Oct. 31, 1950 D. P. MULLANEY 2,527,842

SPOOL FOR FLEXIBLE BINDERS

Filed Feb. 7, 1946 2 Sheets-Sheet 1

FIG. 1

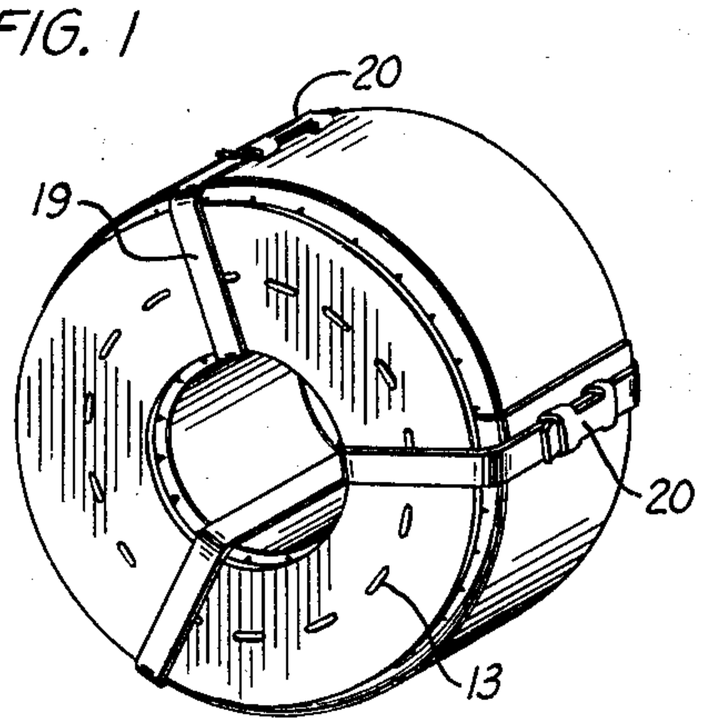

FIG. 2

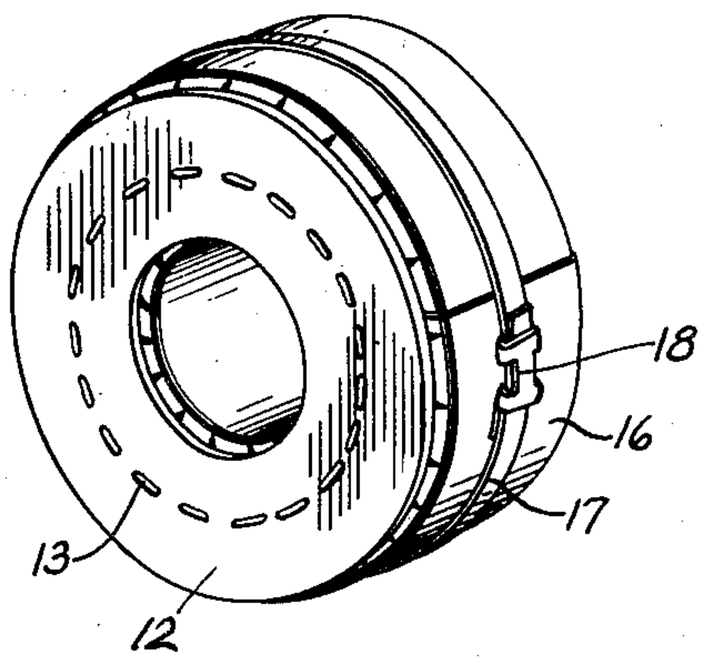

FIG. 3

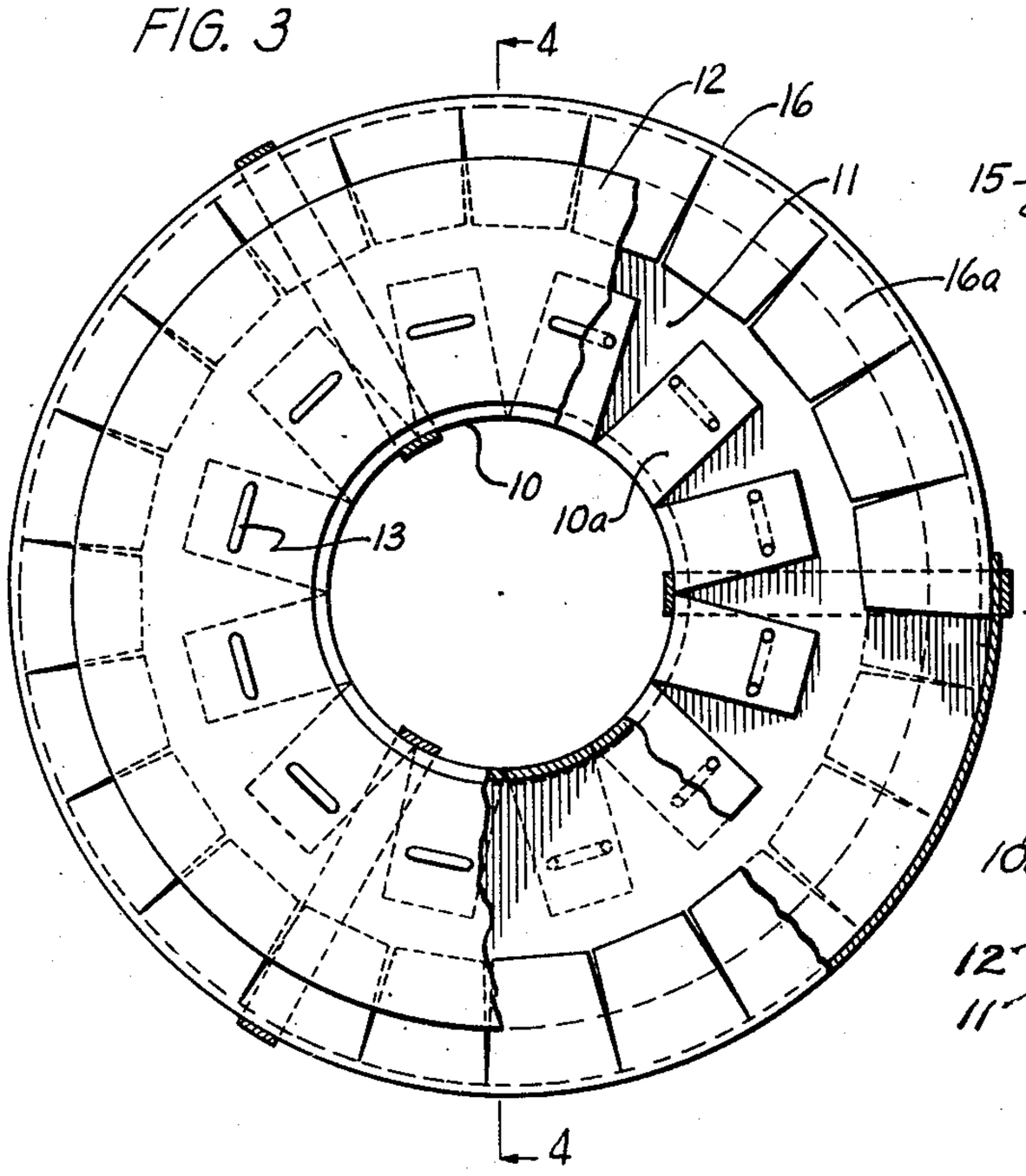

FIG. 4

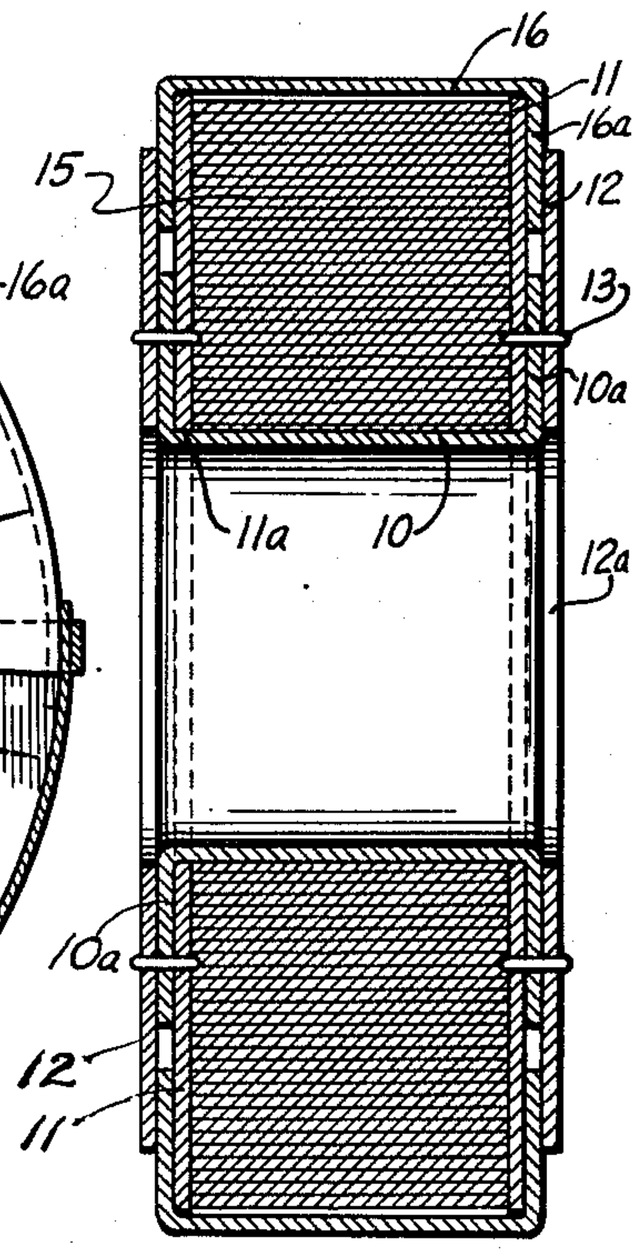

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FIG. 5

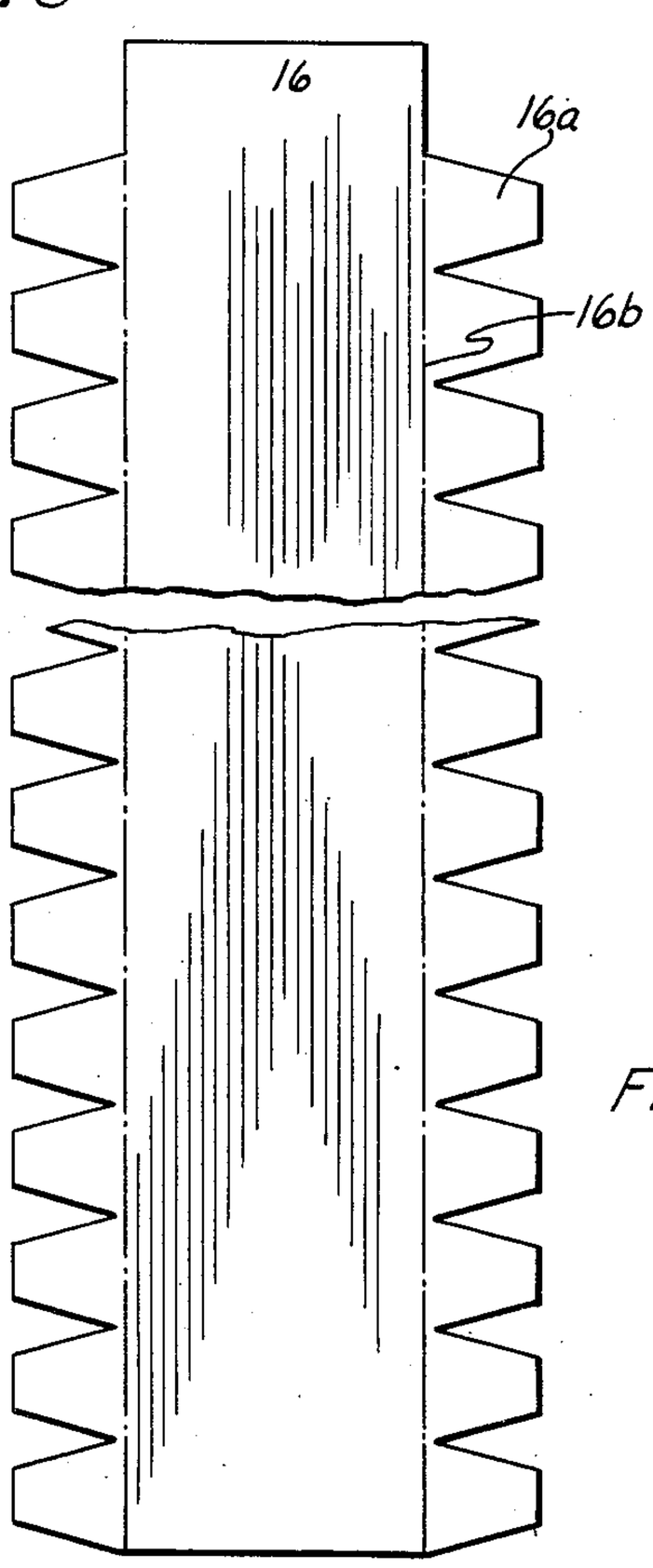


FIG. 6

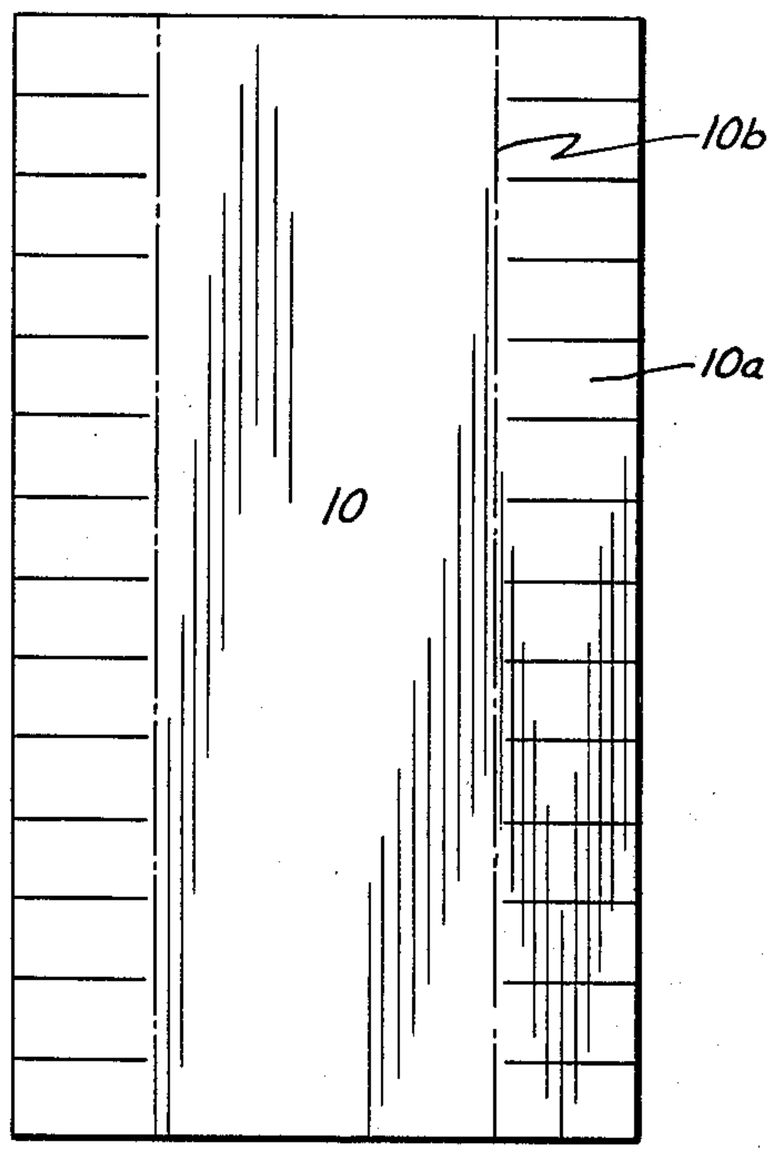


FIG. 7

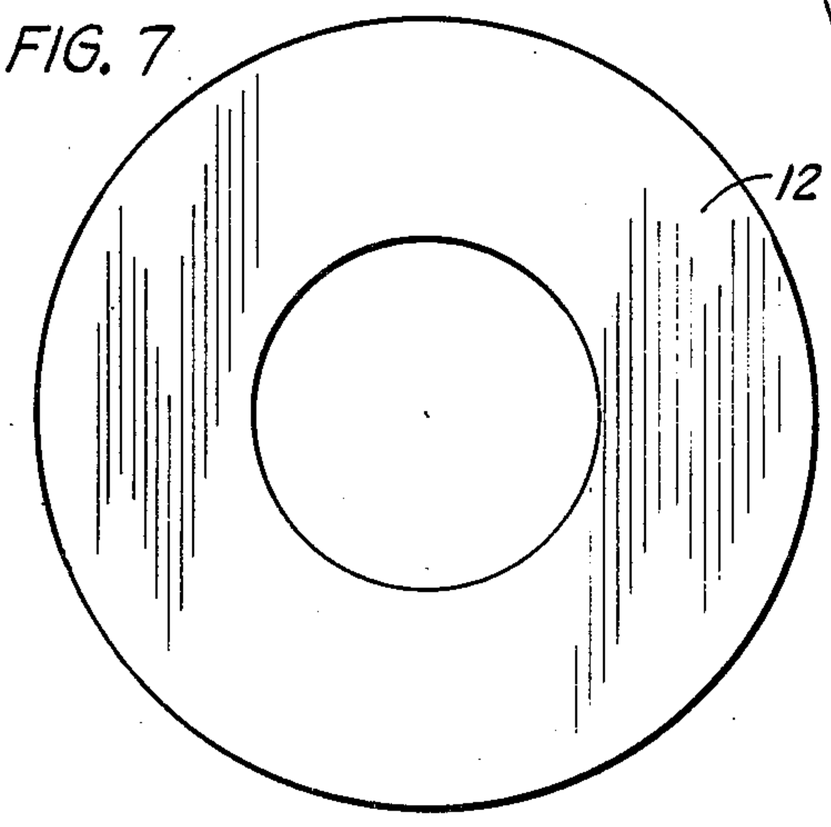
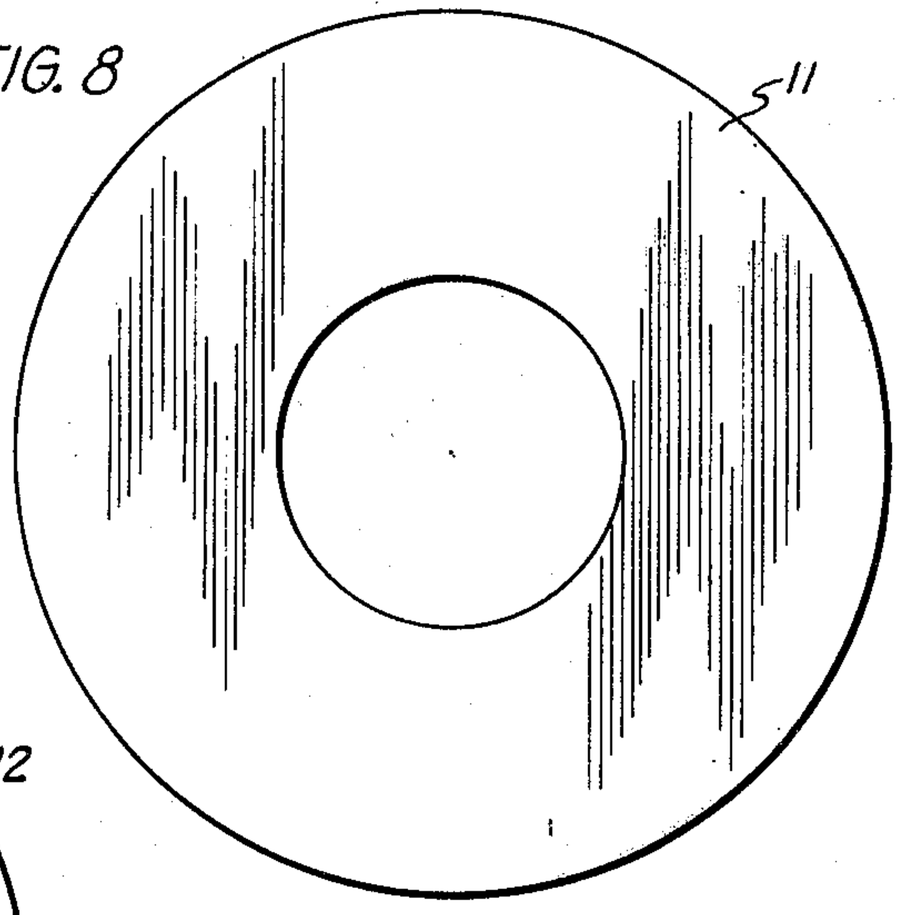


FIG. 8



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SPOOL FOR FLEXIBLE BINDERS

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4 Claims. (Cl. 206—52)

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This invention relates to improvements in spools or reels for holding and protecting coils of flexible binding material such as round wire, steel strapping, flat stitching wire, and the like.

The principal object of the invention is to provide a container for a metal coil which will protect the coil from the weather and from impacts with other objects during storage and shipment and also act as a spool during the winding and unwinding of the coil. A further object of the invention is to provide a spool made up of sheets of non-metallic material, such as fibreboard or the like, the parts of which may be packed and shipped in knockdown form and which may be readily assembled at the place of use. Another object is to provide a container for a coil or the like made up of a plurality of non-metallic sheets or parts, some of which are assembled to form a spool upon which a coil of flexible metallic material is wound, after which the remainder of said sheets or parts are applied to the spool to complete the formation of a closed container. Still another object of the invention is to provide a new method of forming and filling a spool and a container, comprising the steps of forming a plurality of non-metallic centrally apertured disks and a plurality of long non-metallic strips, assembling said disks and one of said strips to form a spool, winding a coil of flexible material on said spool, and then securing another of said strips around the outer margin of the spool to form a closed container. Other objects relate to various features of construction and arrangement and to details of the method which will appear more fully hereinafter.

The nature of the invention will be understood from the following specification taken with the accompanying drawings in which certain embodiments of the invention are illustrated. In the drawings,

Fig. 1 shows a perspective view of one form of spool and container embodying the present invention;

Fig. 2 shows a perspective view of another form of spool and container which is now the preferred embodiment of the invention;

Fig. 3 shows an enlarged radial section through the form of spool and container shown in Fig. 2;

Fig. 4 shows a vertical section taken on the line 4—4 of Fig. 3;

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Fig. 5 shows a partial plan view of the long non-metallic strip which is adapted to form the outer annular wall of the container;

Fig. 6 shows a plan view of the non-metallic strip which forms the hub or core of the spool and container;

Fig. 7 shows an end elevation of one of the outer disks of the spool; and

Fig. 8 shows an end elevation of one of the inner disks of the spool.

As illustrated in the drawings, the improved spool and container of the present invention comprises a central hub 10 formed of a sheet of comparatively stiff fibreboard or the like and having radiating tabs 10a along its edges which project outwardly between pairs of centrally apertured disks, each pair comprising an inner disk 11 and an outer disk 12. The disks 11 are somewhat larger in diameter than the disks 12 and are centrally apertured as shown at 11a to fit over the hollow hub 10. The outer disks 12 are centrally apertured as shown at 12a in registry with the hollow hub 10 and they seat against the outwardly extending tabs 10a of the hub. The parts 10a, 11 and 12 at each end of the hub are secured together by wire stitches or staples 13 which extend in a circular series as shown in Figs. 1 and 2. The parts thus far described form a comparatively rigid spool which may be readily assembled either at the factory or at the place of use.

Having formed the spool as heretofore described, a coil 15 of flexible binding material, such as round wire or metal strapping or flat stitching wire, is wound on the hub of the spool between the end disks in the usual manner. When the coil has been formed, it is enclosed by an annular closure member 16, also preferably formed of fibreboard or other suitable non-metallic material, which is provided along its annular edges with inwardly extending tabs 16a arranged to fit between the outer margins of the pairs of disks 11 and 12. When the closure member 16 has been wrapped around the coil and the spool with its tabs 16a extending inwardly between the pairs of disks, it is secured in place by one or more flexible binders, the preferred practice being to use a flexible binder 17 which extends around the outer cylindrical surface of the closure member 16, as shown particularly in Fig. 2,

with its overlapping ends secured together by a metal seal 18 or the like after it has been put under suitable tension. The binder 17 holds the parts in assembled relationship and the complete container thus formed is capable of withstanding the shocks and impacts to which it may be subjected during handling and shipment.

Instead of using a single surrounding flexible binder 17 as shown in Fig. 2, the closure member 16 may be secured in place by a series of flexible binders 19 which extend in planes which are radial of the spool and which, after being put under sufficient tension, have their overlapping ends secured together by metal seals 20. These binders extend completely through the hub of the spool and around the end disks as well as the annular closure member. It has been found that three such binders 19 spaced equal distances apart are sufficient for the purpose.

The hub 10 is preferably formed from a long flat strip of cardboard or the like, as shown in Fig. 6, the edges of the strip being slitted transversely at equally spaced intervals to form the tabs 10a which are adapted to be bent transversely to the body of the strip along the fold lines 10b. Similarly, the closure member 16 is preferably formed initially as a long strip of fibreboard or the like as shown in Fig. 5 and the edges of the strip have parts cut away to form the tabs 16a which are tapered outwardly from the body of the strip so that they will fit in edgewise relationship to each other at each end of the strip when they are bent transversely around the fold lines 16b and extended between the end disks 11 and 12. The end disks 12 and 11 are shown in Figs. 7 and 8, respectively, and are formed as annular rings having the central apertures previously referred to.

Although the parts of the spool and container described above may be assembled in various ways, the operation is preferably effected by placing one of the outer disks 12 horizontally on a jig, then bending one of the hub strips 10 into annular form, threading it through the central aperture of a disk 11, and then bending the tabs 10a at the end of the hub outwardly against the face of the disk 11. These parts are then placed over the previously located disk 12 with the tabs 10a directed outwardly in contact therewith. A split spacing ring is then placed around the hub 10 above the horizontally extending disk 11 and another disk 11 is placed over the other end of the hub which still has its tabs 10a extending outwardly in alignment with the body of the hub. Having placed the second disk 11 in position against the spacing ring, the tabs 10a on the upper end of the hub portion are bent outwardly against the outer surface of the disk 11. Thereupon, another outer end disk 12 is placed over the tabs 10a at the top end of the hub, thus completing the assembly in proper relative relationship of the non-metallic parts of the spool. These parts are then clamped together between clamping rings which engage the inner portions of the outer disks 12 and, while the parts are so held, the disks 11 and 12 of each pair and the intervening radiating tabs 10a are stitched together by the wire stitches or staples 13 which are preferably clinched on the inner sides of the inner disks 11.

When the completed spool has thus been formed, the coil of flexible material 15 is wound thereon. This may be done by inserting the free end of the flexible material between the abutting

ends of the hub portion 10 and rotating the spool in a suitable device to wind the flexible binding material or the like thereon. When the coil has been completed, the outer closure member 16 is applied thereto. One convenient way to do this is to hold the tabs 16a after they have been bent transversely to the body portion of the strip and then to roll the coil and the spool longitudinally of the strip 16 while at the same time inserting the tabs 16a in the spaces between the pairs of end disks 11 and 12. When the closure member 16 has been applied with its ends slightly overlapping, it is secured in place by flexible binders such as the binder 17 shown in Fig. 2 or the series of flexible binders 19 shown in Fig. 1.

It will be observed that the new spool and container of the present invention serves not only as a device for effecting the winding of the flexible material 15 in a coil after the spool has been formed but that it also serves as a container for protecting the coil 15 from the weather and from surrounding objects during the storage and shipment of the filled container. Also, when the filled container reaches the place of use, the workmen may readily remove the binder or binders 17 or 19 by which the closure member 16 is secured in place and then, upon removing this closure member, the spool portion of the container may again be used during the unwinding of the coil as it is consumed.

Although one embodiment of the improved spool and two examples of the method of securing the closure member in place have been illustrated and described in connection with a description of one method of assembling the parts of the spool and container, it will be understood that the invention may be constructed in various ways and that the method of assembly may be varied without departing from the scope of the appended claims.

I claim:

1. A container for a coil comprising, a hub having radially extending parts at its ends, a pair of radially extending disks at each end of said hub, said disks of each pair embracing and being secured to said radially extending parts at one end of said hub, and an annular closure member bridging the space between the outer margins of said pairs of disks, said closure member having parts along each edge extending inwardly between the disks of one pair.

2. A container for a coil comprising a hub having radially extending parts at its ends, a pair of centrally apertured radially extending disks at each end of said hub, said disks of each pair embracing and being secured to said radially extending parts at one end of said hub, an annular closure member bridging the space between the outer margins of said pairs of disks and having parts extending inwardly between the disks of each pair, and means for securing said closure member to said disks.

3. A container for a coil comprising a hub having radially extending parts at its ends, a pair of centrally apertured radially extending disks at each end of said hub, said disks of each pair embracing and being secured to said radially extending parts at one end of said hub, an annular closure member bridging the space between the outer margins of said pairs of disks and having parts extending inwardly between the disks of each pair, and flexible binders extending around said closure member and said disks and through said hub.

4. A container for a coil comprising, a hub, a pair of radially extending disks secured to each end of said hub with the disks of each pair spaced apart, and an annular closure member bridging the space between the outer margins of said pairs of disks and having along its opposite edges inwardly extending parts which project between the disks of a pair.

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