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3,381,812

WEATHERTIGHT REEL FOR PIPE-TYPE CABLE

Filed Aug. 4, 1966

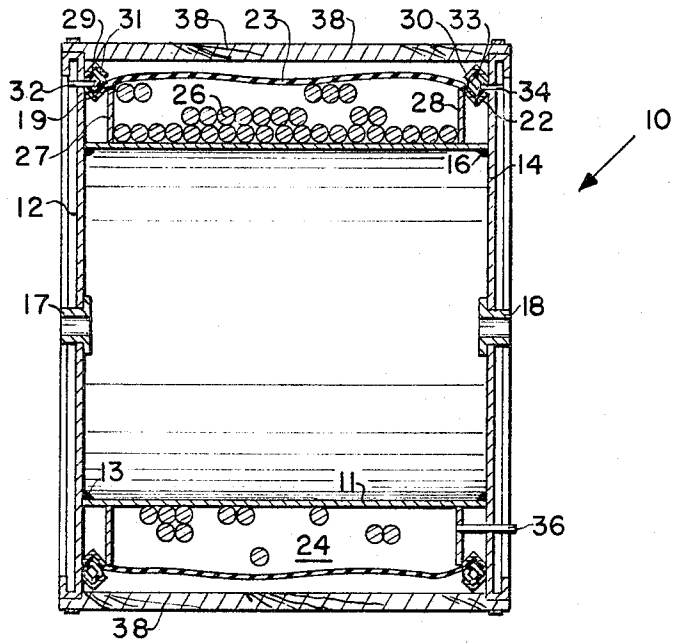


Fig. 1

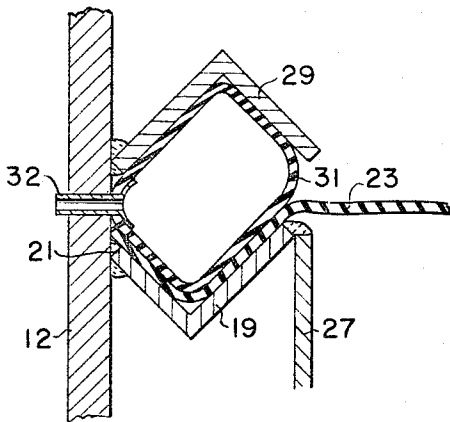


Fig. 2

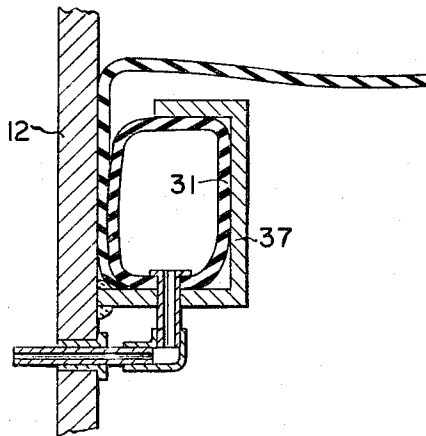


Fig. 3

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HIS AGENT

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3,381,812

WEATHERTIGHT REEL FOR PIPE-TYPE CABLE
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Wire and Cable Company, a corporation of Delaware
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4 Claims. (Cl. 206—59)

ABSTRACT OF THE DISCLOSURE

A weather-tight reel for cable cores is formed by spreading an impermeable blanket between the reel flanges onto annular rings that project toward each other from the flanges. The blanket is sealed by the pressure of inflated pneumatic tubes pressing it against the projecting rings.

My invention relates to reels for shipping and storing electric cables and particularly to such reels comprising inflated tubes for sealing the reels against moisture.

In the manufacture of high-voltage electric cables great pains are taken to remove all traces of moisture from the cable cores. The cores are stored on reels and shipped to installation sites where they are pulled into pipes from which all traces of moisture have been carefully removed. During storage the reels are sealed by means of a moisture-impervious blanket or membrane and a thoroughly dried inert gas is fed under the blanket to maintain a positive pressure that will prevent moist air from entering.

To attach the blanket to the reel the flanges of the latter have annular projections to which the blanket is strapped and a wax or adhesive is applied to the projections so that there will be no air leaks. This known means of attaching the blanket to the reel has a number of shortcomings:

The application of sealant to the flange projection is time consuming and it will not be effective unless it is expertly done.

The blankets are usually torn when it is attempted to remove them from the reel so that they are not considered to be returnable. In any event it would be necessary to remove the adhering sealant.

I have invented a cable reel combination providing positive assurance of a superior seal without any sealant.

My invention has the further advantage that a seal can be either made or broken rapidly with a minimum of labor.

My weathertight cable reel comprises a drum with flanges secured to both ends. It has annular supporting rings projecting inwardly from each of the flanges and a substantially moisture impervious annular blanket extending between the flanges with the drum, flanges, and blanket comprising walls of a cable-storing chamber. Inflated annular pneumatic tubes compress the blanket in substantially moisture tight engagement with each of the rings. In one embodiment of my invention a pair of annular rings project inwardly from each flange and the pneumatic tubes are positioned between each of the pairs of rings. Preferably there is positive gas pressure in the chamber of the reel and a substantially higher gas pressure within the tubes.

A more thorough understanding of my invention can be gained from the appended drawing.

In the drawing:

FIGURE 1 shows a section of a cable reel of my invention.

FIGURE 2 shows an enlarged section of an element of the reel of FIGURE 1.

FIGURE 3 shows an enlarged section of an element of another embodiment of my invention.

My reel indicated generally by the numeral 10 has a

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drum 11 free from any perforations that will admit moisture when the reel is sealed. Preferably the drum 11 is steel and it is covered by a replaceable cushioning layer of paper which has been omitted from the drawing for the sake of clarity. To the left end of the drum 11 there is welded a flange 12 by means of a weld 13. Similarly a flange 14 is welded to the right end of the drum 11 by means of a weld 16. The flanges 12 and 14 are impervious to moisture and care is taken that the welds 13, 16 should be tight so that there will be no moisture leakage between the drum and the flanges. Hubs 17, 18 in the respective flanges 12, 14 provide means for mounting the reel 10 on a shaft.

An annular supporting ring 19 is welded to the flange 12 by means of a weld 21 (FIGURE 2) and a similar ring 22 is welded to the flange 14. The weld 21 and its counterpart for the ring 22 are free from leaks so that the rings 19, 22 form a moisture tight seal to the flanges. A blanket 23 is spread between the flanges 12 and 14 over the rings 19 and 22. The blanket 23 must be impervious to moisture and a suitable blanket construction might comprise a layer of polyethylene, a layer of aluminum foil, a layer of fabric, and another layer of polyethylene. The polyethylene can be heat sealed to itself to form the blanket into an annular cover. The drum 11, flanges 12, 14 and blanket 23 can be considered to constitute the walls of a chamber 24 for holding a cable core 26 which must be protected from moisture. In order to protect the core 26 from being damaged by abrasion against the rings 19, 22 when it is removed from the reel, additional flanges or plates 27, 28 are fastened between the rings and the drums. It will be readily understood that on the reel so far described it is not necessary for the plates 27, 28 to be moisture-tight and if they are moisture-tight and are welded with moisture-tight welds to the rings 19, 22 and to the drum 11, then it will not be essential for the flanges 12, 14 to be leak-proof, since a moisture tight chamber would be formed with walls comprising the drum 11, flanges 27, 28 and blanket 23.

The rings 19, 22 have V-notch sections and they are respectively opposed by concentric rings 29, 30 welded to the respective flanges 12, 14. Between the rings 19, 29 there is positioned a pneumatic tube 31 inflated through a check valve 32 of conventional design. Between the rings 22, 30 there is inserted a similar pneumatic tube 33 inflated by means of a check valve 34. The inflation of the tubes 31, 33 compresses the blanket 23 in a moisture tight seal against the rings 19, 22. Although I have shown these rings as angles it will be readily understood that they might be in the form of half-rounds or channels within the scope of my invention or one of the rings might be flat. Positive pressure of a moisture-free gas is maintained in the reel chamber 24 by means of a nipple 36 which may comprise a check valve, and, during shipment, a tank of nitrogen with suitable automatic valves can be attached to the reel to keep dry gas in the chamber. The pressure of this gas does not have to be high, a pressure of a few inches of water being sufficient to keep moist air from entering the reel. The pressure in the tubes 31, 33 should be between 5 and 20 p.s.i. gage and I have found that a pressure of 10 p.s.i. will make a very tight seal without requiring any adhesive or sealant.

In FIGURE 3 I have shown an embodiment employing a single J-ring 37 instead of two rings to confine the tube 31. In this case the blanket 23 has been applied over the tube by tucking it in between the tube and the flange 12 so that the tube compresses the blanket against the flange. This method provides a positive seal even if there is some leakage in the welding of the ring 37 to the flange 12. Other configurations of rings for confining the inflated tubes against the blanket are operable within the scope

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of my invention and I wish the configurations I have shown to be exemplary rather than definitive.

When the reel 10 is shipped, a dehydrating agent is included within the chamber 24 and the blanket is protected by wooden lags 38—38 strapped around the entire circumference of the flanges 12, 14. 5

My reel has particular utility for "pipe-type" cables which have oil-saturated, paper-wrapped cable cores. In the practice of my invention the cores are wound on the reel in a chamber that is maintained at low humidity with the tubes 31, 33 in place around the rings 19, 22. When the reel is full and after bags of desiccant have been attached, the blanket 23 is placed between the flanges and heat sealed to close the cross-wire seam. In applying the blanket it is inserted under both the tubes and these are then inflated to form a positive seal. While the reel is being stored dry gas is continually introduced through the nozzle 36. For shipment the lags 38 are applied and the pressure in the tubes raised to 20 pounds. When the cable is on site, ready for installation the valves 32, 34 are released to deflate the tubes. The blanket seal is heated to break the seam and the blanket removed and stored so that it may be returned with the reel for reuse. 10 15 20

I have invented a new and useful cable reel for which I desire an award of Letters Patent. 25

I claim:

1. A weathertight cable reel for the cores of pipe-type cables comprising:

- (A) a drum,
- (B) flanges secured to both ends of said drum, 30
- (C) annular supporting rings projecting inwardly from each of said flanges, each of said rings cooperating with one of said flanges to form an annular partial enclosure for a pneumatic tube,
- (D) a substantially moisture impervious annular blanket extending between said flanges, said drum, said 35

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flanges and said blanket comprising walls of a cable-storing chamber,

(E) inflated annular pneumatic tubes compressing said blanket in substantially moisture tight engagement with each of said rings, said blanket forming a vapor-tight seal free from the application of any adhesive.

2. The reel of claim 1 wherein there is a positive gas pressure within said chamber and a substantially higher gas pressure within said tubes.

3. A weathertight cable reel for the cores of pipe-type cables comprising:

- (A) a drum,
- (B) flanges secured to both ends of said drum,
- (C) a pair of concentric annular rings projecting inwardly from each of said flanges, said rings cooperating to form annular partial enclosures of pneumatic tubes,
- (D) a substantially moisture impervious annular blanket extending between said flanges, said drum, said flanges, and said blanket comprising walls of a cable-storing chamber,

(E) inflated pneumatic tubes positioned between each of said pairs of rings compressing said blanket to form a substantially moisture tight seal, free from the application of any adhesive.

4. The reel of claim 2 wherein there is a positive gas pressure within said chamber and a substantially higher gas pressure within said tubes.

References Cited

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WILLIAM T. DIXSON, JR., *Primary Examiner*.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,381,812

May 7, 1968

Bernard J. Cohen

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 32, "drums" should read -- drum --.
Column 3, line 14, "cross-wire" should read -- cross-wise -
Column 4, line 16, "of" should read -- for --.

Signed and sealed this 14th day of October 1969.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

WILLIAM E. SCHUYLER, JR.

Commissioner of Patents