July 21, 1936. E. E. NEWTON 2,048,511

STRAND HANDLING APPARATUS

Filed July 19, 1934

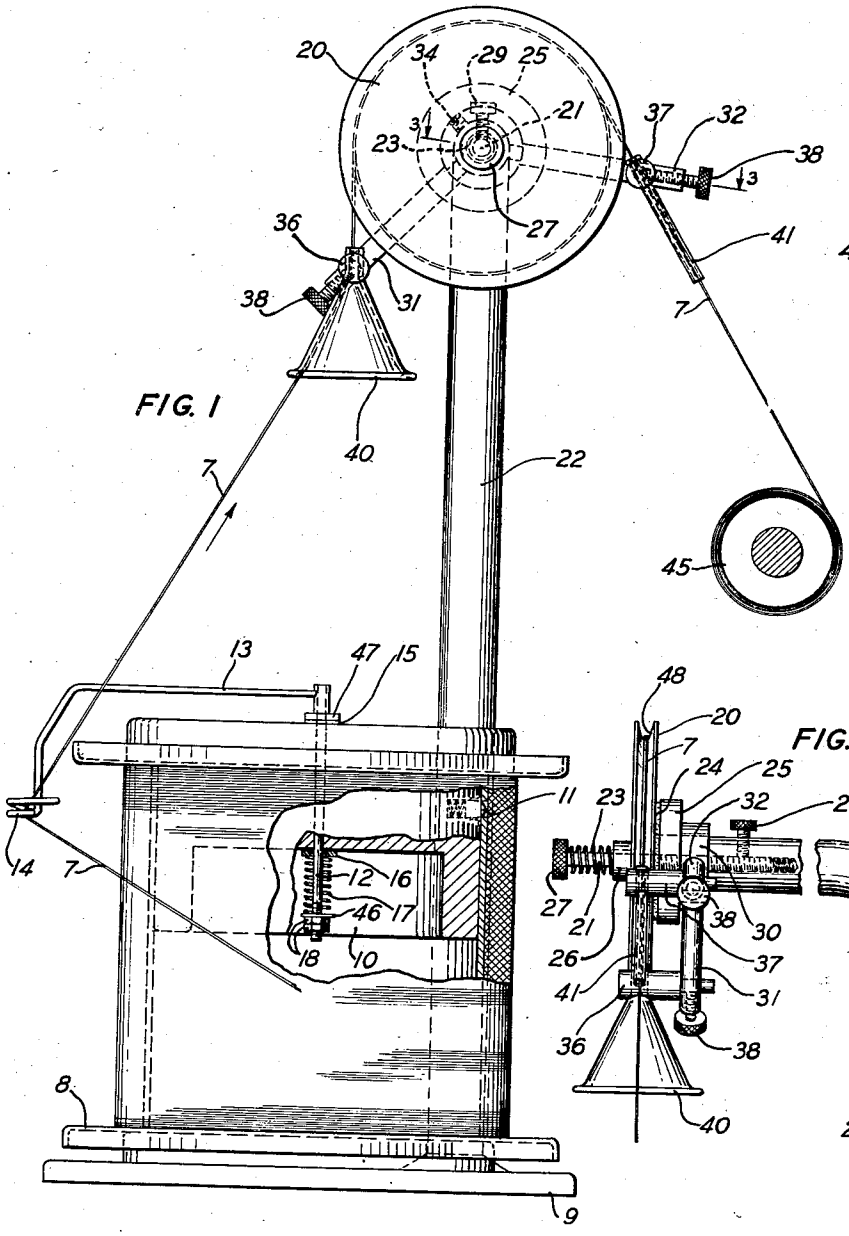


FIG. 1

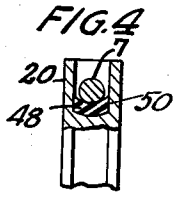


FIG. 4

FIG. 2

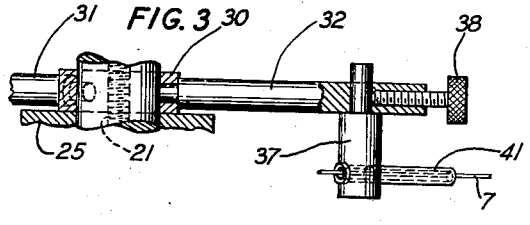


FIG. 3

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Patented July 21, 1936 2,048,511

UNITED STATES PATENT OFFICE

2,048,511

STRAND HANDLING APPARATUS

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Application July 19, 1934, Serial No. 735,915

6 Claims. (Cl. 242—128)

This invention relates to strand handling apparatus and more particularly to apparatus for unwinding or removing strand material from a stationary spool, reel or the like.

In removing strands wound on a stationary reel or the like, and particularly the finer grades of wire, there are several desiderata to be considered. It is desirable to have a guide rotating about the body of strand to carry the strand off substantially in the plane of the winding thereof or at least at an acute angle to that plane so that the strand may not be dragged harshly across neighboring coils, and so that the strand if more or less buried betwen neighboring coils may be easily released therefrom. It is further desirable that means be provided to maintain a constant but adjustable resistance to the longitudinal motion of the strand in order to impose light and adjustable tension on the strand. It is also desirable that the guiding means used to lead the strand through the apparatus should afford as little friction as possible to the movement of the strand therethrough.

An object of the present invention is to provide a strand handling apparatus of improved simplicity of construction and operation and controllability of action for unwinding or removing a strand from a stationary supply thereof wound on a reel, spool, cop, or the like.

Other objects and features of the invention will appear from the following detailed description of one embodiment thereof 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 broken view in front elevation of an apparatus embodying the invention;

Fig. 2 is a broken view of the top portion thereof in right hand side elevation;

Fig. 3 is a broken partial view thereof in plan on the line 3—3 of Fig. 1, and

Fig. 4 is a broken enlarged radial section of the tensioning wheel to show an alternatively added friction lining for the groove thereof.

In the embodiment of the invention herein disclosed a vertical pillar or support 22 having its upper part bent horizontally forward is rigidly mounted on a base 9. A conventional reel or spool 8 stands on the base 9 and contains wound thereon a supply of strand 7 which is to be unwound or taken off from the reel by a rotary element 45 belonging to some other apparatus not shown and whose purpose and function are no part of this invention, except that it serves to advance the strand 7 longitudinally thereof through the apparatus.

A cylindrical plug 10 of wood or other appropriate material is inserted into the cylindrical axial bore of the reel 8 and is frictionally held in position by one or more round headed spring pressed plugs 11 mounted in appropriate radial bores in the plug 10 and bearing against the inner wall of the reel. The plug 10 is axially bored to receive a vertical shaft 12 mounted for free rotation therein. The bottom end of the shaft is threaded to receive a pair of nuts 18 screwed thereon. A spiral compression spring 17 surrounds the shaft, resting at its lower ends against the nuts 18 or against an interposed washer 46, and at its upper end against a washer 16 which in turn bears against an under surface of the plug 10. On the upper end of the shaft is a washer 15 resting on the top surface of the plug 10 and supporting a collar 47 integral with or rigidly secured to the shaft.

By adjustment of the nuts 18 on the shaft 12 the frictional resistance of the latter to turning may be adjustably varied.

A horizontally extending arm 13 is rigidly mounted in the top of the shaft 12 and extends out beyond the periphery of the upper spool head and then downwardly to a point opposite the body of strand to be unwound where it is formed with a strand guide proper 14 consisting of one and a half or more spiral turns of the end of the arm.

The horizontally extending upper end of the pillar 22 is formed with an axial threaded bore which receives a correspondingly threaded shaft 21 having a knurled head 27 by which the shaft 21 may be screwed into and out of the bore for adjustment therein. A jam screw 29 is provided to lock the shaft 21 in its adjusted position. A sheave 20 having a peripheral groove 48 is mounted to rotate freely on the shaft 21. A disk 25 is mounted rigidly on the extremity of the support 22 and carries a friction pad 24 of felt or other approved material secured thereto. The sheave 20 is adjustably pressed against the friction pad 24 by a compression spring 23 surrounding the shaft 21 and bearing at one end against the head 27 and at the other end against a washer 26 which bears in turn against the sheave.

It may further be preferable in some instances to provide the groove 48 with a lining of soft rubber, leather or other analogous friction promoting material to provide improved traction of the sheave 20 on a strand 7 passing thereover.

A hub or collar 30 is rotatably mounted on the

support 22 and is adjustably locked thereto by a set screw 34. The collar is provided with two radially extending arms 31 and 32. The arm 31, near its outer extremity, has a transverse perforation in which is rotatably positioned a cross stud 36 adjustably held in place by a jam screw 38 mounted in the arm 31.

The outer portion of the stud 36 is perforated transversely to receive and hold the small end of a funnel shaped strand guide 40 preferably of glass, glazed ceramic or vitrified material, or other smooth, hard and relatively frictionless material, preferably non-metallic.

The arm 32 is similarly provided with an adjustable transversely positioned stud 37 locked in place by a screw 38. Instead of a bell shaped guide however, the stud 27 supports a tubular guide 41 of material analogous to the material of the bell guide 40.

In operation, a strand 7 is drawn from the reel 8, threaded through the guide 14 and the guide 40, wound as many times around the sheave 20 as may be advisable in any given case, threaded through the guide 41 and carried to some propelling device 45 which is to draw the strand off for use elsewhere.

The nuts 18 are ordinarily adjusted to afford just sufficient friction at 46 and 47 to keep the guide 14 from overrunning under its own momentum in case the speed of operation slackens for any reason.

The tension in the strand occasioned by resistance to the pull of the element 45, is adjustable to any desired value within a wide range by adjustment of the tension of the spring 23.

It is not intended ordinarily that the strand 7 shall slip over the sheave 20, although this may be desirable in some cases where an unusually high tension in the strand is required. Generally, however, the requisite friction is intended to be between the sheave 20 and the pad 24 and to be adjustably modifiable by means of the head 27.

Both friction and wear in the guides 40 and 41 is minimized by making them of glass or analogous material, thus further concentrating substantially all frictional effect and drag on the sheave 20.

The embodiment of the invention herein disclosed is merely illustrative 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 control means comprising a sheave, a pivotably adjustable member coaxial therewith and having a radially disposed arm thereon, and a pivotably adjustable strand guide member on the arm.

2. In a strand handling apparatus, strand control means comprising a sheave, a pivotably adjustable member coaxial therewith and having two radially disposed arms thereon, a pivotably adjustable strand approach guide member on one arm, and a pivotably adjustable strand withdrawal guide member on the other arm.

3. In a strand handling apparatus, strand control means comprising a sheave, adjustable brake means for the sheave, a pivotably adjustable member coaxial therewith and having a radially disposed arm thereon, and a pivotably adjustable strand guide member on the arm.

4. In a strand handling apparatus, strand control means comprising a sheave, adjustable brake means for the sheave, a pivotably adjustable member coaxial therewith and having two radially disposed arms thereon, a pivotably adjustable strand approach guide member on one arm, and a pivotably adjustable strand withdrawal guide member on the other arm.

5. In a strand handling apparatus, strand control means comprising a sheave provided with a lining of friction promoting material in the groove thereof, adjustable brake means for the sheave, a pivotably adjustable member coaxial therewith and having a radially disposed arm thereon, and a pivotably adjustable strand guide member on the arm.

6. In a strand handling apparatus, strand control means comprising a sheave provided with a lining of friction promoting material in the groove thereof, adjustable brake means for the sheave, a pivotably adjustable member coaxial therewith and having two radially disposed arms thereon, a pivotably adjustable strand approach guide member on one arm, and a pivotably adjustable strand withdrawal guide member on the other arm.

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