(No Model.)

C. C. CLIFFORD.

REEL AND TAKE-OFF APPARATUS.

No. 439,114. Patented Oct. 28, 1890.

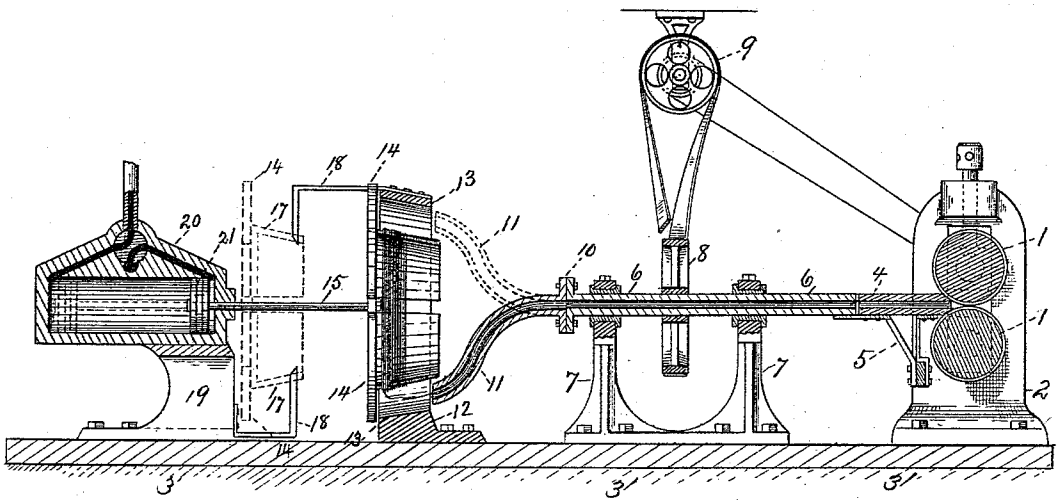


Fig. 1.

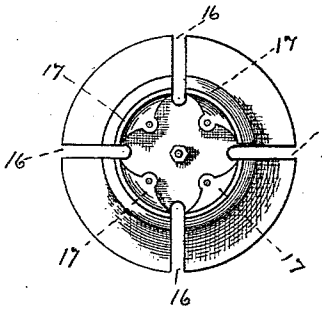


Fig. 2.

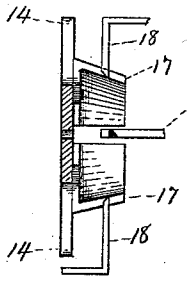


Fig. 3.

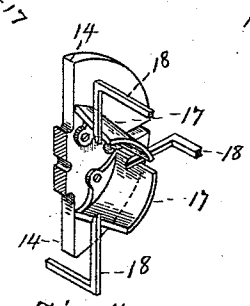


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES C. CLIFFORD, OF SWISSVALE, PENNSYLVANIA.

REEL AND TAKE-OFF APPARATUS.

SPECIFICATION forming part of Letters Patent No. 439,114, dated October 28, 1890.

Application filed December 2, 1889. Serial No. 332,177. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. CLIFFORD, a citizen of the United States, residing at Swissvale, in the county of Allegheny and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Automatic Reel and Take-Off Apparatus, of which improvement the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a central longitudinal section through my entire apparatus, connected with a pair of finishing-rolls. Fig. 2 is a front end view of the back plate of the reel with its attached segmental plates upon which the rod is coiled. Fig. 3 is a side elevation of the reel and take-offs when the reel is in the position shown in the dotted lines of Fig. 1. Fig. 4 is a perspective view of a half of the reel, showing the take-offs entered within the radial slots of said reel.

The purposes of my invention, generally stated, are to substitute automatic devices for manual labor in coiling rods in a wire-mill; second, to so coil the rods and in such laps that the rod will not kink or knot when unwound; third, to insure that the last length of wire as it comes from the rolls will be properly coiled and not stick in the pipe described below, and, finally, to remove the coil of wire expeditiously by machinery from the reel to make way for the second coil.

In Fig. 1, 1 1 are the usual finishing-rolls for wire-rod mills, set in the usual housings 2 upon the mill-floor 3. 4 is the usual guide from the rolls, supported by the bracket 5, bolted to the housings 2. With these parts my invention has nothing directly to do.

6 is a solid hollow shaft rotating in housings 7 7, bolted to the mill-floor. Its rotation is effected by the pulley 8, speeded from the rolls. The internal diameter of the hollow shaft 6 is such as to easily accommodate the passage of rods of any desired diameter. By means of the coupling 10, the hollow shaft 11, preferably in the form of a reverse curve, is rigidly attached to the shaft 6 and partakes of its motion. Bolted by a suitable bracket 12 to the mill-floor is a conical ring 13. Against the back of said ring 13 13 abuts the rear plate 14 of the reel, supported upon the piston-rod 15 bolted thereto. The construction of the plate 14 is best seen in Fig. 2. Extending from its circumference inwardly are any desired number of radial slots 16 16, here four. Bolted to the front face of said plate 14 are segmental plates 17 17, tapering outwardly, which form the core upon which the rod is coiled. The bolts by which plates 17 17 are secured to plate 16 are preferably set in slots in said plate 16, so that the core may be contracted or enlarged, according to the diameter desired for the coil of wire. These segmental plates 17 17 project into the path of the rotating shaft 11 when the rod is being coiled. Sufficient space is left between the segmental plates 17 17 and the ring 13 to accommodate the bundle of wire. Take-offs 18 18, adapted to enter the radial slots 16 16, are rigidly secured to the ring 13 and the housing 19. These take-offs are simply arms of bent metal, as shown in the several figures. Upon the housing 19 is set the cylinder 20, the piston 21 of which may be reciprocated by means of a two-way valve in the usual manner of such valves or in any other way desired. The take-offs 18 18, bolted to the ring 13, also perform the function of keeping the reel-plate 14 from twisting.

The operation of my devices will now be apparent. The rod, as it comes from the rolls and the guide 4, enters the rapidly-revolving tube 6 and passes out through the revolving tube 11 which by its rotation guides it around the reel, where it is closely wrapped around the segmental plates 17 17 on the face of the reel. When the last length of rod comes from the rolls, even if it has lost the forward motion imparted by the rolls, it will not stick in the pipe 6 or 11 on account of their rotation, but will be expelled and wrapped upon the reel, owing to the proximity of the reel and the nozzle. It will be noticed that the coils of the rod are so laid around and upon the reel without any twist by my invention that they will not kink or knot when uncoiled. When the reel is full, steam is applied, and the piston 21 is rapidly drawn back, retracting the reel to the position shown in dotted lines in Fig. 1. The take-offs 18 18, meantime entering the radial slots 16 16, slide or pull the coil of rod off the tapering segments 17 17, and the bundle may be rolled aside. The piston 21 is then advanced to its original position, bearing the reel to re-

ceive a new coil. It will be noted that by my devices the rod is led from the rolls to the reel, wrapped thereon, and the full coil removed therefrom with no manual labor beyond turning the valve, admitting the steam to the cylinder, and carrying away the coils after they have been released from the reel.

Having fully described my invention, I claim—

1. An improved reel for coiling rods, consisting of the conical ring 13, the reel-plate 14, abutting against the back of said ring 13, said reel-plate having the radial slots 16 16, and the segmental plates 17 17, in combination with take-offs adapted to enter the radial slots of said reel-plate and strip off the bundles of wire, all substantially as shown and described.

2. An improved reel for coiling rods, consisting of the conical ring 13, the reel-plate 14, abutting against the back of said ring 13, said reel-plate having radial slots 16 16, and a core to wrap the wire around, in combination with take-offs 18 18 and a reciprocating piston, the rod of which is attached to said reel-plate, all substantially as and for the purposes set forth.

3. The combination of the cylinder, its piston, the reel-plate attached to the rod of said piston, said reel-plate being slotted, as described, and having upon its front face a reel or drum, and the take-offs 18 18, all substantially as and for the purposes set forth.

4. An improvement in the means for coiling and taking off rods, which consists in the combination of the hollow shaft 6 and a hollow shaft 11 coupled thereto, all rotated with a reel consisting of the conical ring 13, the reel-plate 14, abutting against the back of said ring 13, said reel-plate having the radial slots 16 16 and the segmental plates 17 17, the latter in the path of the revolution of the end of the shaft 11, the take-offs 18 18, adapted to enter the radial slots 16 16 of the reel, and a piston adapted to reciprocate, the rod of which is attached to the reel-plate 14, all substantially as shown and described.

5. An improvement in the means for coiling and taking off rods, which consists in the combination of a reel consisting of the conical ring 13, the reel-plate 14, abutting against the back of said ring 13, said reel-plate having the radial slots 16 16 and the segmental plates 17 17, the take-offs 18 18, adapted to enter the radial slots 16 16 of the reel, and a piston adapted to reciprocate, the rod of which is attached to reel-plate 14, all substantially as shown and described.

In testimony whereof I have hereunto set my hand.

CHARLES C. CLIFFORD.

Witnesses:
WM. L. PIERCE,
CHAS. M. JOHNSTON.