March 26, 1940. B. C. JOHNSON 2,194,795

SPOOL

Filed March 19, 1938

Fig. 1

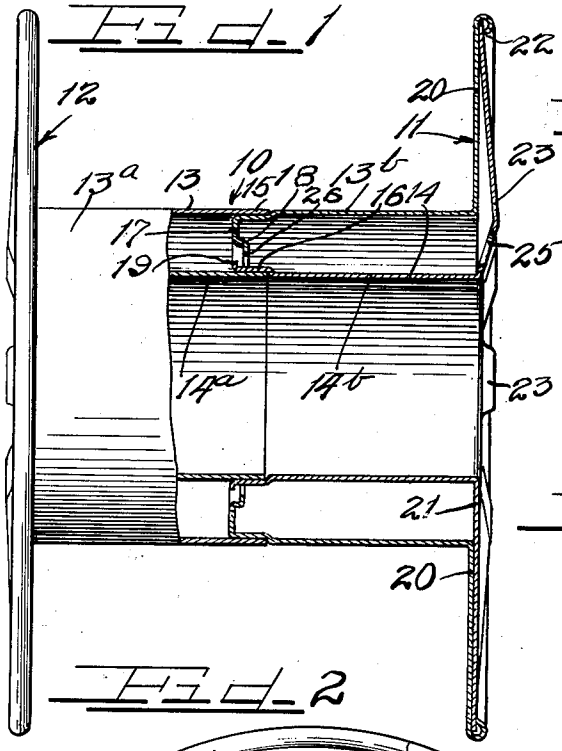


Fig. 3

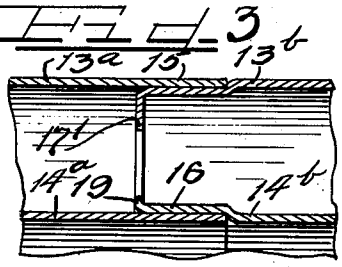


Fig. 4

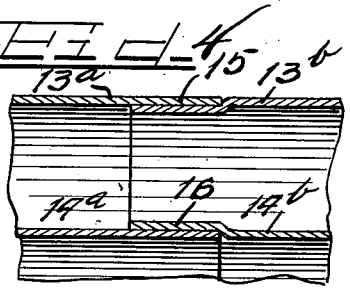
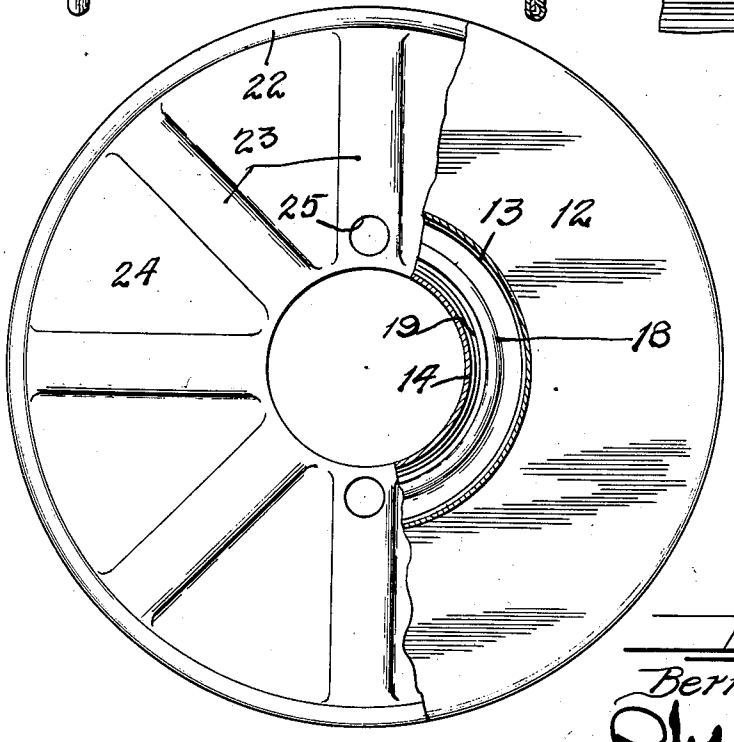


Fig. 2



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UNITED STATES PATENT OFFICE

2,194,795

SPOOL

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Application March 19, 1938, Serial No. 196,811

4 Claims. (Cl. 242—123)

The present invention relates to an improved metal spool construction and has for a primary object the provision of a construction which enables the economical manufacture of an exceptionally strong spool from relatively light material.

A further object of the invention is to provide an improved spool having a barrel with double walls which are integrally formed with the end head flanges, and in which the flanges are so constructed and interconnected as to form an exceptionally strong head structure.

Another object of the invention is to provide an improved construction which is of such a nature that it enables the spool parts to be assembled in proper relation and then simultaneously secured in assembled relation by a single brazing or welding operation.

Still another object is to provide in a spool construction improved means for reenforcing the spool barrel in a circumferential direction between its ends.

Other objects and features of the invention will more fully appear from the following detailed description, taken in connection with the following drawing which illustrates the preferred embodiment thereof, and in which:

Figure 1 is a sectional view taken through a spool embodying the features of the hereinde-scribed invention;

Figure 2 is a fragmentary end view of the same showing the reenforcing ridges in the outermost flange of the head structure; and

Figures 3 and 4 are fragmentary sectional views illustrating alternate forms of construction at the telescopic joint of the spool barrel.

As shown on the drawing:

In the illustrated embodiment of the herein-described invention, it will be noted from the disclosures in Figure 1 that the spool in its broad aspects is of the usual construction containing a barrel, generally indicated at 10, which is associated at its ends with heads generally indicated at 11 and 12.

More specifically, the barrel of the spool is formed by two tubular concentrically disposed shells 13 and 14 in radially spaced relation.

Each shell is similarly formed of two portions which are telescopically joined at their innermost ends. The shell 13 is composed of tubular sections 13*a* and 13*b* which are telescoped to form a joint as indicated at 15, the joint end of section 13*b* being contracted substantially the thickness of the material so that the outer surfaces of the two sections of the joint will be substantially flush as shown.

The innermost shell 14 is likewise composed of two sections indicated at 14*a* and 14*b*. These two sections are similarly telescoped at their innermost ends to form a joint, and the joint end of section 14*b* is expanded substantially the thickness of the material in order that the innermost surfaces of the inside shell 14 may be substantially flush at the joint, this joint being indicated at 16.

At the joined ends, it will be noted that the end margin of section 13*b* is inwardly deflected to form a circumferentially extending flange 17 which may be additionally deflected at its innermost edge as shown at 18. Section 14*b* also has its end margin outwardly deflected to form a circumferentially extending flange 19. These flanges 17 and 19 operate to circumferentially reenforce or strengthen the joints 15 and 16 in a circumferential direction and effect a very strong construction at the center of the barrel.

As will be seen, the head structures 11 and 12 are similar, so that it will only be necessary to describe one of them in order to clearly understand this part of the invention.

The outermost end of the shell 13 is deflected at right angles to form an end flange 20. Outwardly disposed of the flange 20 is a second flange 21 in surface engagement therewith, the flange 21 being integrally formed with the section 14*b* at its outermost end. The peripheral edge of flange 20 is outwardly turned to form a bead 22 which engages and anchors the flange 21 at its peripheral edge and serves to initially hold the sections 13*b* and 14*b* in proper spaced relation.

It will be noted that the innermost flange 20 provides a smooth end surface for an abutment of wire or other material which is wound on the spool and that the beaded edge prevents cutting the material during the drawing operation in the case of wire.

In order to further strengthen the head constructions, the outermost flange 21 is provided with raised radially extending reenforcing ridges 23 which are spaced from the associated surface or flange 20. Between these ridges are surfaces 24 which lie in the same plane and are in surface engagement with the adjacent surface of flange 20 for a purpose which will hereinafter be explained.

If desired, two of the diametrically disposed ridges may be provided at their innermost ends with openings 25 for receiving driving studs for

rotating the spool during the winding of wire or other material thereon.

While these ridges may be of any desired configuration, it is preferred to have the ridges of greater depth toward the center of the spool and gradually taper off in depth toward the periphery of the spool, terminating in the plane of the surfaces 24 where engaged by the circumferentially extending bead 22.

In the actual construction of the spool parts, which are only four in number, the barrel sections with their integrally formed end flanges are drawn or otherwise formed from a flat sheet in which the shell sections at their innermost ends are entirely closed. That is to say, the portion, for example, forming the flange 17 would extend clear across and form in effect a bottom. This bottom is then partially removed to provide the opening 26 and leave a circumferentially extending flange. In the case of the section shown at 14b, the bottom is entirely cut out and the edge then deflected outwardly to form the flange 19.

It will be evident that in utilizing this construction that flanges of different shapes may be easily provided at the center of the barrel. I have shown in Figure 3 an alternate flange construction 17' which does not have its innermost edge deflected as shown in Figure 1.

Of course, if desired, the bottoms of the sections may be entirely cut out to leave unflanged edges at the joints as shown in Figure 4, although in this case the joint is not reenforced to quite the same extent since the strengthening in this case results merely from having a double thickness of material in joint.

Having the parts assembled as shown in Figure 1, the telescopic joints 15 and 16 and the areas 24 in surface engagement with the flanges 20 are secured together in any well known manner, but it is preferred to braze these parts together either by placing brass shim stock between the surfaces, or by copper plating. The surfaces may be united then by subjecting the entire spool to sufficient temperature to cause the brazing metal to flow.

From the foregoing description, it will be apparent that the present invention provides an improved spool construction which enables the economical manufacture of an exceptionally strong spool from relatively light material; a spool construction in which the barrel is double walled and has integrally formed head flanges at its ends, these flanges being so formed and interconnected as to provide an exceptionally strong head structure; which enables the spool parts to be assembled in proper relation and then simultaneously secured in assembled relation by a single brazing operation; and which utilizes a novel reenforcing construction for the barrel in a circumferential direction between its ends.

It is, of course, to be understood that although I have described in detail a preferred embodiment of my invention, the invention is not to be thus limited, but only insofar as defined by the scope and spirit of the appended claims.

I claim as my invention:

1. In a spool construction, a double walled tubular spool barrel, said walls being concentrically disposed and spaced apart and each having both its end margins deflected to form flanges at the respective ends of the barrel, all of said flanges extending outwardly past the outermost of said walls and the flanges at each end of the barrel having portions in surface engagement with each other, a telescopic joint in each of the barrel walls disposed between the barrel ends, a circumferential flange extending inwardly from the outermost wall at its joint, a circumferential flange extending outwardly from the innermost wall at its joint, and means securing the flanges at each end of the barrel together in surface engagement.

2. In a spool construction, spaced end head flanges, a tubular barrel interconnecting said flanges, said barrel having double walls in spaced parallel concentric relation, and a lap joint in each of said walls disposed between the ends of said barrel, said lap joints having separate reinforcing flanges associated therewith and located between said double walls, said flanges extending in a direction substantially parallel with each other.

3. In a spool construction, a double walled tubular spool barrel, said walls being spaced in concentric relation with each other and each having both its end margins deflected angularly outwardly to form flanges at the respective ends of the barrel, all of said flanges extending past the outermost of said walls and the flanges at each end of the barrel having portions in surface engagement with each other, radially extending ribs in the outermost flanges at each end of the barrel, said ribs being of greater depth adjacent the center of the spool and tapering in depth toward the periphery thereof, and a lap joint in each of the barrel walls disposed between the ends of said barrel, said lap joints having separate reinforcing flanges disposed substantially toward each other between said double walls.

4. In a spool construction, a double walled tubular spool barrel, said walls being spaced in parallel concentric relation with each other, each of said walls comprising a pair of aligned tubular members having both outer end margins deflected outwardly to form flanges at the respective ends of the barrel, all of said flanges extending outwardly past the outermost of said walls and the flanges at each end of the barrel having portions in surface engagement with each other, said surfaces being bonded together, a peripheral bead securing the associated flanges at their peripheral margins, raised radially extending reinforcing ribs in the outermost of said flanges, said ribs being of greater depth toward the center of the spool and gradually tapering in depth to terminate in the plane of the flange adjacent said peripheral bead, a pair of diametrically disposed ribs being provided adjacent their inner ends with openings adapted to receive means for rotating said spool, a lap joint in each of said barrel walls formed by telescoping the inner ends of said tubular members so that their outer surfaces are flush, the innermost walls of each of said joints extending therebeyond in a direction at right angles thereto to form reinforcing flanges.

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