May 1, 1934. E. SNYDER 1,956,631

UNWINDING DEVICE

Filed Aug. 19, 1929 2 Sheets-Sheet 1

Fig. 1

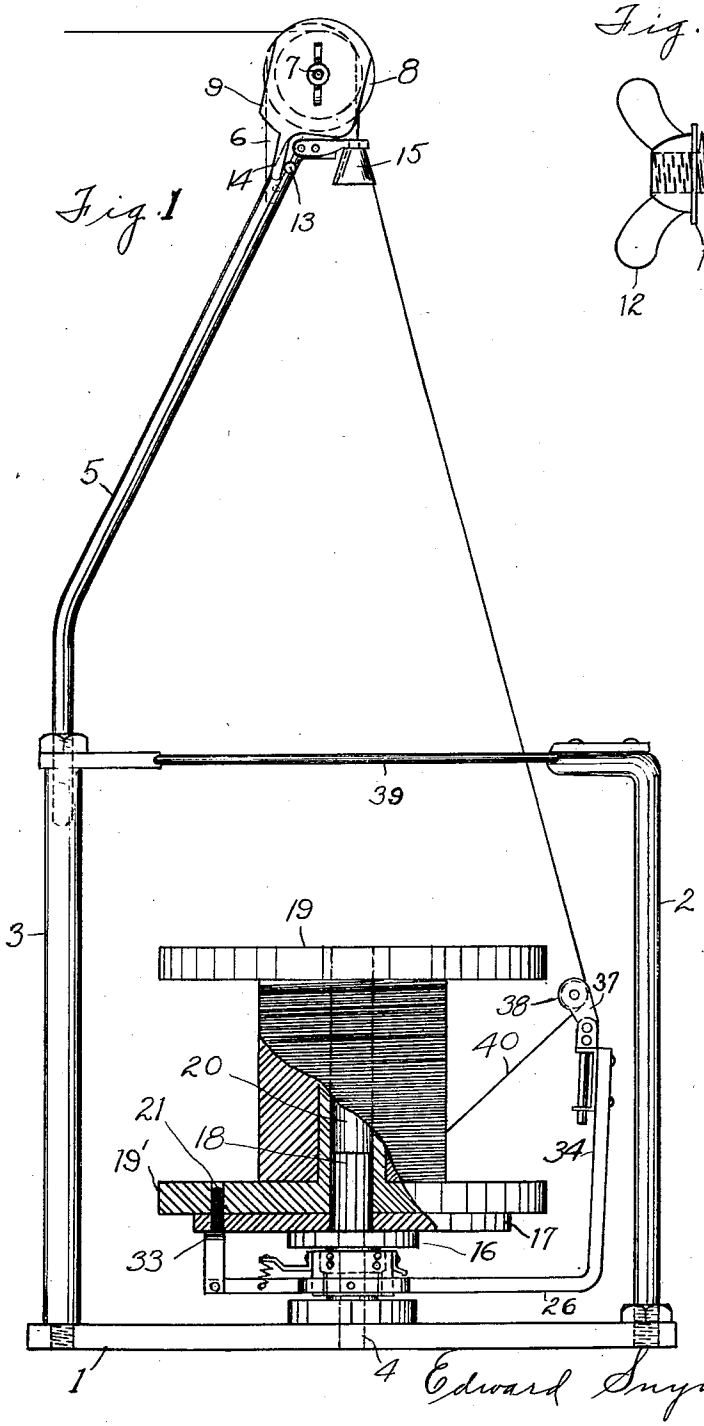
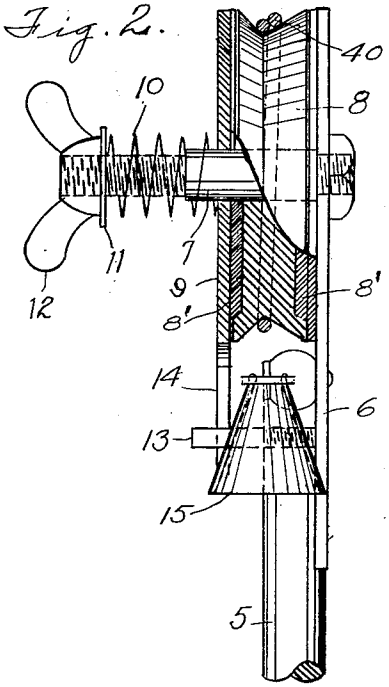


Fig. 2.



Edward Snyder INVENTOR

BY

N. G. Burns ATTORNEY

May 1, 1934. E. SNYDER 1,956,631

UNWINDING DEVICE

Filed Aug. 19, 1929 2 Sheets-Sheet 2

Fig. 3.

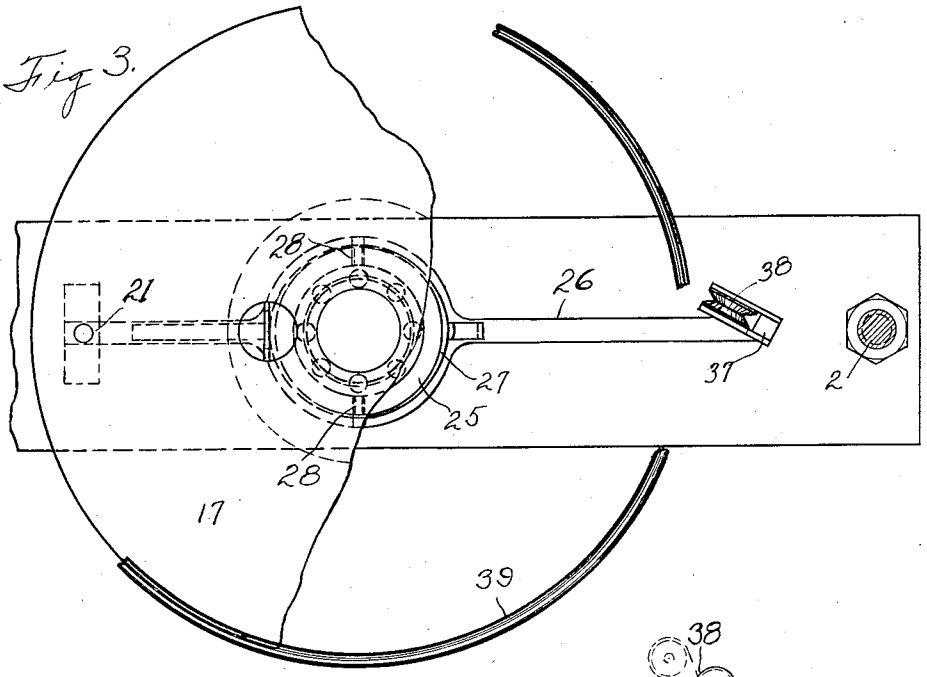
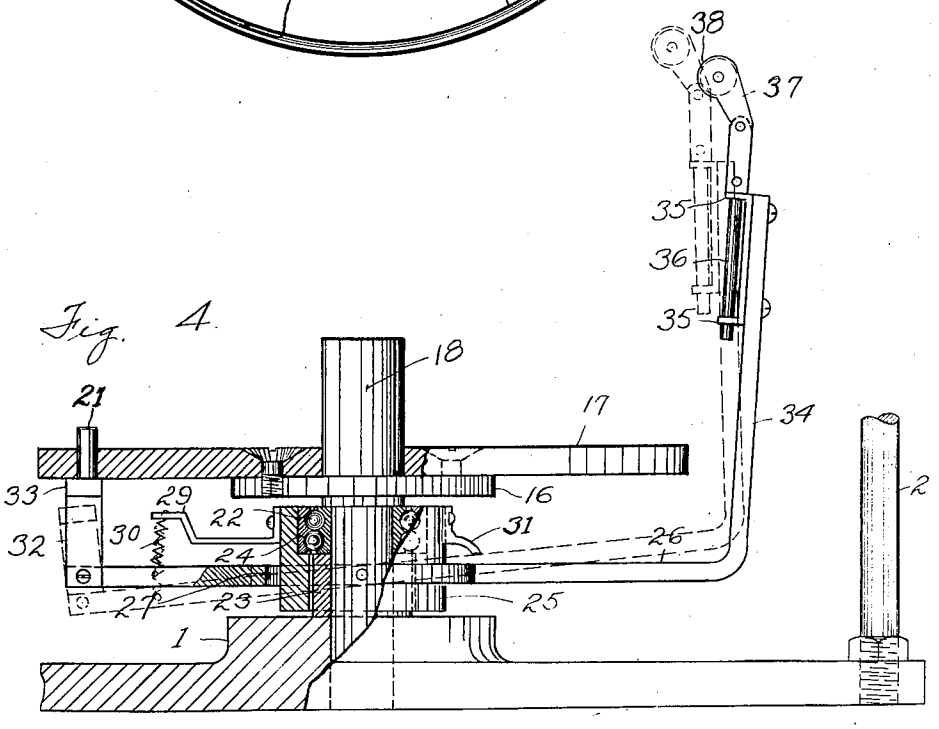


Fig. 4.



Edward Snyder INVENTOR

BY

A. G. Burns ATTORNEY

Patented May 1, 1934 1,956,631

UNITED STATES PATENT OFFICE

1,956,631

UNWINDING DEVICE

Edward Snyder, Fort Wayne, Ind., assignor to General Cable Corporation, New York, N. Y., a corporation of New Jersey

Application August 19, 1929, Serial No. 386,745

11 Claims. (Cl. 242—128)

This invention relates to improvements in appliances for the withdrawal of a wire or other strand from a reel upon which the strand is wound to a point where it is to be utilized.

One of the objects of the improvement is the provision of means for controlling a strand during the unwinding operation as the strand is withdrawn for use, so that kinking, looping or other disorders of the strand are averted, and overrunning of the strand or racing of the reel is prevented.

Another object of the improvement is to construct the device in such manner that a substantially constant tension will be applied to the strand during the unwinding operation regardless of any irregularity in the rate of withdrawal of the strand, as well as of sudden starting and stopping in the withdrawal action, whereby disarrangement of the strand about the reel and other parts of the appliance is obviated.

A preferred illustrative embodiment of the invention is shown in the accompanying drawings, in which:—

Fig. 1 is a side elevation of a construction embodying the invention;

Fig. 2 is a detail view of a friction device including an idler over which the strand is withdrawn;

Fig. 3 is a fragmentary plan view of the reel support, fly member, and other parts, a portion being broken away; and

Fig. 4 is a side elevation partly in section, showing the reel support and fly member, the latter three views being upon an enlarged scale.

The illustrative embodiment of the invention comprises a base 1 upon opposite sides of which are mounted standards 2 and 3, and in the center of which base is a post 4. Secured to the upper end of the standard 3 is a bracket 5, and secured to the bracket 5 near its upper end is an apertured plate 6. One end of a shouldered bolt 7 is secured in the aperture of the plate 6, and carried on the bolt 7 is an idler 8 consisting of a sheave, the ends of which are faced with felt 8'. Upon the bolt 7 also is mounted a friction plate 9 that normally bears against the adjacent face of the idler 8 under the influence of a spiral compression spring 10 surrounding the bolt 7 and bearing at one end against the plate 9, the idler 8 being frictionally engaged on its opposite side by the plate 6. Bearing against the other end of the spring 10 are a washer 11 and a thumb-nut 12 on said bolt by means of which the compression on said spring and plate 9 may be adjusted. The plate 9 is loosely mounted upon the bolt so as to have turning movement thereon, and a peg 13 that projects from the bracket 5 engages a projection 14 on the friction plate 9 whereby to a substantial but limited extent turning movement of said plate about the bolt is permitted.

Mounted on the bracket 5, at a point beneath the idler 8, is a strand guide 15, its forward end being in the form of an inverted funnel disposed in alinement with the groove of the idler 8 and with the longitudinal axis of the post 4.

The post 4 is vertically disposed and has an annular flange 16 upon which is secured a platform 17. The upper end of the post projects through and above said platform and constitutes a centering pintle 18 for a spool 19, into the bore 20 of which said pintle extends when the spool is placed upon the platform. The platform has an upwardly projecting dog 21 for engaging an opening in the adjacent head 19' of the spool to prevent turning movement of the spool upon the platform about the pintle.

As may best be seen in Fig. 4, a ball bearing 22 of known construction is positioned upon the post 4 and is sustained thereon at a point above the top of the base 1 by means of a collar or spacer 23. The outer ring 24 of the bearing is fixed in a sleeve 25 so as to rotate therewith, the lower end of the sleeve encircling loosely about the spacer without contact therewith.

A fly member is carried by the sleeve 25, and consists of a rocking lever 26 having an opening 27 therein loosely encircling the sleeve 25. Two trunnions 28 extend laterally from opposite sides of said sleeve into the corresponding sides of the lever 26, upon which trunnions the lever has tilting movement.

A bracket 29 fixed upon the sleeve 25 extends along and above the rear end of the lever 26, and a retracting spring 30 forms a yielding connection between the bracket and lever, whereby the rear end of the lever is normally held in its uppermost position. Upon the sleeve 25 at a point diametrically opposite the bracket 29 is secured a stop 31 which is adapted to contact with the upper face of the lever 26 and limit tilting movement of the lever when said lever is tilted in opposition to the action of the spring 30.

Upon the rear end of the lever 26 is supported a block 32 having on its top a brake shoe 33 that normally bears against the lower face of the platform 17 under the influence of the retracting action of the spring 30. Rotation of the fly member upon its bearing 22 is resisted to an extent dependent upon the pressure of the shoe against the platform.

The forward end of the lever 26 projects beyond the edge of the platform 17 and has an upwardly extending arm 34 provided on its inner edge with a pair of vertically spaced perforated ears 35. In the ears is swiveled a stem 36, and upon the top of the stem is secured a fork 37 having pivoted in its upper end an idler 38, the axis of which is disposed horizontally and to one side of the extended longitudinal axis of the stem.

Referring to Figs. 1 and 3, a guard 39 consisting of a wire ring horizontally disposed, and in axial alinement with the pintle 18, is supported by the standards 2 and 3 in a plane spaced between the top of the spool and the guide 15.

In operation, a spool containing coiled strand is placed upon the platform with the pintle extending up into its bore, and with the dog 21 projecting into an opening in the lower end of the spool. The end of the strand 40 is initially unwound from the spool and strung through the fork 37, over the idler 38, through the guard 39, and guide 15, and around and over the idler 8, and from thence to the point of utilization. As the strand is required, it is withdrawn at such rate as may be desired, in the customary manner by pulling the strand over the idler 8.

During the operation of withdrawal of the strand, the fly member, owing to the action of the strand, is caused to rotate upon its bearing, and the idler 38 on the fly member, over which the strand passes, revolves about the axis of the spool. Because of pressure exerted by the pull of the strand as it passes over the idler 38, the lever 26 is tilted about its pivotal support in opposition to the action of the spring 30, so that the brakeshoe 33 is withdrawn from contact with the platform, thereby permitting freedom of rotary movement of the fly member, and corresponding freedom of the strand in uncoiling from the spool.

When the withdrawal of strand ceases, or the rate of withdrawal is lowered, the pull on the strand decreases and the brakeshoe resumes contact with the bottom of the platform through the action of the spring 30. The continued revolution of the fly member due to momentum, with consequent premature unwinding of the strand from the spool is thereby retarded or prevented. However, when the rate of withdrawal of the strand becomes excessively high, the idler 38 and its mounting tend to swing outwardly due to the action of centrifugal force, which has the tendency to tilt the lever 26 and augment the action of the spring 30 in moving the brake-shoe into contact with the platform. In this manner racing of the fly member and consequent premature uncoiling of the strand from the spool are obviated.

When withdrawal movement of the strand is suddenly started, the brake-shoe is at once withdrawn from contact with the platform through the tilting action of the fly member, and the fly member is thereby permitted to rotate freely. When withdrawal of the strand is suddenly stopped, the brake-shoe is again applied to the platform by reaction of the spring 30, and further rotation of the fly member is thereby retarded and suppressed.

During operation of the appliance, especially at high speeds, that portion of the strand between the fly member and the guide 15 tends to lash outwardly under the influence of centrifugal force induced by the unwinding operation. The strand is restrained by the guard 39 through which the strand passes, the guard confining the strand within safe bounds.

Since the strand supply spool is held in stationary position upon the platform, as by means of the dog 21, the unwinding of the strand from the spool is accomplished without rotation of the spool. Rotation of the spool in ordinary instances tends to cause irregularities in the unwinding of the strand, such as overrunning of the spool, due to momentum when withdrawal of the strand is suddenly stopped, and abnormal high tension on the strand when withdrawal thereof is suddenly started. Such tendencies are common in apparatus where unwinding of the strand is dependent upon rotation of the spool, and frequently result in disarrangement and entanglement of the strand, and in objectionable variations in the tension of the strand when the withdrawal is intermittent or at irregular speed, or even when withdrawal is continuous and at uniform speed. These tendencies commonly are magnified in such apparatus because of the continual reduction in the weight of the coiled strand on the spool as withdrawal progresses, and are difficult to suppress. The present invention contemplates the complete elimination of such objectionable tendencies, and the promotion of uniformity and order in supplying the strand from the spool as required for use.

Generally it is desirable to apply more or less tension to the strand 40 during its passage from the idler 8 to the point to where it is drawn and utilized. By turning the thumb-nut 12 so as to compress the spring 10, the pressure of the plates 6 and 9 against the ends of the idler 8 is increased, and rotation of the idler as the strand is drawn over it is thereby frictionally restrained. By looping the strand around the idler 8, the frictional resistance between the strand and the idler is increased. By manually turning the plate 9 about the bolt 7 so that its projection 14 is moved away from the peg 13, the strand may be threaded up through the guide 15 and looped around the idler by passing the strand between the projection and the peg as the strand is being applied beneath the idler. Thus, adjustment of the strand in looped relation with the idler is facilitated.

It will be understood that the invention may be variously modified and embodied within the scope of the claims.

What I claim is:—

1. In an unreeling device, the combination of a base member; a post fixed thereon; a platform fixed on said post at a point spaced from said base, the upper end of said post extending beyond the platform and constituting a spool-centering pintle; an annular bearing on said post concentric therewith and sustained thereon between the base and platform; a rotatable sleeve supported by said bearing; a fly member consisting of a lever pivotally supported in connection with said sleeve and having at one end an angularly extending arm; a brake-shoe in supported relation with the other end of said lever, which shoe normally has frictional engagement with said platform; a swivel member supported on said arm and having an idler; a bracket fixed on said sleeve and having a retracting spring connection with said lever operable to yieldingly apply said brake-shoe to said platform; a spool having a strand wound thereon, said spool being positioned endwise upon said platform and centered thereon by said pintle; a dog projecting from said platform engaging said spool to prevent turning of said spool; an idler in supported relation with said

platform, the front of said idler being alined with the axis of said spool; a guide beneath the idler having a perforation alined with said axis; a friction device in connection with the latter idler for restraining rotation thereof; and an annular guard supported at a point between the spool and guide in axial alinement therewith, said fly member being rotated by the action of the strand as said strand is withdrawn from the spool, over said idlers and through the guide therebetween.

2. In an unreeling device, the combination of a base member having a fixed post thereon; a stationary platform on said post including a spool centering means; a rotatable member concentric with said centering means; a fly member pivotally supported on said rotatable member and having limited tilting movement; a brake-shoe in connection with said fly member, having contacting relation with said platform; a spring acting on said fly member operable normally to yieldingly apply said brake-shoe to said platform; a swivel on said fly member having an idler; a spool positioned endwise upon said platform, there being in connection with said platform means to prevent rotation of said spool thereon; and a guiding means including an idler supported at a point spaced from the end of the spool opposite the platform and alined with the axis of said spool, said fly member being rotated by the action of the strand as said strand is withdrawn from the spool, over the swivel supported idler and through said guide.

3. In an appliance for unreeling a strand from a spool, the combination of a stationary support for a spool; means in connection with said support for securing said spool against rotation; a spool positioned endwise upon said support and secured by said means; a fly member; mounting means for said fly member including means providing for rotary movement of the fly member upon an axis alined with that of the spool and other means providing for tilting movement upon another axis extending at right angles thereto; a guide on said fly member disposed at a point aside from the spool; a second guide alined with the axis of the spool and spaced from the end thereof opposite the spool support; retracting means applied to the fly member operable to yieldingly resist tilting movement thereof; and a brake member in connection with the fly member and having engaging relation with the spool support under the influence of said retracting means, said fly member being actuated by the strand as said strand is withdrawn from the spool and through said guides.

4. In an appliance for unreeling a strand from a spool upon which said strand is wound, the combination of a stationary mount for said spool operable to support said spool and prevent rotation thereof; a fly member; means for supporting said fly member on said mount including means providing for rotary movement of the fly member upon an axis approximately alined with that of the spool when the spool is mounted in place, and other means providing for tilting movement upon another axis extending at right angles thereto; a braking means associated with the fly member and mount that is normally operable and which upon tilting of the fly member is inoperable; a yielding means applied to said fly member by which tilting movement thereof is resisted; a guide on said fly member disposed at a point aside from the spool; and a second guide spaced from the end of the spool and alined therewith, said fly member being tilted and rotated by action of the strand as said strand is withdrawn from the spool through said guides.

5. In an appliance for unreeling a strand from a spool upon which said strand is wound, the combination of a stationary spool-supporting mount adapted to secure a spool disposed thereon against rotation; a spool secured thereon and having a coiled strand; a fly member; mounting means for said fly member including means providing for rotary movement of the fly member, and other means providing for tilting movement of the fly member; a guide for said strand on said fly member, which guide encircles said spool upon rotation of said fly member; a brake mechanism associated with the fly member and mount that is normally engaged and which upon tilting of the fly member is released; and a second guide for said strand alined with the axis of the spool, said fly member being tilted and rotated by action of the strand as said strand is withdrawn from the spool through said guides.

6. In apparatus of the class described, the combination of a stationary spool-supporting mount; a spool containing a coiled strand, disposed upon said mount; a fly member; mounting means for said fly member including means providing for rotary movement of the fly member upon an axis alined with that of the spool and other means providing for tilting movement of the fly member, said fly member having normal braking relation with said mount which relation is interrupted upon tilting of said fly member; a guide on said fly member through which the strand is strung, said guide being disposed so as to encircle said spool upon rotation of the fly member; and a second guide through which said strand is also strung, which second guide is alined with the axis of said spool, said fly member being tilted and rotated by said strand as said strand is withdrawn through said guides.

7. In apparatus of the class described, the combination of a stationary support for a spool upon which said spool is positioned endwise and having means to hold said spool thereon against rotation; a rotating member on said support axially alined with said spool; a fly member pivotally supported upon said rotating member and having limited tilting movement relative thereto; a brake member on said fly member having frictional engagement with said support, said frictional engagement being interrupted when the fly member is tilted; yielding means tending to sustain such engagement; and a guide member on said fly member disposed aside of said spool.

8. In apparatus for unreeling a strand from a spool upon which spool the strand is wound, the combination of a stationary support for said spool upon which said spool is positioned endwise and having means to hold said spool thereon against rotation; a mechanism on said support; mounting means for said mechanism including means providing for rotary movement upon an axis approximately alined with that of the spool and other means providing for tilting movement, said mechanism normally having frictional relation with said support which relation is interrupted upon tilting of said mechanism; and a guide supported by said mechanism in a position aside of said spool and through which guide said strand is strung, said mechanism being rotated and tilted by the action of said strand as said strand is withdrawn from the spool through said guide.

9. Apparatus for unreeling a strand from a spool, comprising, in combination, a vertical sup-

port for said spool, a strand guiding member mounted on said support to revolve about said spool, and braking means for impeding movement of said guiding member, the arrangement being such that the braking means is released when the tension on the strand as it is withdrawn from the spool increases and applied when the tension is reduced and the speed of said guiding member is excessive.

10. Apparatus for unreeling a strand from a spool, comprising, in combination, means for supporting a spool in position, a strand guide revolvable about the spool between the ends of the spool, braking means for controlling the movement of said guide, and means for controlling said braking means automatically in response to the pull on the strand as it is withdrawn from the spool and to the speed of the strand guide.

11. Apparatus for unreeling a strand from a spool, comprising in combination, a support for the spool, a strand guide revolvable about the spool as said strand is withdrawn from the spool, and braking means for preventing excessive speed of the strand guide, said braking means being automatically responsive to variations in speed above a certain value.

EDWARD SNYDER.