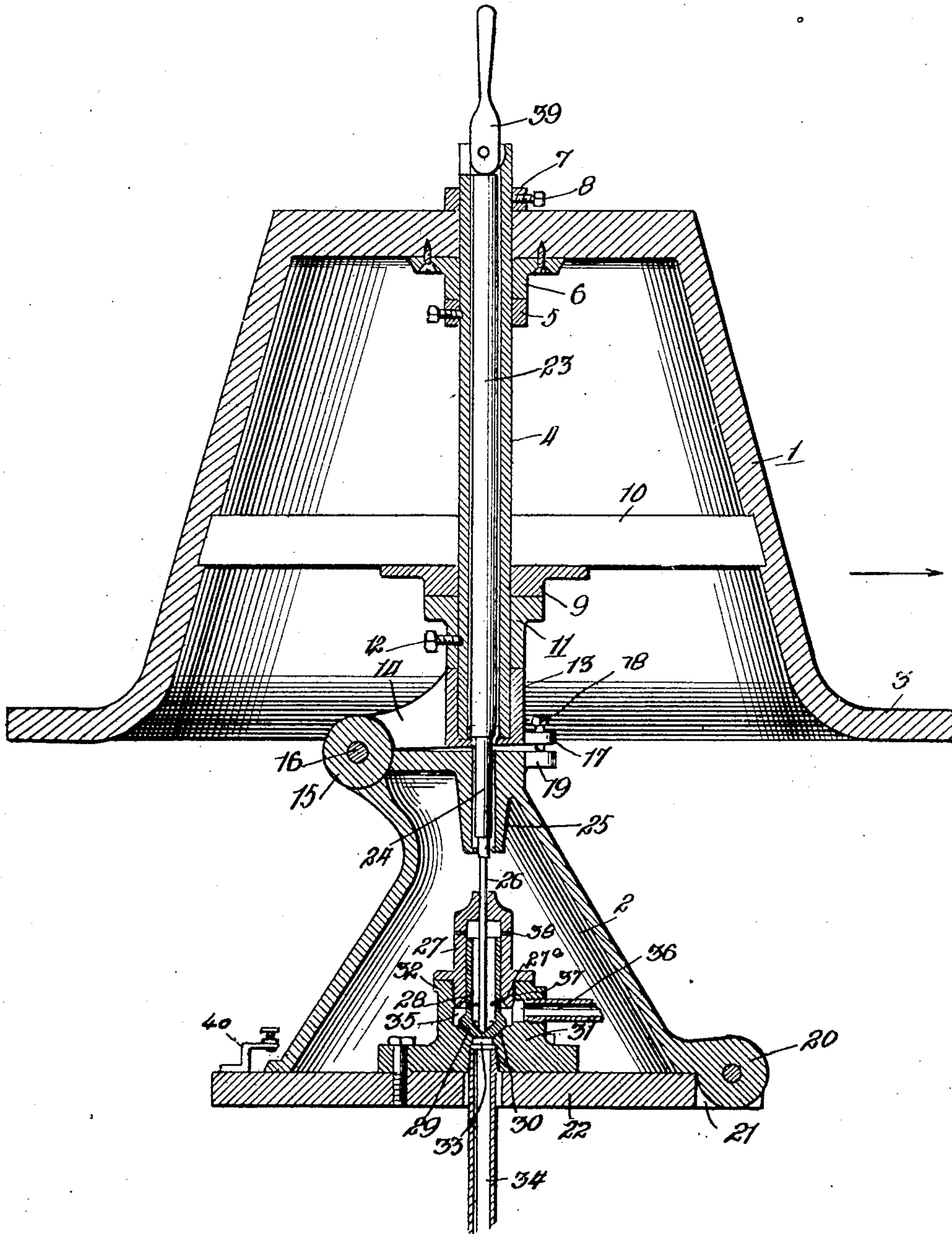


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J. H. REECE.  
AUTOMATIC SAFETY APPLIANCE FOR WIRE REELS.  
APPLICATION FILED JUNE 18, 1907.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC SAFETY APPLIANCE FOR WIRE-REELS.

No. 878,235.

Specification of Letters Patent.

Patented Feb. 4, 1908.

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*To all whom it may concern:*

Be it known that I, JUAN H. REECE, a citizen of the United States, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Automatic Safety Appliances for Wire-Reels, of which the following is a specification.

In the operation of drawing wire in wire factories, grave accidents and injuries sometimes happen by reason of the fact that an operator or employee in the factory becomes entangled in a strand of wire during its progress from the reel to the wire drawing block. Ordinarily the wire is fed along with great rapidity, so that in case of emergency it is impossible to stop the mechanism in sufficient time to prevent serious injury.

The object of the present invention is to provide the reel, from which the wire is fed through the die block, with suitable automatic appliances, whereby the revoluble drawing block, which draws the wire rapidly through the die block, will be quickly stopped and the tension of the wire relieved in case of emergency. This stopping of the wire is effected by abnormal tension exerted by the wire as it leaves the reel, which of course would be the situation in the event of an accident whereby the operator or employee became entangled in the traveling wire. This renders the operation of wire drawing much safer and enables the employees to handle the wire without apprehension of danger and injury.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

The drawing illustrates a longitudinal sectional elevation of a wire reel embodying the features of the present invention.

The reel comprises a rotary tapered carrier 1 and a stationary supporting standard 2. The rotary carrier is of the usual type and is provided with an outwardly extending shelf or ledge 3 at its lower periphery, which is intended to receive a bundle of wire preparatory to the drawing operation. The rotary carrier is journaled upon a fixed tubular center post 4, which is provided with a stationary ring or collar 5, which provides a frictional bearing for a flanged sleeve 6, which is secured to the center portion of the rotary carrier. The latter is maintained in its proper position upon the standard by

means of an outer collar 7, which is positioned on the standard by means of a set screw 8, or in any other suitable manner. In addition to the upper sleeve 6, the carrier is provided with a hub 9, which is secured to the wall of the carrier by means of radiating braces 10, which hub abuts against a fixed collar or ring 11 on the standard, which is suitably positioned by means of a set screw 12. The lower end of the tubular standard is entered into a socket member 13, which, at its upper end, abuts against the lower edge of the collar or ring 11, and the tubular member is provided, on the left or rear side, with a tongue 14, which is journaled between ears 15 on the standard for the reel, by means of a pin or pivot 16, which arrangement permits the entire carrier and standard to be tilted back in order to receive a bundle of wire without the necessity for lifting the wire up to the level of the top of the raised carrier. The socket member on the side opposite the tongue 14, is provided with a forwardly projecting lip 17, through which is entered a set screw 18, which forms in effect an adjustable stop or abutment and coincides with a companion lip 19 outwardly projecting from the forward side of the reel standard. The reel standard is of upwardly tapering formation and is provided, at its forward side, with a tongue 20, which depends below the edge of the standard and is hinged or pivoted within a slot 21 in the periphery of a bed plate 22, which arrangement permits the entire reel, including its standard, to be tilted forwardly in a direction in line with the travel of the wire, which direction is indicated by the arrow.

The tubular standard has mounted thereon an upper plunger rod 23, the lower end of which normally bears against an intermediate plunger rod 24, which is slidably mounted within a depending sleeve 25 integrally formed in line with the center of the standard. The intermediate plunger rod 24 bears against a lower valve stem 26 of reduced diameter, which valve stem is slidably entered into a valve casing 27, within which is located a tubular valve member 28, through the center of which the valve stem passes. The valve member terminates at its lower end in an enlarged head 29, which is normally held in contact with a beveled seat 30, formed in the center of a valve base portion 31, which is cast with or secured to



the center of the bed plate by bolts or other suitable means of attachment. The base portion of the valve is provided with a neck 32, into which the lower end of the valve casing is screwed. The beveled valve seat merges into an inlet port 33, into which is entered a pressure pipe 34 leading to a suitable source of fluid pressure, such as compressed air.

Below the end of the valve casing, and within the valve base portion, is a valve chamber 35 of suitable size to permit the upward movement of the enlarged valve head 29, and into the valve chamber is entered a pressure pipe 36, which leads to suitable mechanism for controlling the operation of the wire drawing machinery. The tubular headed valve 28 is provided, above the head, with a plurality of vent openings 37, so positioned with respect to the head that when the head is raised to permit the inflow of pressure the vent openings will be closed by the surrounding walls of the valve casing, and the contact of the enlarged head 29 against the beveled seat 27<sup>a</sup> on the end of the casing 27. The vent holes 37 cooperate with suitable vent holes 38, in the wall of the valve casing, above the upper end of the movable valve chamber, when in lowered position. The plunger rod 23 is normally held against the upward pressure of the valve by means of an eccentrically mounted hand lever 39 in the upper end of the tubular post.

In use, when it is desired to insert a bundle of wire onto the reel, preparatory to drawing, the reel is tilted backward upon the pivot 16, the standard remaining in normal position, and this rearward tilting automatically stops the wire drawing mechanism, by reason of the fact that the plunger rod 23 will be lifted out of contact with the lower plunger rod 24, whereby the pressure on the valve head 29 will be relieved and the valve unseated by the pressure beneath it, which permits compressed air or other medium to escape from the pipe 34 through the valve chamber 35 and into the pipe 36, whence it will be carried to suitable pressure operated mechanism for stopping the drawing blocks, or such mechanism as it may be found desirable to stop by the action of fluid pressure. After the wire bundle has been inserted on the reel, the latter will be tilted back into normal position, which position can be regulated, if desired, by means of the adjustable set screw 18. With the parts in the normal position shown in the drawing, the weight of the rotary wire carrier will serve to hold the pressure valve closed, and this condition will pertain at all times during the operation of the reel, unless an accident should happen whereby additional forward tension is exerted by the wire against the reel, as, for instance, in case the arm or leg of an operator or employee should become entangled in the

traveling wire, and this forward pressure will cause the entire reel, including the carrier and standard, to be tilted forward upon the hinge 20, and this tilting forward will break the connection between the lower plunger rod 24 and the valve stem 26, whereby the valve will be allowed to rise and pressure to enter the pipe 36, in the same manner as heretofore described. By an arrangement of double joints in the superimposed plunger rods, the valve can be allowed to rise by a movement of the parts in either direction, so that the wire drawing machinery will be always thrown out of commission in all cases in which is it desirable to stop the mechanism.

Although a pressure valve mechanism has been heretofore described, it is clear that a substantially similar result could be obtained by the use of an electrical contact of the general character shown in the drawings and numbered 40. Such contact can be suitably positioned to close an electrical circuit by an upward movement of the lower rim of the standard, and it is obvious that the wire drawing mechanism can be thus controlled by the electrical rather than pneumatic action, if so desired. The safety appliance of the present invention is highly desirable in that it is entirely automatic and instantaneous in its operation, which is a matter of vital importance, in view of the fact that the wire travels at a very high rate of speed, so that even a momentary delay in stopping the travel of the wire might result in loss of life or limb.

What I regard as new and desire to secure by Letters Patent is:

1. A wire reel, comprising a supporting member, a standard hinged at its lower forward side to the supporting member, an upright post hinged to the rear upper side of the standard, both hinged members hinged so as to tilt in a vertical direction, a rotary carrier journaled on the post, a plunger rod extending through the center of the post, a lower plunger rod slidably mounted in the standard and adapted to be normally depressed by the upper plunger rod, and a valve connected to the supporting member and located immediately below and in line with the lower plunger rod and having the valve stem normally in contact with said plunger rod for holding the valve seated, whereby the valve may be opened by moving the carrier on its hinge or the standard on its hinge and pressure allowed to flow through the valve, substantially as described.

2. A reel, comprising a fixed supporting member, a supporting member hinged thereto, a carrier rotatably mounted with respect to the hinged member and adapted to be tilted therewith in a vertical direction, a valve connected with the fixed supporting member for controlling the flow of pressure,



and a valve controlling member adapted to be raised when not subjected to pressure and adapted to be depressed by the weight of the carrier and hinged supporting member when  
5 in operative position, substantially as described.

3. A reel comprising a fixed supporting member, a supporting member hinged thereto, a carrier rotatably mounted with respect  
10 to the hinged member and adapted to be tilted therewith in a vertical direction, a valve connected with the fixed supporting member for controlling the flow of pressure and adapted to be normally raised and  
15 adapted to be depressed by the weight of the carrier and hinged supporting member when in operative position, substantially as described.

4. A reel, comprising a fixed supporting  
20 member, a supporting member hinged thereto, a carrier rotatably mounted with respect to the hinged member and adapted to be tilted therewith in a vertical direction, a valve connected to the fixed supporting  
25 member and located below the carrier and in alinement with the axis thereof, a valve stem upwardly projecting from the valve and a member movable with the hinged supporting member and adapted to contact  
30 and depress the valve stem when the hinged member and carrier are moved to operative position, substantially as described.

5. A reel comprising a fixed supporting member, a standard hinged at its lower forward side to the supporting member, an upright post hinged to the rear upper side of the  
35 standard, both hinged members hinged so as to tilt in a vertical direction, a rotary carrier journaled on the post, a pressure valve connected with the supporting member normally open to permit the flow of pressure, and means adapted to close the valve when the two  
40 hinged sections are in vertical position and adapted to release the valve when either section is tilted in a vertical direction, substantially as described.

6. A reel comprising a fixed supporting member, a standard hinged at its lower forward side to the supporting member, an upright post hinged to the rear upper side of  
50 the standard, both members hinged so as to tilt in a vertical direction, a rotary carrier journaled on the post, a plunger rod slidably mounted in the standard and adapted to be held depressed by the weight of the post and  
55 the carrier when said post and carrier are swung in vertical position, and a valve connected to the supporting member and located immediately below and in line with the plunger rod and having the valve stem normally in contact with said plunger rod for  
60 holding the valve seated, whereby the valve may be opened by moving the carrier on its hinge or the standard on its hinge and pressure allowed to flow through the valve, substantially as described.

7. A reel, comprising a fixed supporting member, a hollow standard hinged at its lower forward side to said supporting member, an upright post hinged to the rear upper  
70 side of the standard, both hinged members hinged so as to tilt in a vertical direction, a rotary carrier journaled on the post, a plunger rod slidably mounted in the standard and adapted to be held depressed by the  
75 weight of post and carrier when said post and carrier are in vertical or untilted position, and a valve connected to the fixed supporting member and located within the hollow hinged standard and immediately below  
80 and in line with the lower plunger rod and having the valve stem normally in contact with said plunger rod for holding the valve seated whereby the valve may be opened by moving the carrier on its hinge or the standard  
85 and on its hinge and pressure allowed to flow through the valve, substantially as described.

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