Oct. 10, 1933. J. B. SPOWART 1,929,568

REEL

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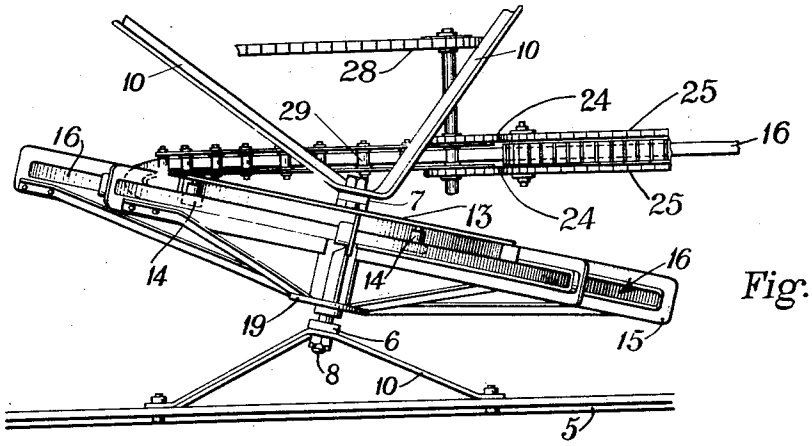


Fig. 3

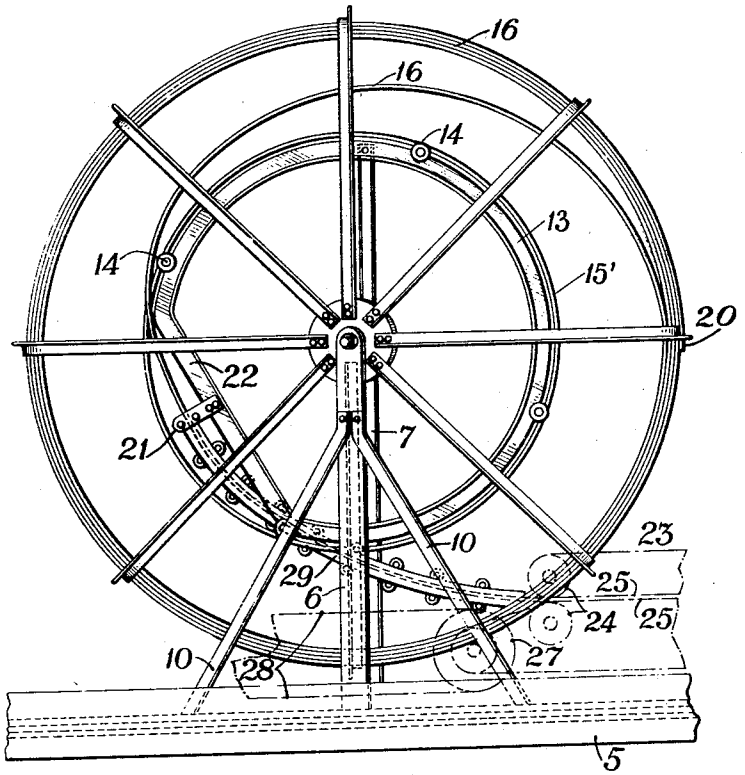


Fig. 1

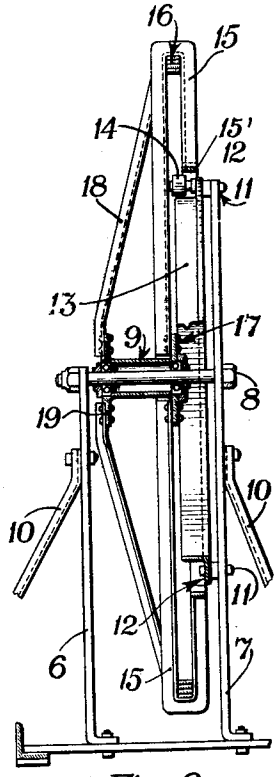


Fig. 2

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REEL

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Serial No. 633,015

12 Claims. (Cl. 242—77)

This invention relates to reels, and more particularly to reels of the internally winding character.

One of the objects of this invention is to provide a reel of the internally winding type wherein the material carried thereby is piled up from the periphery of the reel toward its axis.

Another object consists in overcoming the momentum of the reel upon the cessation of the winding or unwinding of the material which it carries by the automatic resisting action presented by the material upon itself.

A further object is to provide means for guiding the material in its passage on and from the reel.

These and further objects will be apparent from the following description, when considered in connection with the accompanying drawing in which one modification of the invention is illustrated.

Referring to the drawing, Figure 1 is a side elevation of the improved reel;

Fig. 2 is an end view partly in section of Fig. 1;

Fig. 3 is a plan view of Fig. 1 shown in a slightly tilted position.

The improved reel herein illustrated and described may be mounted on any suitable support, for instance on a motor truck 5. This reel is adapted to receive rod, tape or resilient material in other forms particularly for use in connection with conduit duct rodding operations. Uprights 6 and 7, which may be bolted at their lower extremities to the truck frame, are shown as forming supports for the reel. A shaft 8 is carried by the uprights and is journaled on antifriction bearings carried by a hub 9. The uprights 6 and 7 may be reinforced by means of braces 10 which are bolted to the uprights and also to the truck frame. The member 7 extends upwardly from the shaft 8 and is provided with bolts 11 which pass through a flange 12 of ring 13 to maintain the ring in a stationary position. A series of rollers 14 is provided on a flange 12 which extends about the periphery of the ring 13. These rollers may be attached in any desired manner to the flange 12. Said rollers are positioned in such relation to the ends of the arms 15, to be presently described, as to prevent the escape of the rod, tape or other resilient material 16 carried by the reel. The rollers 14 also prevent the material from assuming too small a diameter while being unreeled and also prevent binding between the inner convolution of the reeled up resilient material and the guide ring 13. The hub 9 of the reel has a spider mounted thereon. This spider for the purpose of illustration is shown as having a plurality of sections or arms 15 of substantially U-shaped formation and these arms extend radially from the axis or hub of the reel. It will be obvious that other forms of spider may be used, for instance a spider of disk form having flanges inturned from its periphery to form a bight. One leg of each of the arms 15 is cut off at a suitable distance from the bight of the U, so as to provide an opening from one side of the reel toward the interior thereof. The arms 15 are interconnected by means of a band 15'. The resilient material 16 as it enters the reel piles up from the bight of the arms toward the reel axis. To prevent said material from piling up toward the axis beyond the cut-off sides of the arms the stationary ring 13 and its rollers are provided, as previously pointed out. Each of the arms 15 at one extremity may be attached to a flange 17 carried on one end of the hub, and braces 18 for each of the arms are attached to a flange 19 on the opposite end of the hub.

One end of the resilient material 16 may be suitably attached to the periphery of the reel at one of its arms, as shown at 20 in Fig. 1. The remainder of said material is piled up from the periphery of the reel toward its axis, with the downward end of the material extending through the guide member 21. This guide member consists of a pair of adjacent plates in which two cooperating rollers are journaled, and said plates are secured to the sides of a flattened portion 22 of the ring 13.

The resilient material 16 may be wound or unwound and propelled in either direction by suitable apparatus. This apparatus in the present instance is shown in the form of a tractor mechanism 23, which includes a pair of adjacent sprocket members 24. These sprocket members may be each connected to other sprocket members (not shown) by means of chains 25, in a well known manner. The chains 25 each comprise a series of cooperating rollers between which the resilient material is engaged and propelled in either direction. The sprockets 24 are driven by suitable gearing 27 connected by chains 28 to a source of power. A chain including a series of rollers 29 leads from the tractor mechanism 23 to the guide member 21, to which it is secured. The resilient material guided between said rollers is engaged and driven

by the tractor chain to be wound or unwound from the reel.

The resilient material 16 is wound or unwound in accordance with the direction of travel of the roller chains of the tractor mechanism.

In the winding operation, the material is guided and propelled from the tractor mechanism toward the series of rollers 29, and enters through the opening at one side of the reel and over the external periphery of the stationary ring 13 to the interior of the reel. When a sufficient amount of material 16 has been wound upon the reel in the manner described, power is disconnected from the tractor mechanism and said material unflexes and offers a resilient opposition to the momentum of the reel in one direction. When the power is disconnected from the tractor mechanism at the completion of the unwinding operation of the material 16 from the reel, said material is caused to flex more and offers a resisting action to overcome the momentum of the reel in the opposite direction.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described and delineated invention will be apparent to those skilled in the art, without further description. It will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention, as defined in the appended claims.

What is claimed is:

1. An internally winding reel for resilient material including a shaft, a spider rotatably mounted on the shaft and having terminals bent at the periphery of the spider to form bights, and a stationary ring mounted in alinement with the terminals and having its periphery spaced from the ends of said terminals to provide an opening from one side of the reel to the interior thereof through which the resilient material passes, the resilient material as it enters the reel being piled up from the bights of the spider towards the reel shaft and said material as it leaves the reel being unpiled in a direction from the reel shaft towards the bights of the spider.

2. An internally winding reel for resilient material including a shaft, a spider rotatably mounted on the shaft and having terminals bent at the periphery of the spider to form bights, a stationary ring mounted in alinement with the terminals and having its periphery spaced from the ends of the terminals to provide an opening from one side of the reel to the interior thereof through which the resilient material passes, and means spaced about the periphery of said ring to prevent binding between the inner convolution of the reeled up resilient material and the stationary ring and also to prevent the escape of such material from the reel.

3. An internally winding reel for resilient material including a shaft, a spider rotatably mounted on the shaft and having terminals bent at the periphery of the spider to form bights, a stationary ring mounted in alinement with the terminals and having its periphery spaced from the ends of said terminals to provide an opening from one side of the reel to the interior thereof through which the resilient material passes, the resilient material as it enters the reel being piled up from the bights of the spider towards the reel shaft, said material as it leaves the reel being unpiled in a direction from the reel shaft towards the bights of the spider, and said resilient material when unwound from the reel flexing to such degree as to offer a resisting action to overcome the momentum of the reel in one direction and when wound on the reel unflexing to such degree as to offer resilient opposition to the momentum of the reel in the other direction.

4. An internally winding reel for resilient material including a shaft, a spider rotatably mounted on the shaft and having terminals bent at the periphery of the spider to form bights, a stationary ring mounted in alinement with the terminals and having its periphery spaced from the ends of the terminals to provide an opening from one side of the reel to the interior thereof through which the resilient material passes, said resilient material when unwound from the reel flexing to such degree as to offer a resisting action to overcome the momentum of the reel in one direction and when wound on the reel unflexing to such degree as to offer resilient opposition to the momentum of the reel in the other direction, and means spaced about the periphery of said ring to prevent binding between the inner convolution of the reeled up resilient material and the stationary ring and also to prevent the escape of such material from the reel.

5. An internally winding reel for resilient material including a shaft having arms of substantially U-shape formation and extending radially from the shaft, one leg of each arm being cut off from the bight of the U to provide an opening from one side of the reel to the interior thereof, guiding means for said material mounted on said shaft, the resilient material as it enters the reel being piled up from the bights of the arms toward the reel shaft, and means for preventing binding between the inner convolution of the reeled up material and the guiding means.

6. An internally winding reel for resilient material including a shaft having arms of substantially U-shape formation and extending radially from the shaft, one leg of each arm being cut off from the bights of the U to provide an opening from one side of the reel to the interior thereof, a stationary ring mounted on said shaft, the resilient material as it enters the reel being piled up from the bights of the U-shaped arms toward said stationary ring, and means mounted on said ring for preventing binding between the inner convolution of the reeled up resilient material and the stationary ring.

7. An internally winding reel for resilient material including a shaft having a spider rotatably mounted thereon and having arms of substantially U-shape formation and extending radially from the shaft, a stationary ring mounted on said shaft, said resilient material being piled up from the bights of the U-shaped arms toward the stationary ring, and when unwound being caused to flex to such a degree as to offer a resisting action to overcome the momentum of the spider in one direction, and when wound on the reel being caused to unflex to such a degree as to offer resilient opposition to the momentum of the spider in the opposite direction.

8. An internally winding reel for resilient material including a shaft having a spider rotatably mounted thereon and having arms of substantially U-shape formation and extending radially

from the shaft, a stationary ring mounted on said shaft, said resilient material being piled up from the bights of the U-shaped arms toward the stationary ring, and when unwound being caused to flex to such a degree as to offer a resisting action to overcome the momentum of the spider in one direction, and when wound on the reel being caused to unflex to such a degree as to offer resilient opposition to the momentum of the spider in the opposite direction, and means mounted in spaced relation about the stationary ring for preventing binding between the inner convolution of the reeled up resilient material and said ring.

9. An internally winding reel for resilient material including a shaft having arms of substantially U-shape formation and extending radially from the shaft, one leg of each arm being cut off to provide an opening from one side of the reel to the interior thereof through which the resilient material passes, and a stationary ring mounted on the shaft for guiding the resilient material in its passage on and from the reel.

10. An internally winding reel for resilient material including a shaft having arms of substantially U-shape formation and extending radially from the shaft, one leg of each arm being cut off to provide an opening from one side of the reel to the interior thereof through which the resilient material passes, a stationary ring mounted on the shaft for guiding the resilient material in its passage on and from the reel, and roller members mounted on said ring for preventing binding between the inner convolution of the reeled up resilient material and the stationary ring.

11. An internally winding reel for resilient material including a shaft having arms of substantially U-shape formation and extending radially from the shaft, one leg of each arm being cut off to provide an opening from one side of the reel to the interior thereof through which the resilient material passes, a stationary ring mounted on the shaft, and means carried by said ring for guiding the resilient material in its passage through the reel.

12. An internally winding reel for resilient material including a shaft having arms of substantially U-shape formation and extending from the shaft, one leg of each arm being cut off to provide an opening from one side of the reel to the interior thereof, through which the resilient material passes, a stationary ring mounted on the shaft, means carried by said ring for guiding the resilient material in its passage through the reel, and roller members spaced about the ring for preventing binding between the inner convolution of the reeled up resilient material and the stationary ring.

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