J. W. WEST.

PROTECTOR FOR TUBE THREAD.

APPLICATION FILED SEPT. 28, 1911.

1,114,660. Patented Oct. 20, 1914.

Fig. 1.

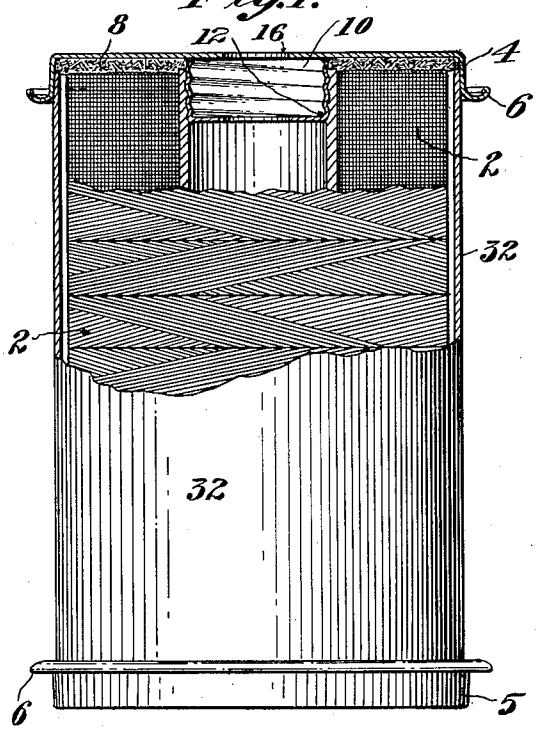


Fig. 4.

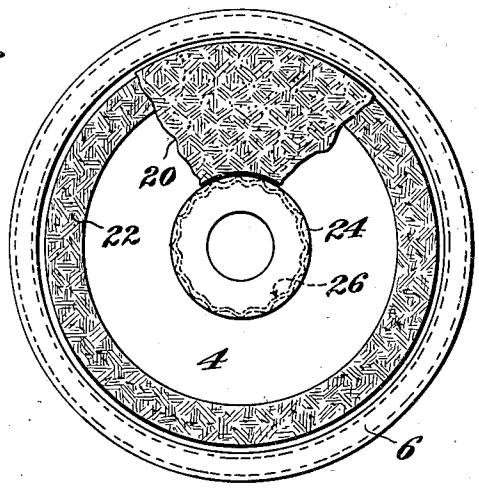


Fig. 5.

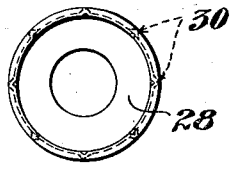


Fig. 2.

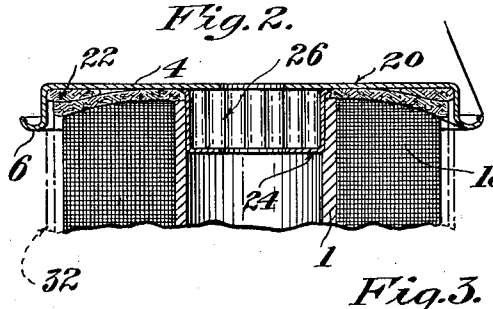


Fig. 6.

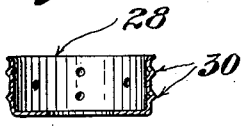
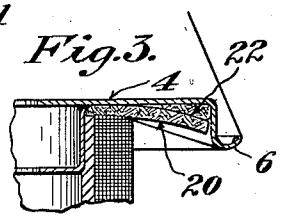


Fig. 3.



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PROTECTOR FOR TUBE-THREAD.

1,114,660. Specification of Letters Patent. Patented Oct. 20, 1914.

Application filed September 28, 1911. Serial No. 651,712.

To all whom it may concern:

Be it known that I, JOHN W. WEST, of Braintree, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Protectors for Tube-Thread, of which the following is a specification.

This invention relates to protectors for tube thread, and is an improvement upon the protector for tube thread shown in my Patent No. 1,001,718 dated August 29, 1911. In said patent I have shown a protector for tube thread having heads arranged for axial movement to enable yielding material on the head to be kept in contact with the corners of the ends of the mass of thread as it is drawn off and the mass consequently diminished in size. The ends of the mass of thread are sometimes flat, and at other times convex or more or less irregular, and the yielding material on the heads is designed to be maintained in contact with the corners of the mass, notwithstanding the irregularity of its end surfaces. I have found that it is far better that the yielding material shall be maintained in continual contact with the ends of the mass of thread, thereby avoiding the necessity of moving the heads axially, and this may be done by holding said yielding material under pressure and in permanent contact with the ends of the mass of thread over substantially their entire area.

Accordingly, the object of the present invention is to provide means for maintaining the yielding material, such as felt or similar material, in intimate contact with the ends of the mass of thread throughout substantially their entire surfaces.

With the above object in view, the invention consists in the protector for tube thread hereinafter described and particularly defined in the claims, the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawing, Figure 1 is a sectional side elevation showing one embodiment of the invention as applied to a tube of thread having a flat end, Fig. 2 is a fragmentary vertical section showing a tube with the mass of thread convex on its end, and also a modified form of boss on the protector head, Fig. 3 is a fragmentary view showing a portion of the mass of thread and the manner in which the thread is guided, Fig. 4 is a plan view of the inside of the head shown in Fig. 2, Fig. 5 is a plan view of a modified form of boss or stem, and Fig. 6 is a vertical section of the latter.

As illustrated in the drawing, 1 represents a tube, made of paper or other suitable material, upon which the mass of thread 2 is wound. This mass of thread is generally cylindrical and of any length and diameter, according to the number of yards and size of thread. The tube wound with the mass of thread is usually placed upon a vertical spindle, and the unwinding thread as it approaches either end of the mass frequently breaks away a corner of the mass and becomes entangled about the spindle, thus causing a considerable waste of thread. In my said patent I provided axially movable heads which were faced with yielding material, such as felt, the material being arranged to engage the corners of the mass of thread to prevent the thread from creeping between the protector heads and the end of the mass of thread; these heads being adapted to be moved from time to time as the size of the mass of thread diminished.

I have found that by maintaining the felt in intimate contact over all with the entire surface of the end of the mass of thread at all times, the necessity for periodical axial movement of the protector heads is obviated. Usually the mass of thread is wound so that its ends are practically flat, as shown in Fig. 1. In this case a single sheet of yielding material suffices to make a padding which will have intimate contact with the entire surface of the end of the mass when the head of the protector is forced down upon it by pressure. As shown in this figure the protector comprises a pair of heads 4, 5, formed of sheet metal, and provided with a thread deflecting flange 6. The head is substantially flat, and to its inner face an annular sheet or ring 8 of yielding material, such as felt or the like, is applied preferably by being glued thereto. Projecting from the inner face of the head is a boss or stem 10, which is preferably made of sheet metal in the shape of a cup, which is flanged somewhat at its open end and secured to the inner face of the head by solder. It has a flat inner end 12, which is provided with a hole 14 adapted to receive the spindle of a machine. The head of the protector is also provided with a hole 16 of the same size as the hole 14 and in alinement therewith. These holes are provided so that the spindle can enter both and thus prevent tipping of

the mass of thread as it is drawn off. The periphery of the boss may be provided with projections for engaging the interior of the tube 1, so that when the head is forced down tightly upon the end of the mass of thread it will be held in this position. In this figure the projections are shown in the form of spiral corrugations or screw threads, although any other suitable form can be readily employed.

In winding some kinds of thread it is necessary to draw it very tightly, and this causes a considerable pressure to be exerted upon the paper tube. This pressure is frequently so great as to cause the tube to gradually collapse after it is removed from the winding spindle with the thread thereon. The bosses of the heads of the protector when forced into the tube prevent this collapse.

Where masses or cops of thread are used without the protector, the tipping of the mass of thread may be prevented by employing one of the cup-shaped members 10 in one or both ends of the tube upon which the thread is wound. That is, a cup-shaped member alone, or what constitutes the boss on the protector head, is forced into the end of the tube, said member having a flat inner end which is provided with a hole, as shown, which is smaller than the bore of the paper tube and loosely fits the spindle of the machine upon which the thread is used. This cup-shaped member is forced into the tube until the flange at its outer end engages the end of the tube 1. These cup-shaped members are also employed without the heads to prevent the collapse of the tube 1. With some kinds of thread it is difficult to wind the mass so that its ends shall be flat. They are often more or less irregular, or convexed as shown in Fig. 2. In this case I provide packing between the ring 20 and the opposing end face of the head. This packing may be in the form of a narrow ring 22 of yielding material, similar to the material of the ring 20, or it may be of any suitable material. The thickness of the packing can be varied according to the irregularity or convexity of the end of the mass of thread 18. In this figure I have also shown a modified form of boss or stem 24, which is soldered to the inner face of the end of the cap 4, and is provided with projections in the form of longitudinal corrugations or flutes 26 for engagement with the interior of the tube 1.

In Figs. 5 and 6 I have shown still another modified form of boss or stem 28 which enters the tube 1. In this form the projections are composed of a series of small protuberances 30, which are formed by upsetting the metal with a prick punch, or similar implement.

In using the protector for a shipping case, the mass of thread is inclosed within a protecting covering, which may be in the form of a card board shell 32, or merely paper wrapped about the mass of thread. The heads 4 and 5 are forced tightly against the ends of the mass and are held thus by the engagement of the bosses or stems with the interior of the tube, and the protecting covering is held between the heads around the mass.

When it is desired to use the thread, one of the heads 4, 5, is removed by withdrawal of its boss from the tube 1, and then the protecting shell or wrapping 32 is removed. The head is then replaced upon the protector, or under some circumstances the upper head need not be replaced. The protector with its thread is then placed in a vertical position upon a suitable spindle. When the thread is being drawn off and reaches an end of the mass, as illustrated in Figs. 2 and 3, the thread is guided away by the peripheral flange on the corresponding head and is prevented from breaking away the corners of the mass, and the yielding material prevents it from creeping between the protector heads and the mass of thread, thereby keeping the thread from snarling about the spindle.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims.

Therefore I do not wish to be limited to all the details of construction shown and described, but what I claim is:—

1. A protector for tube thread, consisting of a sheet of yielding material adapted to cover the entire end of the mass of thread, a ring of packing arranged so that said sheet will conform to the end of the mass of thread, and means for holding said material under pressure against the entire surface of said end, substantially as described.

2. A protector for tube thread, having a sheet metal head adapted to engage an end of a mass of thread, a boss on the inside of the head adapted to enter the tube on which the thread is wound having projections to engage said tube, and a rounded peripheral flange of sheet metal on said head for deflecting the thread as it is drawn from the end of the mass, substantially as described.

3. A protector for tube thread, consisting of a sheet metal head having a peripheral flange and a hole for receiving a spindle, and a sheet metal boss secured to the inside of said head, the inner end of said boss being provided with a spindle hole of the same diameter as and located in alinement with the said hole in the head, substantially as described.

4. A protector for tube thread, comprising a sheet metal head having a peripheral

flange and a hole for receiving a spindle, a sheet metal boss secured to the inside of said head, the inner end of said boss being provided with a spindle hole of the same diameter as and located in alinement with the hole in said head, said boss being adapted to enter said tube and having projections to engage said tube, substantially as described.

5. A protector for tube thread, consisting of a pair of heads, a ring of yielding material on each head adapted to entirely cover the end of the mass of thread on the tube, a packing ring located between said first mentioned ring and the head to enable the flexible material to conform to the irregular surfaces of the ends of the mass and be held in intimate contact with the entire surface of said ends, and means on said heads for engaging the tube, substantially as described.

6. A protector for tube thread, comprising a pair of sheet metal heads adapted to engage the ends of the mass of thread, a boss on the inside of each head adapted to enter the tube on which the thread is wound having projections to engage said tube, and a rounded peripheral sheet metal flange on each head for deflecting the thread as it is drawn from the end of the mass, substantially as described.

7. A cup-shaped member adapted to fit the interior of a tube upon which a mass of thread is wound, said member having its inner end or bottom provided with a wall having a hole which is of less diameter than the bore of the tube and adapted to loosely fit the spindle of a machine upon which the thread is to be used, substantially as described.

8. A cup-shaped member adapted to fit the interior of a paper tube, said member having its inner end or bottom provided with a wall having a hole which is of less diameter than the bore of the tube, said member also having projections which engage the interior of the tube, substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOHN W. WEST

Witnesses:
WILLIAM J. SPERL,
JOHN B. HOLT.