E. SNYDER

UNREELING APPLIANCE FOR WIRE, THREAD, ETC

Filed June 8, 1928

INVENTOR BY

Edward Snyder

ATTORNEY
This invention relates to improvements in unreeling appliances for wire, thread, etc., and is especially useful in connection with machines to which the wire or thread is supplied intermittently and at a rapid rate in the manufacture of articles formed thereof.

The object of the invention is to provide apparatus by means of which the wire is withdrawn from a spool or reel upon which it is wound, without rotation of the spool, and which will cause unreeving of the wire as rapidly as it is withdrawn for use, without the development of slack, and thereby cause entanglement, kinking, looping or other disorder of the wire. Another object of the invention is to construct the device so that the wire is unreeled and supplied under more or less constant tension as it is withdrawn, without over-running from the reel.

Numerous devices have hitherto been employed by which the slack of the wire is taken up in order to overcome difficulties due to the slack. However, the present invention contemplates an unreeving appliance so constituted that in its operation there is no development of slack in the wire, and use of a take-up device is thereby dispensed with, which are further and especial objects of the invention.

An embodiment of the invention selected for the purpose of illustration is shown in the accompanying drawing, in which:

Fig. 1 is an elevation of an unreeving device, partly in section, in which the invention is embodied;

Fig. 2 is a plan view of the device, a part thereof being in section; and

Fig. 3 is a detail view of an idler and its mount, that forms a part of the device.

The characters appearing in the description refer to parts shown in the drawing and designated thereon by corresponding characters.

The invention consists of a base having a circular cavity, the top of the base being open and there being an upwardly extending flange surrounding the cavity. An upwardly extending pintle is fixed in the base in alinement with the axial center of said cavity. The base has on one side thereof a lug in which is fixed, in upright position, a standard, the upper portion of which is bent so as to overhang the axis of said pintle. In the upper end of said standard is mounted an idler consisting of a sheave pulley, there being a pair of arms spaced apart, between which the idler is positioned. Each arm has an inwardly extending shoulder that overhangs the adjacent sheave of the pulley, and a spring tongue is secured on the outer face of one of the arms at the upper end thereof and extends downwardly across the gap between said plates, and bears against the inner face of the arm opposite the one to which the tongue is secured.

A spool, upon which the wire or thread is wound, is set on end within the base, centered therein by the pintle which projects up into the bore of the spool. The upper end of said spool extends to a point above the plane of the top of the flange on said base.

Upon the top of the spool is positioned an annular brake plate having an axial sleeve that projects downwardly into the bore of the spool, by means of which said brake plate is centered in position upon the spool. In the hub of the brake plate is centrally secured an annular ball bearing by means of a retaining member, which member consists of a pair of metal washers and a felt washer interposed therebetween, being screws extending through said washers into the hub for securing the retaining member in place thereon.

A spinner is supported in connection with the bearing, and consists of a post the lower end of which is slotted and extends centrally through the bearing in which it is vertically adjustable, there being a screw in the lower end of the post, which when screwed inwardly causes the post to expand and become secured in the bearing. In the top of the post 20 is secured a fly member made of spring wire and formed with a loop between its ends. One arm 24 of the fly member is shaped so as to have bearing contact with the brake face of the plate 14 over which it extends, and said arm terminates with a pendant extension 25, the lower end of which is coiled to form an eye. The
other arm 27 of said fly member is secured fixedly in the post 20 through which it extends, there being a screw 28 in the top of said post by which said member is clamped in place.

The arm 27 has a hooked outer end 29 through which the arm 24 loosely extends, said hook portion being spaced slightly above the extending outer portion of said arm 24 with which it has contact when the arm 24 is raised and yieldingly limits rising movement thereof.

Upon the standard 6, beneath the idler 7, is fixed a guide consisting of a wire 30, the outer end of which is coiled to form an eye 31, which eye is disposed in axial alinement with the pinlute 4 upon which the spool is centered, and also upon the standard 6 is adjustable secured a bracket 32 that rigidly supports, in horizontal position, a guard consisting of a wire ring 33 which is spaced above the fly member and in axial alinement with said pinlute.

In utilizing the invention, the spool upon which the wire is wound is positioned upon the base and centered by the pinlute, and an unwound portion 12' of the wire is strung through the eye 26 at the end of the drag arm 24, guard ring 33, eye 31, and over the idler 7 from which it extends to the machine (not shown), into which it is drawn as it is required in the usual manner. As the wire is drawn in the direction indicated by the arrow, it is pulled tangentially and unwind from the spool, and, the fly member, through which the wire extends, is caused to rotate upon the axis of its post, which rotation is resisted by the brake plate with which the fly member has more or less frictional contact. When, withdrawal of the wire is suddenly stopped, or its rate of withdrawal is more or less gradually reduced, rotation of the fly member is accordingly stopped or its velocity reduced by the application of pressure of the drag arm upon the brake face 14' of the plate 14. In this manner the unwound portion of the wire is sustained under more or less tension and its premature unwinding from the spool and becoming slack is averted.

As the velocity of the fly member increases, the extension 26 is influenced outwardly by centrifugal force which causes upward flexure of the drag arm, and thus, the pressure of the drag arm upon the brake plate is correspondingly reduced and the freedom of the fly member to rotate is consequently increased.

The spool and the brake plate are of such weight as to be immobile and unaffected by the pull of the wire as it is unreeled from the spool, and the action of the drag arm upon the brake plate when the drag arm is rotated.

The flange 3 and the guard ring 33 function in like manner. That portion of the unwound wire between the spool and the eye 26 of the fly member becomes restrained by the flange 3 in its tendency to lash outwardly when influenced by centrifugal force induced by the unwinding operation; and the guard ring 33 likewise restrains similar tendency of that portion of the unwound wire between the eyes 26 and 31. Thus, the flange and the guard ring, as well as the frictional action between the fly member and the brake plate, contribute in the circumvention of slacking of the wire, and the fly member, being of slight weight, responds sensitively to the pull of the wire and to the action of the brake plate, when withdrawal of the wire is suddenly started and stopped, which further averts breaking and slacking of the wire.

What I claim is:

1. In an unreeling device, a base member including a spool-centering pinlute and an annular upwardly extending flange with said pinlute; an idler supported above the base; a guide member having an eye, which eye is supported in alinement with said pinlute between the pinlute and said idler; a spool positioned upon the base and centered thereon by said pinlute; a guard ring disposed between the spool and said eye; a circular brake plate positioned upon the top of the spool in concentric relation therewith; a spinner member including a bearing therefor positioned centrally in said plate; and a fly member secured in connection with said spinner, which fly member normally has frictional contact with said brake plate and is provided with a pendant extension that overhangs said spool, said extension being provided with an eye, said fly member being adapted to be rotated with said spinner by the wire coiled on said spool, as said wire is withdrawn therefrom through said eye.

2. In a device for unreeling a wire from a spool upon which the wire is wound, a support forming a mount for the spool including centering means therefor; a guide having an eye disposed above the spool in axial alinement therewith; a circular brake plate positioned upon the top of the spool and centered thereon; a spinner rotatably mounted upon said plate; and a spring pressed fly arm attached to the spinner and normally bearing upon said plate, the outer end of said arm having an eye disposed beyond the edge of the spool, said fly arm being rotated with said spinner by the wire as said wire is withdrawn from the spool through said eyes.

3. In a device for unreeling a wire from a spool upon which said wire is wound, a mount for said spool; a guide disposed in axial alinement with and spaced from one end of said spool when said spool is positioned on said mount; a brake plate disposed between said guide and spool; a rotatable post
in said brake-plate; and an unwinding member mounted on said post, that has a spring pressed fly arm normally bearing upon said brake-plate so as to have frictional relation therewith, the outer end of said fly arm being provided with a guide for said wire disposed beyond the perimeter of the spool, said unwinding member being rotated by the wire as said wire is withdrawn from the spool through said guides.

4. In mechanism for unreeling a wire from a spool, a mount for said spool; a stationary brake plate; a rotatable post supported in said plate; a member including a spring pressed fly arm normally having frictional bearing relation with said brake plate, said fly arm being provided with a guide for said wire; and a stationary guide spaced from said rotatable member through which said wire passes from the former guide, said rotatable member being operated by the unwinding action of said wire as said wire is withdrawn from said spool.

5. In mechanism for unreeling a wire from a spool, a mount for said spool; a brake plate supported at one end of the spool in axial alinement therewith; a rotatable member including a spring pressed drag arm provided with a guide for said wire, said drag arm having frictional engagement with said brake plate and being movable out of contact therewith by centrifugal action and the withdrawal movement of said wire in opposition to the spring pressure; a guide spaced from said rotatable member for said wire as it passes from the former guide, and a member engageable with said drag arm for limiting movement thereof away from said brake plate, said rotatable member being operated by the unwinding action of said wire as said wire is withdrawn from said spool.

6. In mechanism for unreeling a wire from a spool, a mount for said spool; a brake plate supported at one end of the spool in axial alinement therewith; a rotatable member including a spring pressed drag arm provided with a guide for said wire, said drag arm having frictional engagement with said brake plate and being movable out of contact therewith by centrifugal action and the withdrawal movement of said wire in opposition to the spring pressure; and a member engageable with said drag arm for limiting movement thereof away from said brake plate, said rotatable member being operated by the unwinding action of said wire as said wire is withdrawn from said spool.

7. In mechanism for unreeling a wire from a spool, a brake plate with which said spool is positioned in axial alinement therewith; a bearing centered in said brake plate; a post mounted in the movable member of said bearing and being longitudinally adjustable therein and having means for securing it in the adjusted positions; and another guide for said wire spaced from said fly member and aligned with the axis of said spool, said fly member being rotated by the unwinding action of said wire as it is withdrawn from the spool through said guides.

8. In mechanism for unreeling a wire from a spool, a brake plate with which said spool is positioned in axial alinement therewith; a bearing centered in said brake plate; a post mounted in the movable member of said bearing and being longitudinally adjustable therein including means for securing said post in adjusted positions; a fly member secured upon said post, including a drag arm that bears upon said brake plate, and having another member disposed over said drag arm to limit movement thereof away from said brake plate, said drag arm having a guide for said wire; and another guide for said wire spaced from said fly member and aligned with the axis of said spool, said fly member being rotated by the unwinding action of said wire as it is withdrawn from said spool through said guides.

9. In apparatus of the class described, the parts comprising the brake plate applicable to the end of spool of wire; a longitudinally adjustable post revolvably mounted in axial alinement with said brake-plate; and a fly member fixed on said post having a drag arm that bears upon said brake plate, said drag arm having a guide for wire as it is withdrawn from said spool.

10. In apparatus for unreeling a wire from a spool upon which the wire is wound, a mount for the spool; a brake restrained revolvible fly member disposed at one end of said spool having a guide through which said wire is withdrawn from said spool; a guide spaced from said fly member in axial alinement therewith and through which said wire extends; and a guard ring disposed between said fly member and the latter guide, which ring encompasses the normal lashing range of said wire in its movement between said guides.

In testimony whereof I affix signature.

EDWARD SNYDER.