

(No Model.)

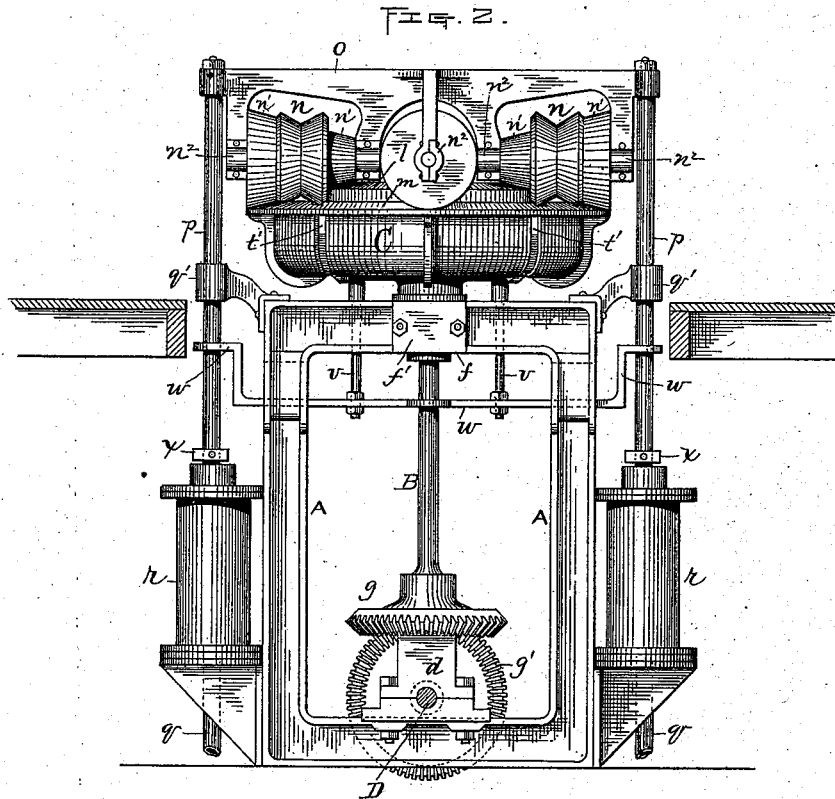
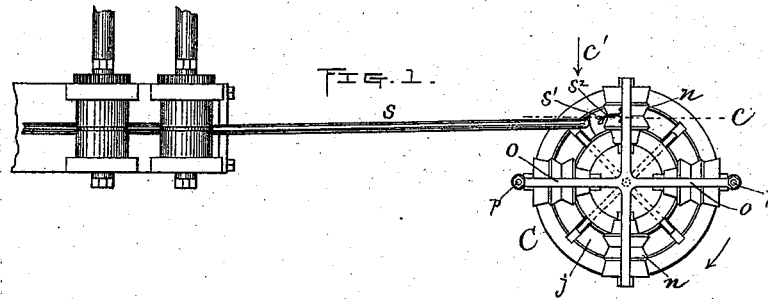
3 Sheets—Sheet 1.

H. A. YOUNG.

WIRE ROD REELING MACHINE.

No. 381,199.

Patented Apr. 17, 1888.



Witnesses;

Inventor;

Walter B. Nourse.

Horace A. Young.

Lucius W. Briggs.

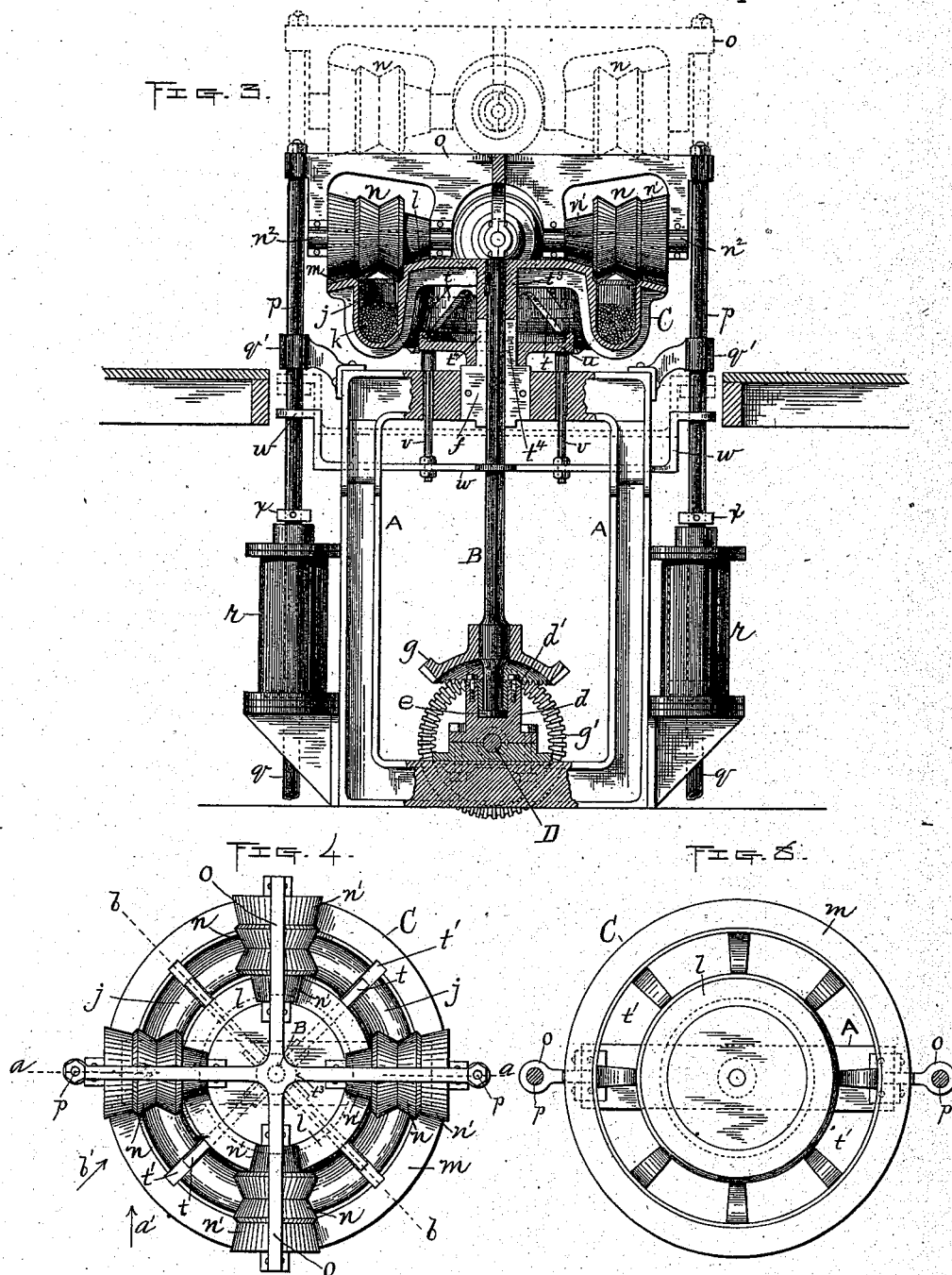
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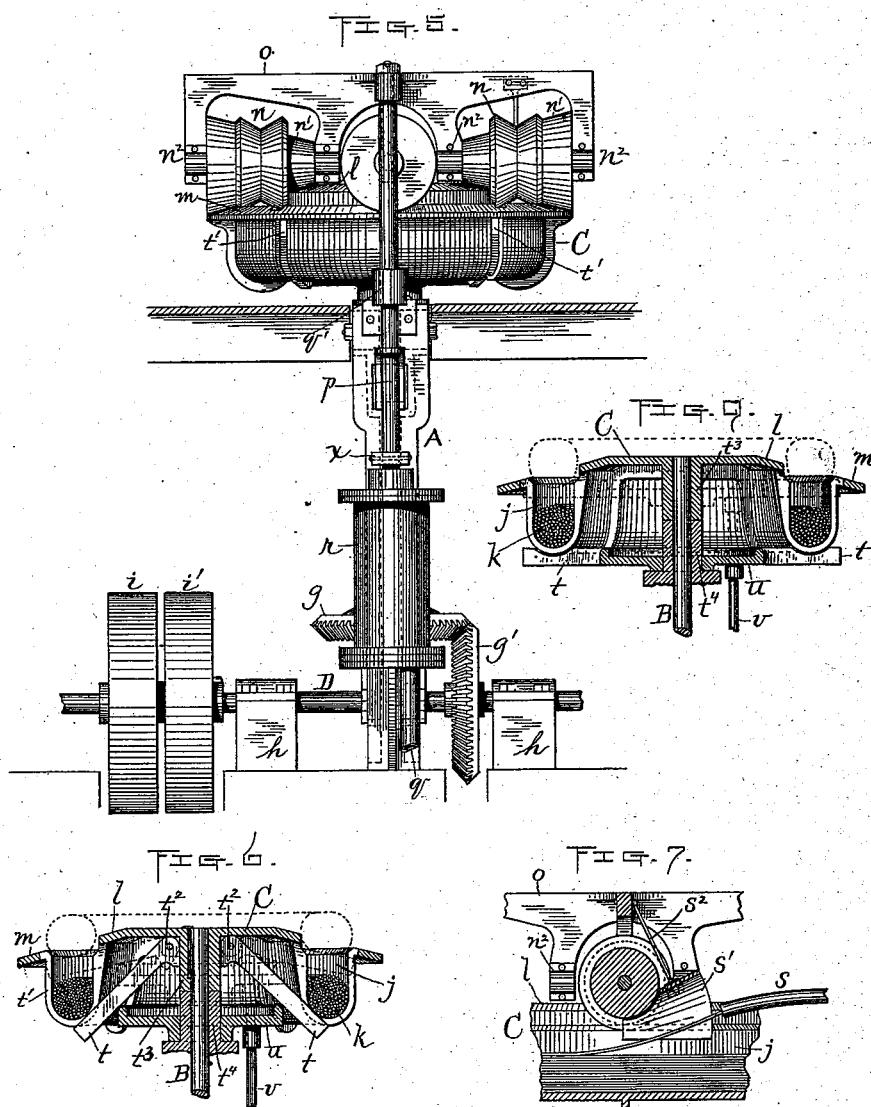
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UNITED STATES PATENT OFFICE.

[HORACE A. YOUNG, OF WORCESTER, MASSACHUSETTS.

WIRE-ROD-REELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,199, dated April 17, 1888.

Application filed November 15, 1887. Serial No. 255,228. (No model.)

To all whom it may concern:

Be it known that I, HORACE A. YOUNG, 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 of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a top or plan view of my improved reeling-machine combined with the last two sets of rolls of a rolling-mill, and the pipe or tube for conducting the wire rods from said rolls to the reel. Fig. 2 is a front view, upon an enlarged scale, of my said improved reeling-machine, all the following figures also being on the same enlarged scale. Fig. 3 is a central vertical section through the machine, taken on line *a a*, Fig. 4, looking in the direction of arrow *a'*, showing parts of the machine in elevation and in different positions by full and dotted lines, as will be hereinafter more fully described. Fig. 4 is a top or plan view of the machine, independent of the rolls and conducting-tube shown in Fig. 1. Fig. 5 is a side view of said machine, showing, in addition to the other figures, a loose and tight pulley upon its main horizontal driving-shaft. Fig. 6 is a vertical section of a part of the machine, taken at the point indicated by line *b b*, Fig. 4, looking in the direction of arrow *b'*. Fig. 7 is also a vertical section of another part of the machine, taken at the point indicated by line *c*, Fig. 1, looking in the direction of arrow *c'*. Fig. 8 represents a plan view, similar to Fig. 4, of a part of the reel, showing a modification in the construction thereof, hereinafter described; and Fig. 9 represents a view similar to Fig. 6, showing a modification in the construction of the coil-lifting mechanism, also hereinafter described.

In order that others may better understand the nature and purpose of my improvements, I will now proceed to describe the same more in detail.

In the drawings, the part marked A represents the stationary frame-work of the machine, which is made of the proper shape and construction to support the various operating parts of said machine.

B is the main vertical driving-shaft, which

is fitted to turn at the bottom in a step formed in the bearing *d*, fastened to frame A, said bearing being provided with a detachable holding-cap, *d'*, whose bottom end has a bearing on the top of a flange, *e*, formed on the bottom of the shaft to hold the latter in position vertically. The upper end of said shaft B is fitted to turn in a suitable bearing, *f*, formed in the frame A, having a detachable face-cap, *f'*. (See Fig. 2.) Above said bearing is secured on the shaft the base or bottom part, C, of the reel, upon which are deposited the wire rods, as hereinafter more fully explained. A continuous rotary motion is imparted to said shaft and reel-base C by means of suitable driving mechanism operatively connected with the central shaft, B. As an illustration of one way of accomplishing said result, I have shown a bevel-gear, *g*, on the lower end of the shaft, which meshes with another bevel-gear, *g'*, on the horizontal driving-shaft D, previously referred to. Said horizontal shaft is fitted to turn in suitable stationary bearings, *h h*, and is driven by one of the pulleys *i* or *i'*, secured thereon, the other being a loose pulley, as ordinarily. Said tight pulley may in turn be driven by suitable mechanism (not shown) connected therewith in the usual way.

The reel-base C is made with an open circular receptacle or pocket, *j*, extending entirely around the same near its outer edge, in which are deposited the wire rods *k* (see Figs. 3, 6, and 9) as they are delivered from the rolling-mill. The top of said base C is also provided at each side of the receptacle-opening with the inclined surfaces or tracks *l m*, inclined downward and out from the center of the machine, as is best shown in said Figs. 3, 6, and 9. Above the wire-rod receptacle *j* and tracks *l m* are arranged a series of wheels, *n*—four in this instance—having next to their bearings beveled or cone-shaped hubs *n'*, corresponding to the bevels of said tracks. Said wheels are fitted to turn in suitable bearings, *n²*, formed in the lower ends of a frame, *o*, having vertical movements only. It is elevated and lowered to raise the wheels *n* above the wire-rod receptacle and tracks *l m*, as indicated by dotted lines in Fig. 3, and lowered to drop the hubs *n'* onto their respective tracks, as indicated by full lines, by means of the vertical piston-rods *p p*, connected at their upper ends

with two opposite outer ends of said frame, as shown in the drawings, and operated up and down by hydraulic, steam, or any other suitable power connected therewith. Hydraulic power applied by means of pipes *q* and cylinders *r*, as shown in the drawings, is preferably employed for the purpose.

The piston-rods *p* are guided midway between the cylinders and frame *o* by the bearings *q'*, extending out from the frame *A*, said bearings being provided at their outer ends with vertical openings to receive said piston-rods.

The purpose of the rotary wheels *n* over the wire-rod receptacle is to hold the rods in position from flying out in the operation of delivering and coiling the same in said receptacle, said wheels, as will be understood, resting during said operation upon the inclined surfaces or tracks *l m*, and by frictional contact turning therewith, thereby offering no resistance to the rods in the coiling operation, while at the same time retaining them within their proper limits, as previously stated.

In making the machine the rotation of the reel-base *C* is timed, as is usual in other similar reeling-machines, to correspond with the speed at which the rods are delivered thereto, so that said rods will be laid in a regular and even coil as fast as they are delivered thereon.

In order that the forward end of each rod may be properly directed from the end of the conducting-tube *s* under the first wheel *n*, and into the receptacle formed in the reel-base *C*, I preferably arrange a hood, *s'*, (see Figs. 1 and 7,) in front of the first wheel under which the rod passes, the sides thereof being extended down below the top surface of the reel-base into the circular rod-receptacle, as is fully shown in said figures.

The hood is fastened independent of the wheel by means of a rod, *s''*, extending up therefrom and fastened at the top to the frame *o*, as best shown in Fig. 7. Although said hood is of considerable advantage, it is not absolutely essential, as by extending the end of the conducting-tube forward a little longer than is shown and using care to bend the same so as to direct the rod properly the hood may be dispensed with. I therefore reserve the right to employ the same or not, as desired. After each coil is completed the frame *o* and its wheels *n* are raised, as previously described, into the position shown by dotted lines in Fig. 3. Said coil is then lifted above the bottom of the receptacle in which it was formed, as indicated by dotted lines in Fig. 6, so as to be conveniently grasped by means of suitable tongs and removed from the reel in the usual way. It is thus lifted by means of a series of radial lifting-arms, *t*, operatively connected with the vertical piston-rods *p*, hereinbefore described, suitable openings, *t'*, being formed in the reel-base for the reception of said lifting-arms to admit of the aforesaid operation being performed. The lifting-arms *t*, of which there are four shown in this

instance, are hinged at their inner ends at the points *t''* to ears formed on the upper end of the internal hub, *t'*, of the reel-base, as shown in Fig. 6. The upward swinging movements thereof are controlled by their upper edges striking the under surface of the reel-base, and their downward movements by their vertical inner ends coming in contact with the vertical sides of said internal hub, *t'*. The normal positions of the arms are those which they occupy when dropped down, as shown by full lines. They are raised all together from said positions to elevate the coil, as previously stated, by means of the horizontal disk *u* (fitted to slide vertically on the hub *t'*) through the vertical connecting-rods *v v*, horizontal plate *w*, and the collars *x x*, secured to piston-rods *p p*, the rods *v* being fastened to the disk and plate *w*. Said plate is provided with vertical openings at both ends to receive the piston-rods and all arranged to move together vertically. By this construction it is obvious that when the piston-rods are moved up to raise the frame *o* and its wheels *n*, as previously described, the fixed collars *x x*, coming against the outer ends of plate *w*, lift said plate and all the parts connected therewith, thereby swinging up the outer ends of the arms *t*, and in consequence lifting the finished coil out of its receptacle, so that it may be conveniently removed from the reel, as hereinbefore described.

If desired, instead of employing the hinged arms *t*, as above described, said arms may be formed upon or fastened directly to disk *u*, as shown in Fig. 9, without departing from the principle of my invention, said arms, as will be obviously seen, serving the same purpose in either case. In operation, the elevation of the coil by the aforesaid lifting mechanism follows directly after the elevation of the frame *o* and its wheels *n*, and both operations are performed automatically. The time between one operation and the other may be varied, as desired, by changing the positions of the collars *x x* on the piston-rods and making other parts of the machine to conform therewith.

In practice, the machine is designed to be stopped automatically preparatory to removing each finished coil by connecting the shipping mechanism with one of the piston-rods or parts lifted thereby; but as said shipping mechanism constitutes no part of my invention it is deemed unnecessary to illustrate or describe the same.

If desired, the reel-base *C* may be made with an open-bottom coil-receptacle having a suitable number of cross-supports for the coil, as shown in Fig. 8, instead of with a solid slotted receptacle, as hereinbefore described.

The number and position of wheels *n* and arms *t* may also be varied, as well as the general construction of the machine modified to produce a like result without departing from the principle of my invention.

Having described my improvements, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a wire-rod-reeling machine, the combination of the reel with a series of rotary wheels mounted horizontally in a suitable frame above the reel, having vertical reciprocating movements, whereby the wire rod is retained in proper position during the coiling operation and released for removal at completion, substantially as set forth.

2. In a wire-rod-reeling machine, a rotary horizontal reel-base having an open circular receptacle or pocket near its outer edge, and inclined top surfaces or tracks at each side thereof, in combination with a series of rotary wheels arranged above said reel-base, and also having vertical reciprocating movements, substantially as and for the purpose set forth.

3. The combination of the reel of a wire-rod-reeling machine with a series of rotary wheels whose axes are at right angles to the axis of said reel and radiate from one common center, and which wheels are mounted in a frame having reciprocating movements toward and from the reel in the direction of its axis, substantially as and for the purpose set forth.

4. In a wire-rod-reeling machine, the combination of the rotary reel-base, having an open circular receptacle or pocket near its outer edge and inclined top surfaces or tracks at each side thereof, with a series of rotary wheels having inclined or cone-shaped hubs corresponding to the bevel of said surfaces or tracks and mounted horizontally in a frame arranged above the reel, having vertical reciprocating movements imparted to it, substantially as and for the purpose set forth.

5. The combination of the reel-base, having a circular receptacle or pocket near its outer edge and inclined top surfaces or tracks at each side thereof, with a series of rotary wheels arranged over the receptacle, also having inclined or cone-shaped hubs corresponding to the bevel of the tracks on the reel-base and mounted horizontally in a frame having vertical reciprocating movements imparted to it by means substantially as described, and the

hood arranged and fastened in front of one of the aforesaid rotary wheels, substantially as and for the purpose set forth.

6. The combination of the rotary reel-base, having an open circular rod receptacle or pocket near its outer edge and a series of vertical radial slots or openings, with a series of radial coil-lifting arms fitted to work in said vertical openings, and means, substantially as described, for elevating and lowering said arms, for the purpose specified.

7. The combination of the reel-base of a wire-rod-reeling machine, having an open rod receptacle or pocket near its outer edge, and inclined top surfaces at each side thereof, also suitable openings to receive coil-lifting arms, and a series of rotary wheels over the top of the said receptacle for keeping the wire rod in position during the coiling operation, with said lifting-arms arranged radially around the central shaft, and means, substantially as described, for elevating said arms to lift the coil out of its receptacle, substantially as set forth.

8. A wire-rod-reeling machine comprising, in combination, a reel-base having a circular receptacle or pocket near its outer edge, and inclined top surfaces or tracks at each side thereof, also having suitable openings for the reception of coil lifting arms, and means, substantially as described, for rotating said reel, a frame arranged over the reel having mounted and fitted to turn horizontally thereon a series of wheels having cone-shaped hubs corresponding to the bevels of the aforesaid tracks on the reel-base, means, substantially as described, for imparting vertical reciprocating movements to said frame and its wheels, radial arms arranged under the reel base for lifting the completed rod-coil, and means, substantially as described, operatively connected with the frame and wheel-lifting mechanism, for elevating said arms, all constructed and arranged to operate substantially as set forth.

HORACE A. YOUNG.

Witnesses:

ALBERT A. BARKER,
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