Jan. 28, 1930. H. BLOUNT 1,744,739

MATERIAL SPOOLING APPARATUS

Filed Dec. 22, 1925

Fig. 1.

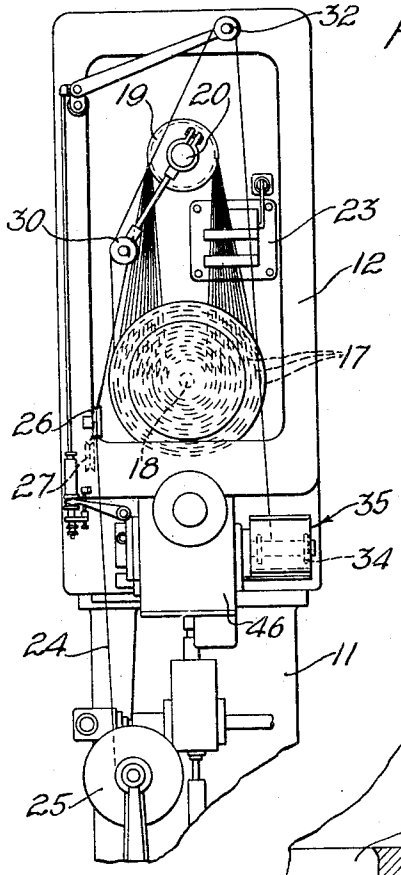


Fig. 3.

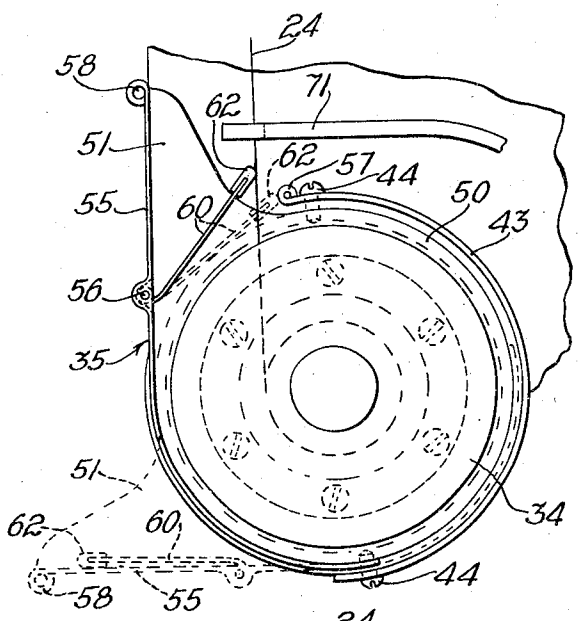
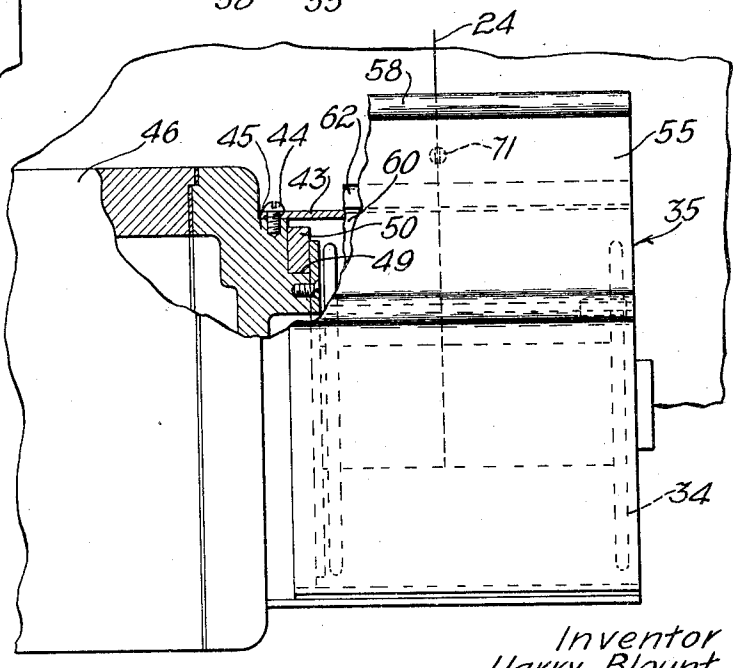


Fig. 2.



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UNITED STATES PATENT OFFICE

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MATERIAL-SPOOLING APPARATUS

Application filed December 22, 1925. Serial No. 76,955.

This invention relates to material spooling apparatus, and more particularly to an improved guarding device therefor.

The principal object of the invention is to provide a simple, inexpensive, and efficient device for guarding a take-up element of a material spooling apparatus.

In accordance with the general features of the invention, there is provided an improved take-up spool guard particularly useful in high speed wire drawing apparatus, and comprising a pair of substantially semi-cylindrical sections cooperating to form an enclosure for the spool, having an opening between the sections for the entrance of a wire being spooled. A freely swinging gate held in an open position by the wire during the normal operation of the take-up spool immediately drops to completely close the opening when the wire breaks, thereby confining the free end of the wire within the guarded enclosure and also preventing the escape therefrom of any small pieces of the wire which may be produced from the end portion thereof due to its engagement with sharp edges during the rapid rotation of the spool.

It is believed that the invention will be clearly understood from the following description taken in connection with the accompanying drawing illustrating one embodiment thereof and in which,

Fig. 1 is a front elevation, partly broken away, of a wire drawing apparatus embodying the features of the invention;

Fig. 2 is an enlarged fragmentary view, partly in section, of a portion of Fig. 1, showing the improved guard for the take-up spool, and

Fig. 3 is an end view looking toward the left of Fig. 2.

Referring now to the drawing in detail and particularly to Fig. 1 thereof, the numeral 11 indicates, generally, a framework for supporting the various elements of a wire drawing apparatus embodying the features of this invention. Rotatably mounted in a compartment 12 supported by the framework 11 are a plurality of integral capstans 17, 17 of gradually increasing diameters. The capstans 17 are secured to a horizontal shaft 18 which is journaled in suitable bearings formed in the compartment 12 and driven by an electrical motor or other suitable source of power (not shown). Mounted above the shaft 18 are a plurality of sheaves or guide rolls 19, 19 which are independently rotatable upon a horizontally disposed shaft 20 suitably supported within the compartment 12. For a detailed illustration and description of the sheaves 19, capstans 17 and the driving mechanism for the latter, reference is made to Patent 1,598,937 to John N. Selvig, September 7, 1926. The details of this construction have been omitted from the present application for the sake of simplicity, since a full disclosure of the particular construction of the sheaves, capstans and driving mechanism is not essential to a complete understanding of the present invention.

Mounted intermediate the capstans 17 and the sheaves 19 is a die holder 23 which carries a plurality of wire drawing dies (not shown) of gradually decreasing diameters. A supply of wire 24 to be reduced in diameter is carried by a supply spool 25 suitably mounted near the bottom of the framework 11. The wire 24 is guided from the supply spool 25 over and under guide pulleys 26 and 27, respectively, and then over the rear guide roll 19 and through the first reducing die carried by the die holder 23. The wire is then wound once around the capstan 17 of smallest diameter, after which it is passed upwardly and over the next sheave 19, through the next reducing die, and around the next capstan, etc., until it is finally drawn down to the correct diameter by the last reducing die. From the last reducing die the drawn wire is passed around the capstan 17 of largest diameter, after which it is guided by pulleys 30 and 32 to a take-up spool 34 driven by suitable mechanism mounted in a housing 46.

The take-up spool 34 is enclosed in a substantially cylindrical guard 35, comprising a semi-cylindrical stationary member 43 and a substantially semi-cylindrical movable member 55. The member 43 is secured in any suitable manner, as by means of screws 44, to a circular raised portion 45 formed on the end face of the housing 46. Rotatably

mounted upon another circular raised portion 49 also formed on the end face of the housing 46 is an annular member 50 provided with a tongue 51 projecting therefrom, which tongue extends upwardly when the guard is in its normal or closed position, as shown in Figs. 2 and 3. The movable member 55 of the guard 35 is secured to the annular member 50 and extends from the end of the tongue 51 to a point just overlapping the lower edge of the stationary guard member 43, when the guard is in its normal or operative position. To remove or replace the take-up spool 34, the guard member 55 is rotated counterclockwise by pressing outwardly and downwardly upon the upper end thereof until it assumes the position indicated in dotted outline in Fig. 3.

Referring to Fig. 3, it will be observed that the upper ends of the guard members 43 and 55 are spaced apart to provide a rectangular opening therebetween through which the wire 24 guided by distributor fingers 71 enters the guard to be wound upon the take-up spool 34. The upper ends of the guard members 43 and 55 are each provided with a reinforcing rolled bead indicated at 57 and 58, respectively, thereby providing against any sharp edges at points where the wire enters the guard.

Pivotally secured to the guard member 55, as indicated at 56, is a rectangular gate or flap 60, the free end of which is adapted to engage the upper end 57 of the guard member 43 to completely close the opening between the guard members 43 and 55. During the normal operation of the spooling apparatus, the free end of the flap 60 bears against the wire being spooled and is thereby held open, as shown in Fig. 3. A strip 62 of fibre or other suitable material, is secured to the free end of the flap 60 to prevent any damage to the wire due to its frictional engagement therewith. As the wire on the spool builds up, the flap is swung to the left by the moving wire and when the wire breaks, the free end of the flap instantly drops into engagement with the upper end 57 of the guard member 43, as shown in dotted outline in Fig. 3, thereby confining the free end of the wire within the guarded enclosure.

In the operation of spooling drawn wire, which is usually done at a high speed, the wire may sometimes break due to various causes, which breakage immediately accelerates the rotation of the take-up spool. This causes the free end of the wire wound on the spool to be swung with great force against sharp edges presented by adjacent members of the apparatus which may in some instances cause the wire to be severed into small sections which are scattered, thus constituting a source of danger to the attendants. Such danger is eliminated by a guard embodying the features of this invention since upon breakage of the wire being spooled, the flap 60 immediately closes, as hereinbefore described, whereby any small pieces of wire that may become severed from the free end of the wire are confined within the guarded enclosure and are thereby prevented from being scattered about in the surrounding atmosphere, thus eliminating any possible danger which might otherwise result therefrom.

Although the invention as herein illustrated and described is particularly well adapted for use in connection with a wire drawing apparatus, it should be understood that the novel features thereof are capable of other applications and the invention should be limited only by the scope of the appended claims.

What is claimed is:

1. A device for guarding a take-up element of a material spooling apparatus, comprising a member designed to substantialy surround the peripheral surface of the element and having an opening therein for the entrance of the material being spooled, and a swinging gate controlled by the material for closing said opening due to its co-operation with said member and permitting the material to move freely across the face of the take-up element.

2. A device for guarding a take-up element of a material spooling apparatus, comprising a plurality of co-operating sections arranged to substantially surround the peripheral surface of the element, one of said sections being pivotally mounted and designed to be spaced from an adjacent section by the material being spooled, and gravity actuated upon the discontinuance of the material to close the space between the sections.

3. A device for guarding a take-up element of a material spooling apparatus, comprising a pair of co-operating sections aranged to substantially surround the periperal surface of the element and adapted to be shifted around each other to permit replacement of the take-up element, said sections being spaced apart to provide an opening therebetween for the entrance of the material being spooled, and means controlled by the material being spooled for controlling said opening.

4. A device for guarding a take-up element of a material spooling apparatus, comprising a pair of co-operating concentric sections arranged to substantially surround the peripheral surface of the element and rotatable with respect to each other, said sections being spaced apart to normally provide an opening therebetween for the entrance of the material being spooled, and pivoted means operated in response to a break in the material for closing said opening.

5. A device for guarding a take-up element of a material spooling apparatus, comprising a pair of cooperating sections arranged to substantially surround the peripheral surface

of the element, said sections being normally spaced from each other to provide an opening therebetween for the entrance of the material being spooled, means controlled by the material being spooled for controlling said opening, and means for moving the sections with respect to each other to permit replacement of the take-up spool.

6. A device for guarding a take-up element of a strand material spooling apparatus, comprising a pair of substantially semi-cylindrical members cooperating to substantially surround the peripheral surface of the element, the ends of said members being normally spaced from each other to provide an opening for the entrance of the strand being spooled, and a gate pivoted to one of the members and engaging the strand, said gate actuated in response to a break in the strand to close the opening.

7. A device for guarding a take-up element of a strand material spooling apparatus, comprising a member designed to substantially surround the peripheral surface of the element, and a swinging gate pivoted thereto at one end and its free end resting against the material being spooled, said gate operated upon a discontinuance of the material to complete the surrounding of the element.

8. A device for guarding a take-up element of a material spooling apparatus, comprising a member designed to substantially surround the peripheral surface of the element and having an opening therein for the entrance of the material being spooled, and a pivotal gate mounted on said member for closing said opening upon an interruption in the material.

9. A device for guarding a take-up element of a material spooling apparatus, comprising a pair of co-operating sections spaced apart to provide an entrance for material being spooled and rotatable with respect to each other, and means free to follow the movement of the material being spooled for closing said entrance.

10. A device for guarding a take-up element of a material spooling apparatus, comprising a pair of co-operating sections arranged to substantially surround the peripheral surface of the element, the sections being spaced apart to provide an opening therebetween for the entrance of the material being spooled, means for mounting the sections to permit movement of one section relative to the other section to enlarge the opening therebetween, and means mounted on the movable section and operated in response to a break in the material for closing said opening.

In witness whereof, I hereunto subscribe my name this 11th day of December, A. D. 1925.

HARRY BLOUNT.