Reeling Mechanism for Wire Rod Rolling Mills

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REELING MECHANISM FOR WIRE ROD ROLLING MILLS.

No. 416,940. Patented Dec. 10, 1889

C. H. MORGAN.

Fig. 1.

Fig. 2.

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REELING MECHANISM FOR WIRE-ROD-ROLLING MILLS.


Application filed June 24, 1886. Serial No. 205,069. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. MORGAN, of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Reeling Mechanism for Wire-Rod-Rolling Mills, which improvement is fully set forth in the following specification.

This invention has reference to the construction of reeling mechanism for use in wire-rod-rolling mills; and its object is to improve such mechanism with a view to facilitating the operation of removing from the reel the rod that has been coined thereon after passing from the furnace through a train of reducing-rolls.

It has been proposed heretofore in the operation of wire-rod rolling to conduct the rod after passing successively between the pairs of rolls constituting a continuous train to a reel having a vertical axis and rotating at such speed as to coil up the rod as fast as delivered from the last rolls of the train, and then, after stopping the reel, to remove the rod by introducing a pair of tongs into the reel and lifting the coil of wire therefrom.

In order to enable the operation of removing the rod to be performed with greater ease and rapidity, and thus to save time in the operation of wire-rod rolling, I propose to construct the reel so that as soon as the rod has been deposited therein it can be lifted clear of the vertical walls or periphery of the reel and held in this position until seized by the tongs and carried away. To accomplish this purpose, the platform or frame upon which the rod is laid in coils and the vertical walls or pins forming the periphery of the reel are so constructed that one can move vertically independently of the other, so that after the rod is deposited either the platform with the rod thereon can be raised clear of the walls or pins or the latter can be dropped, leaving the rod in convenient position to be grasped by the tongs.

The invention may be carried out as follows: The reel is constructed with two platforms, the lower one carrying the vertical pins or walls of the reel and being supported on a hollow shaft, to which rotation is imparted by suitable gearing. The upper platform has a spindle inclosed in said hollow shaft and is free to move vertically independently thereof. When the rod has been deposited and the reel brought to rest, the spindle and platform can be lifted clear of the walls of the reel, and in this position the coil can be readily seized by the workman and carried away. When the rod has been removed, the upper platform can be lowered to its normal position and the reeling of the next rod can proceed with little delay. Any suitable devices or means can be employed to raise and lower the platform. Preferably the spindle is connected with a pneumatic or hydraulic piston, by means of which power is applied at the proper moment to raise the spindle and platform carried thereby. Means are provided whereby the reel can be stopped promptly when the rod has been deposited, and put in motion again when the reeling of the next rod is about to begin.

In the accompanying drawings, which form a part of this specification, Figure I is a plan view of a pair of reels constructed in accordance with the invention, the upper portion of one of the reels being removed; and Fig. II is a view partly in elevation and partly in vertical section, the planes of section being indicated by the broken line 11, Fig. I.

As the two reels shown are alike in construction, the corresponding parts have the same letters and figures of reference, and it will be understood that the following description applies to both reels.

A represents the lower platform of the reel mounted on a hollow shaft 1 and provided with the vertical pins or prongs a, forming the outer and inner walls of the reel, between which the rod is coiled. The shaft 1 has a bevel-gear 2, supported in the cross-pieces 3, by the standards e.

Shaft 1 has near its lower end a bevel-gear 4, which engages with a corresponding gear 5, mounted loosely on the main shaft 6. The latter is rotated by a driving-wheel 7, engaging with a gear 8, fast on said shaft. The collar 10 is so mounted on shaft 6 that it turns therewith, but can move lengthwise thereof. It carries a friction-clutch 9, adapted when the collar is moved in the proper direction to engage the loose wheel 5 and cause it to revolve, thereby rotating the reel. The clutch is operated by means of a vertical lever 11,
provided with a pin 12, which enters a groove in collar 10. The lever 11 is pivoted at 13 to the base of the frame-work. When the clutch is disengaged from gear 5, the reel is thrown out of action; but in order to check the momentum of the reel and bring it at once to rest it is necessary to apply a brake. To this end a band 14 is arranged to encircle a collar 15, depending from the bottom of platform A of the reel. The ends of this band are connected with a two-armed lever 16, secured to a vertical rock-shaft 17. The latter is connected by an arm 18 and link 19 to a cross-head 20, pivoted to the vertical lever 11.

Thus the lever is made to operate both the brake and the friction-clutch, simultaneously applying the brake and disengaging the clutch, and vice versa. The lever 11 might be operated by hand or by any desired mechanism. As shown, the cross-head 20 is connected with the rod 21 of a hydraulic or pneumatic piston 22, working in a cylinder 23, provided with the inlet and outlet pipes 24-25. Within the hollow shaft 1 of the reel is a spindle 26, which supports the upper platform B, upon which the rod is deposited as it enters the reel from the guide-pipe 27. The platform B is so constructed and mounted that it can be lifted independently of the platform A, so as to raise the coil of wire rod clear of the pins or prongs a. The platform B may be of any construction suitable for this purpose. As shown, it consists of a number of spokes radiating from a central hub and passing between the vertical pins or prongs a.

Any appropriate means may be employed to lift the platform B; but preferably this is done by hydraulic or pneumatic devices, and such construction is shown in the drawings.

In the lower part of the shaft 1 is a cylinder 28, enclosing a piston 29, whose rod 30 is attached against the spindle 26. A pipe 31 supplies the motive fluid to the cylinder when it is desired to lift the platform B and the coil resting thereon.

In operating the mechanism shown and described the rod, as it comes from the rolls, is conducted by one of the pipes 27 to the corresponding reel. At the proper moment the operator, who may be posted at a safe distance from the reel, sets the latter in motion by opening the proper valve to admit fluid through pipe 28 to the cylinder 23, thus releasing the brake 14 and engaging clutch 9 and gear 5. The parts would then be in the position shown in the drawings. As soon as the rod is deposited the operator reverses the valves, so as to move the piston 29 to the other end of the cylinder, disengaging the clutch and applying the brake 14. The reel then comes to rest, and the next rod is fed to the other reel, and while it is being coiled the operation of removing the rod from the first reel is performed. To accomplish this, the operator admits the liquid or gaseous agent by pipe 31 to cylinder 28, lifting the piston 29, and with it the spindle 26 and platform B, until the latter is clear of the pins a. A workman then grasps the rod with his tongs and removes it. The platform is lowered, and the reel is then ready to receive another rod.

It will be obvious from the foregoing description that modifications may be made in the construction and arrangement of parts without departing from the spirit of my invention, and that parts of the latter may be used without others.

Having thus fully described my said invention and the manner in which the same may be carried into effect, what I claim is—

1. A reeling device for receiving and laying in coils the wire rod as it is delivered from a train of rolls, said reeling device being provided with a platform supporting the coil and capable not only of revolving with said reel, but also of being elevated independently thereof, so as to lift the coil above the periphery of said reel and permit its removal laterally, substantially as described.

2. In a reel, the combination of the upper and lower platforms mounted on concentric vertical shafts, gearing for imparting rotation to both said shafts, and means, such as indicated, for moving one of said shafts lengthwise of the other, substantially as set forth.

3. The combination, with a reel comprising a platform supported on a revolving shaft and carrying pins or prongs within or between which the rod is coiled, of the upper platform comprising a hub and radiating spokes or arms extending between said pins, and means for lifting said platform clear of said pins or prongs and thus facilitating the removal of the rod, substantially as described.

4. The combination of the reel, its shaft, gearing for driving the same, a clutch for throwing the reel into and out of action, a brake, and an operating-lever connected both with said clutch and with said brake, so that the latter is applied when the former is released, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WITNESSES:

PHILIP MAURO,
C. J. HEDRICK.