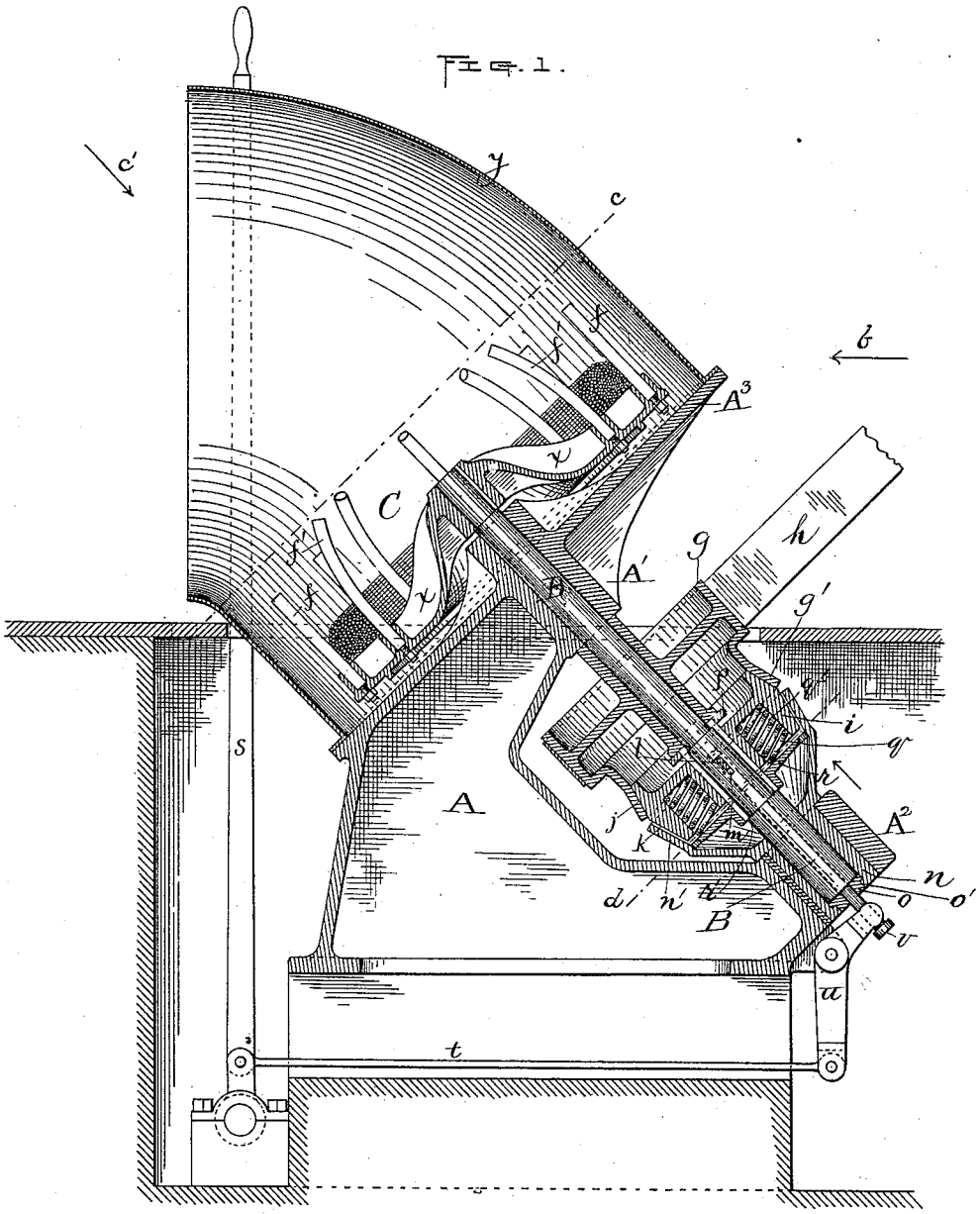
(No Model.) 4 Sheets—Sheet 1.

C. H. MORGAN.

WIRE ROD REELING MACHINE.

No. 381,408. Patented Apr. 17, 1888.

Fig. 1.



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(No Model.)

4 Sheets—Sheet 2.

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FIG. 2.

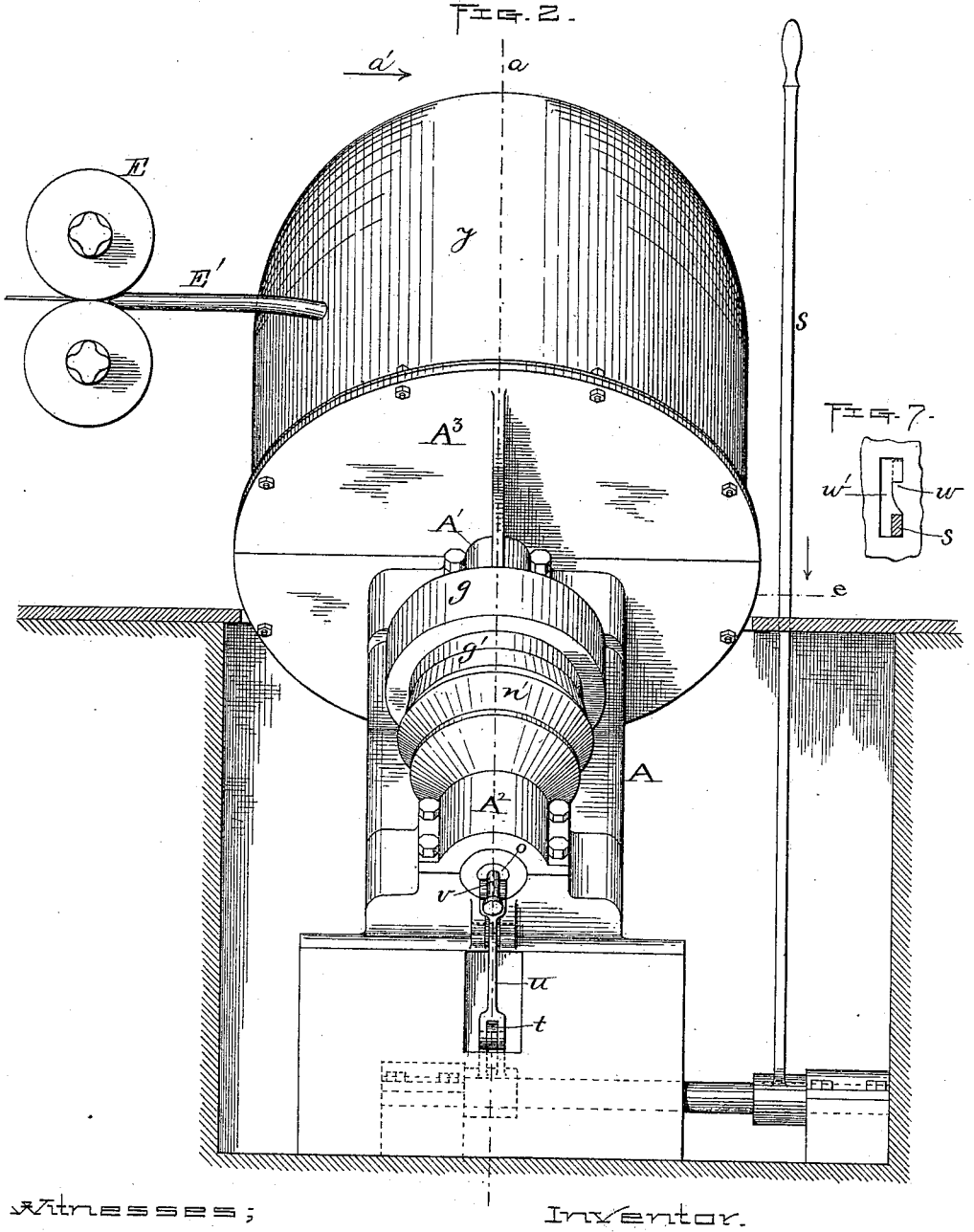

FIG. 7.

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(No Model.) 4 Sheets—Sheet 3.

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FIG. 3

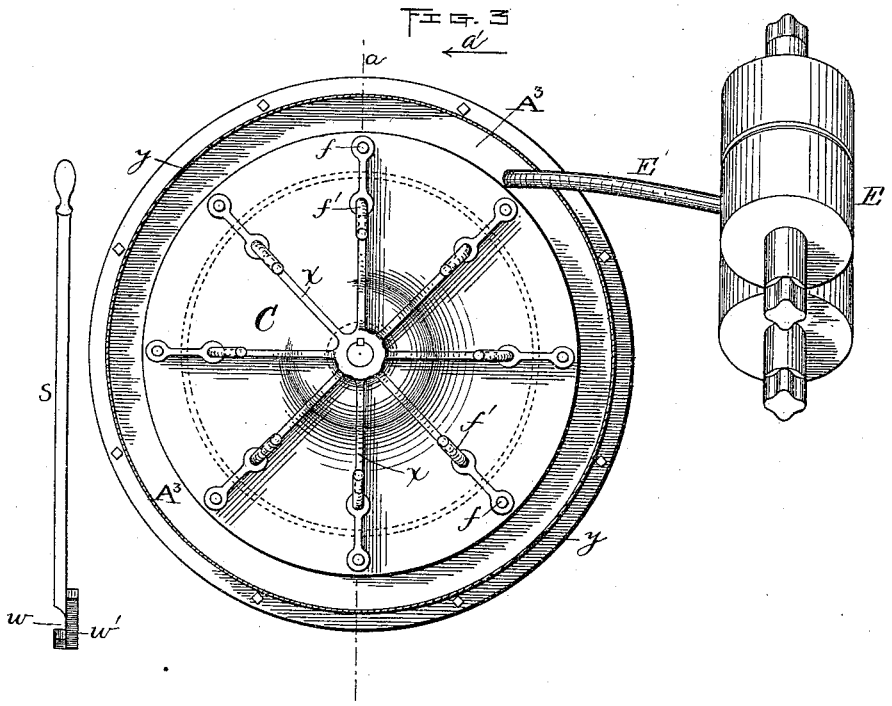
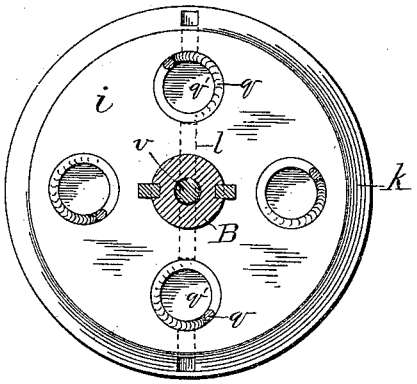


FIG. 4.



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4 Sheets—Sheet 4.

C. H. MORGAN.

WIRE ROD REELING MACHINE.

No. 381,408. Patented Apr. 17, 1888.

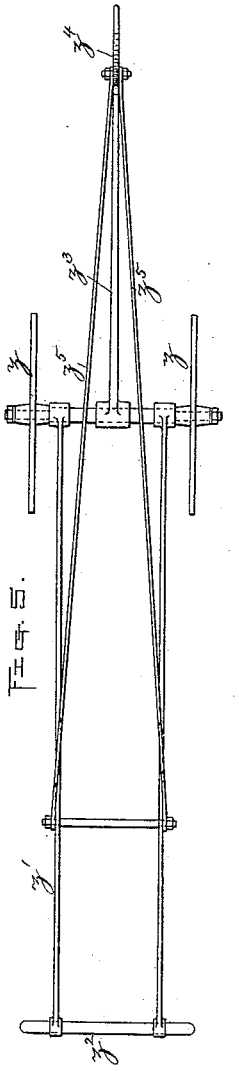

Fig. 5.

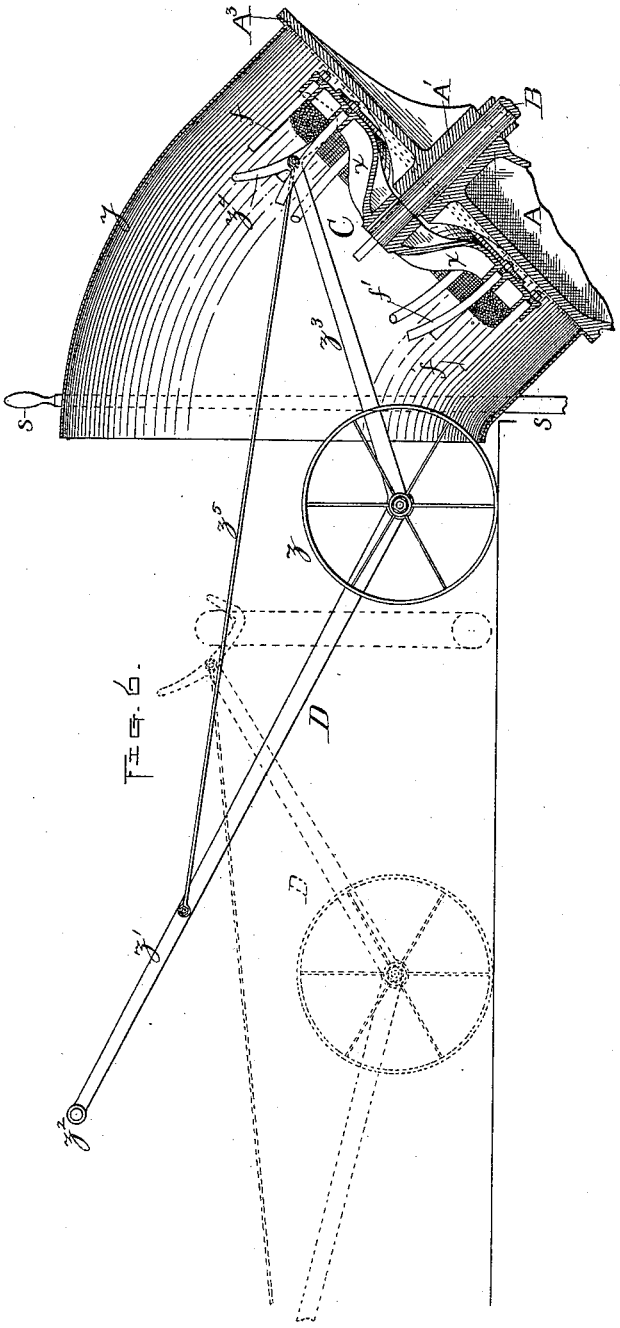

Fig. 6.

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Inventor;
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UNITED STATES PATENT OFFICE.

CHARLES H. MORGAN, OF WORCESTER, MASSACHUSETTS.

WIRE-ROD-REELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,408, dated April 17, 1888.

Application filed January 30, 1888. Serial No. 262,476. (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 certain new and useful Improvements in Wire-Rod-Reeling Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a central vertical longitudinal section of a wire-rod-reeling machine embodying my improvements, taken on lines *a a*, Figs. 2 and 3, looking in the directions indicated by arrows *a' a'*, same figures. Fig. 2 is a back view of said reeling-machine, looking in direction of arrow *b*, Fig. 1, also showing the last set or finishing rolls of a rolling-mill and the usual wire-rod-conducting tube between said rolls and the reel. Fig. 3 is a transverse section through the protecting hood or guard over the reel hereinafter described, taken on line *c*, Fig. 1, looking in the direction of arrow *c'*, showing the reel in plan view and other parts in an oblique angle. Fig. 4 is a transverse section through the reel-shaft and other parts hereinafter described, taken at the point indicated by arrow *d*, Fig. 1. Fig. 5 is a plan view of an apparatus for removing the finished coil, also hereinafter described. Fig. 6 is a similar section to that shown in Fig. 1 of the reel, its hood or guard, a part of the shaft and shipping-lever, and the aforesaid coil-removing apparatus, the latter being shown in side view by full and dotted lines to more fully illustrate the operation of removing the finished coil; and Fig. 7 is a horizontal section through the shipping-lever, taken on line *e*, Fig. 2, showing a simple method of locking said lever at each end of its throw in shipping and unshipping the driving-power to and from the machine.

My invention relates to improvements upon the machine for coiling wire rods patented to me in the United States under two patents, Nos. 224,787 and 224,941, both dated February 24, 1880, also in England, May 25, 1880, No. 4,801; and it consists in making the machine, as hereinafter described, with an inclined reel having a double circular row of spokes or pins, between which the rods may be coiled as they are delivered from the rolling-mill and deposited upon said reel, also with a protecting hood or guard over said reel, and of an improved coil-removing apparatus, the purpose of said improvements being to simplify the construction and coil-removing operation, as well as to afford better protection to the attendants from injury during the coiling operation.

Following is a detailed description of my said invention with reference to the accompanying drawings:

The parts marked A represent the main supporting frame-work of the machine, having suitable inclined bearings, A' A^2, for the inclined reel-shaft B to turn in. To the upper end of said inclined shaft is secured the reel C, upon which the wire rods are coiled as they are delivered from the rolling-mill. Said reel is provided with a double circular row of spokes or pins, *f f'*, fastened thereto at the proper distance apart to receive the coil between them, as indicated in the drawings. The shaft and reel are turned by means of a pulley, *g*, arranged upon said shaft, and which may be connected by a belt, *h*, or otherwise with any suitable and convenient driving mechanism. The driving-power is shipped and unshipped to and from the shaft in the following manner: Upon said shaft adjoining pulley *g* is arranged a friction-hub, *i*, having the two beveled or cone-shaped surfaces *j k* inclined downward longitudinally in opposite directions, for the purpose hereinafter described. Said hub is fastened so as to turn with the shaft and at the same time have a slight longitudinal movement thereon by passing a key, *l*, transversely through said parts and making the slot or opening *m* in the shaft a little longer than the width of said key, as shown in Fig. 1. The hub is arranged between a flaring-shaped flange, *g'*, formed on the side of pulley *g*, and a similarly-shaped flange, *n'*, formed on a hub, *n*, secured to the lower bearing, A^2, of frame A. The lower end of the shaft is fitted and turns in said hub, and is held against downward longitudinal movement by a bearing or collar, *o*, interposed between the bottom of the shaft and an internal holding-flange, *o'*, formed on the hub *n*. If preferred, said collar may be dispensed with and the lower end of the shaft arranged to bear directly against said flange.

The pulley *g* and its flange *g'* are fitted to turn upon shaft B, while the hub *n* and its flange *n'* are fastened rigidly, as above described. Therefore, when the beveled hub *i* on shaft B is made to engage with the flange on the pulley, the driving-power of said pulley, which turns continuously, is transmitted to the shaft, thus rotating the reel; and when said hub *i* is moved in the opposite direction, which disengages it from the pulley and engages it with the stationary flange *n'*, the shaft and reel are at once stopped.

The pulley *g* is held in position longitudinally upon shaft B by the upper end of its hub coming against the upper bearing, A', of frame A and its lower end against a shoulder on the shaft or a collar, *p*, interposed between said hub and shoulder, as shown in Fig. 1.

Hub *i* is operated to thus engage and disengage the driving-power to and from shaft B and reel C in the following manner: A constant upward pressure is produced upon the hub toward the pulley *g* by a series of spiral springs, *q*—four in this instance—disposed in suitable recesses, *q'*, formed preferably in a circle in the under side of said hub *i*, as shown in Figs. 1 and 4, said springs bearing at their upper ends against the hub and at their lower ends against a plate or disk, *r*, keyed to shaft B and held against the pressure of said springs by a shoulder, *r'*, formed on said shaft, against which the hub of said plate or disk bears. (See also Fig. 1.) The hub *i* is drawn away from the rotating flange *g'* and engaged with the stationary flange *n'* to stop the reel by pulling upon the shipper-lever *s* in the direction from the machine, said lever being connected with said hub through the connecting-rod *t*, crank-arm *u*, rod or piston *v*, and the key *l*, before alluded to. The rod or piston *v* is fitted to slide longitudinally in a central opening formed in shaft B. The key *l* is passed through its inner end, and its outer end is engaged with the upper end of the hinged crank-arm *u*, as is shown in Figs. 1 and 2. The construction of the other connections will be understood from said figures without further description thereof. In this instance the shipper *s* is locked when drawn forward, as aforesaid, to unship the power from the shaft and reel by bringing the same back of a stationary shoulder, *w*, as shown by dotted lines in Fig. 7, a slot, *w'*, as well as said shoulder, being formed in the floor for the purpose.

In order that the completed coil may be conveniently removed from the reel C, said reel is provided with a series of radial flanges, *x*, for holding said coil a little above the surface of said reel, as is shown in Figs. 1 and 6. They are in this instance arranged in line with each set of spokes or pins *f f'*, as shown in Fig. 3; but I do not limit myself thereto or to the number and position of said spokes or pins.

A protecting hood or guard, *y*, is employed upon the machine around the reel C, for the purpose of confining the rod within proper limit, and thus protecting the attendants from injury in case short pieces of the rod fly out of the reel during the coiling operation, as will sometimes happen when the rods are rolled from defective material. Said hood is fastened to the outer edges of the circular portion A^3 of frame A coming under the reel, as shown in Figs. 1, 2, 3, and 6, and extends over the top longer than at the bottom, so that the front end thereof is vertical, or substantially so, as shown in Figs. 1 and 6. The reel being thus inclosed, except upon the front side, effectually serves the purpose above described, while at the same time the coil may be conveniently removed, owing to said reel being arranged at an oblique angle, as shown and previously described.

My improved apparatus for removing the finished coil from the reel consists of a truck, D, made with two wheels, *z z*, with a back extension, *z'*, and handle z^2, and with a forward extension, z^3, having the peculiarly-shaped hook z^4 at the outer extremity thereof, adapted to be passed under the coil, as indicated in Fig. 6, preparatory to the removal thereof from the reel. The truck is strengthened upon each side by means of the tie-rods z^5 z^5, extending from the hook z^4 to within a short distance of the handle z^2. The essential feature of this part of my invention consists in applying the hook *z* to the front of said truck. The truck proper may be of any suitable and well-known construction.

The operation of the machine is in brief as follows: Assuming that the driving-pulley *g* is in operation and the reel at rest, said reel is first set in motion by pulling upon the shipper *s* in the right direction to engage the bevel-faced hub *i* with the flange *g'* on said pulley *g* through the connections hereinbefore described. Meanwhile the billet or bar is going through the process of reduction in the rolling-mill, (only the last or finishing rolls E of which is shown,) and by the time the reel is well under way the rod passes out from between said last set of rolls into and through the conducting-tube E', and is projected upon said revolving reel between the two sets of spokes or pins *f f'*, previously described, which catch and carry round said rod as it issues from the conducting-pipe. Upon the coil being finished, the reel is stopped by reversing the shipper. Said coil is then removed from the reel by passing the hooked end of the truck device D under the same, as previously described, then lifting the coil by depressing the outer end of said truck, and finally drawing the truck with the coil suspended from its hook back, as indicated by dotted lines in Fig. 6, thus completing the operation.

I reserve the right to make such modifications in the construction of the machine as may be deemed expedient under different circumstances, and, if desired, some other coil-removing device or apparatus may be employed in conjunction with said machine in lieu of the one herein shown and described. In practice it is preferable to arrange the shaft

and reel at an angle of about forty-five degrees, as shown in the drawings, as the best results are thereby obtained; but I do not limit myself thereto.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. In a machine for coiling wire rods, an inclined reel having a double row of spokes or pins, between which the rods may be coiled, and a protecting-guard surrounding said reel, substantially as and for the purposes set forth.

2. A machine for coiling wire rods, comprising, in combination, the following elements: a reel mounted on the upper end of an inclined shaft and having a double row of spokes or pins, between which the rods may be coiled, said inclined shaft fitted to turn in suitable inclined stationary bearings in the frame, means for rotating said shaft and for shipping and unshipping the power to and from the same, substantially as shown and specified.

3. In a machine for coiling wire rods, the reel thereof having a double row of spokes or pins, between which the rods may be coiled, and a series of radial flanges upon the top surface thereof (preferably in line with said spokes or pins) for holding the rods above said top surface, substantially as and for the purpose set forth.

4. In a wire-rod-reeling machine, the combination of the frame, the reel, and a protecting hood or guard secured to said frame and extending around and over the top of the reel in the manner described, said reel being mounted on the upper end of an inclined rotary shaft, and having a double row of spokes or pins, between which the rods may be coiled, and said inclined shaft being fitted to turn in suitable inclined bearings in the frame, substantially as and for the purpose set forth.

5. The coil-removing apparatus consisting of a truck made in substantially the manner described, and having a hook at its forward end adapted to be passed under the coil to remove the same, substantially as set forth.

6. The combination, with a reel having radial flanges to hold the coil above the bottom thereof, of a truck having at its forward end a hook adapted to be inserted between said flanges under the coil to remove the latter, substantially as set forth.

7. The combination, with a reel mounted on an inclined shaft and having radial flanges, as specified, and a hood or guard curving over said reel and open in front, of a truck provided with a projecting hook shaped to enter said hood and remove the coil from the reel, substantially as described.

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