

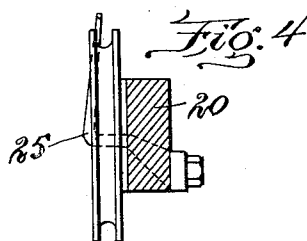
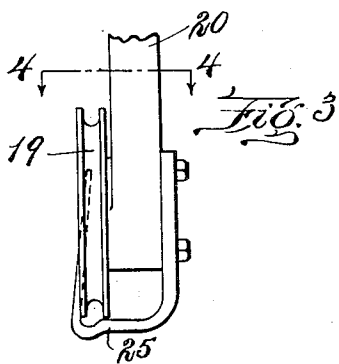
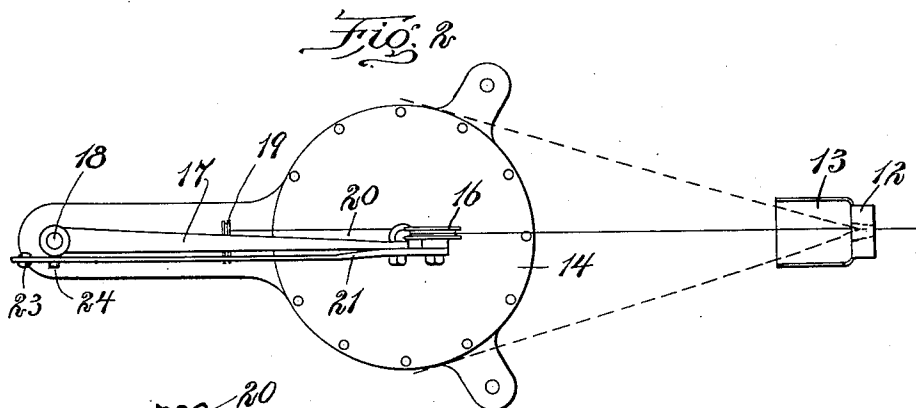
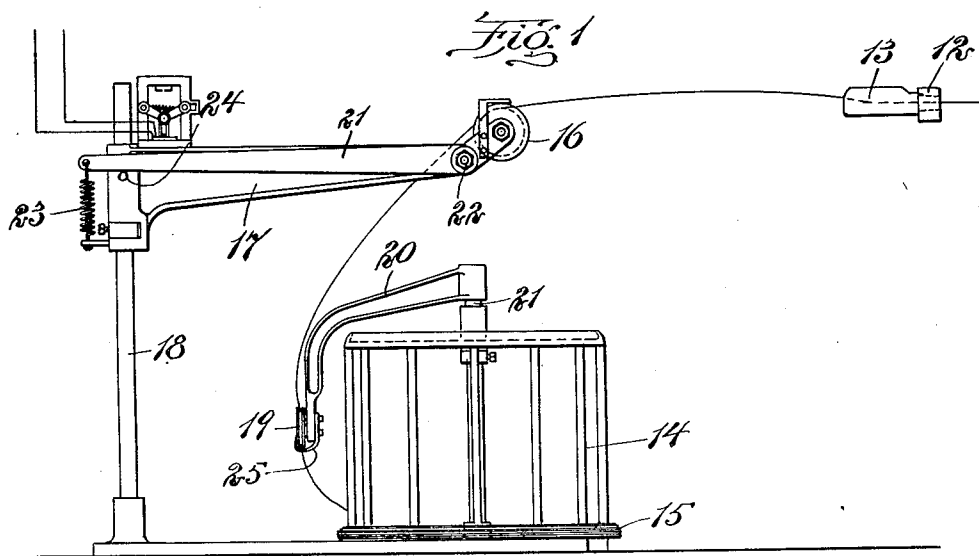
J. A. HORTON.

WIRE DRAWING MACHINE AND UNCOILING APPLIANCE THEREFOR.

APPLICATION FILED APR. 18, 1906.

960,016.

Patented May 31, 1910.



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UNITED STATES PATENT OFFICE.

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WIRE-DRAWING MACHINE AND UNCOILING APPLIANCE THEREFOR.

960,016.

Specification of Letters Patent. Patented May 31, 1910.

Application filed April 18, 1906. Serial No. 312,288.

To all whom it may concern:

Be it known that I, JAMES A. HORTON, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Wire-Drawing Machines and Uncoiling Appliances Therefor, of which the following is a specification.

This invention relates to wire-drawing machines, and has especial reference to the means for delivering the wire or the rod which is reduced to wire by the action of the machine, to a drawing-die.

It is customary to provide a holder for grease or other lubricating material, adjacent to the die which effects the first reduction of the rod, the holder being arranged so that the rod in entering the die passes through the lubricating material contained in the holder. If the rod is allowed to pass through the holder for the lubricant in a path from which there is practically no deviation, the rod will wear or otherwise displace the lubricating material in such manner as to form a groove or tunnel therein. When this tunnel is formed, the wire will not have sufficient contact with the lubricant to insure its proper lubrication.

One object of the present invention is to prevent this difficulty and to provide for a lateral swinging movement of the wire as it passes through the lubricant, thus causing the wire to deviate from a single straight path of the diameter of the wire, and so move through the lubricant as to insure adequate lubrication of its surface.

Another object of the invention is to provide for the automatic separation from a coil, of each convolution thereof, in such manner as to impart to the wire a very slight or gradual twist, the twist being the same that is provided by the usual hand operation of delivering or leading-in the convolutions from a coil, the operator lifting each convolution and delivering it toward the die with a rotating motion, which imparts one twist to each convolution of the wire. This twist is desirable, because of the fact that the wire rods are seldom, if ever, cylindrical in cross-section, but are usually slightly oval. If the rod is not thus twisted during the leading-in operation, the ends of the major axis of its cross-section always strike the die in the same place, and soon

wear the die out of round. My invention enables this leading-in operation to be automatically performed, and dispenses with the services of an operator for this purpose.

The invention also has for its object to enable the automatic leading-in mechanism to be utilized for stopping the wire-drawing, in case of a tangle in the coil from which the wire is being drawn.

To these and other related ends, the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a side elevation, showing a portion of a wire-drawing machine, including my improved uncoiling appliance. Fig. 2 represents a top plan view of the same. Fig. 3 represents an enlargement of a portion of Fig. 1. Fig. 4 represents a section on line 4—4 of Fig. 3, and a plan view of the parts below said line.

The same reference characters indicate the same parts in all the figures.

In the drawings,—12 represents a wire-drawing die, which may be one of a series of dies employed in a continuous machine, or it may be an independent die.

13 represents a receptacle for grease or other lubricant, located at the receiving side of the die, in position to subject a rod or wire entering the die to contact with lubricating material, the rod or wire passing through the holder.

14 represents a holder for a coil of wire rod or wire to be delivered to the die. In the embodiment of my invention shown herein for purposes of illustration, the holder 14 is a stationary drum, the periphery of which is surrounded by the coil 15, a suitable support being provided, below the periphery of the drum, to sustain the weight of the coil. In uncoiling, the leading convolution passes upwardly, over the top of the drum, and thence to the die, through the lubricant-holder.

In carrying out my invention, I provide means for swinging the stretch of wire passing from the coil-holder to the die, in such manner as to cause the portion of the wire within the lubricant-holder to move laterally in the said holder, and thus insure adequate lubrication of the wire before it enters the die. The best means known to me for

giving the wire this swinging motion comprise a guide 16 formed as a pulley, journaled in a suitable bearing supported by an arm 17, which is mounted to swing on a suitable support, such as a fixed standard 18 adjacent to the coil-holder 14. The bearing in which the guide 16 is journaled is preferably adapted to be moved independently of the arm 17, by an abnormal strain on the wire, for a purpose hereinafter described. The arm 17 is adapted to oscillate to such an extent as to permit the guide 16 to swing across the upper end of the coil-holder 14, and from side to side of the holder.

In this embodiment of my invention, a fixed coil-holder being employed, a revolving guide 19 is provided to engage the wire as it leaves the coil, said guide being adapted to revolve about the coil-holder, and follow the wire as it separates from the coil. The guide 19 is preferably a pulley journaled in the outer end of an arm 20, which is fixed to a shaft 21 journaled in bearings at the upper and lower portions of the coil-holder. The wire passes from the guide 19 to the guide 16, and from the latter to the die. As the wire rises from the coil, it causes the revolution of the guide 19, and this in turn causes the guide 16 to swing or reciprocate laterally and thus impart a swinging movement to the stretch of wire between the coil-holder and the die. This operation, besides insuring a sufficient lubrication of the wire, imparts a twist to the wire, similar to that imparted by the hand operation of leading-in.

The independently movable bearing in which the guide 16 is journaled is preferably the shorter arm of a lever 21, which is fulcrumed at 22 to the swinging arm 17. To the longer arm of the lever 21 is connected a spring 23 (for which a weight may obviously be substituted), the object of said spring being to normally hold the guide 16 in a predetermined position, the longer arm of the lever 21 bearing against a suitable stop 24 affixed to the arm 17. The stress of the spring 23, or its equivalent, is such that when the wire is running under normal conditions, its tension will not overcome the spring. When, however, an abnormal strain is exerted by the wire on the guide, such as would be caused by the untangling of the wire in the coil, the spring yields, permitting the descent of the guide 16 and an upward movement of the longer arm of the lever 21. This movement of the lever may be utilized to stop the wire-drawing machine in any suitable way, such, for instance, as by breaking the circuit, in an electrically driven machine.

25 represents what may be called a separator, which is interposed between the revolving guide 19 and the coil 15, the object

of this separator being to separate the rising convolution engaged with the guide, from the body of the coil, and prevent the lifting of more than the one convolution engaged with the guide. The separator 25 is preferably formed as a hook, one end of which is attached to the arm 20, its other end extending under the guide 19, and being bent upwardly at the opposite side of the arm, a space being preferably left between this end and the arm, for the insertion of the wire. The separator 25, by extending under the guide 19, prevents the wire from dropping out of engagement with said guide, in case of temporary slackening of the tension.

The pulleys forming the guides 16 and 19 are preferably made of a material which is softer than the wire, to prevent abrasion of the wire and of the coating placed thereon to facilitate the passage through the die. Any suitable material may be employed, such as bronze, or a non-metallic material, such as hard wood.

I claim:

1. An uncoiling appliance comprising a coil-holder, and a reciprocable guide adapted to engage and laterally swing the stretch of material passing from a coil on the holder.

2. An uncoiling appliance comprising a fixed coil-holder, a reciprocable guide adapted to engage and laterally swing the stretch of material passing from a coil on the holder and a revolving guide movable in a path substantially concentric with the holder, and engaging the wire between the coil and the reciprocating guide.

3. An uncoiling appliance comprising a coil-holder, a reciprocable guide adapted to engage and laterally swing the stretch of material passing from a coil on the holder, an arm mounted to revolve on a fixed center and having a guide at its outer end movable in a path substantially concentric with the holder, said arm having a separator interposed between the guide and the coil on the holder.

4. An uncoiling appliance comprising a coil-holder, a guide arranged to engage the stretch of material passing from a coil on the holder, and guide-supporting means having provisions for permitting a sidewise movement of the guide to swing the stretch of wire, and a yielding movement of the guide under an increase of strain on the material engaged therewith.

5. In a wire drawing machine, the combination with a wire drawing die, a lubricant-holder adjacent thereto, a guide adapted to engage a stretch of material passing through the lubricant-holder and die, and means for movably supporting the guide, said means having provisions for permitting the guide to oscillate in the directions required to laterally swing the stretch of material in the lubricant-holder.

6. In a wire drawing machine, the combination with a wire drawing die and a lubricant-holder adjacent thereto, of a coil-holder adjacent to the die, and a reciprocable guide
5 adapted to engage and laterally swing a stretch of material passing from the coil-holder to the lubricant-holder and die.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JAMES A. HORTON.

Witnesses:

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