Feb. 3, 1925 1,525,012

E. L. TINKHAM

COP SKEWER

Filed June 23, 1924

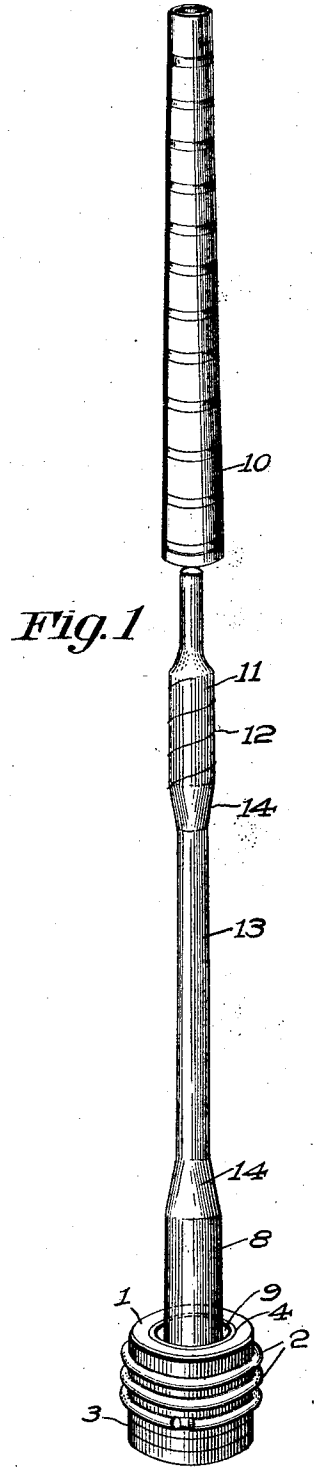


Fig. 1

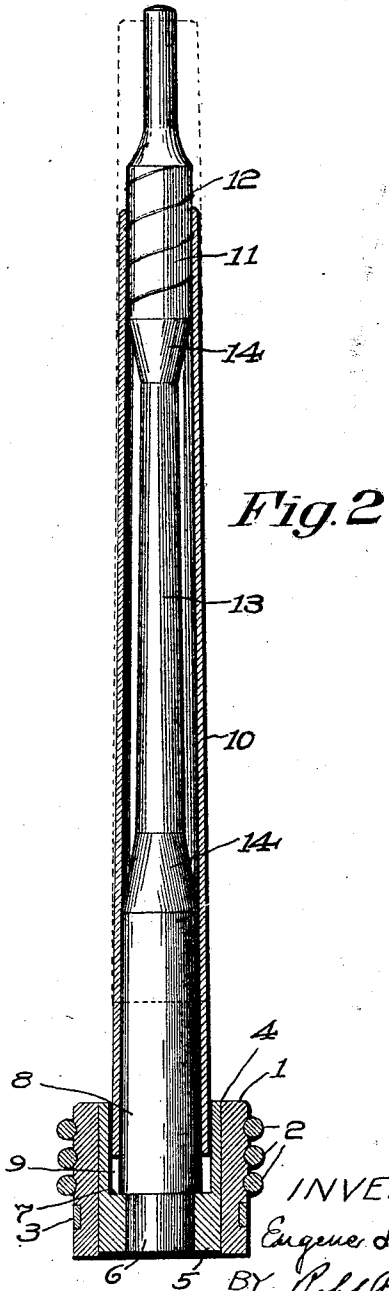


Fig. 2

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Patented Feb. 3, 1925. 1,525,012

UNITED STATES PATENT OFFICE.

EUGENE L. TINKHAM, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO DRAPER CORPORATION, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

COP SKEWER.

Application filed June 23, 1924. Serial No. 721,690.

To all whom it may concern:

Be it known that I, EUGENE L. TINKHAM, a citizen of the United States, and residing at Hopedale, in the county of Worcester and State of Massachusetts, have invented an Improvement in Cop Skewers, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to cop skewers for receiving and holding cop tubes having yarn wound thereon.

It is now the usual practice to provide small paper cones or tubes called "cop tubes" with yarn wound thereon, which may be placed upon the cop skewer in the shuttle, for weaving purposes. It is also the ordinary practice to provide cop skewers of metal, either as a solid spindle or sheet metal for receiving the wound cop tubes. Such cop skewers usually taper from the head of the skewer towards the tip portion thereof and the paper cop tube is sometimes held upon such skewers by means of projections formed on the skewer. The amount of yarn that can be wound upon the usual cop tubes now ordinarily employed is limited by the size of the cop tube, and the cop skewer is correspondingly formed of small dimensions to accommodate the small cop tube.

It is sometimes desirable to provide larger cop tubes which will accommodate a larger supply of yarn, but in such case the cop skewer must be correspondingly enlarged, with the result that the additional weight of the cop skewer becomes objectionable, and especially is this observable when the shuttle is suddenly brought to rest in the shuttle box.

One of the objects of the present invention is to provide a cop skewer so constructed and arranged that it will support a larger cop tube with its supply of yarn, and at the same time add no appreciable or undesirable weight to the cop skewer itself.

In order to prevent the cop tube and its load of yarn from being disengaged from the cop skewer at the end of a shuttle flight and to securely maintain the cop tube on the cop skewer, the present invention provides in a cop skewer for accommodating a larger cop tube, means for effectively maintaining the cop tube in fixed position on the skewer.

The novel features of the invention and new combination of parts will best be made clear from the following description and the accompanying drawings of one good practical form of the invention.

In the drawings:

Fig. 1 represents a cop skewer containing the present invention and shows an enlarged cop tube adapted to fit the enlarged cop skewer; and

Fig. 2 is a view of an assembly of the cop skewer of the present invention and an enlarged cop tube positioned thereon.

In accordance with the present invention, the cop skewer, of a size and construction to effectively support a cop tube, has cop tube supporting barrels in separated relation, with an interposed body section of the cop skewer cut away or decreased in diameter, without materially increasing the total weight of the cop skewer over that of the ordinary construction. The barrel portions of the skewer are preferably formed tapering and engage the interior surface of the cop tube at opposite end portions thereof, and in order that cop tube may be securely held to the cop skewer, one of the barrel portions, or both, is provided with a spiral rib or thread which will engage the interior surface of the enlarged cop tube and maintain it on the cop skewer during use.

The cop skewer as shown comprises a head portion 1 formed of suitable material about which are placed the metal rings 2 by which the cop skewer is held in the shuttle of a filling replenishing loom by means of the usual spring holding jaws. If desired, the head 1, especially if formed of wood, may be circumscribed by a metal band 3 which serves to give stability thereto.

The head 1 of the cop skewer is provided with a bore or recess 4 in which is secured a metal cup 5, as shown. The head portion of the metal cup 5 has an opening centrally within the head 1 for receiving the end portion 6 of the cop skewer, and such end portion 6 of the cop skewer terminates upwardly or towards the tip of the skewer by a shoulder 7 on which the enlarged portion or barrel 8 of the cop skewer rests. Above the shoulder 7 the cup 5 is recessed

as at 9 for the accommodation of the base end portion of the cop tube 10 when the latter is placed upon the skewer.

As indicated in the drawings, the cop skewer is preferably formed as a spindle and may be appropriately constructed of metal, so that when the end portion 6 of the cop skewer is secured to the head 1 the parts may remain in assembled relation.

The enlarged barrel portion 8 of the cop skewer extends longitudinally of the spindle and is of a size and diameter to engage the interior surface of the large cop tube itself when the latter is placed upon the skewer. The barrel portion 8 is preferably tapering towards the tip of the skewer, so that when the cop tube 10 is forced downwardly onto the tapering barrel 8 of the cop skewer, it will snugly engage the tapering surface of the barrel 8.

The cop skewer is provided with a second barrel portion 11 which is disposed adjacent the tip end portion of the skewer and is preferably formed tapering to engage the tapered internal surface of the cop tube 10 with an accurate fit when the cop tube is placed upon the skewer, as will presently appear.

One of the tapering barrel portions 8 or 11 is provided with a spiral rib, and in the illustrated form of the invention, the small tapering barrel portion 11 has the spiral ribs 12 which project slightly beyond the surface of the tapering barrel 11 for engagement with the interior surface of the cop tube.

Between the barrel portions 8 and 11 the cop skewer is cut away along the body section 13 or is made of such smaller diameter than the barrel portions 8 and 11 that between such barrel portions the cop tube 10 finds no support. By forming the body portion 13 of the cop skewer of smaller dimensions than the barrel portions thereof, it will be observed that the cop skewer is materially lightened and yet provides for the accurate and substantial support of the cop tube when the latter is placed upon the skewer. The body portion 13 of the cop skewer may be formed either tapering or as a cylinder extending between the barrel portions 8 and 11, and at each end of the body section 13 are the inclines 14 which connect the reduced body portion 13 of the skewer to the tapering barrels.

The cop tube 10, which is usually formed of paper, has its internal surface tapering in substantial accordance with the taper of the barrel portions 8 and 11 of the skewer so that when the cop tube is placed upon the skewer it will find substantial and accurate bearings on the tapering surfaces of both barrel portions.

While the spiral rib or thread 12 may be placed upon either of the barrel portions, it is preferably placed upon the smaller tapering barrel 11 and there serves the additional purpose not only of securing the cop tube 10 to the cop skewer but prevents play or loose motion between the end portion of the cop tube and the barrel 11 of the cop skewer.

The two tapering barrel portions 8 and 11 of the cop skewer engage the correspondingly tapered interior surface of the cop tube at the ends thereof, and by forming the body section 13 of the cop skewer of reduced dimensions, the total weight of the cop skewer is minimized. This is an important feature of the invention because any added weight to the shuttle introduces objectionable operation and necessitates changes in the shuttle checking devices in the loom itself, and by such construction of the cop skewer as described, and without materially increasing the total weight of the cop skewer, a cop tube of increased dimensions may be employed with its added load of yarn.

In applying the large cop tube 10 to the cop skewer, the larger end portion of the cop tube is introduced over the end of the skewer into substantially the position shown by the dotted lines in Fig. 2, it being understood that the cop tube at such times may have thereon its load of yarn. When the tapering interior surface of the cop tube meets the spiral thread 12 on the barrel 11, the cop tube is rotated. At this time the spiral threads 12 by engagement with the interior surface of the cop tube, cause the cop tube to be forced downwardly upon the cop skewer in substantially the same manner as a threaded engagement between the spiral 12 and the interior of the cop tube, until when the cop tube has been firmly seated upon the larger tapering barrel portion 8 and preferably with the end of the cop tube within the recess 9 of the cup 5, the cop tube will closely fit the cop skewer at the barrel portions and be firmly held in place, so that during the operation of the loom in which the shuttle is used, the cop tube will be firmly held upon the cop skewer both by the fit of the tapering interior surface of the cop tube and the tapering external surface of the barrel portions 8 and 11, and also by the spiral ribs 12.

A cop skewer constructed in accordance with the present invention is not only light, but serves to impart to the cop tube a positive hold upon the cop skewer, so that as the shuttle is arrested in the shuttle box, particularly at the replenishing side of the loom, the cop tube will remain in engaged relation with the cop skewer and all liability of detachment of the cop tube from the skewer is overcome.

Furthermore, the cop skewer having the barrel portions 8 and 11 with the intermediate body section of decreased dimensions,

forms a light cop skewer spindle for the accommodation of cop tubes of large dimensions.

What is claimed is:

1. A cop skewer having tapering portions rigid therewith adjacent each end of the skewer for engaging the interior surface of a cop tube near opposite ends thereof and a smaller body section between the tapering portions, one of said tapering portions being provided with a spiral thread or rib for engagement with interior of the cop tube and effecting retention of the cop tube upon the skewer.

2. A cop skewer formed as a metallic spindle having two tapering portions integral therewith for engagement with the interior of a cop tube adjacent opposite ends thereof, the metallic spindle being reduced in diameter between the two tapering portions, and one of said tapering portions being provided with a spiral rib for engagement with the interior of the cop tube.

3. A cop skewer formed as a smooth solid metallic spindle having a head, a tapering barrel integral therewith extending from the head towards the tip of the skewer, a second tapering portion integral with the spindle for engagement with the interior of a cop tube adjacent the end thereof and separated from the tapering barrel by a body section smaller than either the tapering barrel or second tapering portion, and a spiral formed on one of the tapers for engagement with the interior of a cop tube.

4. A cop skewer comprising a head and adjacent barrel portion, a smaller barrel portion adjacent the tip of the skewer rigid therewith and separated from the barrel portion adjacent the head by a smooth body section smaller in diameter than either of said barrel portions, and a spiral formed on the barrel portion adjacent the tip of the skewer for engagement with the interior of a cop tube that the latter may be screwed onto and held by the cop skewer.

5. A cop skewer formed as a solid metallic spindle having an integrally formed tapering barrel for engaging the interior of a cop tube adjacent one end, a smaller tapering barrel adjacent the other end of the spindle integral therewith and provided with a spiral rib for engagement with the interior of a cop tube at the smaller end thereof, and a body section of smaller dimensions between the two tapering barrel portions of the skewer.

6. A cop skewer formed as a spindle having two fixed tapering barrel portions integral therewith for engagement with the interior of a cop tube and separated by a body section of less diameter than either of said tapering barrel portions, said body section being connected to the tapering portions by short sections of increased taper merging into the body portion.

7. A cop skewer constructed of a solid metallic spindle having integral barrel portions adjacent the ends of the spindle, the barrel portion near the tip of the spindle being of less cross-sectional area than the barrel portion adjacent the other end of the spindle, and the body of the spindle between the barrel portions being of less cross-sectional area than either of the barrel portions to provide a cop skewer for holding large cop tubes without unduly increasing the weight of the cop skewer as a whole.

In testimony whereof, I have signed my name to this specification.

EUGENE L. TINKHAM.