Aug. 16, 1938. H. C. HOWSAM 2,126,993

SPOOL

Filed Dec. 24, 1936

Fig. 1.

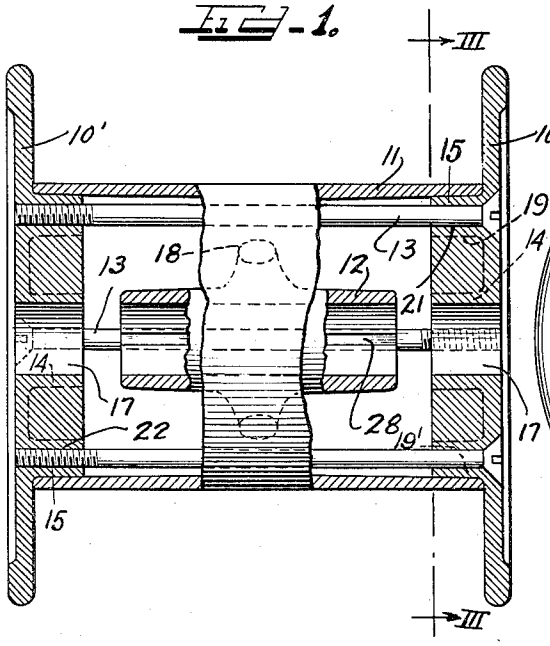


Fig. 2.

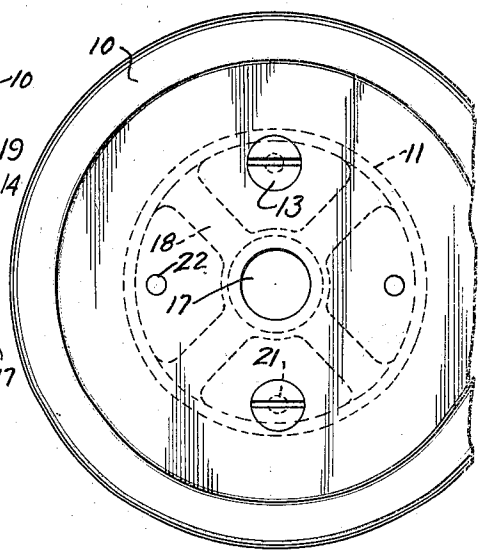


Fig. 3.

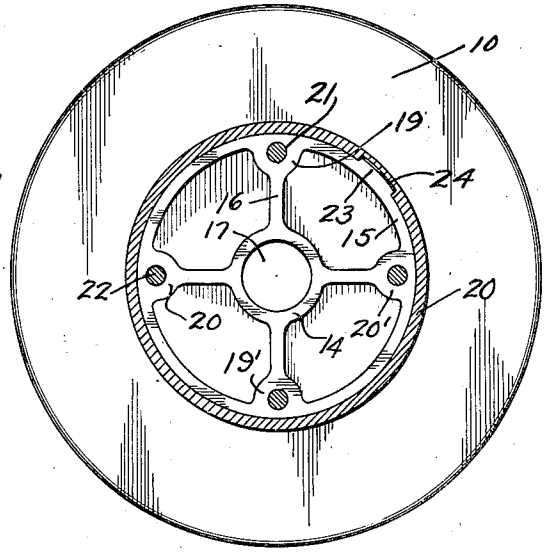
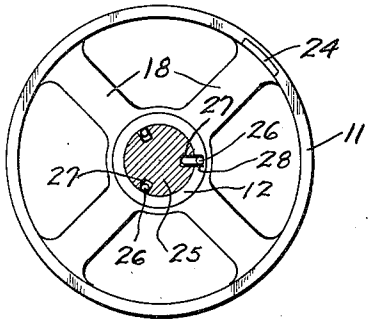


Fig. 4.



Inventor

HILYARD C. HOWSAM.

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2,126,993

UNITED STATES PATENT OFFICE

2,126,993

SPOOL

Hilyard C. Howsam, Chicago, Ill., assignor to Hubbard Spool Company, Chicago, Ill., a corporation of Illinois

Application December 24, 1936, Serial No. 117,554

3 Claims. (Cl. 242—124)

This invention relates to spools for supporting material such as wire or the like, and which are strong and durable yet comparatively light, and which may be constructed entirely or only partly of metal.

The spool of my invention comprises a barrel part, a winding arbor receiving part, heads and means for clamping the heads to the barrel ends.

An important feature of the invention resides in making the barrel tube and the arbor receiving tube parts of an integral structure which may be readily die cast or molded from metal, non-metallic materials, or suitable composition material. A further important object of the invention is to provide one or more channels in the arbor receiving tube part of the spool in which channels the spring keys of a winding arbor may engage in order that the spool may be more securely held on the arbor against rotational displacement thereof during a winding operation.

The above cited and other important features of the invention are incorporated in the structure shown on the drawing, in which drawing:—

Figure 1 is a side elevation of a spool, partly in vertical diametrical section;

Figure 2 is an end view;

Figure 3 is a section on plane III—III of Figure 1; and

Figure 4 is an end view of the barrel and arbor tube structure.

The spool comprises heads 10 and 10', a barrel part 11, an arbor receiving tube part 12, and means such as screws 13 for clamping the heads to the barrel part 11. The heads are preferably die castings of strong and durable yet comparatively light metal but could be die cast, pressed, molded, or otherwise formed of non-metallic material, such as "Bakelite", fiber, or suitable composition material.

Each head 10 is in the form of a disk having the annular flanges 14 and 15 extending inwardly therefrom and strengthening ribs 16 extending radially between the flanges, the inner flange 14 surrounding the winding arbor passage 17, and the outer flange 15 serving as a seat for the adjacent end of the barrel part 11.

The barrel part 11 and the arbor receiving part 12 are tubular and form part of an integral structure of metallic or non-metallic material and die cast, molded, or otherwise formed. In this integral structure, the barrel tube and the arbor receiving tube are held together by spokes or arms 18 extending from the middle portion of the arbor receiving tube to the barrel tube. The means for clamping the heads to the barrel tube ends may be in the form of screws 13 arranged as disclosed in my copending application Serial No. 113,315, filed November 30, 1936, patented October 26, 1937, as Patent 2,096,965. As shown in Figure 3, the ribs 16 are spaced 90° apart and are enlarged at their outer ends to form bosses 19 and 19' which are diametrically opposite, and bosses 20 and 20' which are diametrically opposite and spaced 90° from the bosses 19 and 19'. As shown, the bosses 19 and 19' have unthreaded passages 21 therethrough, while the bosses 20 and 20' have threaded passages 22 therethrough. The unthreaded passages 21 are counterbored at their outer ends to receive the heads of the screws extended therethrough, while the threaded passages 22 receive the threaded ends of screws, the threaded passages in one head being in axial alignment with the unthreaded passages in the other head. With this arrangement, the heads can be made exactly alike in order to be interchangeable. I have shown four screws, but it is evident that a greater number of screws may be provided as desired, with one set of screws threading into one of the heads and the other set of screws threading into the other head.

The flanges 15 of the heads engage snugly in the ends of the barrel tube 11 to form a tight and rigid joint. In order to secure against relative displacement of the heads and barrel tube, the head flanges 15 may have key extensions 23 engaging in keyway 24 formed in the barrel tube 10. The key extensions and keyway are so located that when the spool is assembled, the screws 13 will pass through the spaces between the spokes 18 of the integral barrel and arbor receiving structure.

The arbor receiving tube part 12 is in axial alignment with the passages 17 through the heads, and the length of the tube part is such as the tube will afford ample engagement surface for the arbor shaft. On Figure 4 I have shown an arbor shaft 25 extending through the tube part 12, such arbor being of well known construction, in which springs 26 are supported in longitudinal channels 27, the springs being normally bowed beyond the surface of the arbor so as to be compressed when the arbor is inserted in the arbor receiving tube and to establish a friction connection. In order that such friction connection will not have to be depended upon to prevent turning of the spool on the arbor, I provide a groove or keyway 28 in the tube part 12 for receiving one of the arbor springs so that the spool will be secured to the arbor against any rotational

movement thereof. When the spool is slipped onto an arbor, the springs may not be in alignment with the keyway **28** and the spool will be held frictionally to the arbor, and should the spool rotate relative to the arbor, the keyway **28** will receive the nearest spring and then further relative rotational movement will be prevented.

The integral structure comprising the barrel and arbor receiving parts can be readily cast of metal or molded or otherwise formed of suitable non-metallic material, such as "Bakelite", fiber, or composition material. In such integral structure, the cylindrical barrel winding surface will always be co-axial with the tube **12** and the supporting arbor so that the spool will always run true for accurate and efficient winding.

I have shown a practical and efficient embodiment of the various features of my invention, but I do not desire to be limited to the exact structure, arrangement, and operation shown and described as changes and modifications may be made which would still come within the scope of the invention.

I claim as follows:

1. A spool structure of the class described comprising heads having each a cylindrical extension on its inner side, a barrel tube seating at its ends on said extensions to be held thereby concentric with said heads, an arbor receiving tube extending axially within said barrel tube between said heads and spaced at its ends from said heads, said barrel tube and said arbor receiving tube forming part of an integral structure, each head having an axial passageway in alignment with the arbor receiving tube bore for assisting said tube in aligning an arbor and holding the spool concentric thereon, and means for clamping said heads against the barrel tube ends.

2. A spool structure of the class described comprising a barrel tube, heads each in the form of a disc having outer and inner cylindrical flanges extending inwardly therefrom, said outer flanges receiving and seating the barrel tube at its ends, an arbor receiving tube extending axially within said barrel tube between the inner flanges on said heads and spaced at its ends from said flanges, each head having an axial bore therethrough surrounded by its inner flange for assisting the arbor receiving tube to align an arbor extending therethrough and to hold the spool concentric with the arbor, said barrel tube and arbor receiving tube forming part of an integral structure.

3. A spool structure of the class described comprising a barrel tube, heads each in the form of a disc having a cylindrical projection on its inner side for receiving and seating the barrel tube at its respective end, an arbor receiving tube extending axially within said barrel and spaced at its ends from said heads, said arbor receiving tube being supported solely by said barrel tube, said heads having each an axial passageway therethrough coaxial with the bore of the arbor receiving tube for assisting said arbor receiving tube in mounting the spool structure on and concentrically with an arbor, and means extending through and between said heads for clamping said heads to the barrel tube ends.

HILYARD C. HOWSAM.