Jan. 27, 1942. G. REPASS 2,271,345

TEXTILE PACKAGE HOLDING DEVICE

Filed Feb. 13, 1941

Fig. 1.

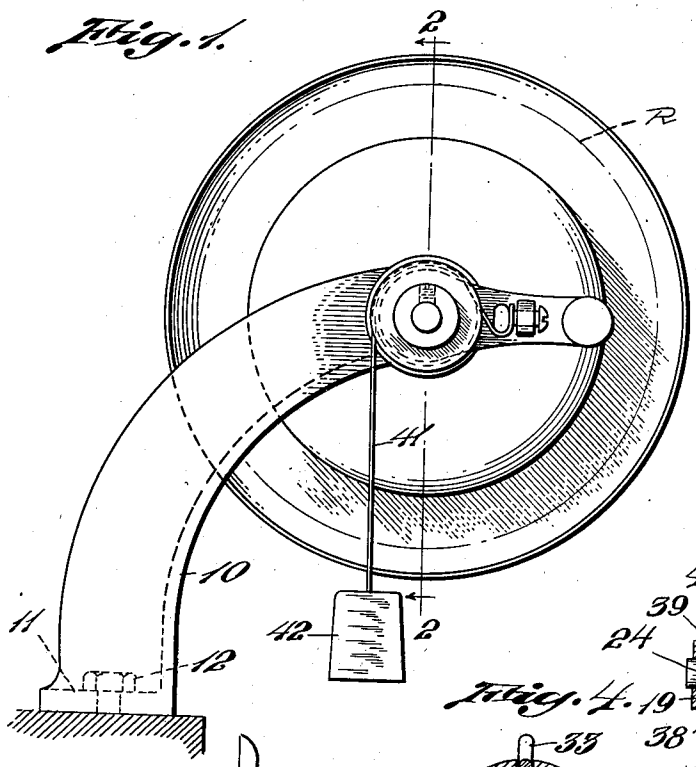


Fig. 2.

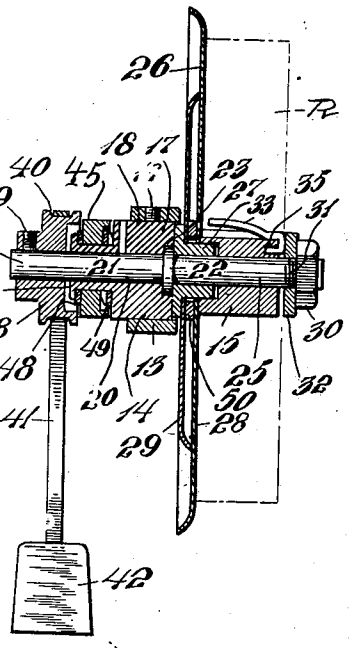


Fig. 4.

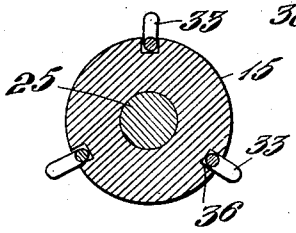


Fig. 3.

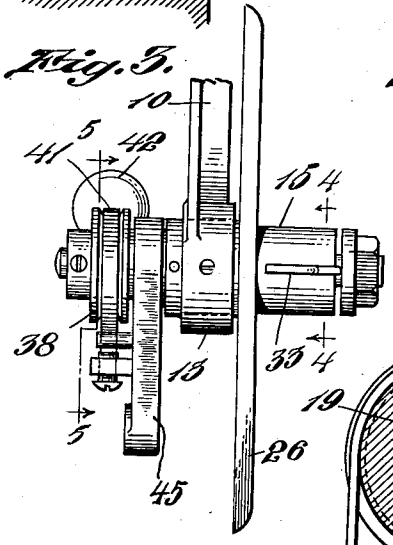
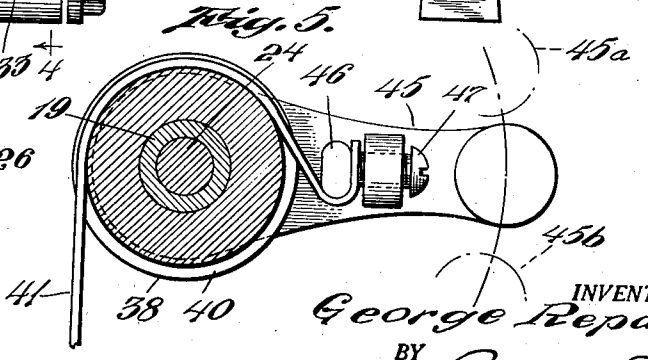


Fig. 5.



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Patented Jan. 27, 1942 2,271,345

UNITED STATES PATENT OFFICE

2,271,345

TEXTILE PACKAGE HOLDING DEVICE

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Application February 13, 1941, Serial No. 378,766

5 Claims. (Cl. 242—75)

This invention relates to holding devices for rotatably supporting a roll of wound textile material and in particular to a rotatable mount for use in machines for the manufacture of paper twine form paper ribbon (or ribbons) for holding the roll of paper ribbon as it is unreeled therefrom and twisted into twine in a damp or wet state by suitable means; and has for one of its objects the supporting of a roll of paper ribbon so that it can rotate to permit the unwinding of the paper ribbon from the roll without the rotation of the roll relative to the means upon which it is mounted.

Another object of the invention is the control of the tension and rate of unwinding of the paper ribbon from the roll.

Another object of the invention is the rotatably supporting of a roll of paper ribbon whereby a uniform resistance will be continuously applied to and maintained to retard the rotation of the roll as the paper ribbon is being unwound whereby it will be removed from the roll at a substantially constant rate of unwinding.

Another object of the invention is the mounting of the roll of paper ribbon on a rotatable support member and the retarding of the rotation of the rotatable support member by a friction device whereby the rate of unwinding of the paper ribbon from the roll will be controlled and at a uniform rate.

Another object of the invention is to provide means so constructed and arranged whereby the magnitude of the resistance applied to retard the speed of rotation of the roll can be varied, as desired, to effect different tensions when unreeling the strip material.

Another object of the invention is to provide a simple and inexpensive rotary mount for a roll of paper ribbon in which the same may be readily and easily slid on or off one end of the mount as desired.

Another object of the invention is the provision of a mount and means for taking up any lost motion between the moving parts of the mount.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a side elevational view, on a reduced scale, of a holding device or rotatable mount embodying the present invention;

Fig. 2 is a vertical sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a top plan view of the device shown in Fig. 1;

Fig. 4 is a transverse sectional view, on an enlarged scale, taken approximately on line 4—4 of Fig. 3; and

Fig. 5 is an enlarged detail view, partly in section, of the adjustable friction-applying member, and taken on the line 5—5 of Fig. 3.

In the manufacture of paper twine, it is desirable to support the roll of paper ribbon so as to rotatably mount and hold the roll to permit the paper ribbon thereon to be unwound from the roll at a uniform rate without difficulty of sticking of the roll upon its support as the paper ribbon is unwound and fed in a damp or wet state to subsequent folding and twisting means in a paper twine-making machine; and in order to attain the aforementioned desirable results, I provide a rotary holder or mount for the paper roll or package comprising a support in the form of a hub or core freely rotatable in a fixed frame member and insertible within the central opening of the paper roll to rotatably mount and support the same; and in the preferred embodiment of the invention, the hub member is held in an overhanging position by an arm member and is carried upon one end of a rotatable shaft which is journaled in the free end portion of the arm member; and in order to control the rotation of both the spool and the shaft upon which the spool is carried as the paper ribbon is being unwound from the roll, I provide means constructed and arranged to exert a constant and predetermined resistance to turning of the hub carrying the roll during the unwinding of the paper strip, and means are also provided for varying the amount of this frictional resistance, while additional means are further provided for compensating the wear between the relatively movable parts of the device; and the following is a more detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished:

Referring to the drawing wherein I have illustrated one embodiment of the invention by way of example, the holding device therein shown consists of a curved arm member 10 provided at one end with a base flange 11 which is bolted as at 12 to the usual framework of the machine for rigidly supporting the arm, and the arm, when thus mounted, extends upwardly and forwardly of its supports and terminates at its free end in an enlarged boss 13 which projects over the side of the part of the machine frame upon which the

arm is mounted, and rotatably mounts the hub member 15, as will be presently described, for insertion into the central hole of a roll R of paper ribbon to support the roll during unwinding of the paper strip. Secured in the bore 14 of the boss 13, as by a set screw 16, is the bearing block 17 which is provided with a cylindrical portion 18 and a reduced cylindrical portion 19 integral therewith, both of which portions being of generally sleeve-like formation having a common axial bore 20 for rotatably mounting a spindle or shaft 21. As illustrated, the shaft 21 is provided at substantially its mid-portion with a collar 22 which is rotatably received by a circular recess 23 formed in the side face of the bearing block 17, and the shaft 21 is of sufficient length so that its opposite end portions 24 and 25 respectively project from the opposite sides of the boss 13 with the hub 15 being mounted upon the projecting end portion 25 of the shaft. Mounted between the inner end of the hub 15 and the side of the boss 13 presenting the side of the bearing block containing the recess 23 is the circular head member 26, the outside face of which engages the inner end of the paper roll R when it is operatively positioned upon the hub 15. As shown in Fig. 2, the head member 26 is carried by a flanged sleeve 27 on the shaft 21 and consists of two annular sheet metal cup members 28 and 29 of different diameters, and inserted one within the other in oppositely cupped relationship to each other, the larger cup 28 being preferably of slightly larger diameter than that of the paper roll R. A suitable washer 50 is positioned about the sleeve 27 between the radial sides of the cup members and serves as a combined spacer and support for the material thereof adjacent the center openings of the cup members when the parts are clamped together by a nut 30, as will be presently described.

The hub 15 is held fast to the shaft 21 by a nut 30 which is threadingly mounted upon the threaded end portion 31 of the shaft 21 and the tightening movement of the nut 30 forces a washer 32 into firm binding engagement with the spring members 33 at the outer end of the hub 15 and forcibly clamps the head member 26, the sleeve 27, and the hub 15 firmly against the collar 22 to secure the parts together into a unitary body. The nut 30, when thus tightened, also serves to hold in place the resilient members 33 which are made of bent pieces of wire having one end inserted in the three equally-spaced holes 35 formed in the outer end of the hub 15, the members 33 being bent over the edge of the hub and held in place by the circumferential slots 36 from which the free ends of the members 33 extend outwardly in a curved direction to serve as fingers for holding the roll R on the hub.

Mounted on the other projecting end portion 24 of the shaft 21 is a pulley 38 which is held fast to the shaft by a set screw 39, and the pulley is provided with a circumferential groove 40 within which is accommodated a strap or band 41 of leather or suitable friction material which extends over the upper arcuate surface of the pulley 38 and suspends from its lower end a weight 42. The other end of the strip or band 41 is secured to a swingable arm 45 by being clamped between the lug 46 and screw 47 carried by the arm 45. The arm 45 is pivotally mounted at its inner end upon a reduced portion 19 of the block 17 and it is held in place thereon by upsetting the material at the end of the reduced portion 19 to deflect it over the outer face of the washer 48 which engages the adjacent side of the arm 45. It will thus be seen that any manual movement of the arm 45 either up or down to the position 45*a* or 45*b* respectively (Fig. 5) either shortens or lengthens the amount of strip in contact with the curved bottom surface of the groove 40 of the pulley and thus will apply more or less frictional pressure on the pulley to retard its rotation and that of the shaft 21 and hub 15. Interposed between the arm 45 and the block 17, I provide an expandible element which, in the form shown in Fig. 2 of the drawing, comprises a resilient split-washer 49 which acts to take up any wear that may occur in the device arising from the swinging movement of the arm 45 into any of its different adjusted positions to vary the arc of contact of the frictional material with the curved surface of the groove 40 of the pulley.

It will thus be seen that in accordance with the invention I have provided a tension regulating device which enables the application of various degrees of frictional resistance to oppose the rotation of the paper roll as the paper strip is unwound therefrom and enable it to turn at any desired rate deemed proper during the folding and twisting operations.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible.

I claim:

1. A device of the character described comprising a support, a rotary spindle journaled intermediate its ends for free rotation on said support, the opposite end portions of said spindle being unsupported and projecting in opposite directions from said support in an overhanging relationship thereto, roll-holding means fast on one of said overhanging end portions of said spindle, and means associated with the other overhanging end portion of said spindle for controlling the rotation of the spindle as it turns during unwinding of material from a supply roll when said roll is mounted upon said roll-holding means.

2. A device of the character described comprising a support, a rotary spindle journaled intermediate its ends for free rotation on said support, the opposite end portions of said spindle being unsupported and projecting in opposite directions from said support in an overhanging relationship thereto, means on one of said overhanging end portions of the spindle secured thereto and arranged for demountably holding a supply roll of material in ribbon form, and means associated with the other overhanging end portion of said spindle acting thereon to apply a constant drag upon the spindle to control its rotation and also the tension of the ribbon material during unwinding of the ribbon from a supply roll when said roll is positioned upon its particular overhanging portion of the spindle.

3. A device of the character described comprising a support, a rotary spindle journaled intermediate its ends for free rotation on said support, the opposite end portions of said spindle being unsupported and projecting in opposite directions from said support in an overhanging relationship thereto, means on one of said overhanging end portions secured thereto and arranged for demountably holding a roll of wound material in ribbon form, and a friction device upon the other overhanging end portion of said spindle for controlling the rotation of the spindle and also the tension of the ribbon during un-

winding of the ribbon from a supply roll when said roll is mounted upon the holding means therefor, said friction device comprising a pulley fast to the spindle, a band surrounding a portion of the periphery of said pulley and having a weighted end, and means secured to the other end of said band and adjustable for varying the braking action of said band upon said pulley.

4. An unwinding device comprising an upright support member, a rotatable shaft journaled intermediate its ends for free rotation in the upper end portion of said support member, the opposite end portions of said shaft being unsupported and projecting in opposite directions from said support member in an overhanging relationship thereto, means on one of said overhanging end portions secured thereto and arranged for frictionally holding a supply roll of paper ribbon in fixed relationship to the shaft whereby the shaft will be rotated as the paper ribbon is unwound from a supply roll when such roll is positioned upon said holding means, and a friction device upon the other projecting end portion of said shaft for controlling the rotation of both the shaft and the supply roll, said friction device comprising a pulley fast to the associated end portion of the shaft, an arm pivotably mounted upon the shaft between said pulley and the support member for independent rotary movement into different angularly adjusted positions about the shaft, a flexible band secured at one end to said arm, said band extending around in frictional engagement with a portion of the arcuate upper surface of the periphery of said pulley and having a weighted lower end, and means yieldably holding said arm in any of its adjusted positions, said arm being rotatable manually into the different adjusted positions for varying the arcuate extent of contact of the band with the arcuate upper surface of the pulley.

5. An unwinding device comprising an upright arm, a rotatable shaft supported intermediate its ends for free rotation in the upper end portion of said arm, the opposite end portions of said shaft being unsupported and projecting in opposite directions from said arm in an overhanging relationship thereto, means on one of said overhanging end portions of said shaft secured thereto and arranged to demountably receive and frictionally hold a roll of wound material in a fixed relationship to said shaft, said means comprising a central hub having a circular head member at the inner end only of the hub, and a friction device upon the other overhanging end portion of said shaft for controlling the rotation of the shaft and also the tension of the material during unwinding of the material from a supply roll when mounted upon said hub, said friction device comprising a pulley fast to the shaft, a band surrounding a portion of the periphery of said pulley and having a weighted end, a pivoted arm secured to the other end of said band and adjustable for varying the braking action of said band upon said pulley, and spring means associated with said arm for holding said arm in any of its different adjusted positions.

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