Nov. 23, 1954 S. C. FONS ET AL 2,695,142

COLLAPSIBLE TAKE-UP REEL

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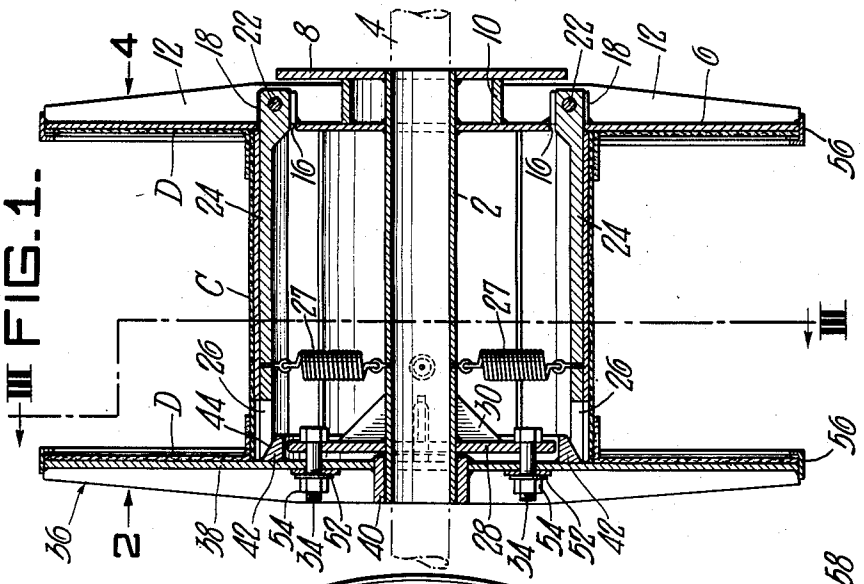


FIG. 1.

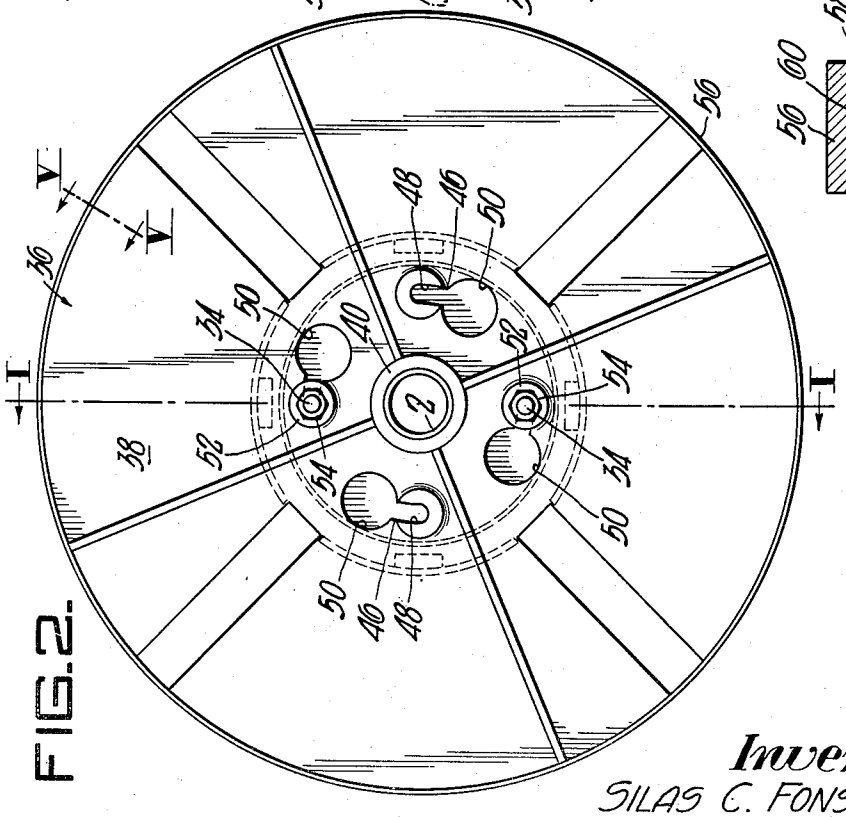


FIG. 2.

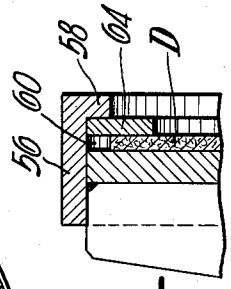


FIG. 5.

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FIG. 4.

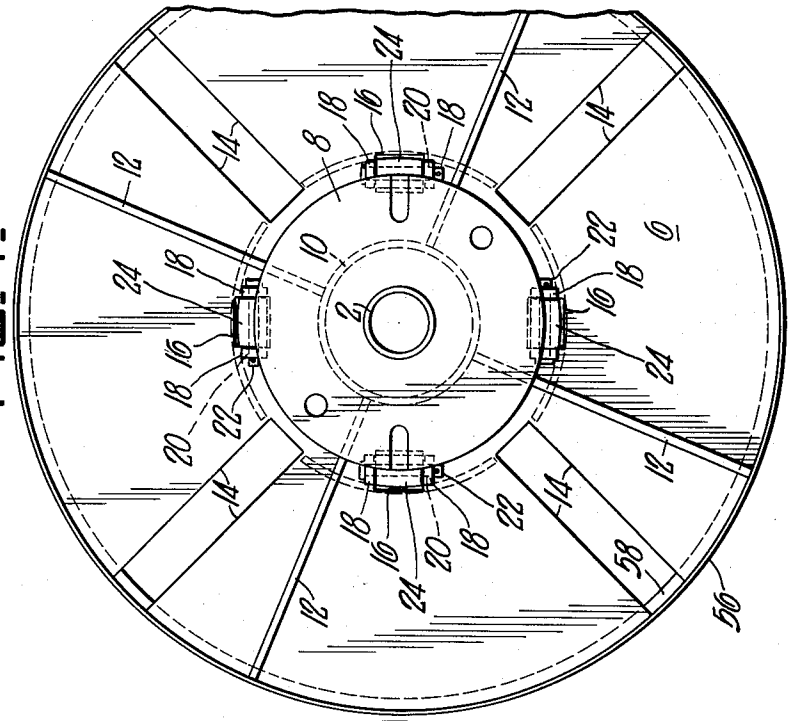
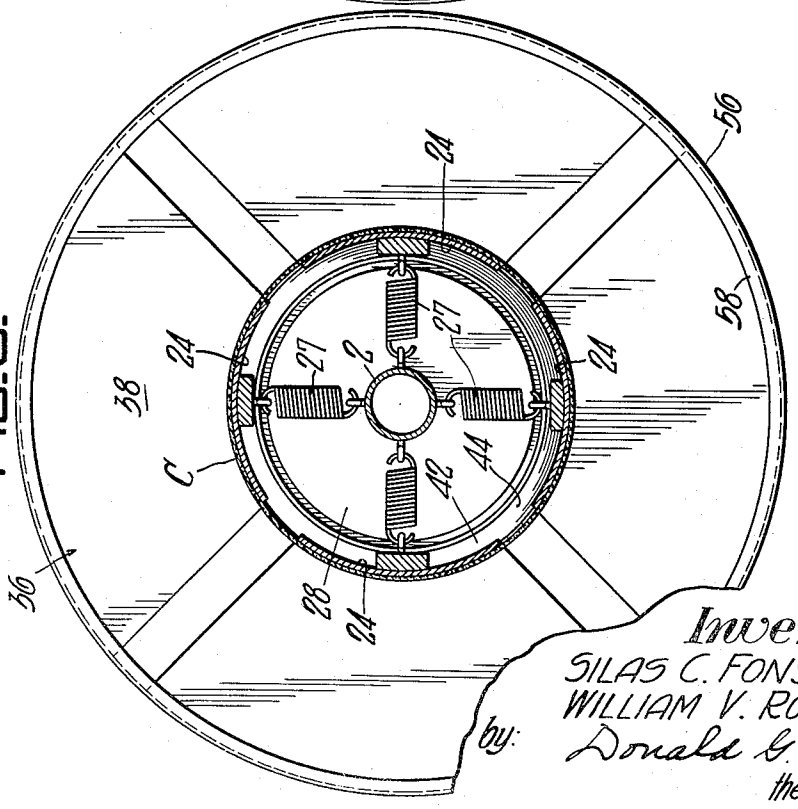


FIG. 3.



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FIG. 7.

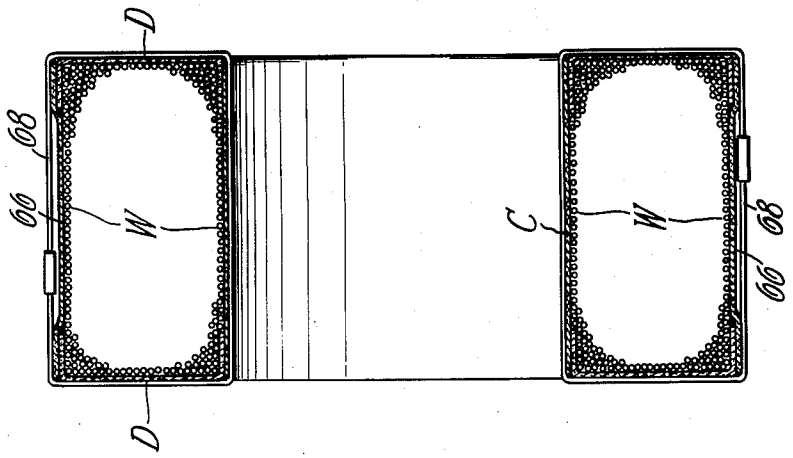
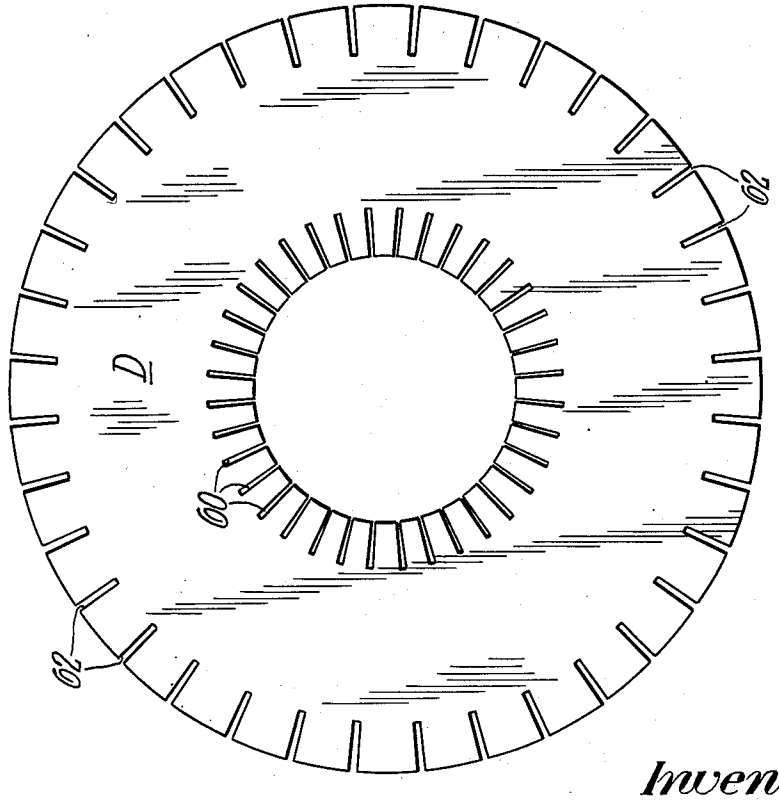


FIG. 6.



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2,695,142

COLLAPSIBLE TAKE-UP REEL

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Application June 8, 1950, Serial No. 166,944

9 Claims. (Cl. 242—115)

This invention relates to a collapsible take-up reel and more particularly to such a reel for use on the mandrel of the take-up of a wire stranding machine. In making up coils of wire it is desired to cover the coil with paper or cardboard and in the past it has been difficult to do this with the reels in common use.

It is therefore an object of our invention to provide a collapsible take-up reel which is peculiarly suited for making paper covered coils of wire.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a sectional view taken on the line I—I of Figure 2;

Figure 2 is an end view of Figure 1 taken in the direction of arrow II;

Figure 3 is a sectional view taken on the line III—III of Figure 1;

Figure 4 is an end view of Figure 1 taken in the direction of arrow IV;

Figure 5 is an enlarged sectional view taken on the line V—V of Figure 2;

Figure 6 shows a paper or cardboard disc used in carrying out our invention; and

Figure 7 is a sectional view of a completed coil of wire.

Referring more particularly to the drawings the reference numeral 2 indicates a hollow shaft which is adapted to be mounted on the arbor 4 of a stranding machine. Welded to the shaft 2 is an outwardly extending flange or plate 6. A circular plate 8 is welded to the extreme end of the shaft 2 adjacent the plate 6. The plates 6 and 8 are connected by a tubular member 10 welded to both plates. Radial reinforcing ribs 12 extend from the outer periphery of plate 6 to the tubular member 10. Radial slots 14 are provided in the plate 6 for a purpose which will appear later. A slot 16 is cut in the plate 6 between each pair of radial slots 14. Welded to the plate 6 on each side of slot 16 is a lug 18. Aligned openings 20 are provided in each pair of lugs 18 for receiving a pivot pin 22. Each of the pivot pins supports a barrel segment 24. As shown, four barrel segments are provided with a space therebetween aligned with the radial slots 14. An axial slot 26 is provided in at least two of the barrel segments 24. One end of a spring 27 is attached to each of the barrel segments 24 with the other end being attached to the shaft 2. A circular plate 28 is welded to the shaft 2 a short distance from the end remote from plate 8. Gusset plates 30 welded to the shaft 2 and plate 28 may be provided for reinforcement. Two studs 34 are welded to the plate 28 with the threaded end thereof extending outwardly for a purpose which will appear later. A cover plate 36 is made up of an outwardly extending flange or plate 38 welded to a tubular hub 40 which has an internal diameter just slightly greater than the outside diameter of the shaft 2. A ring 42 having a bevelled outer surface 44 is welded to the inner side of plate 38. Plate 38 has a plurality of openings 46 therethrough for receiving the studs 34. Each of the openings 46 has a portion 48 having a width slightly greater than the diameter of the studs 34 and a larger circular portion 50. The diameter of the portion 50 is such that washer 52 and nut 54 which are fastened to each of the studs 34 can pass therethrough.

As best shown in Figure 5, each of the flanges 6 and 38 has a ring 56 fastened to its outer periphery. An inwardly extending radial flange 58 is attached to each of

the rings 56 on the side of the flange 6 or 38 adjacent each other. A space 60 is provided between the flange 58 and the flange 6 or 38.

The operation of the device is as follows:

The shaft 2 is slipped over the arbor 4 and is held in place thereon in any suitable manner. A cylindrical core C, preferably made of paper, is slipped over the barrel segments 24 and a side disc D is placed against the inner face of the flange 6. As best shown in Figure 6, the disc D has slots 60 in its inner periphery and slots 62 in its outer periphery. Prior to placing the disc D against the flange 6, the disc is bent inwardly over the core member C. A snap ring 64 is forced into the opening 60 with one side bearing against the flange 58 and the other side bearing against the disc D to hold it in place. In like manner a second disc D is positioned against flange 38. The cover plate 36 is then placed against the flange 28 with the large portion 50 of the openings 46 being aligned with the studs 34. The bevelled portion 44 of the ring 42 bearing against similar bevel portions on the barrel segments 24 force the barrel segments to their expanded position against the pressure of springs 27. The cover plate is then turned until the studs 34 are in the narrow sections 48 of the openings 46. The nuts 54 are then tightened to hold the reel in assembled position. The end of the wire W being coiled is forced through the core member C into one of the openings 26 in the barrel segments 24 and reeling is begun. When the wire coil has been built up to a diameter substantially equal to the diameter of the disc at the base of the slot 62, the wire is cut and the ends of the disc D are bent over the outer periphery of the coil. If desired, a paper covering 66 may be placed around the outer periphery of the coil. Steel strapping 68 is then wrapped around the inner surface of the core between the barrel segments, outwardly around the sides of the coil in the slots 14 and around the outer periphery of the coil and the ends fastened together. The wrapping of the coil may be done either with the reel mounted on the arbor 4 or with the reel removed therefrom.

While one embodiment of our invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

We claim:

1. A collapsible take-up spool for coiling wire comprising a shaft, an outwardly extending flange rigidly secured to one end of said shaft, a plurality of barrel segments pivotally mounted on said flange, a spring attached to each segment and to said shaft, an outwardly extending member rigidly secured to the other end of said shaft a short distance from the end thereof, a removable flange slidably mounted on said shaft adjacent the last named end thereof, an inwardly extending ring on said removable flange, cooperating wedge surfaces on said ring and said segments for holding the segments in expanded position, and means for detachably fastening said removable flange to the said member.

2. A collapsible take-up spool for coiling wire comprising a hollow shaft, an outwardly extending flange rigidly secured to one end of said shaft, a plurality of barrel segments pivotally mounted on said flange, said barrel segments having a space therebetween, a spring attached to each segment and to said shaft, an outwardly extending member rigidly secured to the other end of said shaft a short distance from the end thereof, a removable flange slidably mounted on said shaft adjacent the last named end thereof, an inwardly extending ring on said cover plate, cooperating wedge surfaces on said ring and said segments for holding the segments in expanded position, said flanges having radial slots therein aligned with the slots between said segments, studs extending outwardly from the said member, and nuts on said studs, said removable flange having openings therein for passage of said studs, each of said last named openings having a portion therein larger than said nut and a smaller portion to receive said stud.

3. A collapsible take-up spool for coiling wire comprising a shaft, an outwardly extending flange rigidly secured to one end of said shaft, a plurality of barrel segments pivotally mounted on said flange, a removable

flange on the other end of said shaft, means for holding the barrel segments in expanded position, each of said flanges being adapted to receive a side disc against which the wire bears, a ring attached to the outer rim of each of said flanges, an inwardly extending flange fastened to said ring and spaced from the side disc to form a space therebetween, and a snap ring in said space bearing against said side disc to hold it in place.

4. A collapsible take-up spool for coiling wire comprising a shaft, an outwardly extending flange rigidly secured to one end of said shaft, a plurality of barrel segments pivotally mounted on said flange intermediate the ends thereof, an outwardly extending member rigidly secured to the other end of said shaft a short distance from the end thereof, a removable flange slidably mounted on said shaft adjacent the last named end thereof, a spring attached to each segment and to said shaft, an inwardly extending ring on said removable flange, cooperating wedge surfaces on said ring and said segments for holding the segments in expanded position, each of said flanges being adapted to receive a side disc against which the wire bears, a ring attached to the outer rim of each of said flanges, an inwardly extending flange fastened to said last named ring and spaced from the side disc to form a space therebetween, a snap ring in said space bearing against said side disc to hold it in place, and means for detachably fastening said removable flange to said member.

5. A collapsible take-up spool for coiling wire comprising a hollow shaft, an outwardly extending flange rigidly secured to one end of said shaft, a plurality of barrel segments pivotally mounted on said flange, an outwardly extending member rigidly secured to the other end of said shaft a short distance from the end thereof, said barrel segments having a space therebetween, a spring attached to each segment and to said shaft, an inwardly extending ring on said cover plate, cooperating wedge surfaces on said ring and said segments for holding the segments in expanded position, said flanges having radial slots therein aligned with the slots between said segments, each of said flanges being adapted to receive a side disc against which the wire bears, a last named ring attached to the outer rim of each of said flanges, an inwardly extending flange fastened to said ring and spaced from the side disc to form a space therebetween, a snap ring in said space bearing against said side disc to hold it in place, and means for detachably fastening said cover plate to said member.

6. A coil forming reel comprising a longitudinal member, a first flange secured to said member at one end thereof and extending transversely thereto, a plurality of arcuate segments aligned so as to form a segmented cylindrical arbor around which a coil of cable may be placed, the axis of said segmented arbor being coincident with the axis of said member, and said arbor segments being spaced radially outwardly from said member and surrounding the latter, means pivotally mounting to said flange one end of each of the arbor segments for pivotal movement of the segments in planes extending through the axis of the arbor whereby the segments may be pivoted toward and away from said member, a second flange extending parallel to said first flange and slidably mounted on the other end of the member for movement toward and away from said first flange, cams secured to said second flange and co-acting with the arbor segments for pivoting the latter outwardly away from the arbor axis in response to movement of said second flange toward said first flange, and co-acting means on said member and said second flange for moving the latter toward said first flange and for securing said second flange in fixed position on said member, wherein said last-recited co-acting means comprises a supporting means fixedly secured on said member and having a plurality of pins extending therefrom parallel to the arbor axis toward said second flange, apertures on said second flange and in alignment with said pins, the latter extending outwardly through said apertures, and wrench-engageable elements on the outermost ends of said pins and cooperable with said second flange for moving the latter inwardly toward said first flange and for securing the second flange in fixed position on said member.

7. An apparatus for forming cable into coils comprising a plurality of arcuate segments aligned so as to form a segmented cylindrical arbor around which a coil of cable may be placed, a first flange at one end of said arbor, means pivotally mounting to said flange the ends of said arbor segments adjacent thereto for pivotal movement of the segments in planes extending through the axis of the arbor, whereby the segments may be pivoted toward said axis so as to render the arbor tapered, a second flange at the other end of the arbor and movable with respect thereto, and co-acting cam means on said second flange and said segments for pivoting the latter outwardly away from the axis of the arbor in response to movement of the second flange with respect to the arbor, wherein said means for moving said second flange with respect to the arbor comprises a plurality of pin elements, means on said pin elements engageable with said second flange, and means for moving said last named means with respect to the arbor.

8. A coil forming reel comprising a longitudinal member, a first flange secured to said member at one end thereof and extending transversely thereto, a plurality of arcuate segments aligned so as to form a segmented cylindrical arbor around which a coil of cable may be placed, the axis of said segmented arbor being coincident with the axis of said member, and said arbor segments being spaced radially outwardly from said member and surrounding the latter, means pivotally mounting to said flange one end of each of the arbor segments for pivotal movement of the segments in planes extending through the axis of the arbor whereby the segments may be pivoted toward and away from said member, a second flange extending parallel to said first flange and slidably mounted on the other end of the member for movement toward and away from said first flange, cams secured to said second flange and co-acting with the arbor segments for pivoting the latter outwardly away from the arbor axis in response to movement of said second flange toward said first flange, and co-acting means on said member and said second flange for moving the latter toward said first flange and for securing said second flange in fixed position on said member, wherein said last-recited co-acting means comprises a supporting means fixedly secured on said member, at least one element mounted on said supporting means, means on said element engageable with said second flange, and means for selectably moving said last named means either toward or away from said first flange.

9. An apparatus for forming cable into coils comprising a plurality of arcuate segments aligned so as to form a segmented cylindrical arbor around which a coil of cable may be placed, a first flange at one end of said arbor, means pivotally mounting to said flange the ends of said arbor segments adjacent thereto for pivotal movement of the segments in planes extending through the axis of the arbor, whereby the segments may be pivoted toward said axis so as to render the arbor tapered, a second flange at the other end of the arbor and movable axially with respect thereto toward said first flange, and co-acting cam means on said second flange and said segments for pivoting the latter outwardly away from the arbor axis in response to movement of said second flange toward said first flange, wherein at least one opening extending substantially from one of said flanges to the other is provided in the outer surface of the cylindrical arbor, and wherein said flanges are provided with grooves each extending from adjacent a respective end of said openings to the outer periphery of the flanges, whereby a tie wire may be placed within the openings with the ends of the wire extending through said grooves.

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