July 25, 1944. H. C. HOWSAM 2,354,375

SPOOL OR REEL

Filed Feb. 15, 1943

Fig. 1

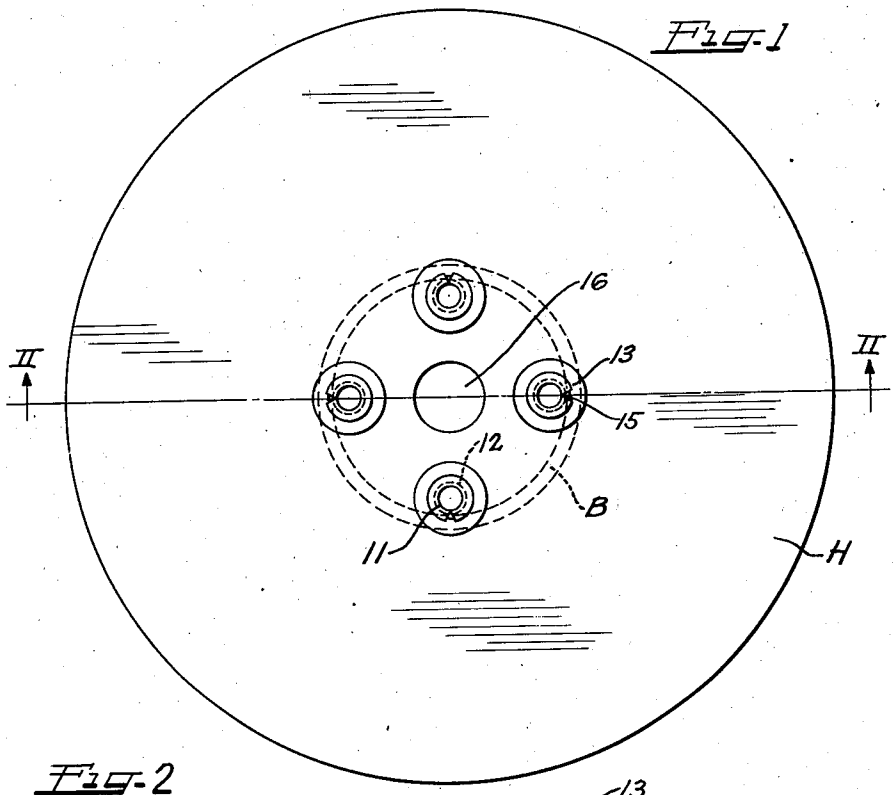


Fig. 2

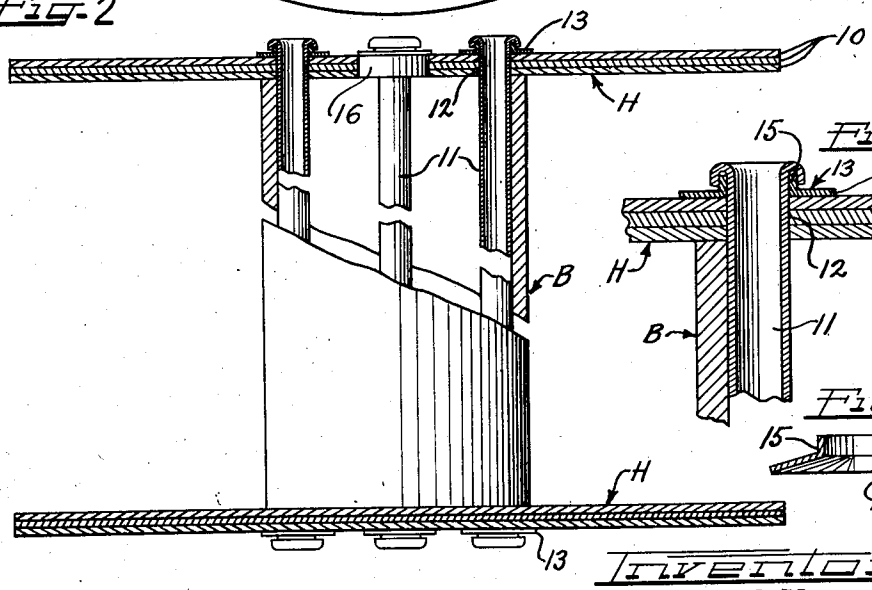


Fig. 3

Fig. 4

Inventor

Hilyard C. Howsam

by Charles Hill Attys.

Patented July 25, 1944 2,354,375

UNITED STATES PATENT OFFICE

2,354,375

SPOOL OR REEL

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

Application February 15, 1943, Serial No. 475,879

1 Claim. (Cl. 242—118)

This invention relates to spools or reels which are particularly useful and desirable for holding material such as thread, yarn, or non-metallic cord, or comparatively light electrical conductors such as electric light cord.

An important object of the invention is to produce a light but strong spool or reel having head and barrel members preferably of non-metallic material such as paper, wood, laminated structure, plastic, or analogous material.

A further important object is to provide head and barrel members of material which may be readily impregnated with suitable substance for protection, binding, or weatherproofing.

Another important object is to provide light yet strong tie members preferably in the form of metal tubes extending through the barrel for alignment thereof relative to the heads and for securing the heads intimately against the barrel ends.

A further object is to provide tubular tie members extending through the barrel and through openings in the heads, with spring washers receiving the tube ends and having annular flanges thereon around which the tube ends are securely riveted for tensing of the tubes to draw the washers against the outer sides of the heads and to clamp the heads securely against the barrel ends.

The various features of my invention are embodied in the structure shown on the drawing, in which:

Figure 1 is an end view of a spool or reel;

Figure 2 is a side elevation, partly in section, on plane II—II of Figure 1;

Figure 3 is an enlarged sectional view showing the engagement of the ends of the tie tubes with washers; and

Figure 4 is a section of one of the washers showing the dished or arched shape of the washers before the tie tubes are riveted thereto.

The spool shown comprises the barrel B and the heads H. The barrel or hub B may be a plain cylindrical tube which may be of light metal but is preferably of non-metallic material such as paper, wood, composition, plastic or other suitable non-metallic material. The heads are preferably in the form of plain disks of non-metallic material of sufficient strength, such as plastic or composition, or, as shown, the disks may be built up of laminations 10 of wood or other non-metallic material intimately bonded together. Where the barrel or the heads are of porous or absorbent material they are preferably impregnated with suitable substance for binding together of the fibres, and for protection against moisture, and for presenting a smooth surface to the material which is to be wound on the spool.

For centering the heads on the barrel and for holding them securely and intimate against the barrel ends, I provide tie members 11 preferably in the form of tubes of comparatively light sheet metal. These tie members may be lengths of tubing, or may be formed by bending lengths of sheet metal blanks into tubular form. The tubes extend through openings 12 in the heads, these openings being located so that the tubes will extend through the barrel in engagement with the inner side thereof in order that the tubes will then concentrically align the heads and the barrel. Any number of these tie tubes may be provided, four being shown spaced circumferentially equal distances apart.

The tie tubes are primarily of a length for projection thereof a distance beyond the outer faces of the heads when the heads and barrel are assembled, in order that the projecting ends may be riveted or deflected radially. Where the heads are of comparatively hard material the tube ends may be riveted or deflected directly against the outer faces of the heads. However, where the heads are of softer material, I preferably provide seating washers 13 for engaging the outer faces of the heads and against which the end portions of the tie tubes are riveted. Referring particularly to Figures 3 and 4, I prefer to use a spring type of washer whose body 14 is arched or dished and of sufficient diameter to afford ample surface for seating against the heads when the tie tubes extending through the washers have their outer portions deflected or riveted thereagainst for clamping the heads securely and intimately against the barrel ends. In order to obtain more secure and stronger engagement of the tube riveted ends with the washers, I preferably provide a flange or neck 15 on the washers around which the tube ends are intimately bent as shown on Figure 3. The riveting pressure will be sufficient to substantially flatten out the dished bodies of the washers for intimate seating thereof against the heads, and the comparatively large seating area will prevent sinking or cutting of the washers into the material of the heads. After the riveting operation, the spring action of the washers will hold the heads intimately against the barrel ends to form closed joints which will prevent entrance or catching of material wound on the spool. The heads have central passageways 16 for receiving an arbor or other supports

on which the spool may be mounted for loading or unwinding thereof.

I have thus produced a light weight spool capable of holding a comparatively large amount of material and whose head and barrel parts can be economically manufactured from inexpensive non-metallic materials. By the use of spring washers with large seating areas, and around whose necks the ends of the tie tubes are intimately riveted and deflected, the heads will be intimately clamped against the barrel ends and the heads strengthened against dishing or warping.

Although I prefer to construct the barrel and heads of non-metallic material, it is conceivable that these parts could be of metal, such as aluminum, magnesium, or other light but strong and durable metal.

I claim as follows:

A spool comprising a tubular barrel, heads for the ends of said barrel having flat outer faces, said heads having openings therethrough, tubular metallic tie members extending through said barrel and said head openings, spring washers receiving the outer ends of said tie members and having outwardly extended necks, the outer portions of said tie members being riveted around said necks, said washers being primarily of conical dish shape with only their outer edges engaging the flat outer faces of said heads but said washers being deflected into intimate flat engagement with said faces with their outer edges withdrawn from cutting edge contact with said faces when the outer portions of said tie members are riveted around the washer necks.

HILYARD C. HOWSAM.