March 15, 1960 F. MAYHEW 2,928,623

METAL REEL AND THE LIKE

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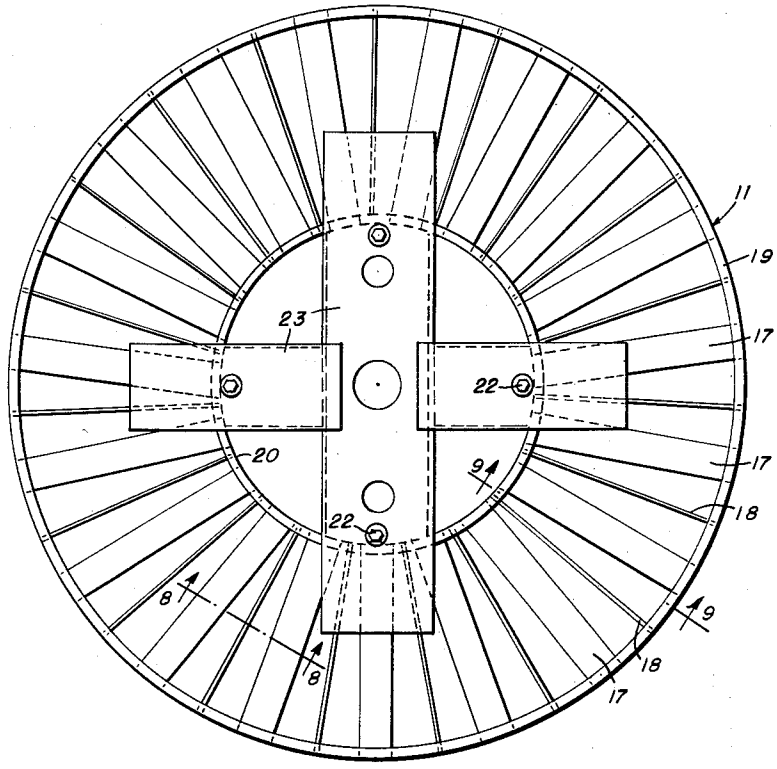


FIG. 1

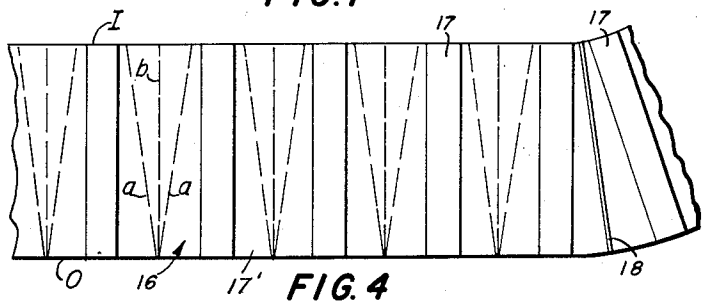


FIG. 4

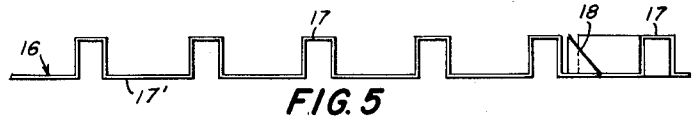


FIG. 5

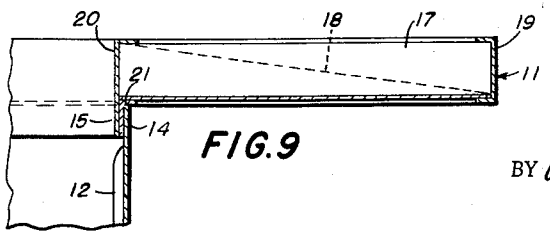


FIG. 9

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METAL REEL AND THE LIKE

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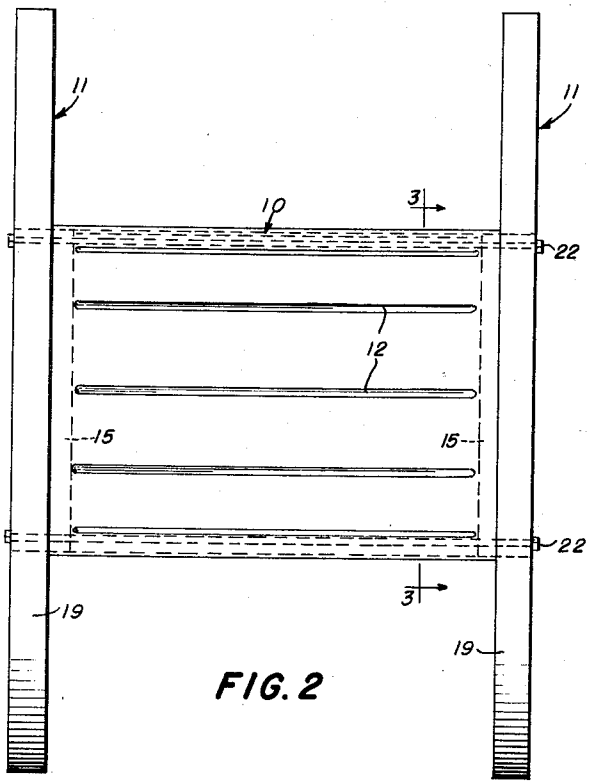


FIG. 2

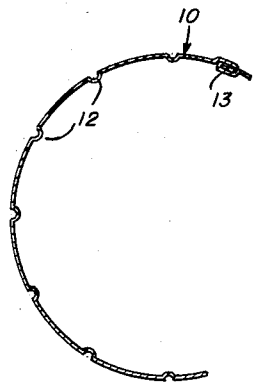


FIG. 3

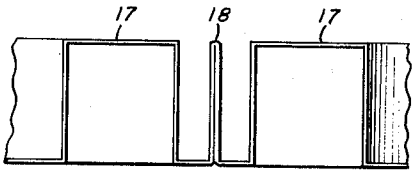


FIG. 6

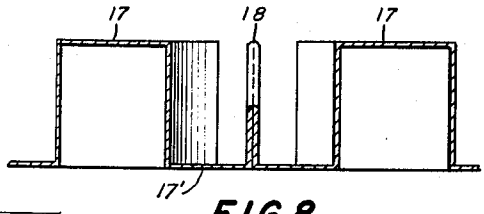


FIG. 8

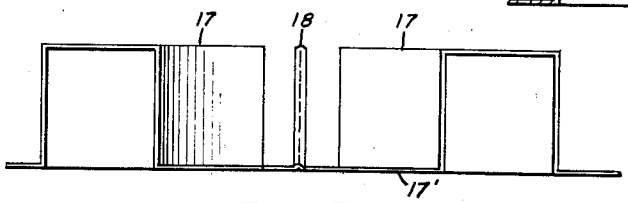


FIG. 7

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METAL REEL AND THE LIKE

Frank Mayhew, Charlotte, N.C.

Application December 17, 1957, Serial No. 703,396
4 Claims. (Cl. 242—77.4)

The present invention relates to reels, pulleys, wheels and the like. More particularly the invention pertains to the formation of the flanges of large metal reels such as the type on which cables are wound and their connections to a drum.

Metal flanges may be formed by cutting a circular piece from a large rectangular sheet of metal and subsequently shaping the cut part by corrugating it for the purpose of providing a reinforced flange. However, there is a considerable waste of metal in this procedure. It has also been proposed to form reel flanges by corrugating a rectangular sheet of metal and then by expanding one edge the sheet is curved in its own plane. In this latter method the corrugations are more or less flattened adjacent the expanded edge, thus reducing the strength of that portion of the flange most subject to deformation by heavy impact in shipment.

It is one of the objects of this invention so to shape flanges for metal reels that the outer periphery of the flange is maintained at maximum strength in the finished product.

It is also an object of the invention to produce a corrugated reel flange from a single rectangular sheet of metal having the upper and lower surfaces of the principal corrugations in parallel relation.

Other objects will be apparent from the following description of the invention when taken with the accompanying drawings in which

Fig. 1 is an end elevation of a preferred embodiment of a reel made in accordance with the invention;

Fig. 2 is a side elevation of the reel shown in Fig. 1;

Fig. 3 is a partial section taken on line 3—3 of Fig. 2;

Fig. 4 is a top plan view of a partially formed metal sheet illustrating one step of the method employed in carrying out the invention;

Fig. 5 is an end view of the bent sheet shown in Fig. 4;

Fig. 6 is a partial elevation of a circular reel flange after it has been curved as seen from the center of the flange;

Fig. 7 is a partial elevation of the circular flange when viewed toward its outer periphery;

Fig. 8 is a sectional view taken on line 8—8 of Fig. 1; and

Fig. 9 is a sectional view taken on line 9—9 of Fig. 1.

In the drawings, it will be seen that the reel comprises a cylindrical drum **10** having secured thereto flanges **11**. The drum is provided with longitudinal ribs **12** and its longitudinal ends are held by interlocking return bent fingers **13** commonly referred to as a "stove-pipe" joint. The ribs **12** do not extend to the ends of the drum so that a smooth marginal portion **14** is provided at each end of the drum to cooperate with axial flanges **15** on the inner rings of reel flanges **11**.

It is to be noted that the drum **10** fits over the axial flanges **15** of the reel flanges and that the drum is disposed radially outwardly of these axial flanges. In this

respect the drum may be said to be floating. The advantage of this arrangement will be apparent when it is considered that any impacts imparted to the outer periphery of the reel flanges are not transmitted to the drum, thus obviating damage to the drum or the material wound thereon.

The method of shaping the flanges comprises the steps of first corrugating a rectangular length of sheet metal **16**, as seen in Figs. 4 and 5, so that portions of the sheet are displaced with respect to each other and are disposed in two parallel planes, after which, or in a simultaneous operation, the metal in one or both of the planes and between the vertical portions of the bent sheet is crimped in the form of a fold. The metal adjacent one side edge of the sheet is folded to a greater degree than is the metal adjacent the opposite side edge of the sheet. The corrugations **17** in Fig. 5 are shown as being rectangular, but they may be otherwise bent to provide strength to the reel flange. The folds **18** are formed by crimping the metal in the plane **17'** between corrugations **17** along the lines *a*, *a* and *b*, it being noted that lines *a*, *a* diverge from a point along one side edge midway between the corrugations so that the raised fold corresponding to the line *b* is inclined to the plane of the sheet **16**. This results in a greater gathering or contraction of the metal adjacent side I of the sheet with substantially no contraction of the metal along side O of the metal sheet. Hence ,when the folds in plane **17'** have been completed, the sheet will assume a curved form and in the present embodiment the resultant product will be a corrugated circular member. The inner circumference of this member represents the length of the outer circumference minus that portion of the metal gathered by the crimping or folding operation. The member has a series of radial corrugations **17** of uniform height from the inner to the outer sides of the flange and an intermediate series of radial folds **18** which have substantial vertical height at the inner circumference of the reel flange tapering toward the outer periphery where the fold is negligible and merges into the sheet at this edge.

The corrugations and folds have been referred to as having "height," but this term is relative, it being understood that it designates the distance between the displaced planes **17, 17'**. As shown in the drawings, the height of the folds and that of the corrugations may be substantially equal, but the height of the folds may be less than that of the corrugations. As previously stated, the folds are shown as being disposed in a single plane, but, depending on the dimensions of certain types of reels, it may be desirable to crimp the metal lying in both of the spaced planes. It is, therefore, intended that the invention be applicable to the latter form of reel flange.

After the corrugated and folded sheet has had its ends connected by welding or a similar operation, inner and outer rings are secured thereto either mechanically or by welding. The outer ring **19** is channel shaped in section, while the inner ring comprises two curved angle members **20, 21** having their axial flanges **15** welded to each other. As stated hereinbefore, these axial flanges cooperate with the ends of drum **10** when placed thereon. The composite reel flanges are secured to each other and held firmly on the drum by tie-rods **22** cooperating with cross members **23**, the latter being welded to the corrugations of the reel flange.

The advantage of providing corrugations of uniform height will be appreciated when it is understood that the reels are shipped in knocked-down condition and separate from the drums. Were the flanges conical or frustoconical, as would be the case where corrugations are tapered, they would be difficult to stack in superposed relation. The drum is provided with a stove-pipe joint so that its ends may be readily connected when they

reach their destination. In shipment a number of them are nested to conserve space. Thus it is possible to stack the flanges and nest the drums in a minimum of space and so store them until they are ready for use. The reels are easily assembled when cable is to be wound thereon. Since the parts are interchangeable, it is unnecessary to replace the complete reel, it being understood that a damaged component may be replaced by a similar element of the reel.

While a preferred form of the invention has been shown and described, it is contemplated that such modifications as fall within the scope of the claims may be employed.

What is claimed is:

1. A circular metallic reel flange having a plurality of radial portions displaced axially and a crimped fold between pairs of adjacent displaced portions, each of said folds having substantial height adjacent the inner circumference of said flange, the height of each fold adjacent the outer periphery of the flange being negligible.

2. A circular metallic reel flange having a plurality of radial portions displaced axially and a crimped fold between pairs of adjacent displaced portions, each of said folds having substantial height adjacent the inner circumference of said flange, said fold tapering downwardly in an outwardly radial direction toward the outer periphery of said flange.

3. A reel flange as defined in claim 1 in which said displaced portions are of uniform height.

4. A circular metallic reel flange having a plurality of radial portions displaced axially and a crimped fold between pairs of adjacent displaced portions, each of said folds having substantial height adjacent the inner circumference of said flange, the height of each fold adjacent the outer periphery of the flange being negligible, said displaced portions being of uniform height, an inner ring secured to said flange at its inner circumference, and an outer ring secured to said flange at its outer periphery.

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