C. A. PALMGREN.

SPOOL HOLDING SPINDLE.

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1,316,638.

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Fig. 1.

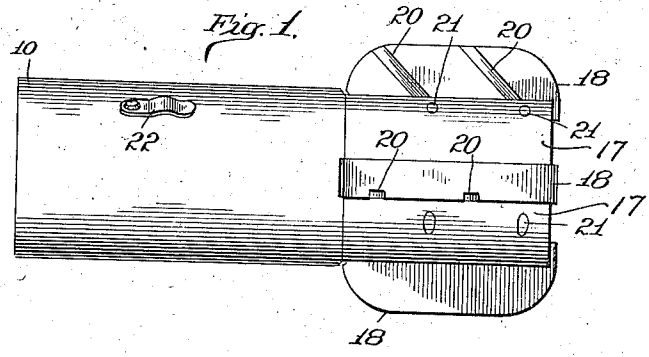


Fig. 2.

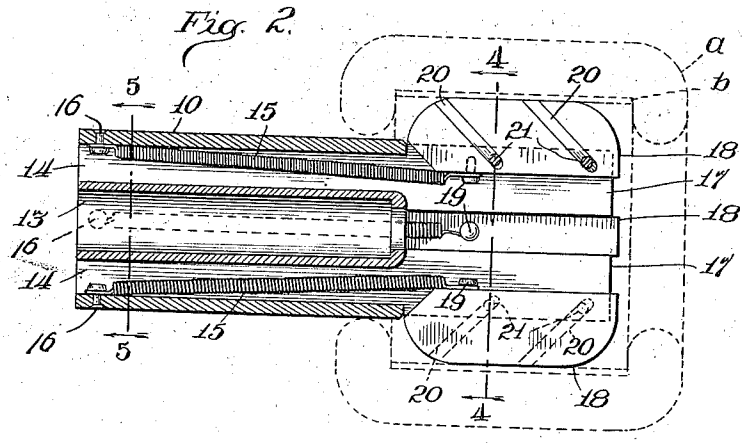


Fig. 3.

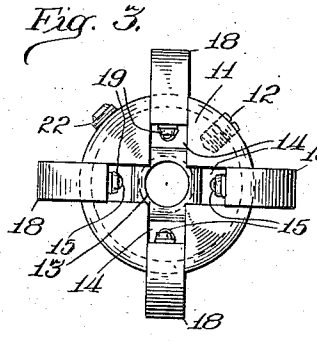


Fig. 4.

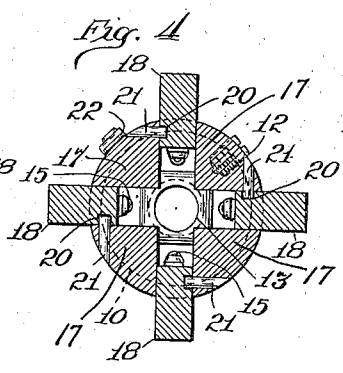
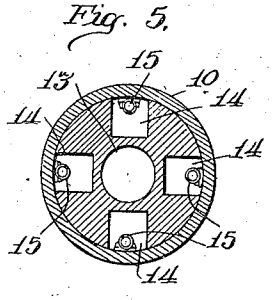


Fig. 5.



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SPOOL-HOLDING SPINDLE.

1,316,638. Specification of Letters Patent. Patented Sept. 23, 1919

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To all whom it may concern:

Be it known that I, CARL A. PALMGREN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Spool-Holding Spindles, of which the following is a specification, reference being had to the accompanying drawing.

This invention relates to improvements in spindles for holding spools while yarn, thread, wire, cord or the like is wound thereon during the rotation of the spool. It has for its object to provide such a spindle with improved means for receiving and holding spools of various interior diameters, whereby the trouble and expense incident to supplying a special spindle or spindle attachment for each size of spool is obviated. It is a further object of the invention to so construct the spool-holding means that a spool can be quickly placed in position upon the spindle, and upon the conclusion of the winding operation the wound spool can be readily disengaged and withdrawn from the spindle notwithstanding that the yarn or other material upon the spool has been so wound thereon, as is commonly done, as to have its spiral coils extend well down over the ends of the spool, the withdrawal being effected without any manual manipulation of the spindle or any of the parts carried thereby, but accomplished wholly by a pull on the finished product so as to cause it to contact the spool-holding devices and force them out of engagement with the spool. These objects I accomplish by the constructions shown in the drawings and hereinafter particularly described. That which I believe to be new will be pointed out in the claims.

In the drawings,—

Figure 1 is a side elevation of a spindle embodying my improvements;

Fig. 2 is a longitudinal central section through the device of Fig. 1, and showing in dotted lines the outline of a wound spool in place thereon;

Fig. 3 is an end view looking from the left in Fig. 1;

Fig. 4 is a cross-section taken at line 4—4 of Fig. 2; and

Fig. 5 is a cross-section taken at line 5—5 of Fig. 2.

Referring to the several figures, 10 indicates a hollow cylindrical spindle member in which is snugly fitted a core 11 that extends from end to end of the member 10, and which may be secured by a screw 12, or in any other suitable manner. The core is shown as having a central opening 13 extending therethrough, and provided also with a plurality of longitudinal passages 14,—four in number in the construction shown—spaced equally from each other. Such passages are shown as formed by slotting the surface of the core. In each passage 14 is located a coiled spring 15 made fast at one of its ends near one end of the passage 14 in which it lies, a rivet 16 secured in the wall of the cylindrical member 10 being shown as the securing means.

At the opposite end of the member 10, and secured thereon in any suitable manner is a head over which a spool is slipped and on which it is retained when yarn, thread or other material is to be wound thereon. Such head, as shown, comprises a plurality of separated segments 17. The number of such segments corresponds to the number of longitudinal passages 14, and the spaces between the segments are located opposite the ends of the said passages so that the coiled springs that are secured in such passages may extend respectively into said spaces. In each of these slots or spaces in the head that is formed, as stated, of the segments, is fitted so as to move freely up and down therein, a block 18. To each block is attached the forward end of one of the coiled springs 15 by means of a screw or pin 19, or otherwise. Means for retaining and guiding the blocks in their respective spaces or slots between the segments 17 are provided, consisting, in the construction shown, of two diagonal slots 20 formed in one face of each block into each of which projects a pin 21 secured near the outer edge of the adjacent segment. The inner ends of these diagonal slots 20 are closed, as clearly shown in Fig. 2, which prevents the blocks from moving out of their respective spaces in the head. The inclination of the slots 20 is such that the tension of the coiled springs tends to hold the blocks 18 normally projected to the limit of their outward movement, as in Fig. 1. It is intended that the blocks shall be of such length that when so projected their ends will be flush with the ends of the segments 17, as shown in said Fig. 1, and that they shall be of such width that they may be forced in-

ward toward the axis of the head to such an extent that their outer edges will not extend above the curved faces of the segments. As such inward movement of the blocks takes place, the blocks will also move forward and project beyond the segments, due to the engagement of the pins 21 with the inclined slots 20. In Fig. 2, the blocks are shown as being moved slightly to such a position. The ends of each block are curved to facilitate the placing of a spool thereon and its removal therefrom.

With the device shown in Figs. 1 to 5, and hereinabove described, the operation is as follows: A spool, such for example, as that indicated in dotted outline in Fig. 2 and marked *b*, is to be pressed at its open end against the rounded outer ends of the blocks 18; such pressure will force the blocks inward and forward against the pull of the springs 15 sufficiently to allow the spool to be moved fully onto the blocks, where it will be frictionally held by reason of the outward pressure that the springs cause the blocks to exert. The rounded edges of the blocks against which the spool is first forced, of course, facilitate the placing of the spool in position, as will be understood. The end of the thread or other material that is to be wound upon the spool is made fast under a spring clip 22 on the member 10, and the spindle as a whole is then revolved and otherwise moved as is usual to cause spiral windings of the material on the spool, such windings extending over the ends of the spool as far as the surface of the member 10, as indicated by dotted lines in Fig. 2, where such material is indicated by *a*. The withdrawal of the wound spool by a pull thereon will, therefore, bring the overhanging wound material at the inner end of the spool against the curved inner ends of the several blocks 18, but as such blocks will readily move inward against the pull of their respective coiled springs the wound spool is easily slipped off the blocks.

By my improvements the same devices can be utilized for holding equally well spools of various sizes.

What I claim as my invention, and desire to secure by Letters Patent, is:—

1. In a device of the class described, the combination with a spindle member, of a plurality of spring-pressed rigid blocks for frictionally engaging the interior wall of a spool, each of said blocks being independently and bodily movable inwardly of the spindle member and to the same extent throughout its length when pressure is applied to the outer edges of the blocks by the forcing of a spool thereover.

2. In a device of the class described, the combination with a spindle member, of a plurality of radially-arranged spring-pressed rigid blocks for frictionally engaging the interior wall of a spool, each of said blocks being independently and bodily movable inwardly of the spindle member and to the same extent throughout its length when pressure is applied to the outer edges of the blocks by the forcing of a spool thereover.

3. In a device of the class described, the combination with a spindle member, of a plurality of spring pressed blocks for frictionally engaging the interior walls of spools of different interior diameter, said blocks being independently movable inwardly and longitudinally when pressure is applied to the edges of the blocks by the forcing of a spool thereover and outwardly and in a reverse direction longitudinally when the spool is removed therefrom.

4. In a device of the class described, the combination of a hollow spindle member, a slotted head connected to one end thereof, a plurality of blocks slidingly mounted in said head for engaging spools of different interior diameters, and spring means located in said spindle member and connected with said blocks for holding said blocks normally projected.

5. In a device of the class described, the combination of a hollow spindle member, a slotted head connected to one end thereof, a plurality of blocks slidingly mounted in said head for engaging spools of different interior diameters, and a coiled spring for each block, said springs each arranged longitudinally of and within the spindle member and secured at one end to such member and at the other end to a block, said springs normally holding said blocks projected.

6. In a device of the class described, the combination with a spindle member having a plurality of longitudinal passages therein and a coiled spring secured in each of such passages, of a slotted head connected with one end of said spindle member, a plurality of blocks slidingly mounted in said head for frictionally engaging spools of different interior diameters, said springs being connected with said blocks and normally holding them projected, and means for guiding the movements of said blocks.

7. In a device of the class described, the combination with a spindle member having a plurality of longitudinal passages therein and a coiled spring secured in each of such passages, of a slotted head connected with one end of said spindle member, a plurality of blocks slidingly mounted in said head for frictionally engaging spools of different interior diameters, said springs being connected with said blocks and normally holding them projected, and inclined guiding means to compel a longitudinal movement of the blocks simultaneously with their inward and outward movement.

8. In a device of the class described, the combination of a spindle, a slotted head con-

nected to one end thereof, a plurality of radially-arranged blocks slidingly mounted in said head for engaging the interior wall of a spool, and spring means connected with the inner edges of the blocks for holding the blocks normally projected.

9. In a device of the class described, the combination of a spindle, a slotted head connected to one end thereof, a plurality of radially-arranged blocks slidingly mounted in said head for engaging the interior wall of a spool, spring means connected with the inner edges of the blocks for holding the blocks normally projected, and inter-engaging means on said head and each of said blocks for preventing withdrawal of the blocks from the head.

10. In a device of the class described, the combination of a spindle, a slotted head connected to one end thereof, a plurality of radially-arranged blocks slidingly mounted in said head for engaging the interior wall of a spool, spring means connected with the inner edges of the blocks for holding the blocks normally projected, and inter-engaging means on said head and each of said blocks for preventing withdrawal of the blocks from the head, said means comprising a pin affixed to one of said parts and a slot in the other of said parts, one end of such slot being closed.

11. In a device of the class described, the combination of a spindle, a slotted head connected to one end thereof, a plurality of radially-arranged blocks slidingly mounted in said head for engaging the interior wall of a spool, spring means connected with the inner edges of the blocks for holding the blocks normally projected, and means on said head and each of said blocks for compelling a longitudinal movement of each block simultaneously with its projection or retraction.

CARL A. PALMGREN.