Feb. 12, 1952 J. C. MORLEY 2,585,159

CABLE REEL

Filed June 17, 1946 2 SHEETS—SHEET 1

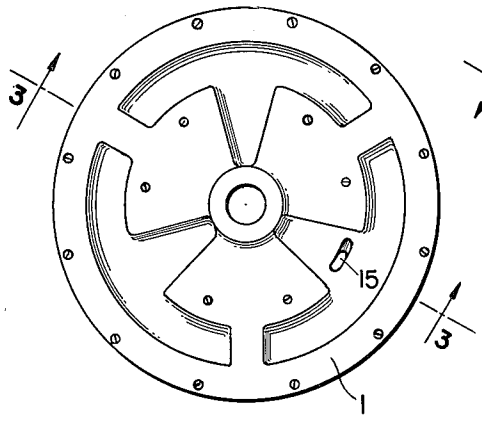


FIG_1

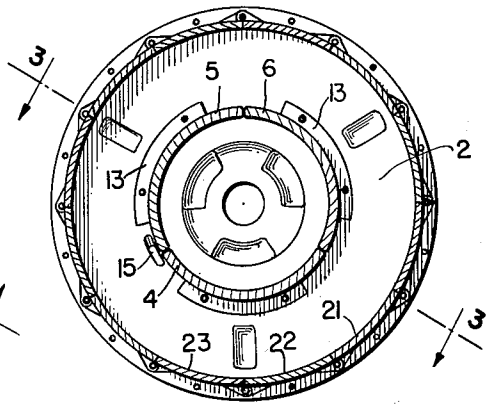


FIG_2

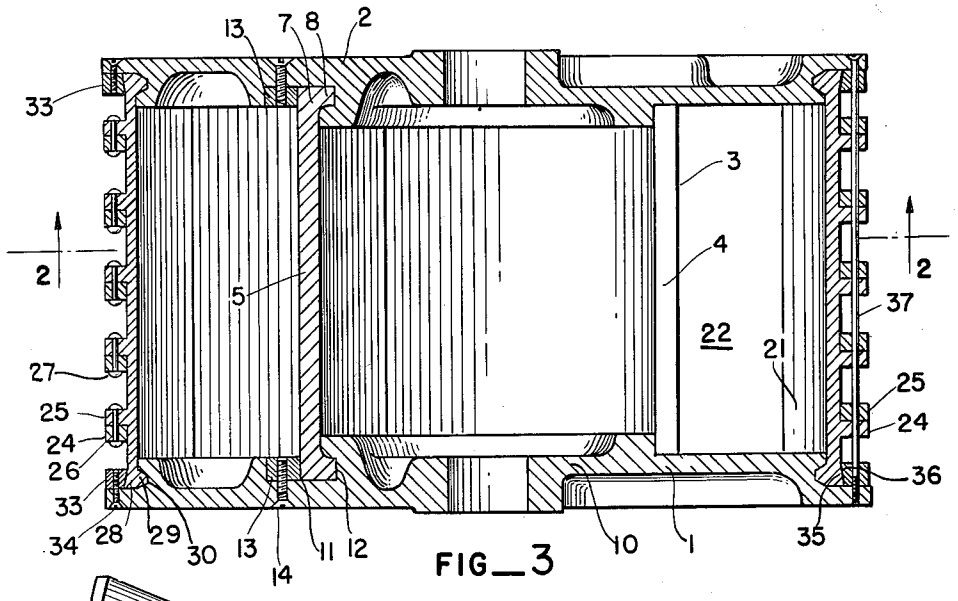


FIG_3

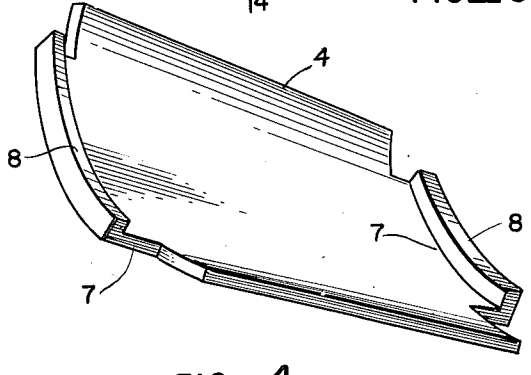


FIG_4

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Feb. 12, 1952 J. C. MORLEY 2,585,159

CABLE REEL

Filed June 17, 1946 2 SHEETS—SHEET 2

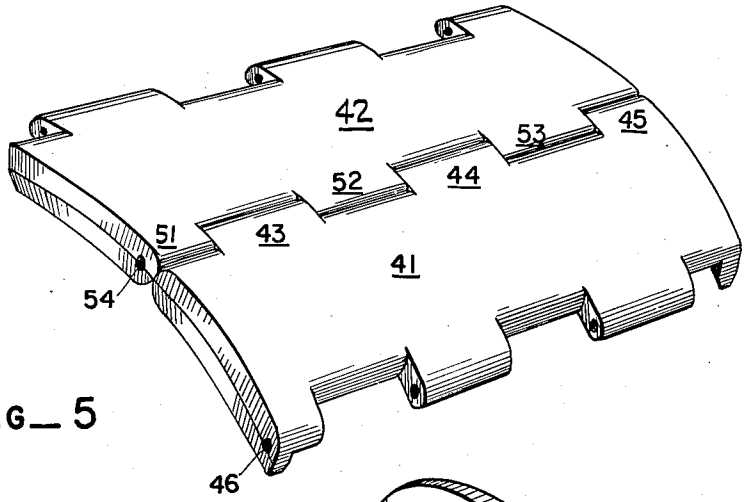


FIG_ 5

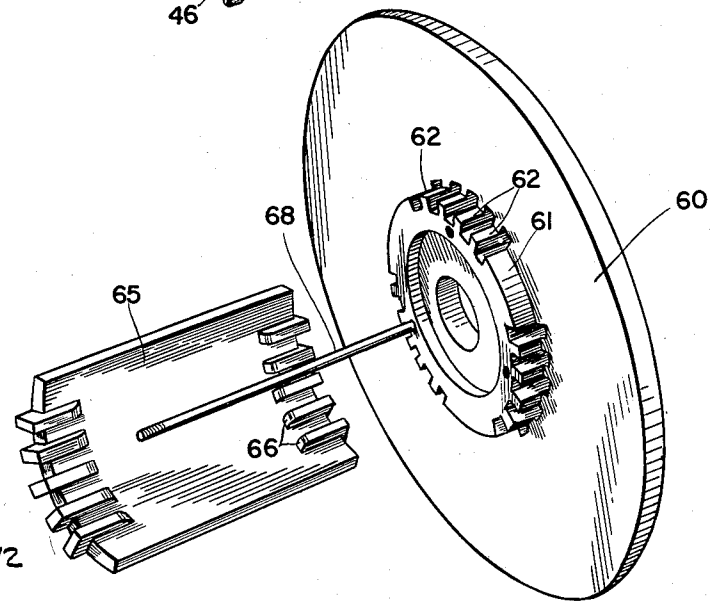


FIG_ 6

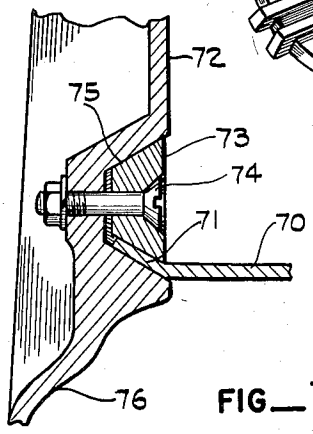


FIG_ 7

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2,585,159

CABLE REEL

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5 Claims. (Cl. 242—77)

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The present invention relates to cable reel and, in more particular, to a reel adapted to act as a container for the shipping of cable, wire, or other commodities adapted to be wound on a reel, or spool.

At the present time, most cable and wire is wound on wooden reels, or spools, for shipment. Reels made of steel are used to a limited extent as compared to the use of wooden reels for shipping cable and wire. While wooden reels have probably been used as long as there has been shipping of cable and wire, and steel reels have been used to some extent in recent years, such reels are very unsatisfactory in the light of the present invention. The manufacturers and shippers of cable and wire have had to be satisfied with wood or sheet steel reels, as there has been nothing better on the market. The use of such reels entails high transportation costs for movement of the reels to and from the customer, and a very rapid depreciation of the reel itself. The life of the average wood reel is about two years, or five trips from the factory. Wooden reels, when damaged, may be repaired to a limited extent. However, even with repairs to these reels their life is very limited, as indicated above. Steel reels usually have a somewhat longer life, but due to their integral construction, usually by welding, any damage to the reel is hard to repair and so, when even slightly damaged, they have to be scrapped. The fabricated sheet steel reels are the only ones on the market in the way of metal reels, as cast iron, cast steel, or cast aluminum, would not be appropriate for shipping, because of their weight, and they would not stand the shock loading to which these reels are subjected. Any cast reel, other than magnesium, strong enough to withstand shock loading would be far too heavy and cumbersome and costly to be shipped.

Having in mind these defects of the prior art, it is an object of the present invention to construct a cable reel, or spool, particularly adapted for shipping cable and wire, which is light in weight and which may be disassembled, or knocked down, for shipping in a compact bundle or small space when the reel is empty and ready to be returned to the shipper.

Another object of the present invention is the construction of a reel which may be repeatedly and easily demounted, knocked down, or disassembled.

A further object of the present invention is the construction of a shipping reel out of magnesium.

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Yet another object of the present invention is the construction of a demountable cable reel with a hollow segmental core.

Yet a further object of the present invention is the construction of a demountable cable reel with a hollow segmental core which interlocks with the flanges.

A still further object of the present invention is the construction of a light weight cable reel that will withstand shock-loading.

Still another object of the present invention is the construction of a cable reel which will withstand distortion and subsequent straightening without breaking of the metal, which reel is made by casting.

The above mentioned defects of the prior art are remedied and these objects achieved by constructing a cable reel, adapted for shipping purposes, out of cast magnesium; and by casting the flanges separately from the core, forming the hub of each flange with a mortise, and forming the core of the reel hollow and in segments with tenons on each segment adapted to fit into the corresponding mortises on the flanges, preferably with mortises undercut and corresponding tenons.

A device which will remedy the above mentioned defects and achieve these objects is shown in the accompanying drawings, in which:

Fig. 1 is an end view of a reel embodying the present invention;

Fig. 2 is a sectional view parallel to the end view of Fig. 1 and on the line 2—2 of Fig. 3;

Fig. 3 is an enlarged sectional view on the line 3—3 of Figs. 1 and 2;

Fig. 4 is a perspective view of one of the core plates;

Fig. 5 is a perspective view of one of the lagging sections;

Fig. 6 is a perspective view of the interfitting parts of a reel showing a modified form of such parts;

Fig. 7 is a fragmentary view of a portion of a reel showing a modification of the device shown in Figs. 1 to 4, inclusive.

In the drawings there is shown a cable reel, or spool, which is adapted to be constructed in many different sizes to accommodate various sizes of cable, wire rope, wire, and other materials which are suitable for winding thereon. The reel shown in Figs. 1, 2, 3, and 4, is made up of two similar flanges 1, 2, which are spaced apart in fixed position by a core 3. This core is made up of a plurality of core plates 4, 5, 6. The reel is constructed so that the edges of the core plates, when in place, will rest one against the other.

The ends of the core plates are provided with a tenon 7, which has thereon a lateral projection, or tenon enlargement 8. Each of the flanges is formed with a hub portion 10. Contiguous with the periphery of the hub portion is a mortise 11. This mortise is formed to receive the tenon 7 and the tenon enlargement 8 on each of the three plates. The tenon enlargement fits in an undercut portion 12 of the mortise 11. The tenons of the various core plates are held in place in the mortise by means of a locking key, or ring 13. This locking ring, or lug, may be in sections. The locking ring is held in place by a series of, bolts, or screws 14. One or both of the flanges is provided with a cable-anchoring opening 15, adjacent to the periphery of the core. When cable is to be placed on the core, one end of the cable is passed through and secured in this opening 15.

The periphery of the reel is provided with lagging made up of a plurality of sections 21, 22, 23, and so forth. Each lagging section has thereon a plurality of ears 24 along one edge and another plurality of ears 25 along the opposite edge. Each lagging ear has therethrough an opening 26. Two sections are joined together by passing a pin, rod, or bolts 27, through the lagging ear openings 26. Each end of each lagging section is formed with a tenon 28, and each of these tenons 28 is formed with an enlarged portion 29, or lateral projection. Each of the flanges 1, 2, have formed on their periphery, or rim, a rim mortise 30 which is shaped to receive the tenon 28 and its enlarged portion 29, the rim mortise 30 having a portion which will receive the enlarged portion 29 of the tenon. When the lagging is placed on the flanges and the tenons of the lagging fitted in the rim mortise, the lagging is locked in position by securing to the rim a locking ring 33. This locking ring may be considered as a portion of the wall of the mortise for receiving the lagging tenon. This locking ring may be held in position by a series of bolts, or cap screws 34 placed between the locking ring and the flange. The locking ring may be made sectional for ease in handling. The lagging tenon 28 and the locking ring 33 may have cooperating wedge portions 35, 36, so that as the cap screws 34 draw the locking ring against the flange, the wedge portions will bear upon each other to force the tenon into the mortise. An easily removable rod 37 may be used for joining two adjacent lagging sections together and for breaking the lagging apart so that it may be removed from the reel.

Reels of the kind shown in Figs. 1 to 4, inclusive, are built in sizes up to 6 and 7 ft. in diameter, and 5 to 6 ft. across the face. All of the parts of the reel, except the rods, bolts, and screws, are cast out of magnesium. The arbor openings in the flanges may be provided with manganese sleeves to prevent undue wear of the magnesium. Magnesium is remarkable for its ability to withstand shock, although it does not readily withstand abrasion. Hence, this material is very highly suited for the present use, as these reels are subject to shock in handling and it is highly desirable that they be made of a light weight material.

When the reel is constructed in the manner herein disclosed it may be assembled by laying one of the ends down and placing the various core plates with their tenons in the mortise of this end plate. The other end plate is then placed on top of the core plates. The core plates are then pushed to the center of the flanges so that the enlargements 8 on the tenons will fit into the recesses 12 in the mortises. The core plates are then held in position by inserting the locking rings 13 into the mortises and securing these locking rings in position by means of screws 14. The lagging plates 21, 22, 23, and so forth, may be joined together by placing bolts 27 in the holes 26 in the ears 24, 25. When a string of these sections has been joined together which is long enough to pass around the reel, the loaded reel may be rolled over the string of lagging sections, and the end section secured in place by passing the rod 37 through the rim of the flange and through the ears 24 of the end section, such as the section 21. Then as the reel is rolled along, the lagging sections will be wrapped around the reel. When several of the sections are wrapped around the reel, a part of the locking ring 33 may be secured in place to securely lock these sections of the lagging to the reel. Finally, when all of the sections are wrapped around the reel, the rod 37 may be withdrawn and the end section placed in position with the holes 26 in its ears 25 in registry with the holes 26 in the ears 24 of the adjacent section. The rest of the sections of the locking ring 33 may be secured in place, and the rod 37 may be reinserted to lock the two end sections of the lagging together. The reel is then complete and ready for shipment with its load of cable or wire.

In Fig. 5 there is shown a modification of a lagging which is represented by two sections 41, 42. Each of the sections has on each edge a series of ears 43, 44, 45, which interfit with ears 51, 52, 53. The ears on each section form intervening cut-out portions. The ears of each section are so proportioned that they will interfit with the ears of another section. The two sections may be joined together by the passing of a bolt, or pin, through the openings 54 and 46 which bolt passes through all the ears of each section. The edge of each ear is rounded, and the edge of each cut-out portion is also rounded, so that when the sections are joined together there is some flexibility and the sections can be bent relative to each other. While each section is curved, the string of sections may be laid out on a plane surface. The advantage of these lagging sections over sections shown in previous figures, is that they have no outwardly projecting ears, such as the ears 24, 25, shown in the previous figures. This lagging may be secured to a reel in the same manner as the lagging shown in the previous figures.

The modification shown in Fig. 6 shows only a portion of the reel, with the parts shown in extended position. In Fig. 6 is shown a flange 60, the hub portion 61 of which is provided, at its periphery, with a mortise which is made up of a series of hub splines 62. The space between the hub splines extends downwardly into the body of the flange. The core portion 65 is provided at each end with a tenon which has thereon a series of spline portions 66 which are adapted to interfit with the spline portions of the hub. The flange 60 and the core plate 65 are assembled by moving the core plate axially of itself, or longitudinally, and normal to the face of the flange so that the splines will interfit. The two flanges are held together by a series of tie rods 68, which pass through both of the flanges and are secured in place by appropriate nuts placed on the ends of the rods 68. The core plate shown in Fig. 6 will not transmit axial loads tending to spread the flanges apart. However, these core plates

will transmit part of any wracking load because as such load is applied it will tend to twist one or more of the core plates relative to the flanges and bind the splines of the core plate to the splines of the flanges, so that the flanges and core plates will lock together and the load applied to either flange or plate will be transmitted from one to the other.

Fig. 7 is a fragmentary view of a portion of a reel showing a modification of the reel shown in Figs. 1 to 4, inclusive. In this modification the core plate 70 and its tenon 71 may be made of sheet stock of uniform thickness. The tenon 71 is formed by bending the edge of the sheet outwardly toward the rim of the flange 72. The locking ring 73 has a cross-sectional area of the form of a trapezoid. The ring is clamped in place by cap screws 74. The mortise 75, contiguous to the hub 76 of the flange, is formed to receive the locking ring 73 and the tenon 71.

In the modification shown in Figs. 1 to 4, inclusive, no tie bolts 68 are needed, and the core plates will transmit all of the side and wracking loads. This is a desirable feature of the present construction, as the cross sectional area of the core is large compared with the cross sectional area of any reasonable size, or numbers, of tie bolts that could be used. Consequently, a member of the construction which is necessary, is used for transmitting the entire load without any supplementary tie bolts. This feature further lightens the construction and increases its strength.

Reels made in accordance with the above disclosure are one-third the weight of wooden reels and 25% or more lighter than the best metal reels of comparable size and designed for comparable loading.

Having thus described my invention, I claim:

1. A reel, comprising: two similar flanges, each flange having a hub portion formed with a recess, an undercut in said recess, said recess and undercut forming a mortise, a segmental hollow core with each segment having a tenon adapted to fit in said undercut and a portion only of said recess, and a key in said recess locking said tension in said mortise.

2. A reel, comprising: two similar flanges, each flange inner face formed with an annular mortise with an undercut with respect to the inner face of such flange, a segmental hollow core with each segment extending from flange to flange and having tenons adapted to partially fill a mortise and to fit in the undercut of said mortise, and in said mortises and with said tenon filling said mortise, lug means locking said tenons in said mortises.

3. A reel, comprising: two similar flanges, each flange inner face formed with an annular mortise, a segmental annulus extending from flange to flange, arcuate rings co-operating with said segments and mortises, circumferentially spaced securing bolts co-operating with said rings to secure said rings and segments with respect to said mortises, and with respect to each flange, one of said arcuate rings and an end of said annulus having a portion thereof seated in such flange's annular mortise, and said bolts securing said ring and annulus end to said flange and such portion thereof in said mortise, whereby the stresses from flange to flange are transmitted through the annulus.

4. A reel, comprising: two similar flanges, each flange inner face formed with an annular mortise, a segmental annulus extending from flange to flange, each segment having tenons fitting in said mortises, arcuate rings bearing on said tenons, circumferentially spaced securing bolts between said flanges and rings, and said bolts and rings securing said tenons in said mortises.

5. A reel, comprising: two similar one-piece flanges, each flange inner face having an annular mortise, an annular segmental core with each segment extending from flange to flange, arcuate rings co-operating with said segments and mortises, and circumferential spaced bolts between each of said flanges and said rings to secure said rings in said mortises and said segments to said flanges, whereby the stresses from flange to flange are transmitted through said core.

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