Nov. 20, 1934. P. M. MUELLER 1,981,809

REEL

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Fig. 1.

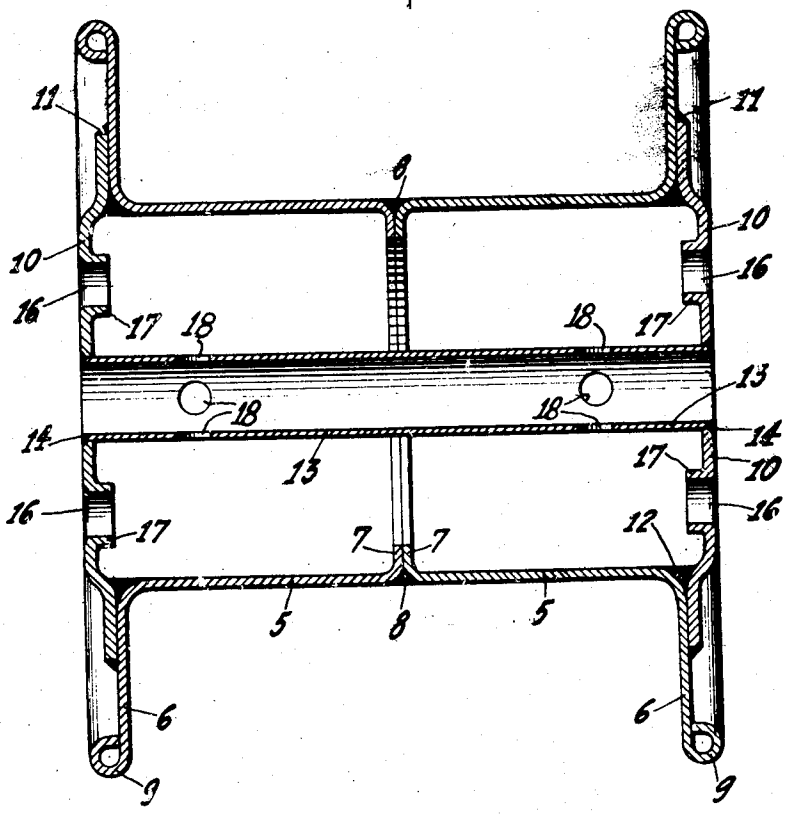
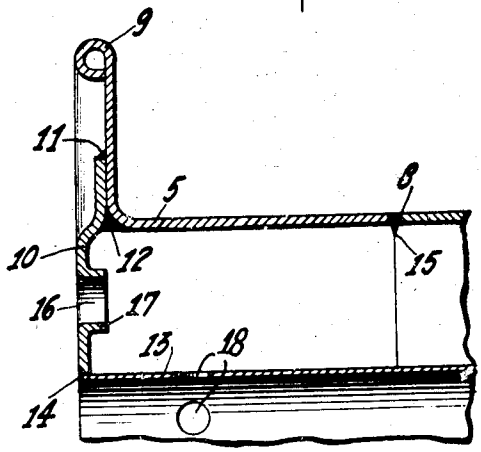


Fig. 2.



INVENTOR-

Paul M. Mueller

BY

Cooley Godward, Brewer & Whittemore

ATTORNEYS

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REEL

Paul M. Mueller, Rome, N. Y., assignor to General Cable Corporation, New York, N. Y., a corporation of New Jersey

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4 Claims. (Cl. 242—123)

This invention relates to metal reels or the like such as are commonly employed in reeling or spooling wire and similar material. In use, reels of this type are subjected to strains of considerable magnitude which result both from handling and from the pressure of the material wound thereon. Due to practical considerations, metal reels must be made from separate pieces of material which are usually united by suitable welds.

An object of this invention is to provide a reel of the type set forth having an all metal construction in which the number of parts are both reduced to a minimum and arranged to provide a rugged, serviceable product.

The forces which operate upon the flanges of a reel in use, produce the greatest bending moment on a line across the flange tangent to the barrel of the reel. At the extremities or circumference of the flange, the stress is resisted by the curl of the circumferential bead which is commonly provided on reel flanges. However, at the point of tangency where the barrel is joined to the flange, previous attempts towards strengthening have generally included welds, the fused metal of which has formed a part of the outer fibre of the section and has therefore been subject to a maximum bending strain. The strain is such as to develop fissures and cracks and considerable maintenance has been required to keep reels in usable condition. It is therefore a further object of this invention to provide a metal reel constructed and arranged in such a manner that all welds are placed away from regions of maximum fibre strains.

These and other objects which will be apparent to those skilled in this particular art are accomplished by means of the invention illustrated in the accompanying drawing in which,

Fig. 1 is a transverse sectional view through a metal reel constructed in accordance with one embodiment of this invention.

Fig. 2 is a partial sectional view of a modified arrangement.

The particular embodiment of this invention which has been chosen for the purposes of illustration comprises an all metal reel having the different parts thereof united into an integral whole by welds which are placed away from regions of maximum fibre strains. As illustrated, the barrel of the reel is formed of separate cylindrical members each of which is shaped from the same material forming the associated flange. A central hollow core extends longitudinally through the barrel member and a suitable re-inforcing breast plate is welded to the outer face of each flange and extended radially inward to the adjacent end of the inner core to which it is also connected. The breast plate is of such diameter that it is welded to the flange first beyond the region of maximum bending moment, while the other weld fastening, which is necessary at the junction of the barrel and the flange, has been so placed between the two members that it lies sufficiently near the neutral axis of bending to keep the resultant strain well within the holding power of the weld. As a result of this arrangement, the cantilever principle is availed of for resisting distorting forces applied to the reel flanges, as hereinafter more fully set forth.

As illustrated in Fig. 1, two "hat-shaped" cylindrical members 5 having outwardly extending radial head flanges 6 formed at opposite ends thereof and inwardly extending radial reinforcing flanges 7 formed on adjacent ends thereof are connected by a circumferential weld 8 which is formed between the abutting reinforcing flanges 7. The head flanges 6 have the usual curled circumferential reinforcing beads 9. A breast plate 10 is secured to the outer face of each flange 6 and each breast plate is of such diameter that a weld 11 by means of which it is secured to the associated flange is positioned well beyond the region of maximum bending moment, this region, as above pointed out, being on a line tangent to the barrel. The breast plate is also dish-shaped to increase its resistance to buckling. It is connected to the barrel 5 by a weld 12 which is so placed between the two members as to lie well away from the region of maximum fibre stress and sufficiently near the neutral axis of bending to keep the resistant strain well within the holding power of the weld. The breast plate is extended radially inward and connected to the associated end of the inner core 13 by a suitable weld 14.

It will be apparent that each breast plate cooperates with the barrel to provide a reel flange having its inner face free of welds and providing a continuous uninterrupted section of metal adjacent the end of the barrel, which is the point at which the bending strains are greatest. The arrangement provides a thickened cantilever section, the greatest sectional modulus of which is at the junction between the flange and the barrel, the inner end of the cantilever being rigidly secured by the weld 14 to the reinforcing core 13. As a result of this cantilever arrangement, each flange is braced against dishing and the stresses applied to one are distributed to both.

In Fig. 2 the reinforcing flanges 7 have been

eliminated and the weld 8 is provided with a flash 15 which is employed to reinforce the barrel circumferentially.

The reels are preferably provided with ventilating holes 16, which are formed with circumferential reinforcing flanges 17 and one of the novel features of the present invention is the provision of similar ventilating holes 18 in the core 13 adjacent each of the flanges 6. Such an arrangement provides sufficient area of ventilating openings without weakening the reel flanges more than is permissible.

I claim as my invention:

1. An article of manufacture comprising in combination a flanged section forming a reel barrel and radial head flanges providing an unbroken continuity of section at the ends of said barrel, a breast plate welded to a central portion of each head flange and extending in unbroken continuity from said central portion inwardly past said barrel, a weld connecting the inner surface of each breast plate with the unbroken portion of the flanged section adjacent the barrel ends, and a reinforcing core extending longitudinally through said barrel and connecting said breast plates.

2. An article of manufacture comprising in combination a flanged section forming a reel barrel and radial head flanges providing an unbroken continuity of section at the ends of said barrel, a dished breast plate welded to a central portion of each head flange and extending in unbroken continuity from said central portion inwardly past said barrel, a weld connecting the inner surface of each breast plate at its dished section with the unbroken portion of said flanged section adjacent the barrel ends, and a reinforcing core extending longitudinally through said barrel beyond the planes of said head flanges and connecting said breast plates.

3. A metal reel comprising, in combination, a barrel member having at each end an integral, outwardly extending annular flange and a reinforcing breast plate permanently connected to said flange by a weld substantially co-extensive with the inner edge of the flange and also by a second weld spaced radially outwardly from said first weld.

4. A metal reel comprising, in combination, a barrel member having at each end an integral, outwardly extending annular flange and a reinforcing breast plate permanently connected to said flange by a weld substantially coextensive with the inner edge of the flange and also by a second weld spaced radially outwardly from said first weld, said breast plate extending in unbroken continuity radially inwardly of said first mentioned weld, and a reinforcing core extending longitudinally through said barrel and connecting said breast plates.

PAUL M. MUELLER.