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SPOOL WITH PLASTIC CONNECTORS

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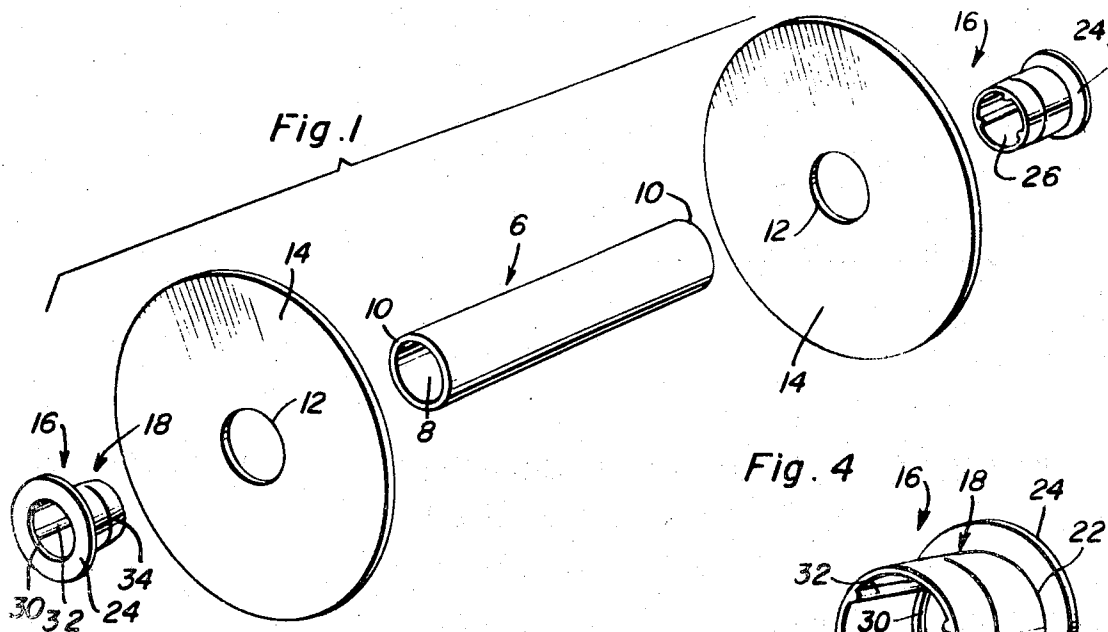


Fig. 2

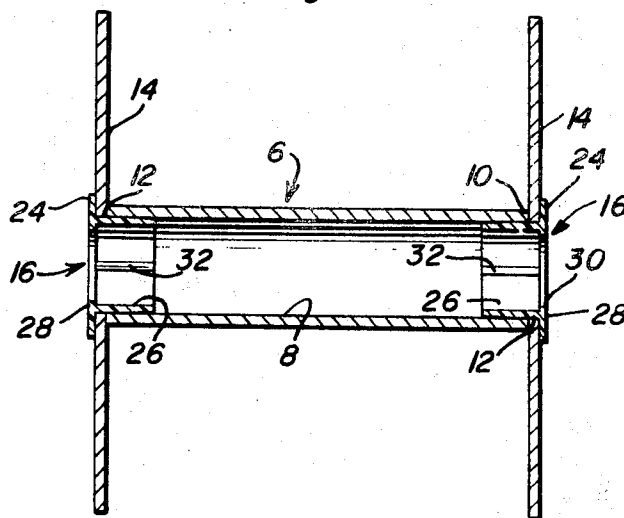
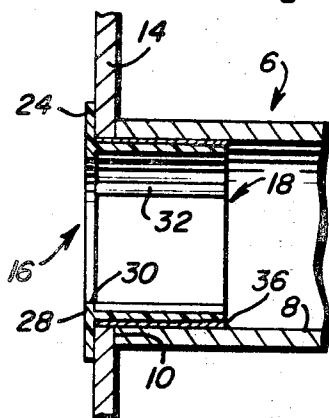


Fig. 3



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1

2

3,521,833

SPOOL WITH PLASTIC CONNECTORS

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4 Claims

ABSTRACT OF THE DISCLOSURE

A ready-to-assembly spool which enables a user to expeditiously assemble or disassemble the prefabricated individual component parts at the site of use, if desired, without tools. It comprises a core, spool heads, and core and thimble-like head assembling and retaining connectors. On-the-spot assembling overcomes perplexing packaging, shipping and storage problems.

This application is a continuation-in-part of our application Ser. No. 659,221 which is now abandoned.

This invention relates to a composite cardboard spool characterized by a hollow cylindrical core or hub, a pair of centrally apertured disk-like heads abutting the respective coating ends of the core, and flanged sleeve-type connectors or thimbles which serve to assemble and mount the heads on the core in a manner to provide a ready-to-use material winding spool.

It is a matter of common knowledge that prior art cardboard and equivalent spools also utilize a tubular cylindrical hub or core, duplicate heads whose centrally apertured portions abut the ends of the core, and assembling and securing means of one type or another which serves, according to its capability, to coordinate the component parts and maintain them in spool form. A significant distinction between analogous prior art adaptations, compared one with the other, has to do with the telescoping connector means which, whether it be a ferrule, collar, thimble or the like, functions to assemble and maintain the parts in permanently assembled relationship.

There has long existed a need for a knockdown type spool, that is, a construction and arrangement wherein each component part is carefully prefabricated and standardized with the idea that the parts can be hand assembled, that is, put together at the point of use, and in doing so to reduce requirements for necessary storage space and to cope, generally speaking, with packaging and storage problems. A typical example of a prior art spool is represented in the patent to Sobota 2,049,334. Sobota represents in a general way the background of the art and if checked into will show that virtually all prior art spools in the category of invention under advisement are such that the assembling units and adapters are applied by machines, require special tools for assembling purposes and in many other instances necessitate the use of objectionable adhesive media which is relied upon to keep the component parts together.

The use of adhesive media requires that the spool to be made up in advance poses storage problems of such bulky items. The cost and use of gluing is an undesirable operational step. Where spools are made up at a winding station there is danger of glue depositing on the material which is being spooled. Metal connectors and uniting ferrules are objectionable because of the tendency to rust and likelihood of cutting and injuring users.

It is an object of the present invention to structurally, functionally and in other ways improve upon prior art spools and, in so doing, to provide a feasible construction

which should appeal to the manufacturing economies of manufacturers, to advertising and sales and storage needs of wholesalers and retailers and which, when fully appreciated by users, will better serve the needs of such users.

Briefly the spool herein shown is characterized by a hollow cylindrical open-ended hub-forming core which is preferably made of rigid cardboard. A pair of interchangeable duplicate disk-like spool heads function, as usual, to abut the open ends of the core. The diameter of the axial holes in the heads corresponds with the inside diameter of the bore which extends through the core. The apertured portions of the heads are aligned with the open ends of the core which makes for practical and acceptable use of the novel head and core assembling and retaining connectors or adapters. Each connector comprises a plastic head and core connecting sleeve which is press fitted into the hole of the coating head after which the projecting end portion of the sleeve can be telescopically fitted and frictionally retained in the bore of the core. The inner piloting end of each sleeve is tapered or reduced to facilitate guiding the same not only into the hole of the head but into the bore of the core. The peripheral portion of the sleeve proximal or adjacent to the junction point of a head abutting flange is of prescribed diameter to friction lock the sleeve in place but to permit dismantling, if so desired.

Prior art ferrules and unifying connectors in this field of endeavor are for the most part glued in place. Manifestly, glue can be objectionable inasmuch as it frequently runs uncontrollably and when the finished spool is used the product being spooled is quite often stained or otherwise damaged. The instant connector is precision made and need not necessarily be glued for the reason that it presents ample area to press and lodge itself within the bore of the core. In the case of competitive metal plugs, when they are stamped out, they normally have two eccentric surface points and these are the pressure points relied upon for anchorage. By comparison, when the herein improved flanged connector does require anchoring (as is often the case) this step is uniquely achieved by use of any suitable chemical (such as acetone, ethylene chloride or the like) which acts on the plastic sleeve. To this end, the desired result is accomplished by interiorly wetting the end of the core with the selected chemical media. When the sleeve is inserted, the chemical media acts on the sleeve's surface and renders it tacky. The then sticky plastic surface is bonded in place. The chemical evaporates and a bond is had with not the slightest chance of staining.

Then too, it should be noted that prior art metal plug-in type collars and connectors are often bent or deformed or perhaps flared out and are often dangerous to users. By comparison, the herein disclosed connectors are made of pliant plastic material, such as polystyrene, and are constant in shape and are amply smooth-surfaced that the chances of cutting and snagging are reduced to a safe minimum. Further, the inner bore of the plug-in sleeve is smooth and uniform in diameter, is provided with equidistant circumferentially spaced spindle engaging and stabilizing ribs, and has a smooth-edged annular or ring-like lip which runs evenly on the off-winding spindles and resists wear and tear, unlike competitive metal collars.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a view in a perspective of a spool with individually prefabricated component parts constructed

3

in accordance with the invention and with the parts in exploded relationship and in readiness to be put together.

FIG. 2 is a view on a smaller scale in section and with the parts assembled and forming the ready-to-use spool.

FIG. 3 is an enlarged detail fragmentary sectional view which emphasizes the tapered inner end portion of each sleeve and showing the internal smooth-edged annular lip and flush spindle engaging ribs.

FIG. 4 is a view in perspective showing one of the plastic head or core assembling connectors by itself.

With reference now to the four views of the drawing attention is first directed to FIG. 1 wherein the five component parts are shown in exploded or separate ready-to-assemble relationship. In this illustration and also in FIGS. 2 and 3 the hollow or tubular cylindrical core, sometimes referred to as the hub, is denoted by the numeral 6. In practice this is made from a suitable grade of substantially rigid cardboard. The bore is denoted at 8 and the respective straight-across open ends are denoted at 10. The diameter of the bore 8 is such that it corresponds with the axial holes 12 in the flat-faced disk-like cardboard end heads 14. The readily applicable adapters which are employed (at the left and right in FIGS. 1 and 2 respectively) are the same in construction and a description of one will suffice for both. Adapters such as these are referred to in various ways in the prior art such as, for example, flanged thimbles, attachable and detachable plugs, ferrules and so on. In the instant matter it is desired to refer to each such unit as a head and core assembling, uniting and retaining connector. Each connector instead of being made of metal or cardboard is made of moldable pliant plastic materials, for example, polystyrene. Each connector is denoted by the numeral 16 and is characterized by a precision made sleeve 18 which is of an outside diameter to fit with requisite nicety into the hole 12 and to extend beyond the same and to fit telescopically and snugly within the encompassing confines of the bore 8 of the core 6. The larger outside diameter or annular portion 20 of the sleeve is of predetermined diameter and is smooth completely around the circumference. The outer end portion 22 is provided with a main outstanding flat-faced flange 24 which is of a diameter to abut the coating exterior surface of the head as brought out in FIGS. 2 and 3 in particular. The inner marginal portion of the flange projects into the smooth bore 26 of the sleeve as denoted at 28 and provides what may be described as an auxiliary flange and which has a smooth uninterrupted edge 30. This edge flange is also referred to as a lip which is of a diameter and construction to aptly embrace and run evenly on an off-winding spindle (not shown) whereby to resist and diminish wear on said spindle. This bore or surface is also provided with equidistant circumferentially spaced longitudinally extending integral ribs 32 which are of a cross-section corresponding to the transverse cross-section of the lip or flange 28 and whose crest surfaces are flush with the edge 30. These ribs serve as reinforcing or stabilizing members and also are in a common plane and accordingly flush with the oriented free edge 30 whereby the ribs and lip cooperate in reducing wobbling of the over-all spool when it is used on the aforementioned spindle. It will be also noticed that the exterior surface of the sleeve is not of uniform diameter but that the inner end thereof is gradually reduced in thickness to provide a tapering and piloting member as at 34. This construction facilitates inserting the sleeve portion of the over-all connector in a seemingly self-evident manner.

As is evident from the preceding introductory portion of the specification this spool can be of the knockdown construction shown in FIG. 1 and wherein the telescoping sleeves are snugly but frictionally held in place. It is reiterated that because the connector is precision made it need not necessarily be glued. When however the unique

4

flanged connector does require anchoring (as is often the case) this step is uniquely achieved by use of any suitable chemical, acetone, ethylene chloride or an equivalent chemical, which acts on the plastic sleeve for anchoring purposes in the manner illustrated in FIG. 3. To this end the desired result is accomplished by interiorly wetting the end of the core with the selected chemical media. When the sleeve is inserted, the chemical media acts on the surface and renders it sticky or tacky. The then temporarily sticky plastic surface is bonded in place as denoted at 36 in FIG. 3. Repeated experience has shown that the chemical when properly selected and applied evaporates and a bond is had wherein the chance of staining is reduced to a practical minimum.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A knockdown-type spool whose component parts are capable of being assembled or disassembled on the spot comprising, a hollow cylindrical open-ended hub-forming cardboard core, a pair of like interchangeable flat-faced centrally apertured disk-like cardboard spool heads, the apertures therein providing axial holes of a precise diameter capable of registering accurately with coating ends of the bore of said core, and readily attachable and detachable head and core assembling, coupling, and retaining connectors for said core and heads, each connector being made of moldable plastic material and comprising a sleeve having a reduced tapering inner end and a lateral head abutting and clamping flange at an outer end of said sleeve, the bore of said sleeve being provided at its outer end with an integral relatively narrow ring-like lip whose outer face is flush with a coordinating outer face of said flange, the free circumscribing edge of said lip being uninterruptedly smooth to aptly embrace and run evenly on an off-winding spindle, whereby to resist and diminish wear on the spindle.

2. The spool defined in and according to claim 1, and wherein the wall of the sleeve's bore is provided with a plurality of equidistant circumferentially spaced reinforcing ribs, said ribs extending longitudinally of the bore and being of a transverse cross-sectional dimension equal to the cross-sectional dimension of said lip so that the crests of the ribs are in a common plane and accordingly flush with the oriented free edge of said lip, said free edge and coordinating ribs cooperating in reducing wobbling of the over-all spool when in use on said spindle.

3. A knockdown-type spool comprising a hollow cylindrical open-ended hub-forming-core, a pair of interchangeable centrally apertured disk-type spool heads, the apertures in said heads providing axially positioned holes and said holes registering precisely with coating ends of the bore of said hub-forming core, and readily attachable and detachable head and core assembly, coupling and retaining connectors oriented and cooperable with said heads and core, each connector being made of moldable plastic material and comprising a relatively short sleeve telescoping into the cooperating end of the bore of said core, said sleeve having an outer end provided with a right angularly disposed head-abutting, clamping and retaining flange, the bore of said sleeve being provided at an outer end with an integral complemental relatively narrow ring-like lip whose outer face is flush with a cooperating outer face of said flange, said lip having a free spindle encircling edge, said edge being uninterruptedly smooth and of a diameter to conformingly embrace and run evenly on an off-winding spindle, whereby to resist and diminish wear on said spindle.

5

4. The spool defined in and according to claim 1 and wherein the outer peripheral surface of said sleeve is coated with a chemical solvent which is adhesively bonded to the encompassing surface of the bore of said hub-forming core.

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6

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GEORGE F. MAUTZ, Primary Examiner

U. S. Cl. X.R.