably in excess to the body portion of the tube so as to assist in stiffening the same. An excess quantity of the adhesive should not be applied to the tip end thereof, as it is desired to make the tip end of the tube relatively softer than the body thereof.

In order to prevent the first laid coils or layers of the yarn or thread from contacting with the tip end of the tube as they are unwound from the cone, I turn or upset inwardly the tip end 5 of the cone, as represented most clearly in Fig. 2. The tip end of the cone should be very materially inturned and preferably so as substantially, if not wholly, to close said tip end. The said tip end of the cone as the yarn or thread is being wound thereon projects very materially beyond the tapered end of the supporting arbor. The approximate position of the outer end of the arbor is indicated by the dotted line x—x in Fig. 2. That is, it is free from contact therewith. Therefore, it is possible to upset or inturn the tip end of the cone to a very marked degree and so as effectively to accomplish an important object of my invention, which is to prevent the breaking or chafing of the yarn or thread by said tip end as the yarn or thread is unwound.

The cone is markedly conical to permit the yarn to free itself from the roughened surface when drawn from the end of the cone, and is provided with stiff, cone-supporting side walls to support the usually large and heavy package. The tip end of the cone is preferably not only inturned but the roughened surface of the cone here coincidently blends into the smooth inturned end surface. The inturned tip end is indifferently centered internally with respect to the axis of the cone. This is possible because the tip end of the cone extends beyond the driver. If, in manufacturing the cone, the apex end thereof be somewhat warped or distorted, the fact that this tip end extends beyond the driver permits it to conform in position substantially to the driver so that as the yarn or thread is drawn off it will not be obstructed or impaired by such warped or deflected portion.

It will be observed that the tube or cone is of a very marked taper and materially exceeds the taper of the usual spinning spindle. The cone or tube embodying my invention is not designed or intended for use in connection with a spinning spindle, but for use upon a tapered arbor and to receive thereon a large package or mass of yarn or thread wound thereon in a comparatively few number of turns or coils in each traverse of the yarn or thread from end to end of the cone. In so winding the yarn or thread, there is great liability that it will slide, especially in the unwinding toward the tip end of the cone or tube. Therefore, it is important that the cone or tube be superficially roughened to prevent this slipping or sliding.

It will be evident from the foregoing description that the cone or tube embodying my invention is peculiarly adapted for the reception of a wound mass or package of yarn or thread, and that at the same time the tip end of the tube is so formed and treated as to prevent all liability of breaking or chafing the first laid layers of the yarn or thread in the unwinding thereof.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a descriptive and generic sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

1. As an article of manufacture, a winding cone having a roughened yarn retaining surface markedly conical in shape to permit the yarn to free itself from said roughened surface when drawn from the end of said cone, the latter having an inturned yielding apex end.

2. As an article of manufacture, a markedly conical winding cone, hard and self-sustaining to receive support from an internal rotating driver or arbor, said cone having an inturned, yielding apex end, to extend beyond said interior driver or arbor.

3. As an article of manufacture, a markedly conical winding cone having stiff, cone supporting side walls adapted to seat upon a rotating driver, said cone having an inturned apex end to extend beyond said driver.

4. As an article of manufacture, a markedly conical winding cone having cone supporting conical walls adapted to seat upon a rotating driver and also having an inturned end to extend beyond said driver and indifferently centered internally with respect to the axis of said cone.

5. As a new article of manufacture, a winding cone having a roughened yarn retaining surface markedly conical in shape to permit the yarn to free itself from said roughened surface when drawn from the end thereof, said cone having its smaller end inturned and the roughened conical surface coincidently blending into a smooth inturned end surface.

6. As an article of manufacture, a markedly conical winding cone having conical supporting walls adapted for continuous seating contact with and upon a driving member or arbor, thereby to adapt said cone for sustaining a large and heavy mass of yarn, said cone having a conical apex portion to extend beyond said member or arbor and with its end inturned to prevent deflective obstruction of the yarn traverse arising from conformation of said supporting walls to said driver.

7. As an article of manufacture, a markedly conical winding cone hard and self-sustaining to receive support from an internal rotating driver or arbor, the tip end of said cone being inturned and smooth and softer and more yielding than the body of the tube, the material of said tip end being circumferentially displaced.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES GESS.

Witnesses:
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