United States Patent

[11] **3,544,032**

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[54] **WIRE REEL**
8 Claims , 10 Drawing Figs.

[52] **U.S. Cl.** **242/118.8**
[51] **Int. Cl.** **B65h 75/14**
[50] **Field of Search** 242/118.8, 118.7, 118.6, 118.61, 118.62, 118.4, 71.8, 118.2, 118.1, 118, 77, 77.3, 77.4

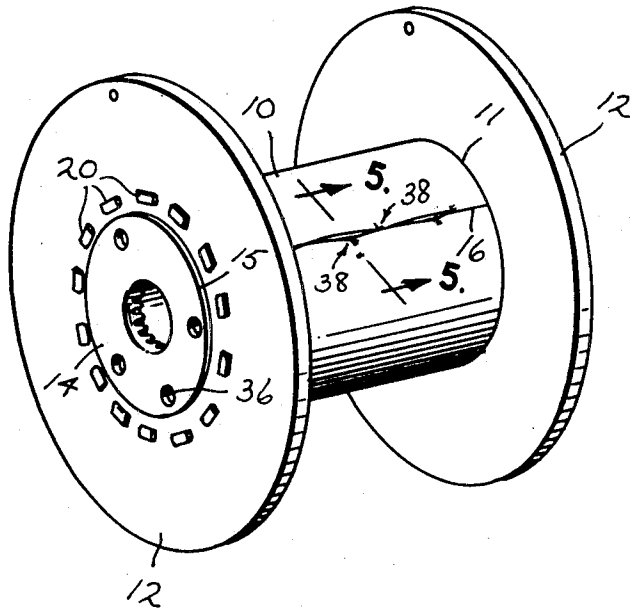
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ABSTRACT: A reel for storage of wire or like material comprising a tubular core, and a pair of end disks each abutting an end edge of said core. Each end edge of said core includes a plurality of circumferentially spaced tabs which protrude through corresponding slots in an abutting end disk. A reinforcing disk is mounted to the outer face of each end disk and has an outer circumferential edge which extends to the slots of the end disk. The protruding ends of the tabs at each end edge of the core are bent around the circumferential edge of a reinforcing disk.



Patented Dec. 1, 1970 3,544,032

Fig. 1

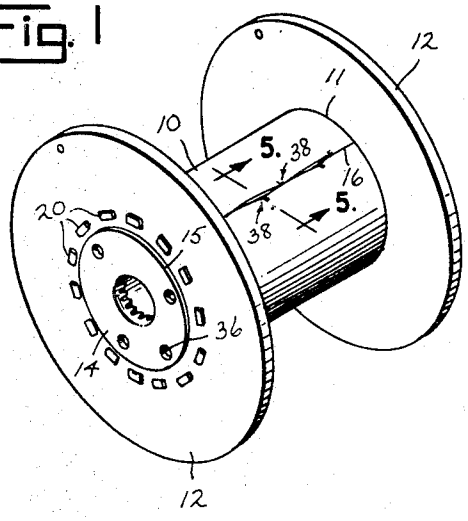


Fig. 2

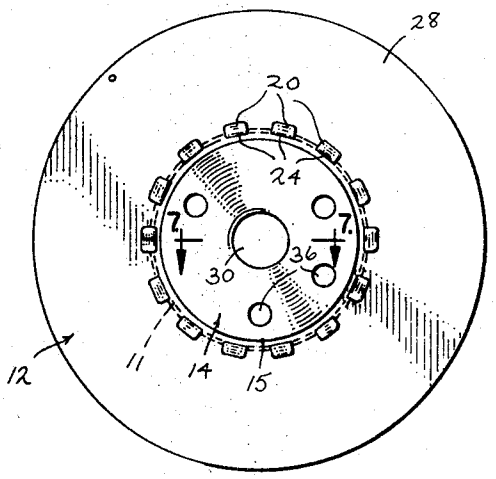


Fig. 3

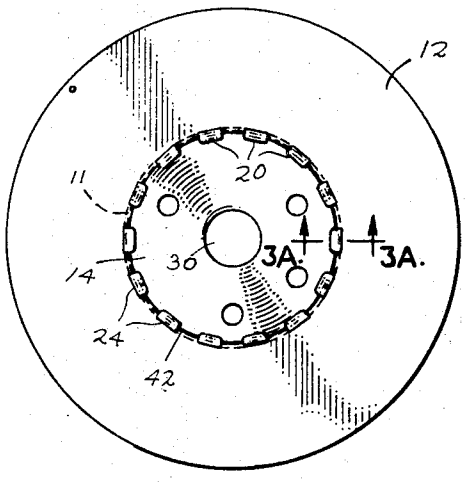
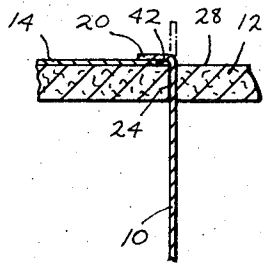


Fig. 3A



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Fig. 4

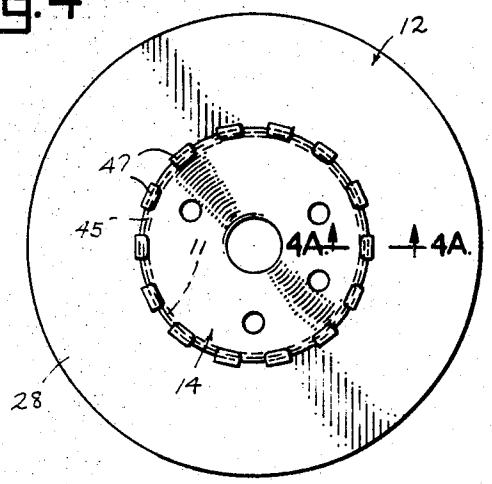


Fig 4A

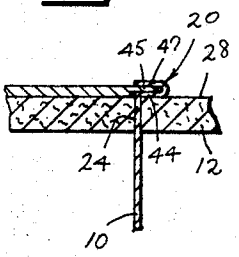


Fig. 5

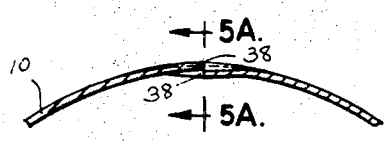


Fig. 6

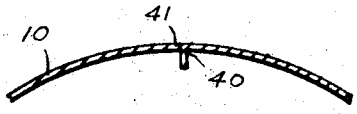


Fig. 5A

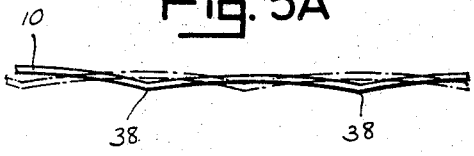
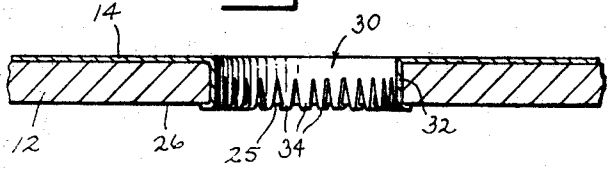


Fig. 7



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WIRE REEL

SUMMARY OF THE INVENTION

This invention relates to a reel for storage of wire or like material and comprises a tubular core having substantially parallel end edges, a pair of end disks each attached to an end edge of the core, and a pair of reinforcing disks each attached to the outer face of an end disk. The end disks and reinforcing disks have registering central apertures and are coaxial with the tubular core.

The core of a wire reel is customarily formed from sheet metal which has been rolled or otherwise formed into a tubular configuration and which has its side edges abutting to define a longitudinal seam that extends the length of the core. For reasons of economy and ease of assembly, the abutting edges of the longitudinal seam of the core are not welded or otherwise secured together. In utilizing a core having a seam of this nature, it is not unusual for one side edge to slip under the adjacent side edge of the seam when wire or similar material is tightly wound upon the reel, thus causing the core to collapse. In the reel of this invention, at least one side edge of the core seam is inwardly deformed or bent so as to provide an enlarged area of lateral edge contact so as to accommodate slight flexures of the seam edges during the winding of wire upon the reel without collapse of the core.

Additionally, when wiring or other elongated material is being wound upon a reel, pressure of great magnitude is placed upon the end disks of the reel. It is not unusual for this pressure to cause the end disks to separate from the core. In the reel of this invention, each end edge of the core has a plurality of circumferentially spaced tabs which are inserted through corresponding slots in an abutting end disk and which have their protruding ends bent over the outer circumferential edge of the reinforcing disk attached to the end disk. In this manner the end disks are firmly secured to the core of the reel and have less tendency to separate from the core when the reel is wound with wire.

Also, each reinforcing disk has its central aperture defined by an inward annular flange which protrudes into the central aperture of the attached end disk. In this manner the reinforcing disks serve not only to strengthen the reel but also to provide a bearing surface for a reel spindle.

Accordingly, it is the purpose of this invention to provide a reel for storing wire and like material which is constructed to resist separation of component parts of the reel when said wire is wound thereon.

It is another purpose of this invention to provide a reel for storing wire or like material which resists collapsing of the reel when said wire is wound thereon.

Another object of this invention is to provide a reel for storing wire and like material which is of economical construction and has a long reusable life.

Other objects of this invention will become apparent upon a reading of the invention's description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of the reel of this invention.

FIG. 2 is an end view of the reel of FIG. 1.

FIG. 3 is an end view of another embodiment of the reel of this invention.

FIG. 3A is a fragmentary sectional view taken along line 3A–3A of FIG. 3.

FIG. 4 is an end view of another embodiment of the reel of this invention.

FIG. 4A is a fragmentary sectional view taken along line 4A–4A of FIG. 4.

FIG. 5 is a fragmentary cross-sectional view of a reel core seam taken along line 5–5 of FIG. 1.

FIG. 5A is a view of one edge of a reel core seam as seen along line 5A–5A of FIG. 5 with the opposite abutting edge shown superimposed thereon in broken lines.

FIG. 6 is a fragmentary cross-sectional view of another embodiment of a reel core seam.

FIG. 7 is a fragmentary sectional view taken along line 7–7 of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The preferred embodiments illustrated are not intended to be exhaustive or to limit the invention to the precise forms disclosed. They are chosen and described in order to best explain the principles of the invention and its application and practical use to enable one skilled in the art to best utilize the invention.

One embodiment of the reel is illustrated in FIGS. 1, 2, 5, 5A and 7 and comprises a tubular core 10 having substantially parallel end edges 11, a pair of end disks 12 each attached to a respective core end edge 11, and a pair of reinforcing disks 14 each attached to the outer face 28 of a respective end disk 12. End disks 12 and reinforcing disks 14 each have registering central apertures and are coaxial with core 10.

Core 10 is preferably formed from sheet metal which has been rolled or otherwise formed into a tubular configuration and which has abutting side edges defining a longitudinal seam 16 that extends the length of the core. A plurality of circumferentially spaced tabs 20 project from each core end edge 11.

Each end disk 12 abuts a core end edge 11 and has an outer diameter which substantially exceeds the outer diameter of core 10. Each end disk has a plurality of slots 24 which are spaced circumferentially about the central aperture of the disk and which receive tabs 20 projecting from the engaging core end edge 11. End disks 12 are formed of a rigid material such as plywood, plastic, or masonite board. Slots 24 in each end disk 12 may be substantially rectangular, or have a triangular, semicircular, or similarly shaped configuration to facilitate receipt of tabs 20 therein.

Each reinforcing disk 14 is preferably formed of metal and is mounted against the outer face 28 of an end disk 12. The outer circumferential edge 15 of each disk 14 preferably terminates adjacently inwardly of slots 24 in the engaging end disk 12. Central aperture 30 in each reinforcing disk 14 is defined by an inturned annular flange 32 which has an outer diameter substantially equal to the diameter of the central aperture in the engaging end disk 12 and which projects into the central aperture of the end disk so as to provide a bearing surface for a reel spindle (not shown). The end edge of annular flange 32 includes a plurality of circumferentially spaced tabs 34 which are bent around the inner edge 25 and engage the inner face 26 of the end disk, as best shown in FIG. 7, to fixedly secure the reinforcing disk to the end disk. Each reinforcing disk 14 and engaging end disk 12 may contain one or more additional registering apertures 36 which serve to receive pins or similar means projecting from the reel spindle or holder.

Tabs 20 of each core end edge 11 project through corresponding slots 24 in the abutting end disk 12 and are bent outwardly against outer face 28 of the end disk to secure the end disk to the core. Each edge of longitudinal seam 16 of core 10 is preferably inwardly deformed at spaced locations 38 with each deformation in one seam edge being preferably located between deformations in the other seam edge. In this manner alternate parts of the edges of seam 16 are positioned out of register, as best shown in FIG. 5A, to prevent one edge from overlapping the other and causing the collapse of the reel core when wire or other similar material is wound thereon.

FIG. 6 illustrates a modified construction of core seam 16 in which at least one edge 40 of the seam is bent inwardly to provide an abutment for the opposite deformed edge 41 of the seam so as to prevent one edge from overlapping the other. Additionally, both edges 40 and 41 of the seam could be inturned to prevent overlapping of the seam edges.

FIGS. 3 and 3A are illustrative of an alternate means for attaching each end disk 12 to an end edge of core 10. In this construction the outer circumferential edge 42 of each reinforcing disk 14 preferably extends to slots 24 of the engaging end disk 12. The end portions of tabs 20 at each end edge of core 10 protrude from slots 24 in the end disk and are bent inwardly over edge 42 of the reinforcing disk.

Another alternate means of attaching end disks 12 to core 10 is illustrated in FIGS. 4 and 4A. In this construction the end portions of tabs 20 of each core end edge 11 protrude from slots 24 in the abutting end disk 12 and are bent outwardly against face 28 of the end disk to form a lower tab web 44. The outer circumferential edge of each reinforcing disk 14 preferably extends slightly beyond slots 24 in the end disk and has a marginal edge part 45 which is preferably recessed and which overlies the lower webs 44 of tabs 20. The ends or tips 47 of tabs 20 of each core end edge are return bent over the circumferential edge of the reinforcing disk.

It is to be understood that for some applications of this invention the core can be constructed without reinforcing disks. In applications where additional end disk rigidity and strength are needed, each reel may consist of a core having two end disks mounted at each end edge thereof with the outer end disk at each core end edge preferably being of smaller diameter than the inner disk.

I claim:

1. A reel for storage of wire or like material comprising a tubular core having substantially parallel end edges each interrupted by a plurality of circumferentially spaced projecting tabs, a pair of end disks each abutting a core end edge and being coaxial with said core, each end disk having a central aperture and a plurality of slots circumferentially spaced about said aperture, a pair of reinforcing disks each contacting the outer face of an end disk and having a central aperture registering with the central aperture of said end disk and an outer circumferential edge extending to the slots in said end disk, each tab of said core extending through a slot in an end disk and having an end portion bent around the circumferential edge of a reinforcing disk.

2. The reel of claim 1 wherein the slot defining portions of each end disk include a substantially straight inner edge joined by at least one nonparallel outer edge.

3. The reel of claim 1 wherein each reinforcing disk includes an inturned flange defining said central aperture therein, said flange being received within the central aperture of an end disk and including tabs which protrude beyond the inner face of said end disk, said flange tabs including end parts bent around the circumferential inner edge of said end disk to secure said reinforcing disk to said end disk.

4. The reel of claim 3 wherein said flange tabs are spaced inwardly from the bend of said flange to provide a bearing surface for a reel spindle.

5. The reel of claim 1 wherein said core is formed from sheet metal and includes a longitudinal seam formed by abutting side edges of said sheet metal, the edges of said seam having parts deformed inwardly so as to place portions of one seam edge out of registry with opposite adjacent portions of the other seam edge.

6. The reel of claim 1 wherein said core is formed from sheet metal and includes a longitudinal seam formed by abutting side edges of said sheet metal, one edge of said seam including an inturned flange part against which the opposite edge of said seam abuts.

7. A reel for storage of wire or like material comprising a tubular core formed from sheet metal and having parallel end edges and including a longitudinal seam formed by abutting side edges of said sheet metal, the edges of said seam each having a straight line configuration when viewed transversely and having alternate parts deformed inwardly toward the center of said reel and forming a generally zigzag configuration when viewed endwise so as to place portions of one seam edge out of registry with opposite adjacent portions of the other seam edge, a pair of end disks, said end disks and core being coaxial, each end disk having a central aperture therein and abutting a core end edge, and means for securing each end disk to said core.

8. A reel for storage of wire or like material comprising a tubular core having substantially parallel end edges each interrupted by a plurality of circumferentially spaced projecting tabs, a pair of end disks each abutting a core end edge and being coaxial with said core, each end disk having a central aperture and a plurality of slots circumferentially spaced about said aperture, a pair of reinforcing disks each contacting the outer face of an end disk and having a central aperture registering with the central aperture of said end disk and an outer circumferential edge extending beyond the slots in said end disk, each tab of said core extending through a slot in an end disk and having a web part bent outwardly against the outer face of an end disk and underlying the circumferential edge of a reinforcing disk, each tab including a return bent part extending from said inner web around the circumferential edge of the overlying reinforcing disk.