June 27, 1939. J. N. SELVIG 2,163,711

STRAND HANDLING APPARATUS

Filed June 12, 1937

FIG. 1

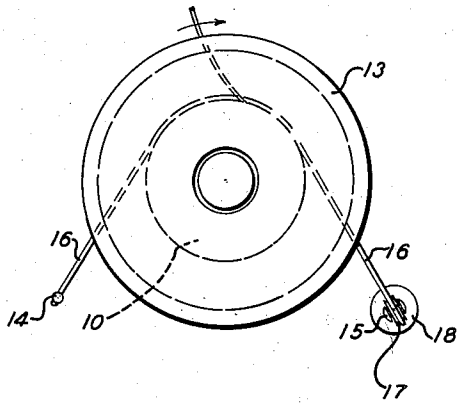


FIG. 3

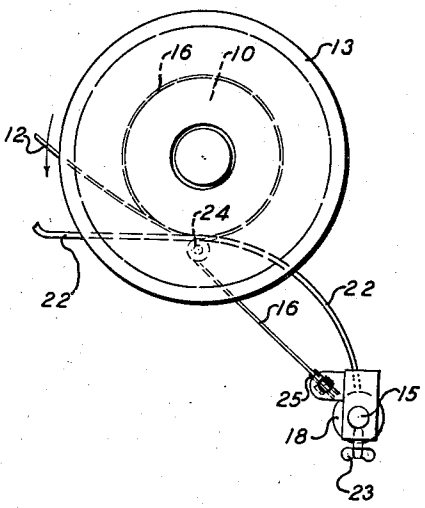


FIG. 2

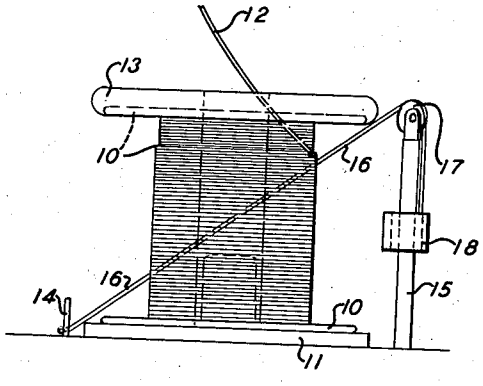
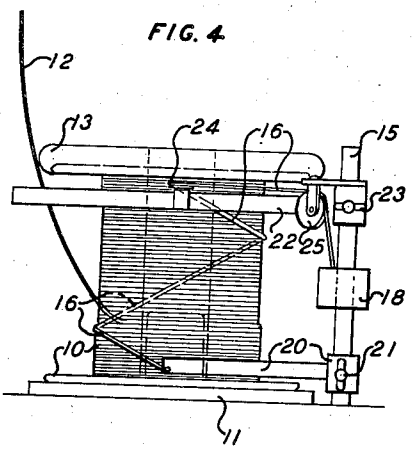


FIG. 4



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STRAND HANDLING APPARATUS

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2 Claims. (Cl. 242—128)

This invention relates to a strand handling apparatus and more particularly to means for preventing the unintended and undesired loosening of coils of strand on a reel, spool, cop or the like from which strand is being withdrawn.

In various forms of strand handling apparatus, strand is unwound from a supply thereof wound on a reel, cop or the like by being drawn off in a direction roughly parallel to the axis of the wound mass of strand and over one end of the mass, the reel or other support being stationary. It may happen, especially if the strand is more or less stiff or slippery or loosely wound or wound under irregular tension or for other reasons, that the next one or more coils following the one being unwound at any given moment, will loosen slightly or otherwise slip out of place, and, especially if the axis of the support is vertical, may fall across or otherwise become entangled with the portion of strand being unwound or other portions.

An object of the present invention is to provide simple, effective and durable means to retain the coils of strand on a reel, spool, cop or the like yieldingly in place and to permit withdrawal of strand therefrom one coil at a time.

With the above and other objects in view, the invention contemplates means to retain coils of strand on a reel, spool, cop or the like comprising a strand positioned around a portion of the surface of the body of strand wound on a reel or the like and across a plurality of the surface coils thereof, the retaining strand being preferably yieldingly retained in position to exert sufficient pressure against the outer coils to retain the same in place until withdrawn and yet to permit withdrawal one coil at a time.

Other objects and features of the invention will appear from the following detailed description of one embodiment of the invention taken in connection with the accompanying drawing in which the same reference numerals are applied to identical parts in the several figures and in which

Fig. 1 is a plan view of a strand supply reel having applied thereto a strand retaining device constructed in accordance with the invention;

Fig. 2 is a view thereof in side elevation;

Fig. 3 is a view corresponding to Fig. 1, of a modified form, and

Fig. 4 is a view thereof corresponding to Fig. 2.

The embodiment of the invention disclosed in Figs. 1 and 2 comprises a supply reel 10 stationarily supported on any suitable means such as a pedestal 11 with a central stud extending up into the axial bore of the reel to hold the same in place. The reel stands with its axis vertical or substantially so. Strand 12 is wound on the reel, ordinarily in successive layers of closely abutted coils, each layer having an opposite spiral of winding from the next so that the strand winds up in one layer and down in the next.

The strand 12 is being drawn off upwardly in the general direction of the axis of the reel, by means not shown, over a smooth surfaced guide cap 13 resting on the upper head of the reel. The cap is ordinarily stationary as shown. However, other strand guide devices, stationary or moving may be used instead, the pertinent features here being that the wound body of strand 12 on the reel is stationary and that the strand is pulled off over one end of the reel.

To retain the coils of the strand 12 releasably in place on the reel 10, a retainer strand 16 is secured at one of its ends near the bottom of the reel 10 to a stationary peg 14 mounted at one side of the reel. From there the strand 16 is drawn both upwardly of the reel 10 and arcuately around and in contact with the surface of the mass of strand 12 on the reel, to a sheave 17 at the top of a second peg or post 15, and down to a weight 18 slidable freely on the post, the other end of the strand 16 being secured to the weight to be drawn taut thereby over the sheave 17 and around the mass of wound strand 12. The peg 14 and post 15 are so located with respect to the reel 10 that the strand 16 is applied to the substantially cylindrical surface of the wound supply of strand 12 on the reel to extend both arcuately partially around and diagonally upwardly over the greater portion of the extent of the surface.

Thus the strand 16 crosses and presses against each of a majority of the superficial coils of the wound body of the strand 12 on the reel and each such coil of the strand 12 is held in place by the strand 16 until the unwinding process reaches that particular coil, when it is drawn off without difficulty.

If a wound coil of the strand 12 above the uppermost contact of the strand 16 with the wound mass becomes loosened and slips down it will be caught and held by the strand 16 before it can drop far enough to become troublesome. It must be remembered that for each size of strand 12 and diameter of wound mass there is a critical angle between a loosened coil and a coil being unwound, on the smaller side of which no tangling occurs. Hence, in many cases it is not in practise necessary to have all of the superficial coils of the wound mass held in situ by the retainer strand. If enough of these coils from the

middle up and down are held it does no harm to leave some of the uppermost and lowermost coils unretained. In such cases the simple apparatus disclosed in Figs. 1 and 2 is practicable and operative to produce the desired result.

The arcuate extent of the contact of strand 16 with the surface coils of the strand 12 may be varied as found desirable or necessary in individual cases by varying the positions of the peg 14 and post 15 with respect to each other and to the reel 10. It is even practicable in some cases to dispense entirely with the peg 14, and to secure the lower end of the strand 16 to the lower portion of the post 15.

It may, furthermore, in some instances be preferable to carry the strand 16 in a whole turn or more than a whole turn about the body of strand 12 on the reel.

In the case of some strands 12 and reels 10 on which they are wound, it may be preferable to have the strand 16 cover a greater portion of the surface coils of the strand 12 than is possible with the arrangement shown in Figs. 1 and 2. In the modified form of the invention shown in Figs. 3 and 4, a collar 19 is adjustably slidable and rotatable on the post 15 and carries a horizontal arm 20 extending out from the post 15 to a distance about equal to the distance to the axis of the reel 10. The arm 20 may well be a flat strip of spring metal so arranged as to be rigid against flexure vertically but elastically flexible horizontally. The lower end of the strand 16 is secured to the outer end of the arm 20 and is held against the bottom surface coil of the strand 12 thereby. The arm 20 is adjusted by means such as the thumb screw 21 to elastically follow the diminishing radius of the mass of wound strand 12.

An arm 22 similar to the arm 20 is slidably and rotatably adjustably mounted on the post 15 near its top and is adjustable by means such as the thumb screw 23 on the post. A sheave 24 is mounted on the outer end of the arm 22 to be pressed against one of the top surface coils of the mass of strand 12 and to be oriented to be substantially tangent to the strand 16 at its uppermost contact with the body of strand on the reel. The strand 16 passes from the mass of strand 12 over the sheave 24 and over another sheave 25 near the inner end of the arm 22 and down to the weight 18. The arm 22 is also so adjusted that the sheave 24 will elastically follow the diminishing radius of the body of strand on the reel.

In either above apparatus the weight 18 causes the strand 16 to hug the body of strand on the reel at all times from full reel to empty reel.

In a third modified form of the apparatus the strand 16 may be made to be longitudinally elastically extensible, e. g. of rubber or the like or of a helical spring covered with a smooth sheath, e. g. of braided textile threads or of leather or the like. In this case, the weight 18 may be dispensed with entirely and the longitudinally stretched strand 16 attached at its lower end to the peg 14 or to the bottom of the post 15 and at its upper end to the top of the post 15.

Although the apparatus herein disclosed shows the reel as oriented vertically, the invention is not limited to such orientation, the modifications required for a tilted or horizontal reel being self evident.

The embodiments of the invention herein disclosed are illustrative only and may be modified and departed from in many ways without departing from the spirit and scope of the invention as pointed out in and limited only by the appended claims.

What is claimed is:

1. In a strand handling apparatus, strand supply means comprising a supply reel to hold strand material wound in coils thereon and having a head over which the strand material may be drawn in successive coils, a retainer strand passing helically over the strand material on the reel and engaging the surface coils thereof, and means positioned to yieldingly hold the retainer strand in contact with the surface coils of the strand material to prevent displacement of the coils thereof until forcibly withdrawn coil by coil over the said head.

2. In a strand handling apparatus, strand supply means comprising a stationary strand supply reel having a head over which a strand is drawn in successive coils from a body of strand wound in coils on the reel, in combination with means to retain in place coils not yet unwound from the reel at any time, the said means comprising a stationary retainer strand not part of the strand on the reel and passing helically over the body of strand on the reel, and means to maintain the retainer strand yieldingly in contact with the surface coils of the body of strand on the reel to prevent displacement of any coil of the body of strand except the coil being drawn off, the retainer strand being substantially smooth and without obstruction over the entire working surface thereof.

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