

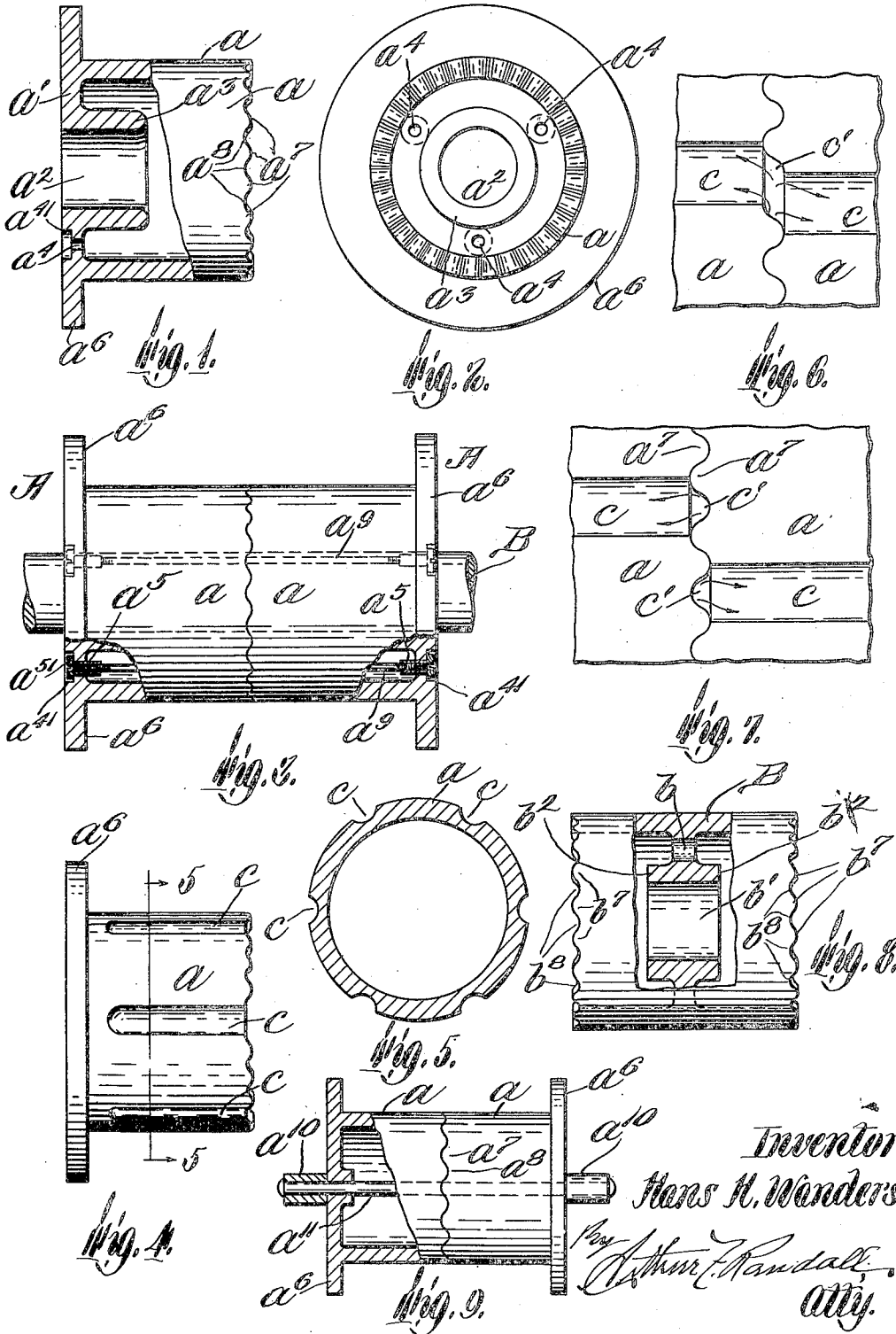
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SPOOL AND THE LIKE

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UNITED STATES PATENT OFFICE.

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My invention relates to spools, rolls and the like, and particularly to moulded spools for holding yarn, thread, etc., and it has for its object to provide an improved article of this class.

It has heretofore been proposed to construct a spool from several moulded parts including a one-piece barrel or body and a pair of end flange members secured in position abutting against the opposite ends of the body or barrel. The objection to a spool constructed in this fashion was that any loosening of either end flange member would provide, or create, an annular joint, crack or crevice, between the end flange and the end of the barrel into which the end convolutions of the winding on the spool would collapse, or pass. Another objection to this old construction was that two dies were required in order to produce the spool, one for moulding the end flange members and the other for moulding the barrel or body. A further objection was that it was impossible to produce a moulded flanged spool having less than three parts.

My invention provides a roll or spool comprising a hollow moulded sectional barrel or shell having integral end walls which may be centrally apertured to receive a shaft, spindle or the like, the parts of said roll or spool being moulded from bakelite or other suitable mouldable material, and in some cases provided with integral end flanges for holding the thread, yarn or the like in place. That is to say, in one form of my invention, viz, when embodied in a spool, the ends of the barrel or body are moulded with integral annular outer flanges, and therefore, there are no joints at the ends of the barrel into which the thread can pass. A feature of my invention consists in providing two end members each a tubular barrel end-section whose inner end or rim is provided with axially disposed alternating projections and recesses intermeshed either with the inner end of the opposite end member so as to rigidly interlock therewith, or with one end of an intermediate barrel section member whose ends are of counterpart shape. In the best form of my invention these alternating projections and recesses are provided by forming the abutting ends of the barrel sections with radial corrugations so shaped that when intermeshed the joint between the two is sinuous.

Suitable means is provided for securing the sections of the spool in assembled relationship.

Other objects and features of my invention are hereinafter pointed out.

In the accompanying drawings:

Figure 1 is a side elevation, partly broken away, of one of the end members of a spool constructed in accordance with my invention.

Figure 2 is a side elevation of the end member shown in Fig. 1.

Figure 3 is a side elevation, partly broken away, of a spool constructed in accordance with my invention and comprising two counter-part end members such as is shown in Figs. 1 and 2.

Figure 4 is a side elevation of an end member constructed in accordance with my invention, and embodying another feature thereof.

Figure 5 is a section on line 5—5 of Fig. 4.

Figures 6 and 7 are details hereinafter described.

Figure 8 is a side elevation, partly in section, of an intermediate barrel section member for use, if desired, with two end members like that shown in Fig. 1.

Figure 9 is a side elevation, partly broken away, of another form of my invention.

The form of my invention shown in Figs. 1, 2 and 3 comprises two end members A, A each of which is a facsimile of the other and is produced by means of a mould from bakelite or other suitable mouldable material, the same mould being used to produce each of these two members. Each of these end members comprises a tubular barrel end-section a that is provided at its outer end with an integral end wall a' having a central aperture a^2 bordered upon the inner side of the wall by an annular flange a^3 which affords an extended bearing for the shaft or spindle B. Fig. 3. This end wall a' is moulded with three equi-distant holes a^4 which, as shown in Fig. 3, are provided at their outer ends with countersunk portions a^{41} to receive the heads a^{51} of nuts a^5 , and to provide shoulders adjacent the outer ends of the holes a^4 for engagement with the heads a^{51} .

At its outer end each section a is also made with an integral exterior annular flange a^6 which serves to hold the winding of thread or the like, upon the barrel of the spool, and

as will be clear there is no joint between the flange a^6 and the barrel section a into which the end windings or convolutions of the thread or the like can crowd. The inner end of each barrel section a is formed with radial and uniform sinuous corrugations throughout its circuit which provide projections or keys a^7 alternating with sockets or recesses a^8 .

To build up a short spool from two end members constructed as described, said members are assembled with the inner corrugated ends of their barrel sections a abutting and intermeshing, as shown in Fig. 3, so that the projections a^7 of each occupy the recesses a^8 of the other. In this way the two members are not only securely locked together against rotative displacement relatively, but the corrugated ends serve to aline the two sections and to hold them against relative displacement laterally. Also, the joint between them is a sinuous joint into which it is impossible for the thread to work, or find its way. When the two end members A are brought together in this fashion the holes a^4 of one are approximately alined with the holes a^4 of the other. That is, they should be assembled or brought together so that these holes are approximately in alignment. The two end members thus assembled are then secured or bolted together by means of the nuts a^5 which are engaged with the opposite threaded ends of rods a^9 . As a matter of fact, the holes a^4 of one end member will be offset slightly with relation to the holes a^4 of the other member an angular distance equal to one-half of the angular distance between two adjacent projections a^7 . However, this is compensated for either by the shape of the rod a^9 or by its flexibility. When it is desired to construct a spool or roll of greater length than that of the two end members A, one or more intermediate barrel sections B, Fig. 8, may be employed, the same being positioned between the two end members A. This intermediate barrel section B is made hollow or tubular like the end sections A and its opposite ends are shaped as counter-parts of the inner ends of the end sections a so that when assembled between the latter, its ends mesh and interlock with the inner ends of the end members. Near its middle, and upon its interior, the barrel section B may be formed with a wall b having at its middle a shaft or spindle receiving aperture b^1 bordered by flanges b^2 which afford an extended bearing for the shaft or spindle. Holes b^3 are moulded in the wall b to accommodate the rods or bolts a^9 which are made of appropriate length.

Spools such as described are often used as holders for tightly twisted yarn or thread while the latter is being steam treated, and in order to provide for access of the steam to the interior of the cylindrical body of thread or yarn wound on the spool, I may form the barrel sections of each end member

A with externally longitudinally disposed grooves or ducts c which, at their inner ends register and communicate with ports c' , Figs. 6 and 7, leading into the interior chamber of the body or barrel of the spool. Thus, if the spindle B is removed and steam supplied to the interior of the barrel it will find an outlet therefrom through ports c' into the channels c , and from the latter to and through the body of thread carried by the spool.

Figure 9 illustrates a modification wherein the spool is provided with end trunnions a^{10} , herein shown as sleeves mounted upon the ends of a rod a^{11} extending through the spool and upset at each end to permanently fasten the parts of the spool together. In this form of my invention, of course, the metal rod a^{11} makes the use of bolts such as a^5 — a^9 , Fig. 3, unnecessary.

What I claim is:

1. As a new article of manufacture, a molded one-piece end member for use in making an article of the character described comprising a cylindrical barrel section; an integral internal end wall at the outer end of said barrel section radial sinuous corrugations providing alternating projections and recesses at the inner end of said barrel section, and a longitudinally extending conduit groove upon the exterior of said barrel section communicating at its inner end with one of said recesses.

2. As a new article of manufacture, a spool of the character described comprising two end members molded to shape and each comprising a barrel section formed at its outer end with an integral internal end closure wall having a central aperture therethrough for the reception of a spindle and formed at its inner end with alternating projections and recesses to intermesh with corresponding projections and recesses of another barrel section, and means fastening the two barrel sections in interlocked relationship so that when mounted upon said spindle an inclosed chamber is provided between said end members having an outlet leading to the interior of a body of material carried by said spool when the latter is in use.

3. As a new article of manufacture a spool comprising two end members each molded to shape and comprising a barrel section formed at its outer end with an integral internal end wall having a central aperture and made with countersunk bolt holes grouped around said aperture and with an integral external annular flange, and having its inner end formed with radial corrugations intermeshing with the corresponding radial corrugations of the other end member, and bolts extending through said bolt holes and fastening the two end members in interlocked relationship, the end portions of said bolts being within the counter-sunk portions of said bolt

holes so that they do not project beyond the ends of the spool.

4. As a new article of manufacture a spool comprising two end members each molded to shape and comprising a barrel section formed at its outer end with an integral internal end wall and with an integral external annular flange, and having its inner end formed with radial corrugations; an intermediate barrel section member having its opposite ends formed with radial corrugations intermeshing with the corrugated inner ends of the end members, and means for fastening the end members in position against the

opposite ends of said intermediate barrel section member. 15

5. An article of the character described comprising two abutting barrel sections having their abutting ends formed with alternating projections and recesses that are intermeshed and each formed upon its exterior with longitudinal conduit grooves communicating through the joint between the two sections with the interiors thereof. 20

Signed by me at Boston, county of Suffolk and State of Massachusetts, this 4th day of January, 1927. 25

HANS H. WANDERS.