April 6, 1937. H. C. HOWSAM 2,076,084

SPOOL

Filed June 22, 1936

Fig. 1.

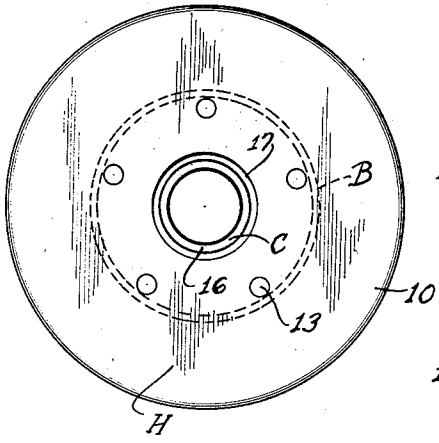


Fig. 2.

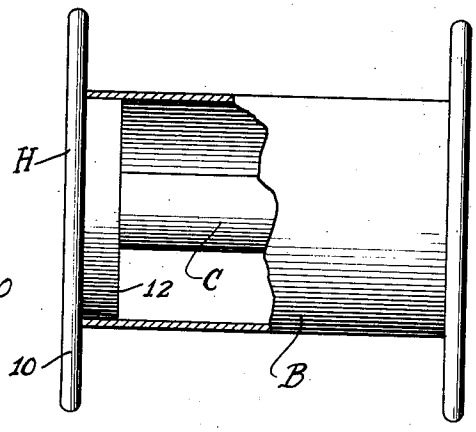
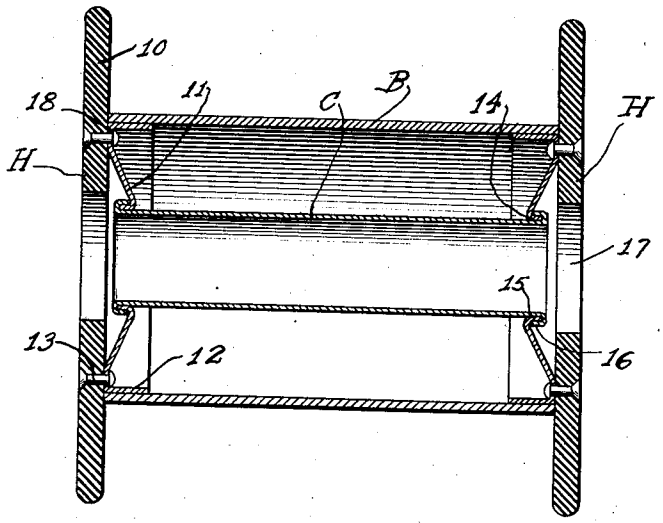


Fig. 3.



Inventor

HILYARD C. HOWSAM.

By Charles Fish Attys.

Patented Apr. 6, 1937 2,076,084

UNITED STATES PATENT OFFICE

2,076,084

SPOOL

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

Application June 22, 1936, Serial No. 86,567

8 Claims. (Cl. 242—119)

My invention relates to spools for carrying material such as wire, yarn, thread, or the like, and the main purpose of the invention is to produce an inexpensively manufactured light weight spool but which is of sufficient rigidity and strength to withstand the strain imposed by the winding thereon of material such as wire under more or less tension and which is adapted to withstand strain which may result from subsequent expansion of the mass of the wire wound thereon.

My improved spool is further disclosed by the accompanying drawing, in which:

Figure 1 is an end view;

Figure 2 is a side elevation, partly in diametral section; and

Figure 3 is an enlarged full diametral section of the spool.

The spool shown comprises end or head structures H, a barrel structure B, and a core or arbor receiving tube C. Each end or head structure comprises a circular disc 10 with a frame 11 secured against the inner side thereof concentric therewith. The head discs 10 may be metallic in the form of metal plates or die castings, but they are preferably of non-metallic material such as wood, paper, fiber, or special material as for example pressed wood fiber, known in the trade as "Masonite".

The frames 11 are preferably stamped and formed integral from sheet metal such as steel and each frame has an inwardly extending peripheral annular flange 12, these flanges forming seats for the ends of the barrel structure B. Each frame is rigidly secured to its disc 10 preferably by means of rivets 13 extending through the discs and through the frames as close as possible to the barrel supporting flanges 12, the rivet heads being flush with the outer faces of the discs so as not to interfere with the rotation of the spool when mounted for winding or unwinding and so the spools may be accurately stacked.

The barrel or hub structure B of the spool is in the form of a cylindrical shell which may be of sheet metal but is preferably of lighter material such as paper, wood, or composition or other special non-metallic material which is light but stiff and durable. The barrel at its end portions intimately receives the flanges 12 of the head structures with the barrel end edges abutting the inner face of the head discs 10.

The inner tube C is preferably of sheet metal and serves to clamp the head structures to the barrel ends and also provides an aligning passage for arbors or supports on which the spool is to be mounted during winding or unwinding thereof. The tube at its ends extends through openings 14 in the body walls of the frames 11 and the material surrounding these openings is preferably deflected outwardly to form annular flanges 15 around which the end portions 16 of the tube C are deflected for interlocking engagement therewith, the process of deflecting the tube ends creating the tension by which the tube C will exert inward pull on the frames 11 for securely clamping the head discs 10 against the barrel B. The head discs 10 have axial openings or passageways 17 in alignment with the bore of the tube C and preferably of greater diameter than the tube so that the edges of the passageways 17 will clear the arbors or other supports within the tube C.

The bodies of the frames 11 could be flat and in engagement throughout their extent with the inner faces of the head discs 10 and with the interlocked flanges 15 and tube ends 16 within the openings 17, but preferably the frame bodies are dished inwardly to leave only a small annular flat seating portion 18 for engaging the head discs 10 and for receiving the rivets 13. If the frame bodies were made flat, the pull exerted thereon during the interlocking therewith of the tube C, would tend to dish the frames and cause distortion of the spool. However, by pre-dishing the frames, the tension during the interlocking process will cause no further dishing or distortion, and as the rivets are close to the barrel ends the interlocking pull on the head discs 10 will be substantially in longitudinal alignment with the barrel, so that the head discs will not be warped.

I thus produce a very simple, light, but strong and rigid spool whose cost of manufacture may be so little that the spool could be discarded or destroyed after unloading thereof to thus eliminate repair costs and expenses involved in shipping back the unloaded spool for reloading thereof.

I have shown a practical and efficient embodiment of my invention but I do not desire to be limited to the exact construction and arrangement as described as changes and modifications may be made without departing from the scope of the invention.

I claim as follows:

1. A spool of the class described comprising a barrel shell, head structures comprising head discs and frames riveted to the inner sides thereof and having inwardly extending flanges for re-

ceiving the barrel shell ends, and an arbor receiving tube interlocked with said frames to exert inward pull thereon for clamping said head discs against the barrel ends, said head discs having passages in alignment with said tube.

2. A spool of the class described comprising a barrel in the form of a cylindrical shell, heads for said barrel, a frame on the inner side of each head having a peripheral inwardly extending flange for receiving the adjacent end of the barrel, rivets extending through each frame adjacent to its flange for securing the frame to the head, said frames inwardly of the rivets being dished inwardly, and an arbor receiving tube interlocked at its ends with said frames to exert axial inward pull thereon for clamping said heads against the barrel ends.

3. A spool of the class described comprising a barrel in the form of a shell, head structures for said barrel each comprising a disc with a frame on the inner side thereof, said frames being of sheet metal and having inwardly extending peripheral flanges affording seats for the adjacent ends of the barrel, rivets extending through said frames directly inwardly of said flanges for securing the frames against the inner sides of the respective discs, said frames having axial passageways with the metal adjacent thereto deflected outwardly to form flanges, and an arbor receiving tube extending through said passageways and having its ends interlocked with said flanges whereby to exert tension for drawing said discs intimately against the barrel ends, said discs having passageways in alignment with said arbor receiving tube.

4. A spool of the class described comprising a barrel in the form of a shell, head structures for said barrel each comprising a disc with a frame on the inner side thereof, said frames being of sheet metal and having inwardly extending peripheral flanges affording seats for the adjacent ends of the barrel, rivets extending through said frames directly inwardly of said flanges for securing the frames against the inner sides of the respective discs, said frames having axial passageways with the metal adjacent thereto deflected outwardly to form flanges, and an arbor receiving tube extending through said passageways and having its ends interlocked with said flanges whereby to exert tension for drawing said discs intimately against the barrel ends, said discs having passageways in alignment with said arbor receiving tube, said frames between the rivets and the arbor tube receiving passages being dished inwardly.

5. A spool of the class described comprising a barrel shell of non-metallic material, non-metallic heads for said barrel, a sheet metal frame on the inner side of each head having a peripheral flange extending inwardly for receiving the adjacent end of the barrel, rivets passing through said heads and through said frames close to the frame flanges for securing the frames to the heads, said frames having axial passageways, and an arbor receiving tube extending through said passageways and interlocked at its ends with said frames.

6. A spool of the class described comprising a barrel shell of non-metallic material, non-metallic heads for said barrel, a sheet metal frame on the inner side of each head having a peripheral flange extending inwardly for receiving the adjacent end of the barrel, rivets passing through said heads and through said frames close to the frame flanges for securing the frames to the heads, said frames having axial passageways, an arbor receiving tube extending through said passageways and interlocked at its ends with said frames, said frames intermediate the rivets and passageways being dished inwardly and said heads having openings in alignment with the arbor receiving tube.

7. A spool of the class described comprising a barrel shell, head structures and an arbor receiving tube, each head structure comprising a disk and a separate sheet metal frame on the inner side thereof having a peripheral flange and means rigidly and permanently securing the frame to the disk at points immediately inwardly of said flange, said flanges affording seats for the barrel ends, said arbor receiving tube extending through and being interlocked at its ends with said frames to exert inward pull thereon for clamping the heads against the barrel ends, said disks having passages therethrough in alignment with said tube.

8. A spool of the class described comprising a barrel shell, head structures and an arbor receiving tube, each head structure comprising a disk and a separate sheet metal frame on the inner side thereof having a peripheral flange and means rigidly and permanently securing the frame to the disk at points immediately inwardly of said flange, said flanges affording seats for the barrel ends, said arbor receiving tube extending through and being interlocked at its ends with said frames to exert inward pull thereon for clamping the heads against the barrel ends, said disks having passages therethrough in alignment with said tube, said frames intermediate their securing means and said tube being dished inwardly.

HILYARD C. HOWSAM.