March 25, 1958 C. I. STEINBACK 2,828,090

WINDING SPOOL CONSTRUCTION

Filed Oct. 29, 1956

Fig. 4

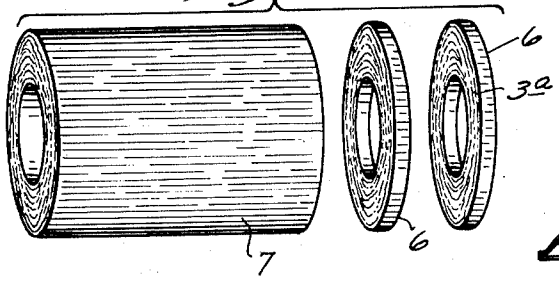


Fig. 5



Fig. 1

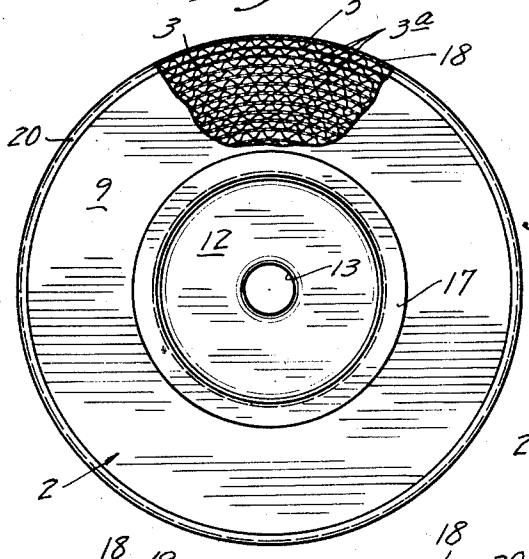


Fig. 2

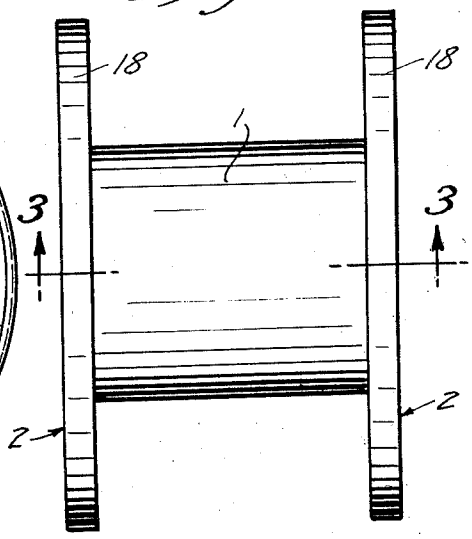


Fig. 3

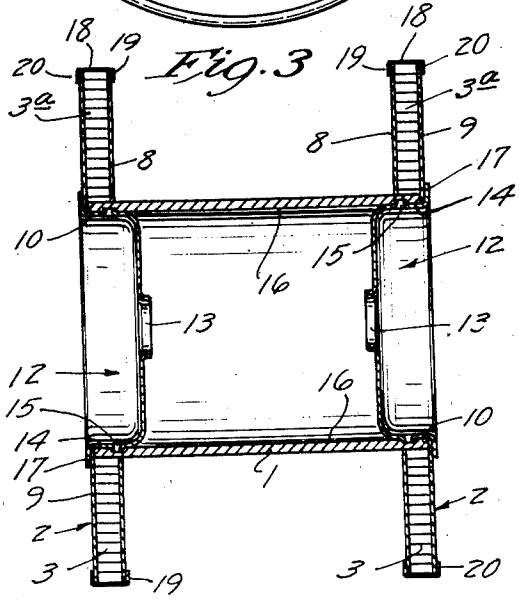
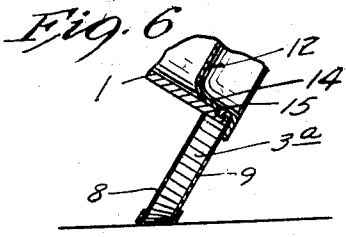


Fig. 6



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WINDING SPOOL CONSTRUCTION

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1 Claim. (Cl. 242—118.7)

My invention relates to winding spools and more particularly to relatively heavy duty spools for winding of wire, for storage and transportation.

More particularly, my invention relates to inexpensive winding spools of the type which may be thrown away after a single use. Numerous different types of so-called "throw-away" spools have been tried heretofore without success. Invariably, however, such spools have been found to be unsatisfactory because, due to impact, dropping or the like upon the flanges thereof, said flanges become damaged and/or disaligned to a point where unwinding of the wire therefrom becomes difficult, if not impossible. For this reason, expensive metallic winding drums are uniformly in use today. Because of their high cost, such spools are required to be used time after time. The handling and reshipping incidental to each such reuse is not only time consuming, but costly.

The primary object of my invention is the provision of an inexpensive winding drum for use by the wire industry, the flanges of which are formed from spirally wound laminations of flexible corrugated sheet stock such as corrugated paper board.

A further object of my invention is the provision of a device of the class immediately above described in which each lamination includes a corrugated element and a relatively straight binder sheet secured to one side only of said corrugated element, and in which the relatively straight binder sheet of each lamination is radially outwardly disposed with respect to the corrugated element of said lamination.

A further object of my invention is the provision of a device of the class immediately above described in which the inner and outer surfaces of the flanges are covered with face plates, also preferably formed from paper stock, said inner face plates being snugly received over opposite ends of the tubular drum on which the flanges are mounted, said outer face plates having inner diameters which correspond to the inner diameter of said drum and overlie the opposite ends of said drum, in concentric relationship therewith.

A still further object of my invention is the provision of a device of the class immediately above described, in further combination with opposed cup-like elements, having axially aligned central apertures, telescopically received in opposite ends of said tubular drum, said cup-like elements having radially outwardly projecting annular flanges on their axially outer ends which project radially outwardly beyond the maximum diameter of the drum and engage said outer face plates.

A still further object of my invention is the provision of an inexpensive throw-away type winding spool which may be formed largely from commercially available paper stock, which may be relatively inexpensively produced, which is rugged and durable, and the flanges of which are capable of being subjected to considerable radial as well as axial impact without damage or without causing disalignment thereof with respect to the winding drum so as to interfere with the unwinding of wire therefrom.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claim and attached drawings.

Referring to the drawings, wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view in side elevation of my novel spool, some parts being broken away and some parts shown in section,

Fig. 2 is a view in plan of the structure of Fig. 1,

Fig. 3 is a sectional view as seen substantially from the line 3—3 of Fig. 2,

Fig. 4 is an exploded perspective view illustrating one of the steps in the method of forming the flanges of my novel spool,

Fig. 5 is a perspective view of the corrugated board, in flat form, from which the flanges of my spool are wound, and

Fig. 6 is an enlarged fragmentary view corresponding to a portion of Fig. 3.

Referring with greater particularity to the drawings, the numeral **1** indicates a tubular cylindrical winding drum, preferably formed from heavy paper stock. Secured to opposite ends of the tubular drum **1**, by any suitable adhesive, are matching annular flanges, identified in their entirety by the numeral **2**. The flanges **2** comprise annular core sections **3** of spirally wound laminations **3***a* of flexible corrugated sheet stock, such as corrugated paper. Each of the laminations **3***a* includes a corrugated element **4** and a relatively straight binder sheet **5** secured to one side only of the corrugated element **4**, see particularly Fig. 5.

Fig. 4 illustrates the preferred method of forming the annular core sections **6** of the flanges **2**, comprising spirally wound laminations **3***a*. This is accomplished by rolling the flat corrugated sheet of Fig. 5 upon itself to form an elongated roll **7**, the relatively flat binder sheet **5** of each lamination being radially outwardly disposed with respect to the corrugated element **4** of each such lamination **3***a*. The core sections **6** are thereafter cut to a desired width by passing same through a band saw or the like, not shown.

Rigidly secured to the inner faces of the laminated core sections **6** are annular face plates **8**. The face plates **8** are of a diameter to be snugly received over the opposite ends of the tubular winding drum **1**, see Fig. 3. Rigidly secured by suitable adhesive or the like, to the outer surfaces of the laminated sections **6**, are outer face plates **9**. The outer face plates **9**, also shown in Fig. 3, have internal diameters corresponding to the internal diameter of the tubular winding drum **1** and overlie and conceal the opposite ends of the winding drum, as indicated at **10**. The face plates **8** and **9** are flexible and also preferably formed from cardboard or other paper stock.

Cups **12**, preferably formed from light-weight sheet metal, are telescopically received in the opposite ends of the winding drum **1**. The cups **12** have axially aligned apertures **13** for the reception of a spindle, not shown, and have their cylindrical wall portions **14** punched radially outwardly into the tubular winding drum **1** at circumferentially spaced points, as indicated by the numeral **15**, to securely anchor same against rotary or outward axial movements with respect to the winding drum **1**. A suitable adhesive may also be used between the telescoping cylindrical walls **14** of the cups **12** and the inner wall **16** of the drum **1**. At their axially outer ends, the cups **12** are formed to provide radially outwardly projecting annular flange portions **17** which overlie and abut the radially inner marginal edge portions of their cooperating outer face plates **9**, as shown particularly in Fig. 3. It will be noted that the flange portions **17** project radially outwardly beyond the external diameter of the drum **1**. With this arrangement, when suitable adhesives are used

between the several abutting surfaces, a very rugged design is achieved.

Wrapped completely around each of the peripheral surfaces of the flanges **2** are flexible tape-like rim elements **18**, preferably formed from any relatively tough pressure sensitive tape. It will be noted that the opposite longitudinal edges of the tape-like rim elements **18** overlie the radially outer marginal edge portions of the inner and outer face plates **8** and **9** respectively, as indicated by the numerals **19** and **20** respectively, so as to discourage separation of the face plates from their cooperating laminated core pieces **6**, under impact due to dropping or the like, as indicated in Fig. 6.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects and while I have shown a preferred embodiment thereof, it should be clear that my invention is capable of modification without departure from the scope and spirit of the appended claim.

What I claim is:

A winding spool for wire and the like comprising a tubular cylindrical winding drum, and annular flanges rigidly secured to opposite ends of said drum and projecting radially outwardly therefrom, said flanges comprising core sections formed from spirally wound laminations of corrugated paper stock, annular face plates formed from flat sheet stock secured to the inner and outer faces of each of said flanges, and flexible rim elements extending around the periphery of said flanges and binding said face plates and said core sections together.

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