Feb. 24, 1959 W. A. DE LONG 2,874,919

REEL CONSTRUCTION

Filed Jan. 11, 1954

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Fig. 1.

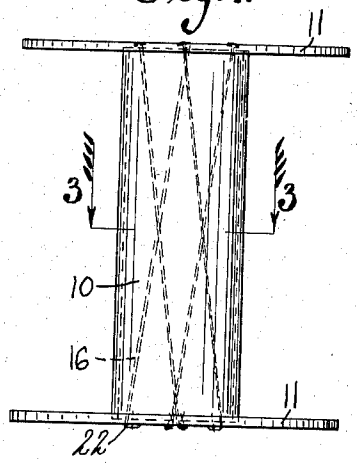


Fig. 2.

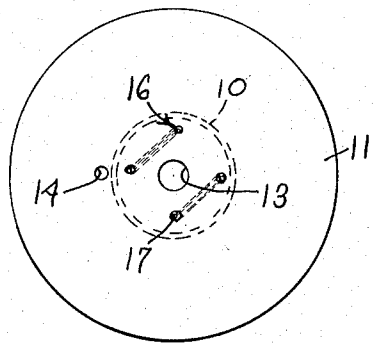


Fig. 3.

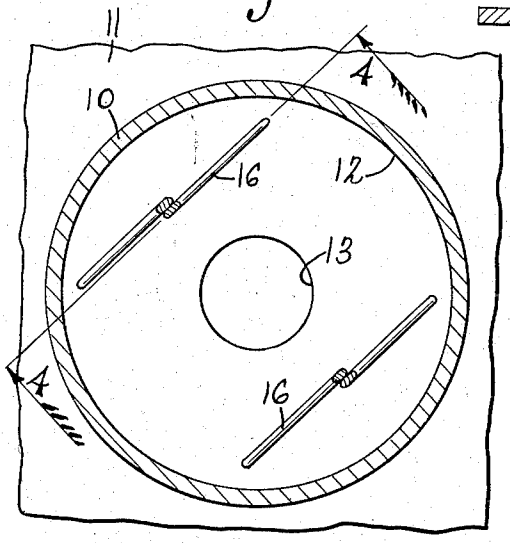


Fig. 4.

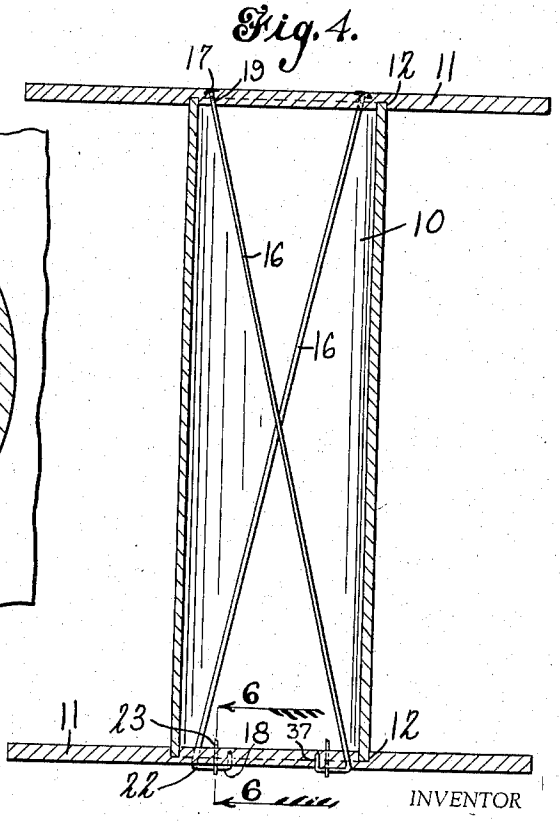
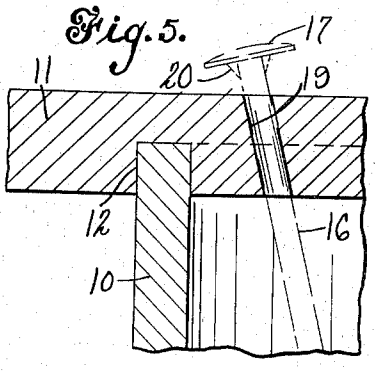


Fig. 5.



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Fig. 6.

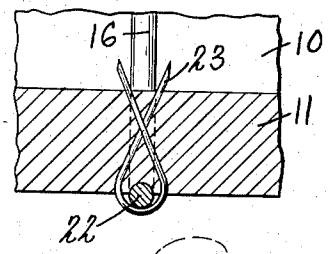


Fig. 7.

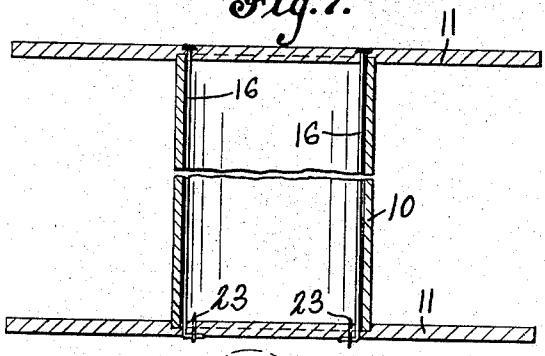


Fig. 8.

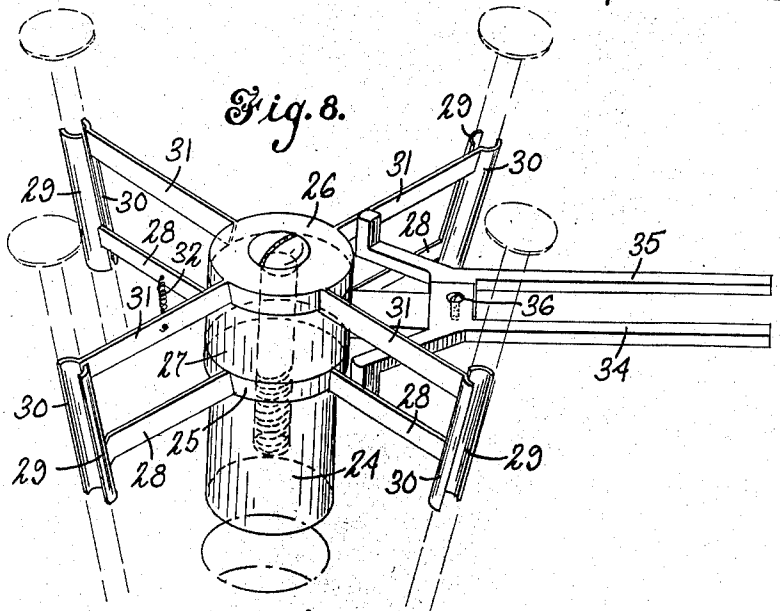
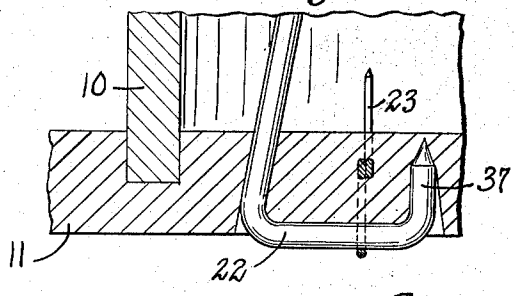


Fig. 9.



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Fig. 10.

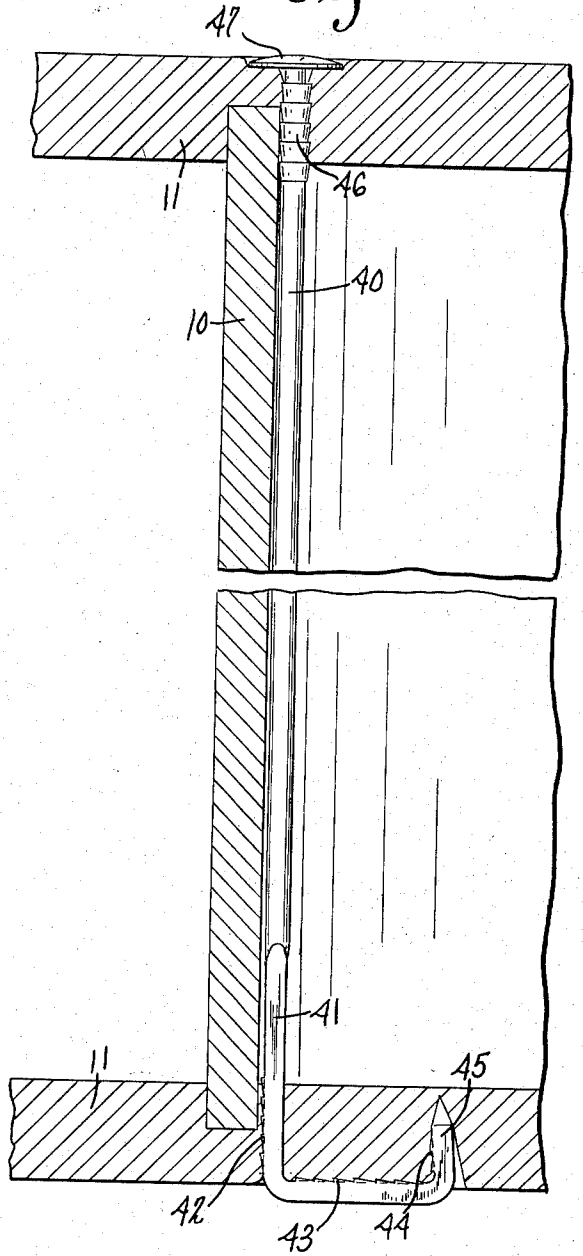
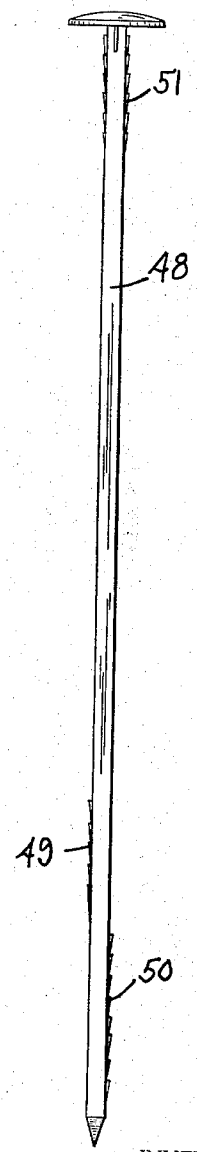


Fig. 11.



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United States Patent Office 2,874,919 Patented Feb. 24, 1959

2,874,919

REEL CONSTRUCTION

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Application January 11, 1954, Serial No. 403,096

1 Claim. (Cl. 242—118.6)

This invention relates to reels or spools, and more particularly to a reel for holding such material as cord or wire, and especially for wire of relatively light gauge such as insulated wire used as an electrical conductor.

Reels of this character tre commonly constructed of relatively light and inexpensive material such as wood and cardboard and commonly consist of a cylindrical body or barrel member having a head at each end thereof. The heads are in the form of flat disks and extend radially beyond the body or barrel of the reel to provide end flanges to hold the wire in place when coiled upon the reel.

It is common practice for the reels to be manufactured by someone other than the user, and they are usually assembled and shipped to the user in assembled condition ready to have the wire coiled thereon. Moreover, after the reel of wire has been shipped and used by a consumer, the reels themselves are not returned but are discarded, and it is, therefore, necessary that they be economically made so as to be expendable.

Shipping of the empty reels from the manufacturer to the user is relatively expensive as they occupy a considerable space relative to their weight and costs, and their transportation, therefore, adds a considerable amount to the cost of the empty reel. It will be appreciated that reels of the type shown in the present application cannot be nested together to great advantage when in assembled condition. However, if the reels can be so constructed that they may be shipped in knocked-down condition and assembled readily and easily by the user with a minimum of labor and expense, they will require much less space in shipment, and their transportation will be less expensive.

In addition, as these reels are discarded after being filled with wire and the wire is used therefrom, it is desirable that they be made as cheaply as possible consistent, of course, with the strength required to stand up under the use and handling to which they may be subjected, while at the same time they should be of relatively light weight and require a minimum of labor in the assembling of the parts.

One object of the present invention is to produce a light but strong reel having barrel and head sections which may be economically manufactured, shipped to the user in knocked-down condition, and assembled by the latter with a minimum of effort.

A further object of the invention is to provide a reel of the character described so constructed that it is of relatively light weight, may be made of inexpensive material and parts, and so designed that the parts may be readily and easily assembled without requiring elaborate machinery for this purpose.

Still another object of the invention is to provide a reel of the character described constructed of parts which are inexpensive to manufacture and which may be assembled with a minimum of effort to provide a light but strong reel capable of withstanding the use and handling to which it may be subjected.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a side elevational view of a reel or spool embodying my invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a sectional view on line 3—3 of Fig. 1;

Fig. 4 is a sectional view on line 4—4 of Fig. 3;

Fig. 5 is a detail sectional view showing the construction of the upper portion of the reel;

Fig. 6 is a detail sectional view on line 6—6 of Fig. 4;

Fig. 7 is a transverse sectional view showning a modified form of reel construction;

Fig. 8 is a view showing a guide means for guiding the fastening pins into place;

Fig. 9 is a fragmentary sectional view at the lower end of the reel;

Fig. 10 is a partial sectional view of a reel construction showing a modified form of fastening member; and

Fig. 11 is an elevational view of still another form of fastening member.

As is illustrated in Figs. 1 to 6 of the drawings, the reel or spool of this invention is composed of a central body or barrel member **10** of hollow cylindrical form. This member may be made of any suitable material such, for example, as heavy cardboard, the dimensions being determined by the size of the reel which is to be made and the use to which it is to be put.

At each end of the body member **10** is a head member **11**, each of these members being of the form of a flat disk. These head members may be made of plywood, for example, although they may be made of another suitable material if desired. The inner face of each of the head members **11** is provided with an annular inwardly facing channel or routing **12** which is designed to snugly receive the adjacent edge of the barrel **10** so as to provide a well-braced joint between these two members and assist in holding the heads in place against canting with respect to the axis of the barrel. Each of the heads is provided with a central opening **13** as is usual for receiving an arbor or other support and may also be provided with an additional opening **14** to receive a crank pin or the like in order to provide for rotation of the reel.

To secure the heads in place upon the barrel member **10** I provide relatively long pins or fastening members **16** provided at one end with heads **17** and pointed at their other ends, as shown at **18**, so that they may be driven through the heads. As shown in Figs. 1 to 6 of the drawings, these members are inserted at an angle or in an inclined position relatively to the axis of the spool **10** so that a pair of the fastening members will cross between the heads in the form of the letter "X," as shown more particularly in Figs. 3 and 4. As illustrated, four of these fastening members are employed, the members crossing in pairs and thus bracing the reel against distortion.

If desired, openings **19** may be made in one of the heads **11**, as shown in Fig. 5, which openings are so inclined as to guide the fastening members **16** in their passage through the barrel. These openings will be of such size as to snugly receive the members **16** and properly guide them when they are driven therethrough. The fastening members **16** may be provided with a roughened portion just below the head **17** such, for example, as the projecting wings **20**, shown in Fig. 5, so that they will tightly grip the head when driven into place. If desired, the openings **19** in the upper head **11** may be omitted and the fastening members driven through this head as they are through the lower head. In that event, if the fastening members are inserted in inclined posi-

tion so as to cross within the barrel, some means should be employed to guide them, and a device for this purpose is shown in Fig. 8 and will be described hereinafter.

As shown in Figs. 4 and 6, the fastening members **16** are driven through the lower head **11** and their ends clenched over, as shown at **22**, so as to lie substantially flush with the lower head. While it will not be necessary in all cases, staples **23** (Fig. 6) may be driven into the lower head of the reel over the clenched ends **22** of the fastening members **16** to hold these ends in place. Preferably these staples should be of such character that their ends will cross when driven into the plywood of the head **11**, as shown in Fig. 6. It is understood, however, that these staples may be omitted if desired.

A device for guiding the fastening members in place if the holes **19** are omitted in the upper head and the fastening members driven therethrough is shown in Fig. 8. This implement comprises a cylindrical member **24** designed to fit into the opening **13** in the head **11**. Rotatably mounted upon this member are rings **25** and **26**, these rings being separated by a cylindrical spacing member **27**. Secured to the ring **25** are four radial arms **28**, each carrying a guide jaw **29** of arcuate form. A cooperating guide jaw **30** is carried by each of four arms **31** secured to the ring **26**. The jaws **29** and **30** are designed when drawn together to slidably and snugly receive the body portion of one of the fastening members **16**, the jaw members cooperating to hold the fastening member while they are being driven through the head and are, therefore, disposed in inclined position relatively to the axis of the member **24**. A spring **32** connected at one end to one of the arms **28** and at the other end to one of the arms **31** normally holds the clamping jaw members **29** and **30** in open position in order that a fastening member may be introduced between them.

Also secured to arms **28** and **31** respectively are a pair of handle members **34** and **35** pivoted together at **36**, and it will be apparent that by pressing the handle members **34** and **35** together, the clamping jaws **29** and **30** may be drawn together to grip one of the fastening members **16** and properly guide it during the driving operation. It will be, of course, understood that whether or not the openings **19** are employed or omitted, the fastening members will be driven through the lower head **11**.

As shown in Fig. 9 of the drawings, the lower or pointed ends of the fastening members **16** are bent inwardly, as shown at **37**, and, when clenched over, are driven into the lower head **11** as illustrated so as to hold the ends of these members in place.

In Fig. 7 of the drawings, I have shown a slightly modified form of construction wherein the fastening members **16** are of the form shown in Figs. 1 to 6. In this instance, however, these members are not crossed in their passage through the barrel **10** but are driven through the two heads **11** in a direction parallel to the axis of the barrel. In this case the fastening members **16** are closely adjacent the inner surface of the barrel **10** so as to engage this surface and afford added bracing and support for the barrel and to maintain the latter in rigid engagement with the heads.

As illustrated in Fig. 7, the fastening members are clenched over, as shown in Figs. 1 to 6, and staples **23** are employed to hold the ends of these members in position. It will be understood, however, that. if desired, any of the other types of fastening members shown in Figs. 9, 10 and 11 of the drawings may be employed in the construction shown in Fig. 7.

As the fastening members **16** in this modification are parallel to the axis of the barrel, it will probably not be necessary to provide means to guide these members through the barrel. If desired, however, preformed openings may be made in one of the heads to guide these members and maintain them in a position adjacent the inner surface of the barrel. Alternatively, a device similar to that shown in Fig. 8 may be employed except that

the axis of the clamping jaws **29** and **30** would in such case be parallel to the axis of the supporting member **24** in order to guide the fastening members to a position parallel with the axis of the barrel.

In Fig. 10 of the drawings, I have shown a further modified form of fastening member which is driven into place in a manner similar to that described in connection with the construction shown in Fig. 7. In this instance the fastening member **40** is of circular cross section throughout the greater part of its length but is provided at its lower end with a flattened end portion of polygonal cross section **41**. At one side of the portion **41** is provided a roughened area or projecting teeth **42** which will serve to bite into the wood of the lower head **11** and tend to hold the fastening member in place. Similar projections or teeth **43** are provided upon the opposite side of the flattened end **41** of the fastening member where it engages the outer surface of the lower head and are also provided, as shown at **44**, upon the same side of the bent end **45** of the fastening member. Also, if desired, similar projections or teeth **46** may be provided at the upper end of the fastening member below the head **47**. When the heads are made of such material as plywood, for example, these roughened projections will hold the fastening member securely in place.

In Fig. 11 of the drawings, I have shown a fastening member **48** which is similar to the fastening member **40** except that it is of polygonal or rectangular shape in cross section throughout its length. Such a member may also be employed advantageously, and this member is likewise provided with the serrations or projections **49**, **50** and **51** designed to serve the same purpose as described in connection with the construction shown in Fig. 10 of the drawings.

From the above description, it will be appreciated that I have provided a reel construction which may be readily and easily assembled without intricate operations or machinery from its component parts. For example, the barrel members and the heads may be shipped to the user in knocked-down condition together with the fastening members **16**, **40** or **48** as desired. The heads will be provided with the routings **12**, and may or may not be provided with the guide openings **19** according to the desire of the user. In any event, it will be a relatively simple matter to assemble a pair of heads with one of the barrel members and drive the fastening members through the two heads, clenching the pointed projecting end of the fastening member over upon the outer surface of the head. As the operation of assembly of the parts is an inexpensive one, considerable expense will be saved in the transportation and assembly of the parts of the reels, thus saving a considerable cost to the consumer.

While I have shown and described some preferred embodiments of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the claim.

What I claim is:

A reel construction comprising a tubular barrel having a disk-shaped head at each end thereof, the inner face of each of said heads being provided with an inwardly facing annular channel to snugly receive the adjacent end of the barrel, and headed pointed elongated fastening members driven through both of said heads, said fastening members being bent transversely at a point adjacent their pointed ends to lie against the outer surface of the adjacent head, and being bent inwardly at their pointed ends to re-enter the material of the head rigidly to secure the heads to the barrel, and said members being crossed in pairs within the barrel to be disposed in noparallel relation to the axis of the barrel and brace the structure against distortion.

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