July 7, 1953 S. T. BURKE, JR 2,644,650

EXPANSIBLE CORE FOR COILS OF ROPE OR THE LIKE

Filed June 27, 1952

Fig. 1

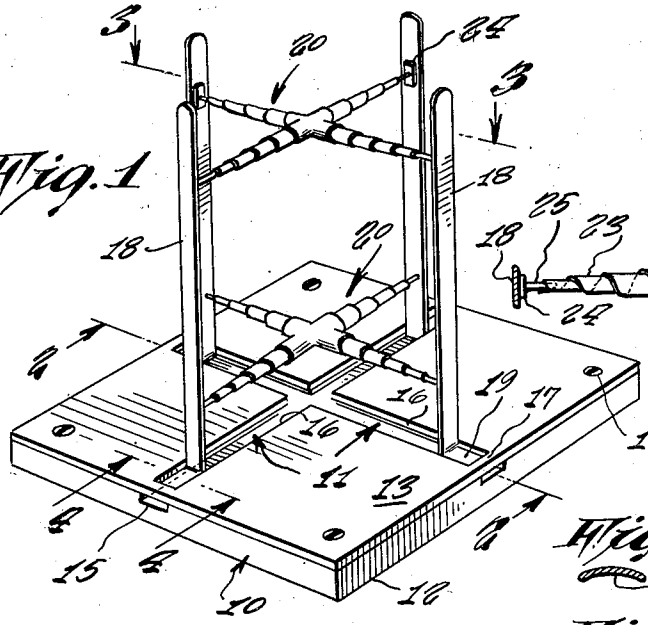


Fig. 3

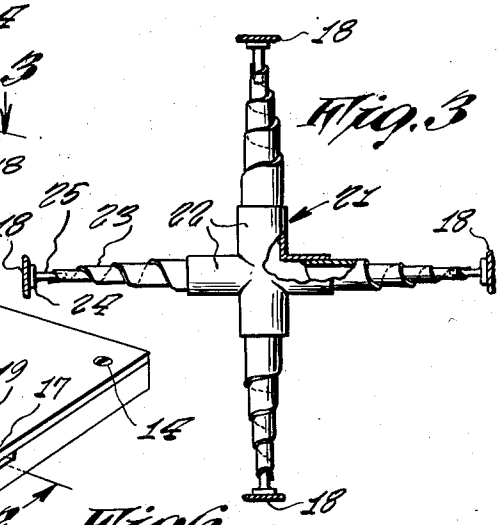


Fig. 6

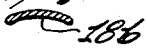


Fig. 7

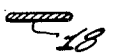


Fig. 4

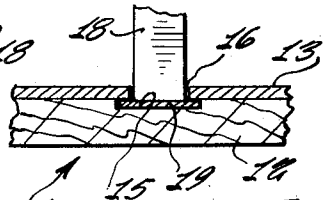


Fig. 2

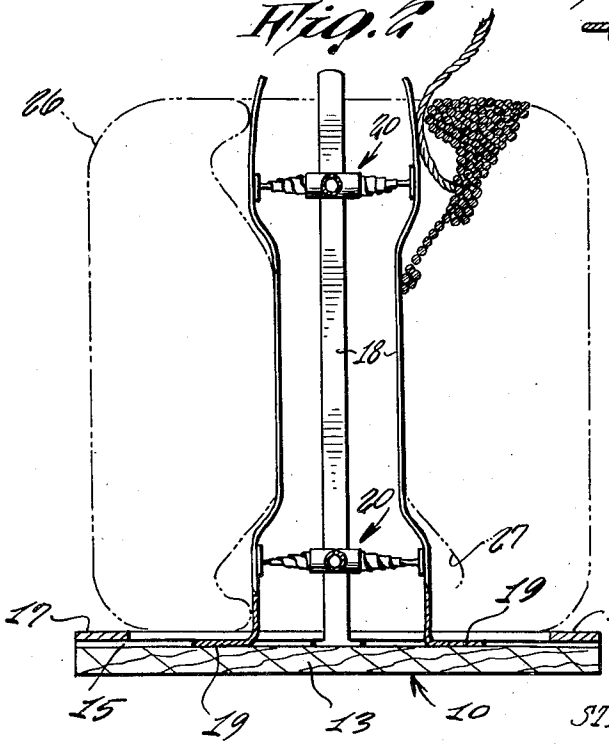
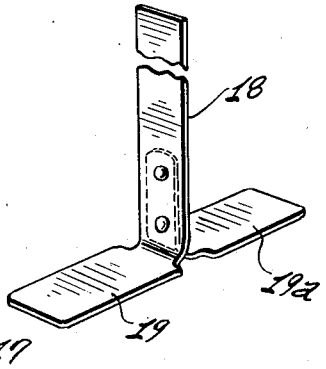


Fig. 5



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EXPANSIBLE CORE FOR COILS OF ROPE OR THE LIKE

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7 Claims. (Cl. 242—113)

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This invention relates to expansible cores for balls of rope, and the main object is to provide a novel, improved and practical expansible rope core adapted to have the ball of rope wound thereabout or to be inserted into a wound ball and provided with means for expanding the core automatically as the hollow core enlarges during unwinding of the rope. Such balls of rope are commonly supplied in a number of sizes. Ordinarily, when such a ball of rope has been sufficiently unwound to considerably enlarge the hollow core, the remainder of the ball becomes unstable and consequently subject to collapse as well as entangling of the rope, so that to avoid the labor of carefully undoing the rope the remainder of the ball is discarded, which is of course wasteful. By making use of the expansible core of this invention, as the hollow core enlarges during unwinding of the rope the arms of the expansible core of this device spread accordingly and thus constantly maintain the walls of the rope ball erect, so that all of the rope may be unwound without danger of tangling.

The above broad as well as additional and more specific objects will be clarified in the following description, wherein characters of reference refer to like-numbered parts in the accompanying drawing. It is to be noted that the drawing is intended solely for the purpose of illustration and that it is therefore neither desired nor intended to limit the invention necessarily to any or all of the exact details of construction shown except insofar as they may be deemed essential to the invention.

Referring briefly to the drawing,

Fig. 1 is a perspective view of an expansible rope core embodying the salient features of this invention.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 and including, in phantom, a small size ball of rope to which the expansible rope core has been applied.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of a modified form of one of the plurality of radially movable arms of the device.

Fig. 6 is a horizontal sectional view through a modified form of one of the above-mentioned arms.

Fig. 7 is a similar sectional view through another modified form of one of the said arms.

Referring in detail to the drawing, the numeral

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10 indicates the base of the expansible core, and the base may be made of wood or any other suitable material, preferably square in conformation, as shown. The base 10 is provided with two intersecting grooves 11 at right angles to each other, either in the following manner or in any other suitable manner. The base 10 may be composed of a lower portion or layer 12 with an upper portion or layer 13 superimposed upon and secured to the lower portion, as by means of screws 14. Grooves 15 are cut or otherwise provided in the top of the portion 12, extending across the same and intersecting each other at right angles. Similarly situated and similar but narrower slots 16 are provided through the upper portion 13, but the slots 16 terminate close to but spaced from the edges of the portion 13 thereby leaving stops 17 at their ends.

Four arms 18 are provided, each having a widened tongue or base 19 at right angles to the lower end of the arm and registering slidably in the groove 15, the opposed edges of the superimposed slot 16, as is clear in Fig. 4, providing overhangs to prevent the tongue 19 from rising out of the groove 15. One of the arm tongues 19 is slidable in each of the four half-grooves 16 thus provided by the intersection of the grooves 16, and, consequently, the four arms 18 are radially slidable with respect to an imaginary center line at right angles to the base 10 through the center thereof.

Resilient means is provided for normally urging the arms 18 outward from the center line above-mentioned, as follows. At at least one position, and preferably at two levels and perhaps even more, a cross-shaped collapsible coiled spring leaf unit is provided. This unit consists of a central cross-shaped housing 21 having four cylindrical tubular legs 22 in each of which is anchored the base of a normally extended helical spiral spring leaf 23 whose outer end is of course reduced and is hollow. Each such spring 23 is obviously adapted to be compressed along its axis to greatly reduce the axial length thereof. At a common horizontal level, each arm 18 has secured on its inner side, as by welding, a head 24 of a pin 25, the latter registering in the hollow extremity of the spring 23.

In the example illustrated in the drawing, two spring units 20 are provided, one near the upper ends of the arms 18 and the other near the lower ends thereof, and Fig. 2 illustrates the operation of the device when applied to a small, say a ten-pound, ball of rope. The arms 18 in this case are formed of spring steel. The ball 26 of rope

normally has a hollow core 27 which is widened near the top and near the bottom, substantially as shown. With the ball mounted on the base 10 and the arms 18 positioned in the hollow core, the force of the springs 23 tends to flex the upper and lower ends of the arms 18 into the conformation of the hollow core of the ball, so that continuously as the rope is unwound and the core enlarges, the arms 18 tend to move against the wall of the hollow core in conformity with the shape and size thereof. Thus, as the unwinding rope enlarges the hollow core the arms 18 maintain themselves as an expanding core inside the ball, to maintain the ball and to facilitate unwinding to nearly the very end of the rope.

For the case where the expanding core is to be used on the larger, say a sixty-pound, ball of rope, the arms 18 may be made of wood or other stiff material, since the cores of such balls, not shown, are substantially cylindrical.

A modified form of arm 18 may be provided, as illustrated in Fig. 5, wherein, in addition to the tongue 19 extending outward from the base of the arm a second similar tongue 19*a* is provided extending in the opposite direction. With this construction the foot of the arm has an enlarged and better balanced base slidable in the groove 11.

Fig. 6 shows, in exaggerated form, and in cross-section, how an arm 18*b* which is otherwise similar to the arms 18, may be curved to enhance the slidability of the rope around the outer surface of the arm during unwinding from the expansible core.

Fig. 7 shows an enlarged cross-section of the arm 18 to bring out the rounded edges of the arms, to prevent gripping or tearing of the fibers of the rope on the arms.

Further, the floors of the grooves 11, that is, of the grooves 15 in the lower base member 13, may be lined with a metal plate or sheet, not shown, if desired, also to enhance the slidability of the tongues 19.

Obviously, other modifications in form or structure may be made without departing from the spirit or scope of the invention.

I claim:

1. An expansible core for a coil or ball of rope or the like having an axial passage therethrough and adapted to be unwound in a radial direction outward from said passage, comprising a base having two relatively long intersecting grooves in the top thereof intersecting at the center of the base thereby providing four relatively short grooves extending outward from the point of intersection, each of said short grooves having a tongue slidably mounted therein, each of said tongues having a substantially upright arm extending therefrom thereby providing four upright arms slidable through their respective tongues in said grooves and providing two pairs of mutually opposed upright arms, and at least one set of normally extended collapsible springs positioned in a horizontal plane between said arms, the outer extremities of said springs being attached to said arms, the inner extremities of said springs having a member joining said inner extremities thereto, said coil being adapted to be mounted on said base with said springs compressed and said arms passing through said axial passage of the coil and urged by said springs against the walls of said passage.

2. The expansible core set forth in claim 1, said arms being made of resilient material and having a greater width than thickness, the said axial passage having varying diameters at different longitudinal positions thereof whence at a given longitudinal position the diameter of the passage is at a maximum, said plane lying in the plane of said maximum diameter of the passage, said springs urging said arms radially outward to bend the arms to conform to the contour of said passage at said longitudinal position.

3. The expansible core set forth in claim 1, said arms being made of resilient material and having a greater width than thickness, said springs comprising helical spiral spring leaves having a conical passage therethrough, said member having tubular sockets extending therefrom, each of said sockets being aligned with one of said conical passages and having one end of one of said spring leaves mounted therein, each of said arms having a pin extending at right angles from the inner side thereof and registering in the outer end of one of said conical passages.

4. The expansible core set forth in claim 1, said grooves having the upper edges thereof narrower than the floors thereof thereby providing longitudinal overhangs along the tops of the grooves, said tongues having a width greater than the width of said narrower upper edges of the grooves.

5. The expansible core set forth in claim 1, said tongues extending from one side of said arms.

6. The expansible core set forth in claim 1, each of said tongues having the said arm thereof extending upward therefrom intermediate the length of the tongue.

7. The expansible core set forth in claim 1, said arms being formed of non-resilient material.

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