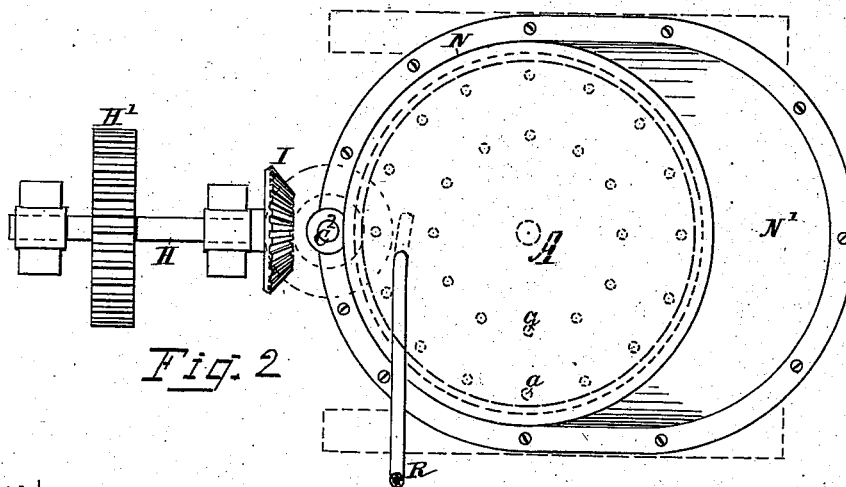
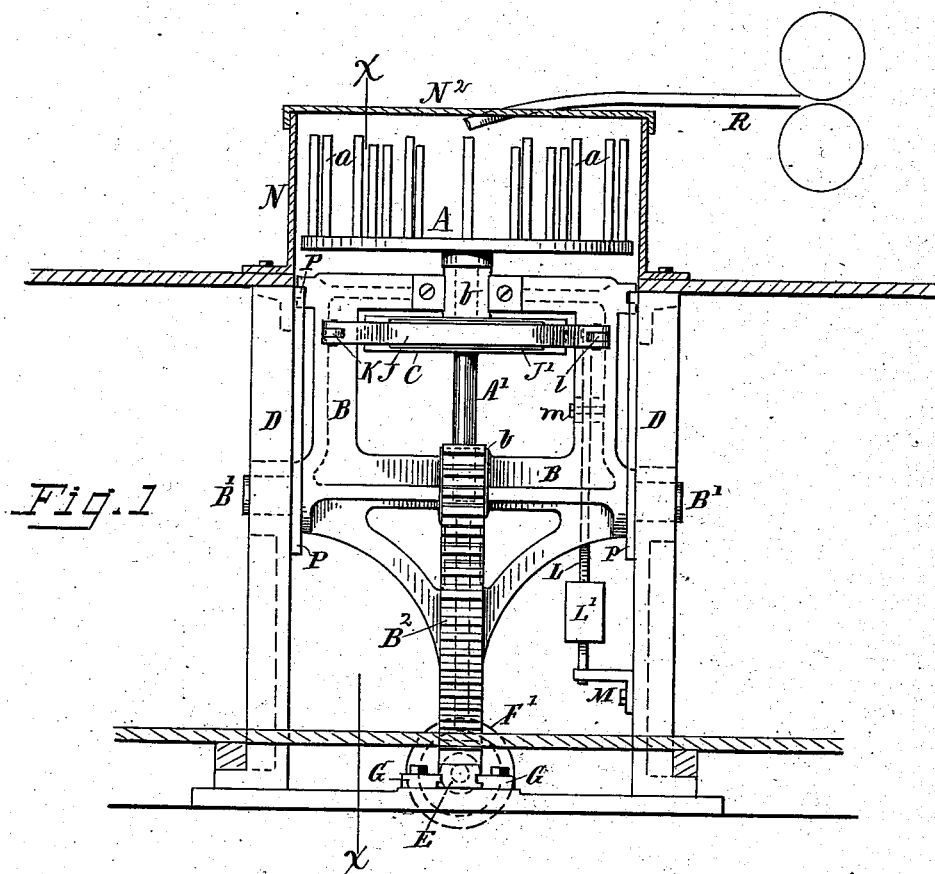


F. H. DANIELS.

REELING APPARATUS FOR ROD ROLLING MILLS.

No. 381,217.

Patented Apr. 17, 1888.



Witnesses.
Simon E. King.
Ella P. Blenus.

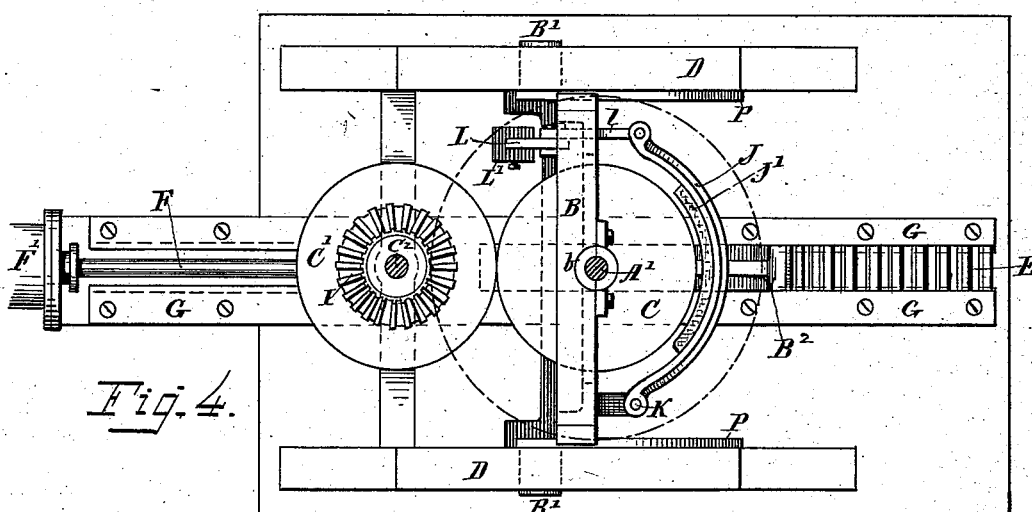
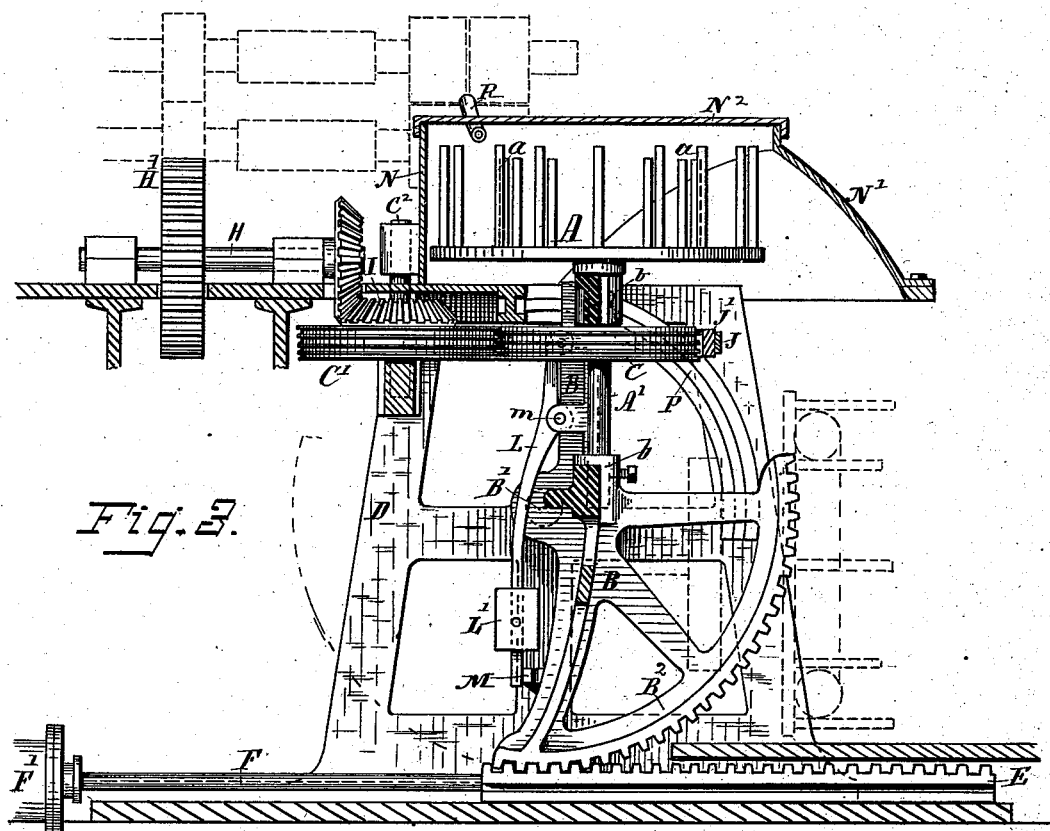
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Witnesses.

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UNITED STATES PATENT OFFICE.

FRED H. DANIELS, OF WORCESTER, MASSACHUSETTS.

REELING APPARATUS FOR ROD-ROLLING MILLS.

SPECIFICATION forming part of Letters Patent No. 381,217, dated April 17, 1888.

Application filed January 14, 1888. Serial No. 260,773. (No model.)

To all whom it may concern:

Be it known that I, FRED H. DANIELS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Reeling Apparatus for Rod-Rolling Mills, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide a reeling apparatus for coiling wire rods or similar rolling-mill product as it is delivered from the rolling-mill, which apparatus is provided with reeling devices capable of being tipped or tilted and efficient mechanism for conveniently swinging or oscillating the reel-supporting frame for carrying the coil-receptacle or reel-head from the position at which it receives the rod to another position for facilitating the convenient removal or discharge of the coiled rod therefrom.

Another object is to provide means for stopping the rotation of the reel when tipped for discharging and for starting and operating the same when returned to coiling position.

Another object is to provide a brake mechanism that is automatically brought into action for stopping rotation of the reel when the supporting-frame is tilted.

These objects I attain by mechanism the nature, construction, and operation of which is explained in the following description, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a front view of my improved rod-reeling apparatus, the guard or top casing being shown in section. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section in the direction of line *x x*, Fig. 1. Fig. 4 is a horizontal section at position just below the reel-head or coil-receptacle.

In reference to parts, A denotes the reel-head or coil-receptacle, preferably composed of a plate having a series of upright pins or spokes, *a*, of usual construction, or with suitable rims for defining an annular space within which the rod is coiled as it is delivered thereto from the rolling-mill through the guide-pipe

R. Said reel or coil-receptacle is supported on a rotatable shaft, A', that is provided with an operating-gear or friction-wheel, C, and mounted in bearings *b* on an oscillating or tipping frame, B, which frame is provided with an axial support or trunnions, B', that rest in bearings on the main supporting-frame D in a manner to permit of said tipping frame B, together with the reel A, being tilted or tipped down, as desired, to effect or facilitate the discharge of the coiled rod therefrom. (See dotted lines in Fig. 3.) The tipping frame B is provided with a segment, B', that engages, by means of gear-teeth or other suitable connecting devices, with a reciprocating bar or rack, E, mounted in suitable guides, G, to operate back and forth, and preferably connected with a piston and piston-rod, F, which is worked by hydraulic or other pressure exerted in the cylinder F' under control of any suitable and convenient valve mechanism, such as ordinarily employed for controlling the action of hydraulic piston mechanism, and which valve mechanism being well known is not herein shown.

C' indicates a revoluble friction-wheel mounted on an upright shaft, C'', that turns in suitable bearings on the supporting-frame. Said wheel C' meshes with the reel-operating wheel C for imparting movement to the reel. The wheel C' is connected by suitable gearing, I, with a driving-shaft, H, that is in turn operated by gearing H' from the rolling-mill or from any convenient motor; or any of the usual well-known means for mechanically transmitting power may be employed for imparting motion to the shaft C''. The wheels C and C' are preferably made with ribbed frictional surfaces; but other form of surfaces may be employed, if desired, to engage with each other and transmit the power and motion of the reel-shaft when their surfaces are brought together with sufficient force.

J indicates a brake-arm carrying a suitable bearing-shoe, J', arranged to press against the surfaces of the wheel C for stopping the rotation of the reel when the wheels C and C' are separated. The brake-arm J is connected with the frame B at one side by a hinge or other suitable connecting-joint, as at K, while its opposite end is connected by a link, L, to the up-

per end of a lever, L, that is fulcrumed upon the frame B, as indicated at *m*. The dependent arm of said lever L is made heavy or provided with a weight, L', and said lever is arranged in such manner that when the frame is tilted the weighted end of said lever swings upward, and the counterpoise of the weight forces the brake against the surface of the wheel C, the pressure being applied thereto in a gradually-increasing degree, accordingly as the lever L assumes a more nearly horizontal position. A stop or guard, M, is provided to engage the lever L and prevent contact of the brake with the wheel C when the reel is upright or in normal working position.

The reel is surrounded by a guard-cylinder or casing, N, having at one side an extension, N', to permit of the reel being tilted over. Said casing is provided with a removable cover, N², as indicated.

P P indicate curved guides for the upper part of the frame B, to support it laterally and keep it steady when in working position and while being tilted.

The axis of the frame B is in the present instance located some distance in rear of the vertical axis of the reel-shaft A', in order that the reel may have a more ready and direct drop from its casing or guard when the tilting action is effected than it would were the axes in the same plane.

In the operation the rod is delivered to and coiled upon the reel while it is in upright position. The reel is then lowered and brought into position to facilitate the convenient discharge of the coiled rod therefrom by tilting or tipping the frame B whereon the reel is mounted. (See dotted lines, Fig. 3.) This tipping action is effected by the drawing back of the rack E by the hydraulic piston, which swings the segment B² with a corresponding backward movement and lowers the reel or coil-receptacle containing the coil of rod, so as to present the coil at a position where it can be conveniently hooked off, gripped by tongs, or otherwise removed, as desired.

If desired, in lieu of using a reciprocating rack, E, the segment B² could be made as a worm-wheel, and the frame be operated by a worm-screw meshing therewith, the worm-screw being mounted upon a rotating shaft located in place of the piston-rod and rack and operated by belts and pulleys or other equivalent means. This latter method of operating the tipping frame might be employed in cases where it would be inconvenient to employ hydraulic mechanism, such as a cylinder and piston. It will also be understood that instead of connecting the segment B² and reciprocating bar F by means of teeth, these parts could be connected by straps or chains or other well-known mechanical devices for effecting equivalent movement. Again, if desired, the piston-rod F could be attached by a connecting-link directly to a wrist-pin on the side of the segment B², or to an arm of the frame B to act in the manner of a crank. I prefer,

however, the construction shown as being the more simple and satisfactory.

When the reel is in operation, the friction-surfaces of the wheel C are forced against that of the wheel C' by the pressure exerted in the hydraulic cylinder F'; hence an amount of pressure can be applied for giving any desired degree of tension or frictional contact.

If desired, a separate wheel or surface may be provided for the brake J, instead of having it pressed upon the same surface of the wheel C that engages with the driving-wheel C'.

In a former application, Serial No. 246,867, I have described and claimed a reeling apparatus in which a reel or pair of reels are adapted for being tilted or inverted for facilitating the discharge of the coiled rod therefrom. Therefore I do not in this my present application broadly claim the feature of a tiltable or invertible reel irrespective of construction; but my present invention relates to an improved construction in this class of apparatus.

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

1. In an apparatus for coiling wire rods, a reel or coil-receptacle supported on a frame mounted on an axis or trunnions and provided with gearing for effecting the tilting of the frame and reel, substantially as set forth.

2. In an apparatus for coiling wire rods, the combination of the reel or coil-receptacle, the frame whereon said reel is mounted, provided with a gear, a rack engaging therewith, and means for imparting motion to said rack.

3. In an apparatus for coiling wire rods, in combination, the reel or coil-receptacle mounted upon a frame, a friction-gear upon the shaft of the reel, and a driving friction-gear which said reel-driving friction-gear engages when the supporting-frame is in upright or working position.

4. In an apparatus for coiling wire rods, the combination of the reel, the tilting frame whereon said reel is mounted, and a hydraulic cylinder and piston with connections for tilting said frame and reel, for the purposes set forth.

5. In an apparatus for coiling wire rods, the combination, with the reel having its shaft mounted in bearings on the swinging frame and provided with a friction-wheel that engages with the driving mechanism friction-wheel when the reel is in working position, of a frame-tilting mechanism adapted for holding the friction-wheels in contact, substantially as set forth.

6. The combination, with a reel mounted on a tilting frame, of a brake brought into action automatically for stopping revolution of the reel when the frame is tilted.

7. The combination, with the reel and its supporting-frame and a friction wheel or surface in connection therewith, of the brake connected with a weighted lever, by means of which said brake is forced against the surface for stopping the reel when the position of the supporting-frame is changed.

8. The combination, with the reel and its hood, of a tilting reel-supporting frame having its axis at one side of the axis of the reel, whereby depression of the reel is effected when the frame is tilted, substantially as set forth.
9. The combination, with the reel mounted on a tilting frame, of the cylindrical guard-casing having the side extension, as shown, for allowing the tipping of the reel.
10. The combination, with the tilting frame, reel, and reel-shaft supported thereon having the friction wheel or surface, the brake jointed to the frame at one side and connected at its opposite side with a lever fulcrumed on said frame, of a stop for throwing said brake out of engagement when the reel is in working position.

Witness my hand this 3d day of January,
A. D. 1888.

FRED H. DANIELS.

Witnesses:

CHAS. H. BURLEIGH,
ELLA P. BLENUS.