C. K. WARNER.

WIRE REEL.

APPLICATION FILED FEB. 19, 1921.

1,394,382. Patented Oct. 18, 1921.

Fig. 1.

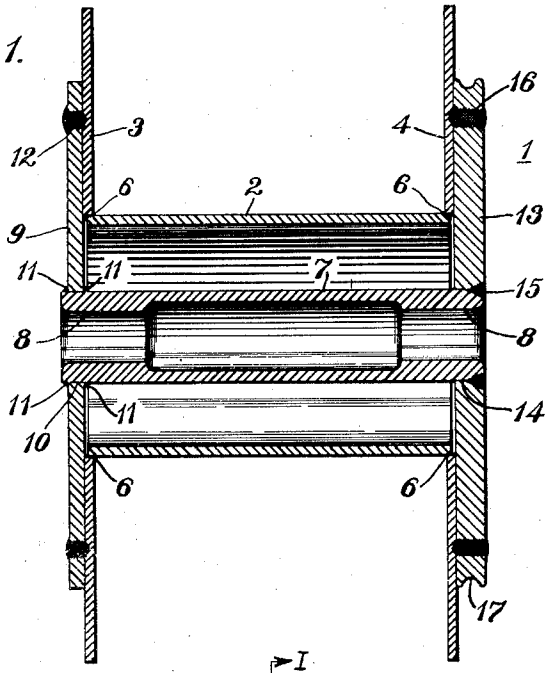


Fig. 2.

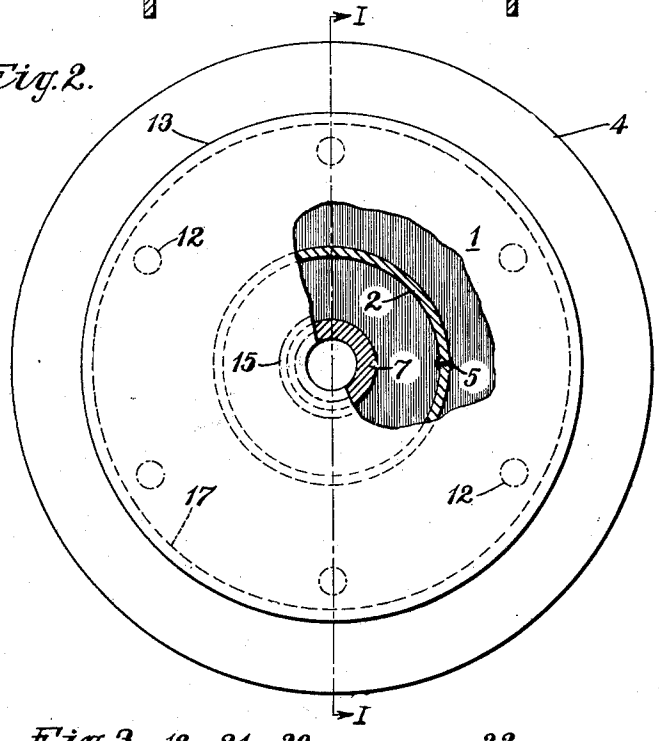
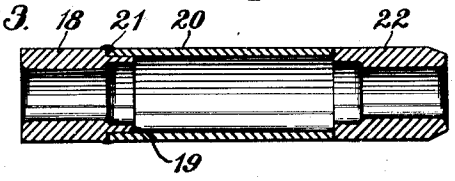


Fig. 3.



WITNESSES:

R. J. Fitzgerald.

H. B. Funk.

INVENTOR

Charles K. Warner.

BY

Wm. Biebel

ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES K. WARNER, OF OAKMONT, PENNSYLVANIA.

WIRE REEL.

1,394,382. Specification of Letters Patent. Patented Oct. 18, 1921.

Application filed February 19, 1921. Serial No. 446,483.

To all whom it may concern:

Be it known that I, CHARLES K. WARNER, a citizen of the United States, and a resident of Oakmont, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Wire Reels, of which the following is a specification.

My invention relates to reels of relatively large size and particularly to wire reels, and it has for one of its objects, to provide a relatively simple, durable, strong, and easily manufactured wire reel made of sheet metal.

Another of its objects is to provide an all-metal reel made of sheet metal members which shall be held together by welding.

Another of its objects is to provide a novel method of manufacturing such a built-up reel which shall insure that all of the parts of the reel shall have their proper operative positions when welded together, so as not to require a straightening of any of the members.

In practising my invention, I provide a sheet-metal drum upon which are located two sheet metal heads which are welded to the drum at the ends thereof. I provide a central hub and bearing member, at one end of which is mounted a reinforcing end disk which is suitably welded on the central hub. At the other end of the central hub, I provide a combined reinforcing end disk and pulley which is also suitably welded on the central hub. Both end disks are provided with a plurality of openings therethrough which permit of depositing welding metal therein which is fused with the metal of the heads and thus operates to maintain the reinforcing end disks in proper operative position relatively to the heads.

In the single sheet of drawings:

Figure 1 is a view, in vertical cross-section, on the line I—I of Fig 2, of a device embodying my invention;

Fig. 2 is a view, in side elevation, of a device embodying my invention, as seen from the pulley side thereof, with certain parts broken away, and

Fig. 3 is a view, in longitudinal cross-section, of a modified form of a central hub and bearing member forming a part of the device embodying my invention.

A wire reel designated, in general, by the numeral 1, consists of an inner reel structure comprising a substantially cylindrical drum 2 and two sheet metal heads 3 and 4. The drum 2 is made up of a piece of sheet metal rolled to substantially cylindrical form with the abutting edges welded together by means of metal deposited thereon, indicated by the numeral 5, in any well-known manner. If found desirable or necessary, the bead may be removed by any suitable method to provide a smooth cylindrical surface.

The heads 3 and 4 are each provided with a central opening 6 of such diameter as to permit of their being located on the cylindrical drum 2. The heads 3 and 4 slightly overhang the ends of the drum 2, and the interengaging surfaces of the drum 2 and the heads 3 and 4 are fused together by means of a welding flame, in a manner to be hereinafter set forth in detail.

An outer reel structure comprises a central hub and bearing member 7 which may be made of axle steel or other similar suitable material provided, at its ends, with suitably dimensioned inner bearing surfaces 8 to permit of its being mounted on a suitable shaft member (not shown) of a reeling or cabling mechanism with which it is to be associated. At one end of the central hub 6, there is mounted a reinforcing end disk 9 which is provided with a central aperture 10 of a diameter to permit of the end disk being located on the hub 7 and of its being held thereon by suitably deposited welding metal 11, as indicated in Fig. 1, or by causing the engaging metals to be fused by the action of a welding flame. The end disk 9 is provided near its outer periphery, with a plurality of openings 12 therethrough, for a purpose to be hereinafter set forth in detail.

At the other end of the hub 7 is mounted a reinforcing end disk and pulley member 13 which is provided with a central opening 14 of a diameter to permit of its being located on the central hub 7. The opening 14 is made conical at one edge of the disk 13 to provide an annular ring, substantially of cone-shape, to permit of locating therein a quantity of welding metal 15 to secure the disk on the hub 7. A plurality of openings 16 are provided through the disk 13 near the outer periphery thereof, for a purpose to be hereinafter set forth in detail.

The method of assembly of the above described structures is substantially as follows: After the drum 2 has been bent to substantially cylindrical form, the abutting edges are welded together, as hereinbefore described, and, if necessary, the extra metal 5 may be removed by grinding or by any

other method known in the art. The head 3 is then so located at one end of the drum 5, as to overhang slightly, and the two members are then subjected to the heat of a suitable furnace and brought to such a temperature as will cause the members to be at substantially red heat. A welding flame is then caused to act upon the interengaging surfaces which causes the metal of the two engaging members to fuse together and thus to permanently weld the head upon the end of the drum.

The central hub 7, with the end disk 9 located thereon in its proper operative position having been brought to substantially red heat, the metal 11 is caused to be deposited thereon, substantially in the position indicated in Fig. 1, by the action of a welding flame in a manner well known in the art or the engaging metals are fused by the action of the flame.

The inner reel structure comprising the drum 2 and the head 3 is then placed in proper position relatively to the disk 9 and the hub 7, substantially as indicated in Fig. 1, with the disk 9 uppermost and in a horizontal position, and the parts are then heated, if necessary, to bring all of them to substantially a red heat. The metal in the head 3 directly opposite the openings 12 is then subjected to the action of a welding flame, for a brief period of time, and molten metal produced by subjecting a weld stick to the action of the flame is caused to be deposited against, and to fuse with, the metal of the head 3 and is permitted to be deposited to such extent as to fill the openings 12 and to cause a small head or bead to be formed on the outside of the end disk 9. This insures a locking together of the reinforcing end disk 9 and the head 3 to hold them in proper operative position, even if subjected to relatively heavy shocks during use.

The partially completed reel comprising the inner reel members 2 and 3, the central hub 7 and end disk 9 may now be so inverted as to bring the head 3 undermost. The head 4 may be placed in position on the drum 2 spaced from the head 3 by means of spacing blocks and, after being heated, may be welded in the same manner as described in connection with the head 3. The reinforcing end disk and pulley member 13 may now be placed upon the end of the central hub 7 and all of the parts heated, if necessary, to bring them to substantially red heat.

The annular opening, hereinbefore described as located at one edge of the disk 13, may now be filled with welding metal by the use of a welding flame and a weld stick to weld the disk 13 to the hub 7. The same method of securing the outer periphery of the disk 13 against the head 4 and of locking it thereto may now be employed, substantially as described above for the members 9 and 3.

I have found it to be very important to heat all of the members substantially as hereinbefore described, during the operation of building up the reel, particularly when using metal sheets of relatively small thickness. If this heating is not done, the heads of the completed reel may warp out of shape, so that the heads 3 and 4 are not parallel to each other, as is necessary in a device of this kind.

As indicated in Fig. 1, the end disk 13 is provided with a groove 17 to permit of either rotating the complete reel or of providing a braking means for the same, as may be required by the operation of the reeling machine with which the reel is to be associated.

Fig. 3 illustrates a modified form of central hub and bearing member and comprises, in general, an end hub and bearing member 18, substantially similar to one of the end portions of the central hub and bearing member 7 hereinbefore described. The member 18 is provided at one end with a shoulder portion 19 upon which may be located the end of a relatively small drum 20 which may be made substantially as hereinbefore described in connection with the drum 2. The drum 20 is welded to the member 18 by means of deposited metal 21, in a manner well known in the art.

An end hub and bearing member 22 is provided, at the other end of the central hub, of slightly different form. Instead of providing a shoulder on the member 22 upon which the drum 20 may be located, as described in connection with the member 18, I may use a butt welded joint, or cause the engaging metals to be fused together, it being understood that, in the manufacture of this central hub and bearing member, substantially the same method of preheating is to be followed as was described in connection with the building up of the complete reel. The outer end of the member 22 may be made conical in shape to provide a greater space for depositing welding metal when welding the end disk 13 to the hub member.

It may be noted that the device embodying my invention provides a compound reel comprising an inner reel structure and an outer reel structure, the outer reel structure consisting of members which are relatively heavy as compared to the members used in building up the inner reel member.

It may also be noted that the device embodying my invention provides an all welded metal reel comprising relatively simple sheet metal members and that the method used is such as to produce a reel in which no straightening is required after the welding operations have been completed and the reel allowed to cool.

Various modifications may be made in the device embodying my invention without departing from the spirit and the scope thereof, and I desire that only such limitations shall be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

I claim as my invention:—

1. In a metal reel, the combination with an inner reel structure comprising a sheet metal drum and a flat sheet metal head at each end of said drum, of an outer reel structure comprising a central hollow hub and a flat end disk secured thereto at each end thereof, the two structures having operative engagement with each other between the opposing flat surfaces of the respective head and disk only at each end of the structures and said end disks having a plurality of openings therethrough, and masses of fused metal deposited in said openings against said heads for securing said end disks against said sheet metal heads.

2. In a metal reel, the combination with an inner reel structure comprising a sheet metal drum and a plurality of flat sheet metal heads, each head having a central opening and being so located as to overhang one of the ends of said drum and welded thereto, of an outer reel structure comprising a hollow central hub and a plurality of flat metal end disks, each disk having a central opening for permitting of its being mounted on said hub at one end thereof and being rigidly secured thereto adjacent to one of said heads and having a plurality of other openings therethrough, and masses of fused metal in said openings contacting with the adjacent head for holding said inner and said outer reel structures in operative relation to each other.

3. In a metal reel, the combination with an inner reel structure comprising a sheet metal drum and a flat sheet metal head at each end of said drum, said drum and heads being welded together over substantially their entire interengaging surfaces, of an outer reel structure comprising a central hollow hub and a flat metal disk welded on said central hub at each end thereof and located outside of said sheet metal head and having a plurality of openings therethrough, and masses of fused metal in said openings for securing said end disks against said heads.

4. A metal reel comprising a sheet metal drum, a flat sheet metal head located at each end of said drum and welded thereto, a central hub coaxial with and inside of said drum, a reinforcing end disk welded on said central hub at each end thereof adjacent to and outside of one of said metal heads and having flat surface engagement therewith, each of said end disks having a plurality of openings therethrough, and masses of fused metal in said openings for securing the reinforcing end disks against said sheet metal heads and for maintaining all of said parts in operative position relatively to each other.

5. A metal reel comprising, in combination, a substantially tubular metal member of relatively large diameter, flat metal plates provided with central openings fitting over the ends of the tubular member and welded thereto, a second tubular metal member disposed within the first named tubular member and having its ends projecting slightly beyond the ends of the first named tubular member, flat metal plates provided with openings through their central portions and fitting over the ends of said second named tubular member, means for securing said plates to the second named tubular member and means extending through said last mentioned plates for rigidly securing them to the plates on the first named tubular member.

6. A metal reel comprising, in combination, a substantially tubular metal member of relatively large diameter, flat metal plates fitting over the ends of the tubular member and welded thereto, a second tubular member disposed within the first named tubular member and having its ends projecting beyond the ends of the first named tubular member, a flat metal plate fitting over each end of the second named tubular member and abutting against one of the plates on the first named tubular member, one of the plates at each end of the tubular members being provided with a plurality of openings, and masses of fused metal located in said openings against the adjacent plate to rigidly secure said plates together.

In testimony whereof I have hereunto subscribed my name this 16th day of Feb., 1921.

CHARLES K. WARNER.