May 3, 1932. H. C. HOWSAM ET AL 1,856,253

SPOOL OR REEL

Filed Jan. 14, 1931

Fig. 1

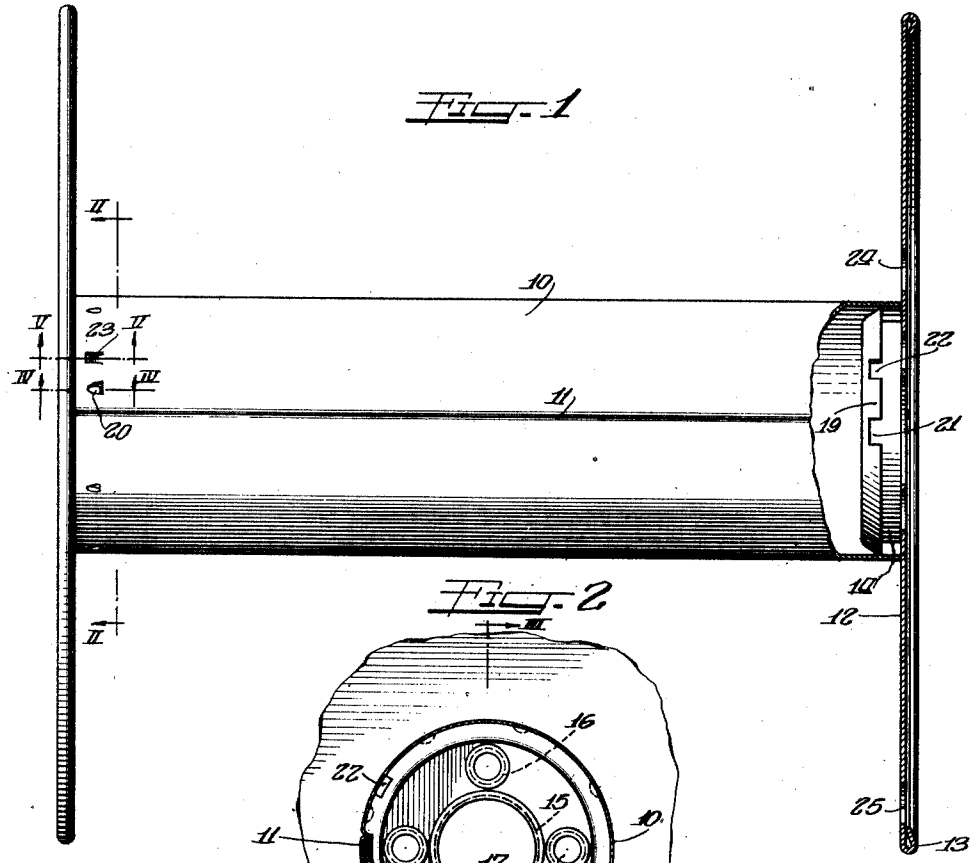


Fig. 2

Fig. 3

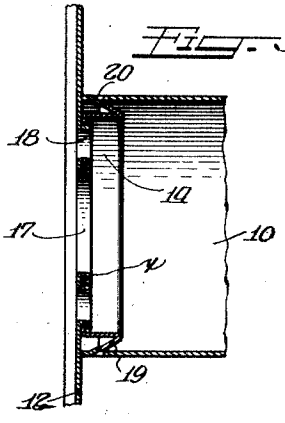


Fig. 4

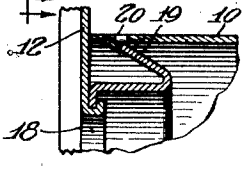
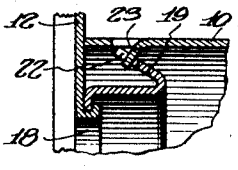


Fig. 5



Inventors:
Hilyard C. Howsam.
Anthony Havac.
by: Charles Wells
Attys.

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UNITED STATES PATENT OFFICE

HILYARD C. HOWSAM AND ANTHONY HLAVAC, OF CHICAGO, ILLINOIS, ASSIGNORS TO HUBBARD SPOOL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

SPOOL OR REEL

Application filed January 14, 1931. Serial No. 508,703.

This invention relates to sheet metal spools or reels for supporting wires, lamp cords, ordinary cords, and like flexible material.

The main purpose of the invention is to produce a comparatively light but strong spool or reel comprising a unitary barrel or hub structure and unitary head structures together with means which will permit these structures to be readily assembled and rigidly secured together without need of tools, so that the barrel structures and the head structures may be manufactured separately and compactly packaged for economical shipment.

A further object of the invention is to provide improved interlocking arrangement for the barrel and heads which, after assembly of the barrel and heads to form the spool or reel, will permanently and rigidly hold the parts together against relative axial or rotational displacement.

The above and other features of the invention are incorporated in the structure disclosed on the drawings, in which drawings:

Figure 1 is a side elevation of a spool or reel with one of the heads and the adjacent end of the barrel in diametral cross-section;

Figure 2 is an enlarged view on plane II—II of Fig. 1;

Figure 3 is a section on plane III—III of Figure 2;

Figure 4 is an enlarged section on plane IV—IV of Figure 1; showing the interlocking between the barrel and heads against axial displacement; and

Figure 5 is an enlarged section on plane V—V of Figure 1, showing the interlocking between the barrel and heads against relative rotation.

The barrel 10 of the spool shown is a rectangular piece of sheet metal rolled into cylindrical form with its edges secured together by a seam 11. Each of the spool heads 12 is in the form of a circular piece of sheet metal with its peripheral section 13 curled in to form a stiffening and strengthening rim. On the inner side of each head and concentric therewith is secured a hub structure in the form of a shallow cylindrical cup 14. The base of each hub structure has a central circular opening 15, and surrounding this opening and equally spaced apart, are smaller openings 16, four such openings being shown. Each head has a central opening 17 for registering with the central opening 15 of the respective hub structure, and surrounding openings 18 for registering with the openings 16 of the respective hub structure. The openings 17 and 18 are primarily of smaller diameters than the openings 15 and 16 so that when a hub structure is applied to a head with the respective openings in register, the metal x overhanging the openings 15 and 16 may be deflected therethrough and against the inner side of the respective hub structure to thus securely rivet the hub structure to the head, the metal which is deflected around the registering opening edges forming also smooth rounded surfaces or ferrules.

The hub structures are of sheet metal and each has its outer peripheral section deflected and turned back to form the annular radially outwardly inclined flange 19, the outer peripheral diameter of this flange being of the same length as the inner diameter of the barrel 10 so that the barrel end may readily engage the flanges of the hub structures to be held accurately concentric with the heads 12.

For automatically locking the barrel to the heads against relative axial displacement when said barrel and heads are assembled, the barrel adjacent to its ends is deflected inwardly at intervals to form detents, tongues, or abutments 20 whose inner edges will abut the outer edges of the flanges 19 on the hub structures 14, as clearly shown in Figure 4. When the barrel is applied to the heads these tongues or abutments 20 engage with the outer beveled surfaces of the flanges 19 of the hub structures and as the various parts of the spool structure are of sheet metal there will be sufficient yield to permit the tongues or abutments to readily pass over the crests or outer edges of the flanges 19 and then the tongues or abutments will spring radially inwardly into abutting engagement with the flange edges and at the same time the outer edges of the barrel will snugly en-

gage against the heads, the barrel and heads being then securely interlocked against relative axial displacement. The assembly of the barrel and heads of a spool is accomplished very readily by slight pressure and entirely without need of any tools.

As the seam 11 of the barrel projects radially a distance beyond the inner surface of the barrel, clearance notches 21 are provided in the flanges 19 of the hub structures for receiving the seam. The cylindrical surface of the barrel is thus free to snugly engage against the cylindrical edges of the flanges 19, and the engagement of the seam in the notches will also form an interlock between the barrel and hub structures to secure the barrel and heads against relative rotational displacement. However, additional notches 22 are preferably provided in the flanges 19, and abutment tongues, or projections 23 projected from the barrel to engage in the notches to securely hold the parts together against rotational displacement. As shown in Figures 1 and 2, the notches 22 are adjacent to the notches 21 so that when the heads are applied to the barrel the notches may first receive the seam ends and the tongues or abutments 23 and then when pressure is applied to the heads the abutments 20 will pass over the hub structure flanges 19 and into interlocking engagement with the flange edges, and then the heads will be in correct abutting engagement with the barrel ends and the heads and barrel will be securely interlocked against axial or rotational displacement. The barrel and the head structures can thus be manufactured separately as unitary structures and separately compactly packaged and shipped to the customer who may readily, without the use of tools, assemble and lock the barrels and heads together with only slight pressure application. After assembly, the spool parts are permanently interlocked and cannot be separated without distorting or destroying the structure. As has been pointed out, the deflected riveted metal x forms a smooth, rounded ferrule for the openings surrounded thereby and therefore the spool will rotate smoothly and freely on a spindle or other support (not shown) inserted through the head central openings 17. Any one of the openings 18 in the heads may serve to receive a driving pin for causing rotation of the spool during winding or unwinding thereof. The heads may also have inner and outer openings 24 and 25 respectively for receiving the ends of the wires, cords, or other materials wound on the spool. The spool of the type shown is particularly adaptable and efficient for supporting comparatively lighter and bulkier material such as lamp cord, although the structure may be efficiently used for supporting other flexible materials.

We have shown one practical and efficient embodiment of the various features of our invention, but we do not desire to be limited to the details of construction and arrangement shown, as changes and modifications may be made without departing from the scope and spirit of the invention as defined in the appended claims.

We claim as follows:

1. In a structure of the class described, the combination of a cylindrical barrel formed of sheet metal, heads for said barrel formed of sheet metal, a sheet metal hub extending inwardly from each head concentric therewith and having its inner end bent outwardly and back to form an annular seating and retaining flange, the ends of said barrel being adapted to fit and receive said hub flanges, abutments deflected from said barrel for springing into interlocking engagement with the edges of said flanges when said heads are applied by pressure to said barrel ends, said abutments and flanges forming an interlocking connection between the barrel and heads to prevent relative axial displacement, said hub flanges having notches, and tongues deflected from said barrel to engage in said notches for locking said barrel and heads against relative rotational displacement.

2. In a structure of the class described, the combination of a cylindrical barrel formed of sheet metal with its edges joined by a seam, sheet metal heads for said barrel, a sheet metal hub secured to the inner side of each head concentric therewith and having an annular seating abutment for the respective end of the barrel, abutment projections at the ends of said barrel adapted when said heads are applied to said barrel to move across said hub abutments into position behind said abutments to interlock said heads and barrel against relative axial displacement, said hub abutments having notches for receiving the ends of the barrel seam and cooperating with said seam to lock said barrel and heads against relative rotational displacement.

3. In a structure of the class described, the combination of a cylindrical sheet metal barrel, heads for said barrel formed of sheet metal, an annular sheet metal hub secured to the inner side of each head concentric therewith, the free end of each hub being bent back to form an annular diagonal flange presenting an outer beveled face, said hub flanges forming aligning seats for the ends of the barrel, tongues deflected from said barrel at the ends thereof for engaging along the beveled faces of said hub flanges when said barrel and heads are assembled and for springing into position behind said flanges and into abutting engagement with the edges thereof when said heads are brought into engagement with the barrel ends, said tongues and flanges forming an interlock between said barrel and head against relative axial displacement, said hub flanges having

notches, and projections formed on said barrel for entering said notches when said barrel and heads are assembled and forming an interlock against relative rotational displacement of the barrel and heads.

4. In a structure of the class described, the combination of a cylindrical sheet metal barrel, sheet metal heads for said barrel, a hub structure for each head in the form of a cylindrical cup, the base of each cup and the corresponding head having registering openings and the metal of the head around its openings being deflected through the registering openings and against the inner side of the respective hub cup to rivet the hub cup to the head, an annular abutment on each hub, and deflections on said barrel interlocking with said hub abutments when said heads are applied to the barrel to lock said barrel and heads against relative displacement.

5. In a structure of the class described, the combination of a cylindrical sheet metal barrel, sheet metal heads for said barrel, a hub for each head in the form of a shallow cylindrical cup, each head and the base of the associated hub having registering central openings and a plurality of surrounding openings, the metal of the head being deflected through said openings against the inner side of said hub base to thereby rivet the hub to the head, the circumferential wall of each hub being deflected to form an annular abutment flange for seating and aligning the respective end of the barrel, and abutment projections deflected from said barrel for interlockingly engaging with said hub abutment flanges when said heads are applied to the barrel, whereby said barrel and heads are locked against axial displacement.

6. In a structure of the class described, the combination of a sheet metal cylindrical barrel, head members for said barrel formed of sheet metal, a hub member for each head in the form of a shallow metal cup, each head member and the respective hub member having registering central openings and a number of registering openings around said central openings, the metal of one of said members being deflected through said opening and against the outer side of the other member to thereby rivet said members rigidly together, the free end of each hub being turned back to form an annular abutment flange, and abutment projections on said barrel adapted for interlocking engagement with said hub abutment flanges when said head members and barrel are assembled and to rigidly lock said barrel and head members against relative axial and rotational displacement.

7. In a structure of the class described, the combination of a sheet metal barrel member, sheet metal head members, a hub member for each head member concentric therewith, each head member and respective hub member having a number of aligned openings and the metal of one of said members being deflected through said openings against the opposite side of said other member whereby to rivet said members rigidly together, said hub members receiving the ends of said barrel member, and means for interlocking said barrel member and hub members against axial and rotational displacement.

In testimony whereof we have hereunto subscribed our names at Chicago, Cook County, Illinois.

HILYARD C. HOWSAM.
ANTHONY HLAVAC.