

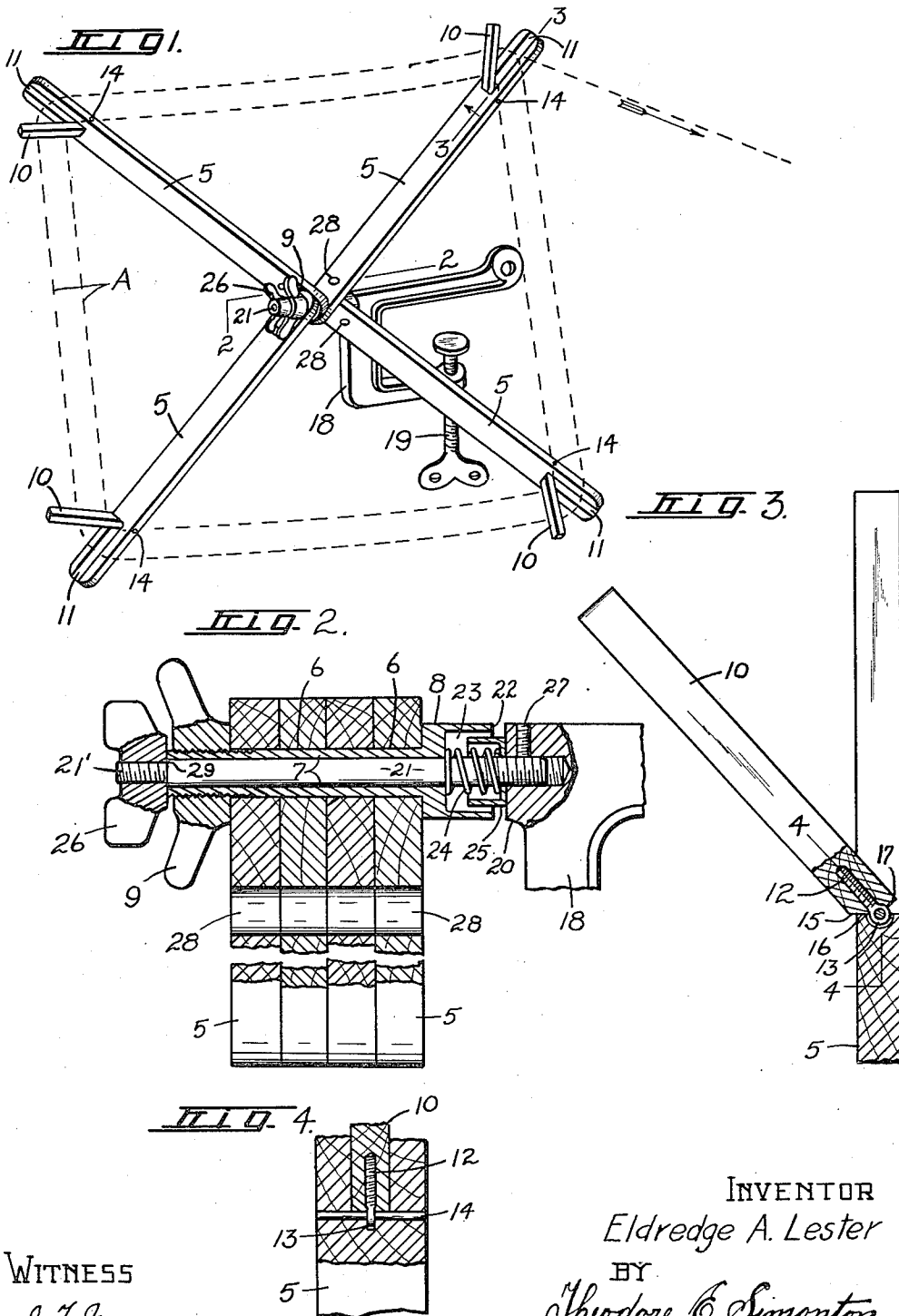
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YARN REEL

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YARN REEL

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This invention relates to a new and improved reel, and particularly to a reel for supporting a skein of yarn while the yarn is unwound from the skein during normal use or while winding the yarn into a ball or upon a suitable form or holder for future use.

It is an object of the invention to provide a reel for supporting skeins of yarn which may be readily adjusted to accommodate skeins of yarn of various sizes.

Another object of the invention is the provision of a yarn supporting reel, the rotation of which is under manual control while the yarn is unwound therefrom.

A further object of the invention is the provision of a yarn supporting reel which may be easily and quickly folded into a compact space when not in use.

Other objects and advantages relate to details of the reel structure and will appear more fully in the following description taken in connection with the accompanying drawing in which:

Figure 1 is a perspective view showing the reel of my invention in operative position;

Figure 2 is a side elevation view partially in cross section taken along line 2—2 of Figure 1, but showing the reel arms in their folded position;

Figure 3 is a sectional view taken along line 3—3 of Figure 1; and

Figure 4 is a sectional view taken along line 4—4 of Figure 3.

The reel of my invention, as shown in the drawing, comprises four identical arms 5 of wood or other suitable material, each having an aperture 6 at one end thereof for the reception of a sleeve 7. The sleeve 7 is provided at one end with a hub 8 while the other end may be threaded for the reception of a wing nut 9 which serves to clamp the adjacent portions of the arms 5 frictionally against each other to hold them in any desired angularly adjusted position.

Each of the arms 5 is provided near its outer end with a finger 10 hingedly connected at one end to the arms, in a manner to be presently described, for supporting a skein of yarn A thereon, as schematically indicated by the dotted lines of Figure 1.

In order to provide a structure which may be folded into a compact space when not in use, I prefer to mount the supporting fingers 10, as shown in detail in Figures 3 and 4. The free end of each arm 5 is provided with a slot 11 extending from the outer free edge of the arm inwardly a distance substantially the length of the fingers 10. The fingers 10, which are preferably of the

same thickness as the arms 5 and which have a width substantially that of the slots 11, are adapted to be hingedly joined to the arms at the base of the slots by means of threaded hinge members 12 threaded into one end of the fingers 10 and provided with a hinge eye 13 adapted to receive a pin or pintle 14 extending transversely through the arms 5.

The end portion of each finger 10, adjacent one side of hinge member 12, is bevelled, as shown at 15, and is adapted to strike against the bottom of the slot 11 at 16 so as to limit the outward swinging movement of the finger. The end portion 17 of the finger 10, adjacent the other side of the hinge member 12, is square with respect to the longitudinal sides of the finger and is adapted to butt against the bottom of the slot 11 when the finger is swung into registration with the slot and is thus prevented from swinging out of the slot on the opposite side of the arm. Thus, it is seen that the particular method of hingedly joining the fingers 10 to the arms 5 permits the fingers to swing outwardly from the arms in one direction so as to form an acute angle therewith for supporting the skein of yarn in suspended relation thereon and to swing inwardly into the slots 11 flush with either side of the arms when the reel is not in use.

The reel comprising the arms 5 mounted upon the sleeve 7, is preferably rotatably mounted upon a suitable holder, as 18, having a U-shaped configuration and provided with a clamping screw 19 threaded through one of its legs whereby the holder may be clamped to a shelf, table, the arm of a chair or other suitable support. The holder 18 may be provided with a boss 20 tapped for the reception of the screw threaded end of a spindle 21, upon which the sleeve 7 is adapted to be rotatably mounted.

The hub 8 of the sleeve 7 is provided with an annular flange 22 forming a socket 23 in the end of the hub. The socket 23 is adapted to house a coil spring 24 encircling the spindle 21 and having one end in engagement with the hub 8 and the other end in telescopic engagement with a guide sleeve 25, the latter being adapted to contact with the face of the boss 20. The sleeve 25 is also adapted for telescopic movement within the annular flange 22. The other end of the spindle 21 is provided with a threaded portion 21' for the reception of a wing nut 26. The portion 21' is preferably of smaller diameter than the main portion of the spindle 21 so as to form a shoulder 29 between the threaded and unthreaded portions of the spindle. The shoulder 29 provides a stop

against which the wing nut 26 may be firmly drawn. The wing nut 26, when in engagement with the shoulder 29, is also adapted to engage the outer end of the sleeve 7 for maintaining the latter in its inward position and the spring 24 under compression and thereby to frictionally hold the reel against undue rotation as the yarn is unwound therefrom. When the wing nut 26 is drawn against the shoulder 29, it is frictionally locked against rotation and thereby prevented from becoming disengaged by the normal rotation of the sleeve 7.

In order that the spindle 21 may not be disengaged from the holder 18 by the rotational frictional engagement of the sleeve 7 therewith, a set screw 27 may be provided in the boss 18 and screw-threaded into frictional engagement with the threaded portion of the spindle to secure the latter against rotation.

When it is desired to vary the tension of the spring 24, the set screw 27 is loosened and the spindle 21 may then be screwed either inwardly or outwardly either by means of the nut 26 when said nut is frictionally locked against the shoulder 29 or by any other means to either shorten or lengthen the projecting portion of the spindle. Thus, by screwing the spindle 21 inwardly, the distance between the nut 26 and the boss 20 is shortened which increases the compression of the spring 24 and consequently, the frictional resistance of the reel against rotation. By screwing the spindle 21 outwardly, the tension of the spring 24 is decreased thereby lessening the frictional resistance to permit the reel to rotate more freely. When the proper tension for a particular weight of yarn has been obtained, the set screw 27 is again tightened for maintaining the adjustment.

In operation, the holder 18 may be clamped to a suitable support as a shelf, chair or table by means of the clamping screw 19. The wing nut 9 may then be loosened and the arms 5 arranged in such angular relation with respect to each other to permit a skein of yarn to be placed about the fingers 10 which, previous to placing the yarn thereon, have been rocked outwardly from their folded position within the slots 11. The angular position of the arms 5 may then be varied until the fingers 10 snugly engage the inner periphery of the skein. When the proper adjustment has been made, the arms may be clamped in their adjusted position by tightening the wing nut 9. It will, of course, be understood that the peripheral distance about the fingers 10, may be varied by varying the angular position of the arms 5. For instance, when it is desired to effect a maximum perimeter, the arms are positioned at right angles to each other so that the fingers 10 define the corners of a square.

In order to provide a shorter perimeter to accommodate smaller skeins of yarn, the angle between two adjacent arms of opposed pairs may be made less than a right angle so that the fingers 10 will define the corners of a rectangle; that is, provided the symmetry of the arrangement is maintained. Although a symmetrical arrangement of the arms with respect to the sleeve 7 is not essential, it is desirable to maintain a condition of symmetry within certain limits so that the center of mass of the yarn and supporting arms will substantially coincide with the axis of rotation.

The minimum perimeter of a symmetrical arrangement will be obtained only when two arms are employed in opposed relation. When the latter arrangement is used, the arms are prefer-

ably clamped in pairs, the outermost arm of each pair being the only one employed for supporting the yarn, thereby preventing the yarn from becoming entangled with the idle arms when it is being unwound from the skein. If a still smaller perimeter of the supporting structure is desired, the arms 5 may be removed from the sleeve 7 and again assembled thereon by passing the sleeve through apertures 28, positioned intermediate the apertures 6 and the fingers 10. It will be apparent that the arms 5 when thus assembled have a shorter effective length and consequently, produce a supporting structure having a smaller perimeter.

When the reel is not in use, the fingers 10 may be rocked into registration with their respective slots 11 which, upon loosening the wing nut 9, permits the arms 5 to be folded one upon the other as shown in Figure 2. The arms 5 may then be clamped together by tightening the wing nut 9 so as to retain their alignment. Thus, the entire reel assembly may be stored in a compact space. If desired, the spindle 21 may be withdrawn from the sleeve 7 by removing the wing nut 26 thus enabling the arms and holder to be stored separately.

From the above description, it is also apparent that the reel structure is capable of further disassembly such as the removal of the arms 5 from the sleeve 7 and the removal of the spindle 21 from the holder 18 thereby enabling the structure to be packed into a compact carton which greatly decreases the storage and shipping costs in merchandising the article.

Although I have shown and described a particular reel structure, it is to be understood that the same is for the purpose of illustration and that changes and modifications may be made by those skilled in the art without departing from the spirit and scope of the appended claims.

I claim:

1. A reel for holding skeins of yarn comprising a support, a plurality of arms mounted for simultaneous rotation upon said support, each of said arms having a slot extending longitudinally from the end edges thereof, a finger hingedly connected to each of said arms at the base of said slots, said fingers being adapted to swing outwardly forming an acute angle with their respective arms for holding the skein in suspended relation to enable the yarn to be unwound therefrom and to swing into substantial registration with their respective slots when not in use.

2. A reel for holding skeins of yarn comprising a support, a plurality of arms mounted for simultaneous rotation upon said support, each of said arms having a slot extending longitudinally from the end edges thereof, a finger hingedly connected to each of said arms at the base of said slots, said fingers being adapted to swing outwardly forming an acute angle with their respective arms for holding the skein in suspended relation to enable the yarn to be unwound therefrom and to swing into substantial registration with their respective slots when not in use, and means for releasably securing said arms in different adjusted angular positions with respect to each other whereby the perimeter defined by the fingers on said arms may be adjusted to substantially the same as the perimeter of the skein of yarn to be suspended from said fingers.

3. A reel for holding skeins of yarn comprising a support, a plurality of arms mounted for simultaneous rotation upon said support, a substantially straight finger hingedly mounted ad-

jacent the free end of each arm, said fingers being hinged to swing outwardly from a position coincident to a position forming an acute angle with their respective arms for holding the skein in suspended relation to enable the yarn to be unwound therefrom, and means associated with each arm and finger co-acting to limit said outward swinging movement of the finger.

4. A reel for holding skeins of yarn, comprising a support, a plurality of arms rotatably mounted at one end upon said support for movement independently of each other, a finger carried adjacent the free end of each arm for holding the skein in suspended relation to enable the yarn to be unwound therefrom, and means for releasably securing said arms in different adjusted angular positions with respect to each other, whereby the perimeter defined by the fingers of said arms may be adjusted to substantially the same as the perimeter of the skein of yarn to be suspended from said fingers.

5. A reel for holding skeins of yarn comprising a support, a plurality of arms rotatably mounted at one end upon said support for movement independently of each other, a finger hingedly mounted adjacent the free end of each arm, said fingers being adapted to swing outwardly from a position coincident to a position forming an

acute angle with their respective arms for holding the skein in suspended relation to enable the yarn to be unwound therefrom, and means for releasably securing said arms in different adjusted angular positions with respect to each other whereby the perimeter defined by the fingers on said arms may be adjusted to substantially the same as the perimeter of the skein of yarn to be suspended from the fingers.

6. A reel for holding skeins of yarn comprising a holder including means for removably attaching the holder to a suitable support, a spindle adjustably mounted in said holder, a sleeve rotatably mounted upon said spindle and provided with a socket in the inner end thereof, a plurality of arms rotatably mounted on said sleeve, means for clamping said arms to the sleeve in predetermined angular position with respect to each other, a supporting finger on each of said arms for holding the skein in suspended relation to enable the yarn to be unwound therefrom, a coil spring mounted in said socket and interposed between the holder and said sleeve, and means effective upon said adjustment of the spindle for urging the sleeve into engagement with said spring for frictionally holding said sleeve against undue rotation while the yarn is withdrawn from the supporting fingers.

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