Dec. 27, 1932. W. C. MILLS 1,892,356

SPOOL

Filed Dec. 5, 1930

Fig. 1.

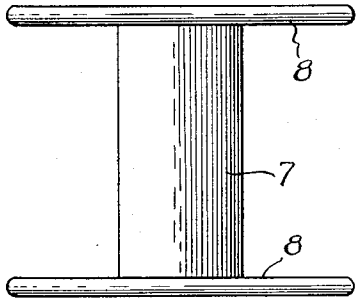



Fig. 2.

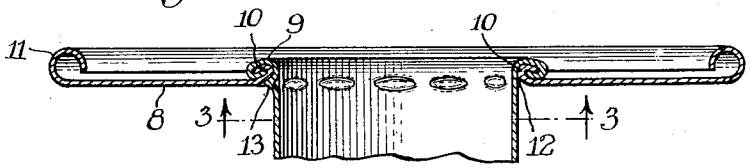



Fig. 4.

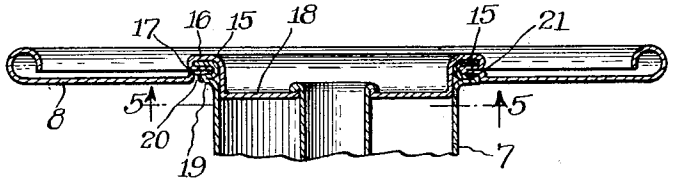



Fig. 3.

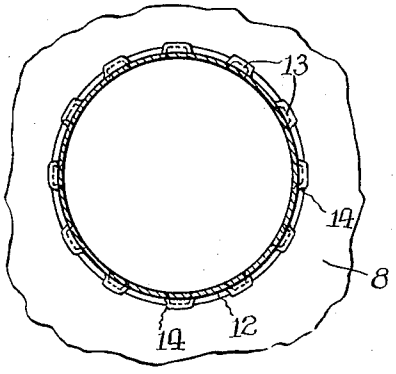
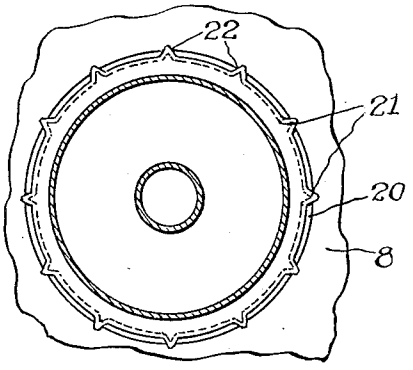



Fig. 5.




Inventor:
Wallace C. Mills,
By Lindabl, Parker & Dodson.
Attys.

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# UNITED STATES PATENT OFFICE

WALLACE C. MILLS, OF ROCKFORD, ILLINOIS, ASSIGNOR TO J. L. CLARK MANUFACTURING CO., OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS

## SPOOL

Application filed December 5, 1930. Serial No. 500,132.

The invention pertains to spools constructed of sheet metal, and has more especial reference to spools intended for use as containers for fine wire, silk thread and similar strand material.

In making sheet metal spools of the character indicated, the common practice is to form the tubular body or core of the spool from a flat sheet of metal bent into tubular form and to apply heads to opposite ends of the core, which heads are formed from disks of metal centrally apertured to receive the core ends and secured to such ends in interlocking relation. The object of the present invention is to provide a spool of improved construction such that the annular groove or crevice formed as an incident to the fastening of the heads onto the ends of the core shall be closed against the entry of wire or thread wound upon the core and confined by the heads, to the end that such wire or thread shall not become wedged in such crevices.

In the accompanying drawing I have illustrated my invention in spools of two specifically different but typical constructions. Of the drawing:

Figure 1 is a side elevational view illustrating in general a spool of the character to which the invention appertains.

Fig. 2 is a central longitudinal sectional view through one end of one form of spool embodying the invention.

Fig. 3 is a transverse sectional view taken approximately in the plane of line 3—3 of Fig. 2, with the outer portion of the head broken away.

Fig. 4 is a view similar to Fig. 2 but showing the invention embodied in another specifically different construction.

Fig. 5 is a fragmentary transverse sectional view taken approximately in the plane of line 5—5 of Fig. 4.

The spool comprises in general a tubular body 7 formed from a flat sheet of metal rolled into tubular form and having heads 8 formed from separate sheets of metal and secured on opposite ends of the body or core 7. The heads 8 are customarily fastened onto the ends of the tubular core 7 through the medium of an interlocking connection which may be varied as desired.

Referring now to Fig. 2, the connection therein shown for fastening the head onto the end of the core comprises an annulus 9 formed integral with the end of the core and curled outwardly and then inwardly in interlocking relation with a reversely bent flange 10 defining a central aperture in the head 8. The latter, as is customary in spools of this character, has an outer peripheral curl 11 for stiffening or strengthening purposes.

It will be observed that with the form of connection shown in Fig. 2 between the head and the end of the tubular core, an annular groove or crevice 12 is formed. I close this crevice at closely spaced intervals by means of a series of radial projections 13 preferably formed by making indentations in the inner surface of the core substantially in the plane of the head 8. The projections 13 are so proportioned that when the connection is formed by the head and the core, the projections are pressed forcibly into the crevice so as to become wedged snugly therein, thus completely filling the crevice at such point. In forming the connection, the parts are customarily pressed between suitable dies (not shown), the inner one of which operates upon the projections 13 to produce the desired wedging effect, leaving an exposed flat surface substantially flush with the inner face of the head.

Preferably the indentations are made in the end of the core in advance of the assembling operation, and are of such depth that the radial extent of the resulting projections 13 is slightly greater than the normal width of the crevice. Accordingly when the projections are pressed into the crevice, corresponding indentations are formed in the flange 10 of the head, thus insuring that the projections will extend entirely across the normal width of the crevice and thus bridge the same, as indicated at 14 in Fig. 3.

It will also be observed that the projections 13 form in effect radial shoulders against which the head is seated, thus lending increased strength to the connection between the parts.

In the construction shown in Fig. 4, the head 8 is secured on the end of the tubular core 7 by means of a connection comprising an annulus 15 which in this instance is formed integral with the head, and an outwardly turned flange 16 on the end of the core is disposed within the annulus 15 in interlocking relation therewith. The annulus 15 has its outer peripheral edge formed integral with an axially offset flange 17 on the head, and the inner peripheral edge of the annulus is formed integral with an end closure plate 18 which is inset into the tubular core. The latter is shaped to provide an annular shoulder in the form of a bead 19 which is engaged by the flange 17 of the head, said flange 17 being offset in an axial direction a distance corresponding to the thickness of the bead.

In this instance a crevice 20 is formed by the periphery of the bead 19 and the head 8, and to close this crevice I provide a series of projections 21 struck radially outwardly from the periphery of the bead, as shown in Fig. 5. In forming the connection between the head and the core, the parts are in this instance also pressed between dies, and during the interlocking operation the projections 21 are squeezed or wedged snugly into the crevice 20 preferably forming slight indentations in the adjacent portion of the head as indicated at 22 in Fig. 5.

It will be observed that in both instances the annular groove or crevice formed by the tubular head and the core as an incident to fastening these parts together is effectually closed at spaced intervals by a wedging projection of a radial length which is preferably slightly greater than the normal width of the crevice. As a result when fine wire or thread is wound compactly on the core the portion thereof which is found adjacent the heads of the core is effectually prevented from becoming wedged in the crevice thus to avoid unwinding of the entire length of the strand material wound on the core.

I claim as my invention:

1. A sheet metal spool comprising a tubular sheet metal core and a head formed from a separate sheet of metal and secured onto the end of the core in interlocking relation, with an annular crevice formed between the head and the core, and a series of radial projections on the core pressed snugly into said crevice so as to interrupt the continuity thereof.

2. A spool of the character set forth comprising a tubular body, a head having a central aperture therein for receiving the end of the body, said head and body being formed of sheet metal and having interlocking flanges for securing the parts together, with an annular crevice formed between the head and the body, and a plurality of radial projections formed in the end of the body and pressed into said crevice with the ends of the projections terminating radially beyond the normal width of the crevice.

3. A spool of the character set forth comprising a tubular body, a head centrally apertured to receive the end of the body, said head and body being formed of sheet metal and having interlocking flanges for securing the parts together in perpendicular relation, with an annular crevice formed between the head and the periphery of the body, said body having a series of indentations forming radial projections, and said projections being pressed forcibly into said crevice and having flat exposed faces substantially flush with the adjacent surface of the head.

4. A spool of the character set forth comprising a tubular sheet metal body having an annulus at one end curled outwardly, a head formed of sheet metal having a central aperture with a flange defining the apertured end curled reversely into said annulus to secure the parts together in interlocking relation, said body having a plurality of radially extending projections therein pressed into interengaging relation to said flange on the head so as to bridge the joint between the head and the body.

5. A spool of the character set forth comprising a tubular sheet metal body having an annular bead projecting radially outwardly near one end of the body, a sheet metal head having a central aperture with an axially offset portion adjacent said aperture seated upon said bead, means securing the head and body together, and a plurality of projections on said bead pressed into interengaging relation to the head adjacent the bead so as to bridge the joint between the bead and the head.

6. A spool having a sheet metal core, a head also formed of sheet metal and secured on the end of the core, with an annular crevice between the parts, and means pressed from the core bridging said crevice to interrupt the continuity thereof.

In testimony whereof, I have hereunto affixed my signature.

WALLACE C. MILLS.