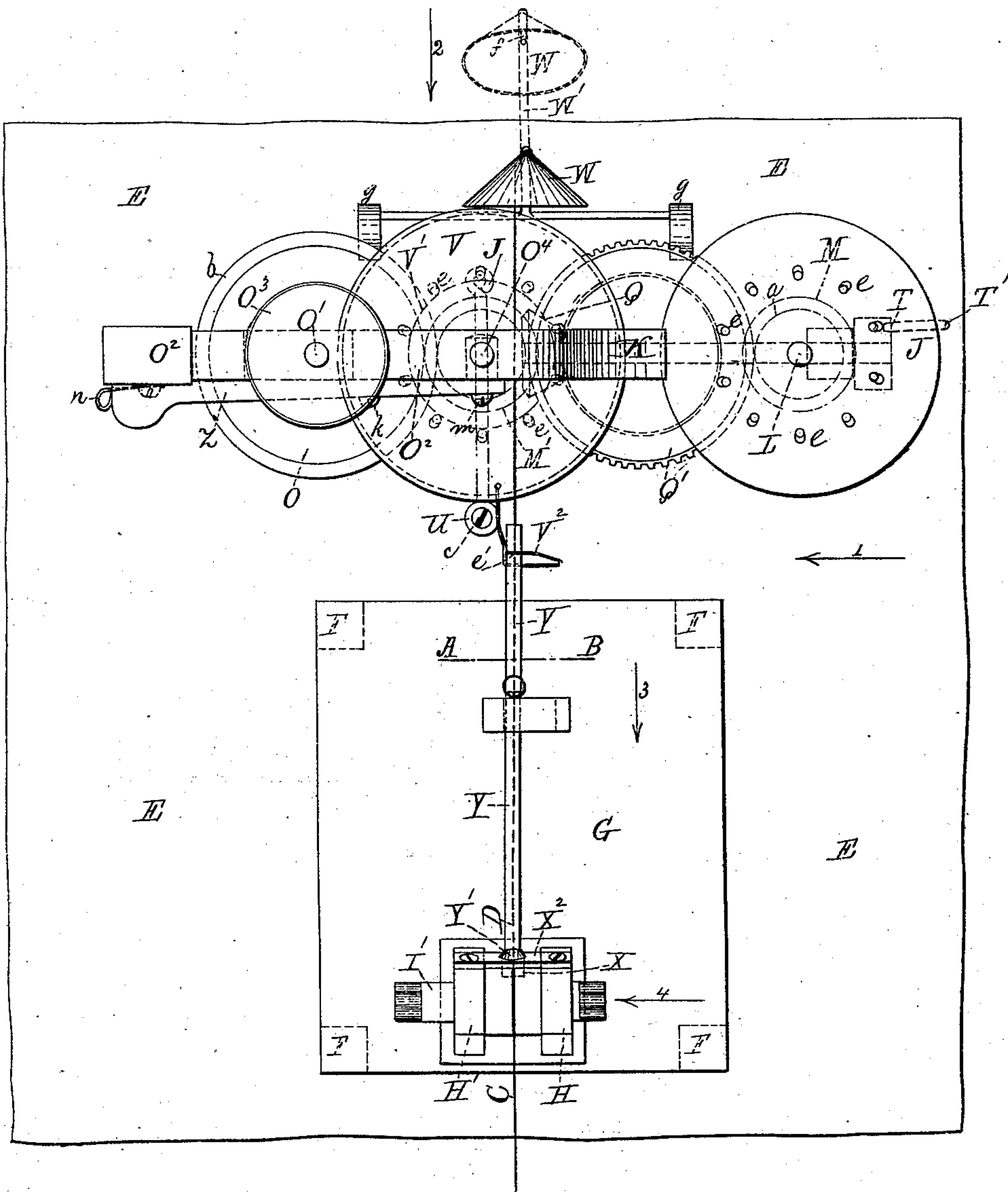


C. H. MORGAN & F. H. DANIELS.  
Reel for Rolling-Mills.

No. 224,838.

Patented Feb. 24, 1880.

FIG. 1.



Witnesses,

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*Edwin C. Moore*

Inventors,

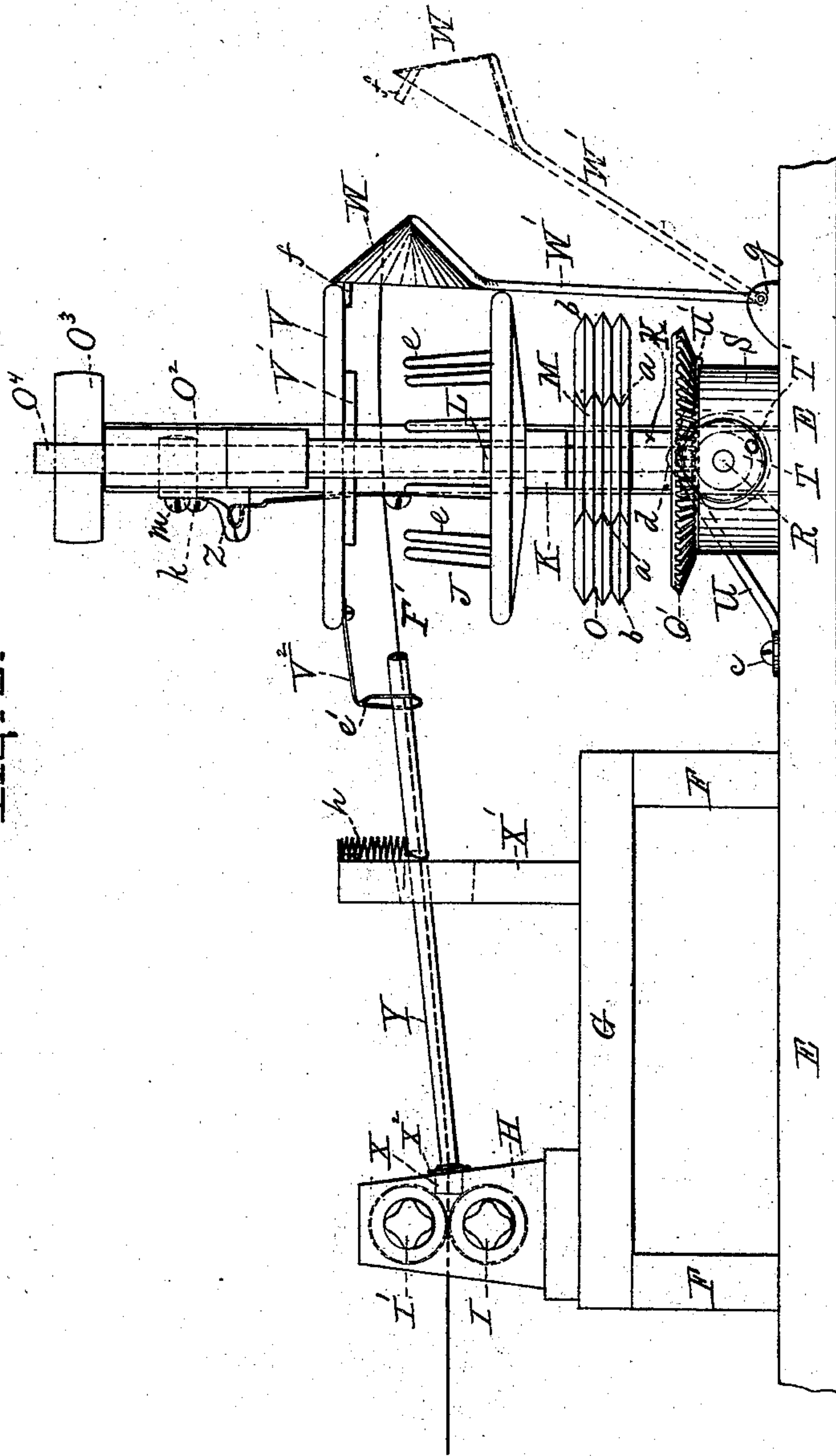
*Chas. H. Morgan*  
*Fred. H. Daniels,*

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Reel for Rolling-Mills.

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FIG. 2.



Witnesses,

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# UNITED STATES PATENT OFFICE.

CHARLES H. MORGAN AND FRED H. DANIELS, OF WORCESTER, MASS.; SAID DANIELS ASSIGNOR TO WASHBURN & MOEN MANUFACTURING COMPANY, OF SAME PLACE.

## REEL FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 224,838, dated February 24, 1880.

Application filed February 20, 1879.

*To all whom it may concern:*

Be it known that we, CHARLES H. MORGAN and FRED H. DANIELS, both of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Reels for Rolling-Mills for Automatically Coiling Wire Rods; and we 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 our said improved automatic reel, together with the last set or finishing-rolls of a continuous or other rod-rolling mill and the adjustable guiding-tube which directs and guides the finished rod to the reels, as will be hereinafter more fully explained. Fig. 2 represents a side view of the parts shown in Fig. 1, looking in the direction indicated by arrow 1 of the same figure. Fig. 3 represents a rear view of the reeling apparatus, looking in the direction indicated by arrow 2, Fig. 1. Fig. 4 represents a portion of the machine which will be hereinafter more fully described; and Fig. 5 represents a central vertical section taken on line C D, Fig. 1, looking in the direction indicated by arrow 4 of the same figure.

To enable those skilled in the art to which our invention belongs to make and use the same, we will proceed to describe it more in detail.

Our invention relates more particularly to that class of machines for automatically receiving and coiling wire rods upon the reel or reels of the same as they pass in a red-hot state from the last set or finishing-rolls of a continuous or other rod-rolling mill, thereby obviating the necessity of catching the end of the rod and conducting it to the reel, upon which it is to be coiled by hand, (the method now employed,) and thus preventing accidents, which are very frequent when the latter method is employed.

In the drawings, the part marked E represents the foundation or bed upon which the machine is arranged and secured. Upon said foundation, in this instance, is also supported, by means of posts F, a flooring, G, which in turn supports the housings H H' of finishing-rolls I I', arranged to turn in said housings.

J J' represent the reels of the machine, which are arranged to turn in bearings formed in the ends of a rotatable frame, K, said reels being secured to the upper ends of short perpendicular shafts L L', which fit loosely in said bearings. Upon said shafts L L' are also secured driving friction-pulleys M M', which turn in slots N N', formed in the ends of revolving frame K.

Driving power is imparted to friction-pulleys M M' to turn reels J J' by means of a large friction-pulley, O, secured upon a perpendicular shaft, O', which turns in suitable bearings formed in frame-work O<sup>2</sup> at its upper end and foundation E at its lower end, and upon the upper end of which is secured a driving-pulley, O<sup>3</sup>, which may be connected by a belt with any suitable and convenient driving mechanism.

For the purpose of obtaining greater frictional surface, pulleys M M' are formed with grooves *a*, and large pulley O with correspondingly-beveled edges *b*, which fit into said grooves *a*.

Rotatable frame K, in this instance, is fitted to turn upon a stationary central shaft or axis, P, (shown by dotted lines in the drawings,) and is operated to turn on the same, so as to bring one of the friction-pulleys, M or M', in contact with large friction-pulley O, by means of a bevel gear, Q, which works in a larger bevel-gear, Q', secured to the under side of said frame K, and also fitted to turn on stationary shaft P, which is stepped in stationary bearing-piece S.

Bevel-gear Q is secured upon the end of a horizontal shaft, R, which turns in the circular stationary bearing part S and bearing S', and driving power is imparted to said gear and shaft by means of a driving-pulley, T, secured upon the outer end of the shaft. If preferred, said gear and shaft may be turned by means of a hand-crank, T'.

Frame K is prevented from sliding up upon its shaft P by means of a hollow shaft, P', placed over said shaft P, which bears upon the top of frame K and the under side of frame-work O<sup>2</sup>; but, if preferred, simply a collar may be formed upon shaft P for the upper side of frame K to bear against, in which case the upper end of the shaft must be secured from moving up and down in frame-work O<sup>2</sup>.



In order that rotatable frame K may be held stationary while friction-pulley M or M' is in contact with large friction driving-pulley O, a strong flat spring, U, secured at *c* to foundation or bed E, is arranged to press upon the under side of said rotatable frame K, as represented by full and dotted lines, Fig. 2 of the drawings; and to more securely hold said frame from turning the under side is grooved out to receive the rounded bent portion *d* of the spring, as is also represented by dotted lines, Fig. 2.

If preferred, any other suitable and convenient device may be employed for holding frame K stationary while a rod is being coiled upon one of the reels.

V is a disk or cover, provided upon its under side with a circular projecting portion or hub, V', which fits in between the upper ends of the arms *e* of the reels J J', said disk and its hub V' being secured upon the lower end of a perpendicular shaft, O<sup>4</sup>, which works up and down in bearings formed in frame-work O<sup>2</sup>.

The purpose of cover V is to force the rod down so that it will be acted upon by the arms *e*, and also for the purpose of preventing the rod, while being coiled upon the arms *e* of the reel, from becoming entangled and imperfectly coiled.

When the machine is in readiness for operation, the reel which is to receive and coil the rod is brought into proper position and put in motion, and cover V raised, as represented by full lines in the drawings, the same being supported in such position upon a pin, *f*, secured in the conical-shaped head W of a swinging arm, W', pivoted in bearings *g g*, secured to foundation E.

As the finished rod F' passes forward from between the finishing-rolls I I' it enters and passes through, first, a short stationary guide-pipe, X, secured upon a plate, X<sup>2</sup>, which is, in turn, secured to housings H H', thence into and through a long swivel guide-pipe, Y, which is upwardly inclined, being held in that position by a light spiral spring, *h*, secured at its upper end to a standard, X', near its top, and to said pipe Y at its lower end. The rod then passes above the arms *e* of the reels, as represented by Fig. 2 of the drawings, and striking in the conical-shaped head W forces the latter and its pin *f* back, as represented by dotted lines in Figs. 1 and 2, thereby allowing disk or cover V to drop by its own weight upon the top of arms *e*. At the same time that cover V drops the upper side, *e'*, of a looped guide-arm, V<sup>2</sup>, secured upon said cover, strikes the top of swivel guide-pipe Y, thereby forcing it down and throwing the rod in between the arms of the reel, so that it will catch and be evenly coiled upon said reel.

If desired, cover V may be provided with a stop, by means of which said cover may be stopped just above the tops of arms or spokes *e*, instead of allowing it to rest upon the same.

Swivel guide-pipe Y is arranged so that it can swing in different directions by means of a ball-joint, Y', (see Fig. 5 of the drawings,) and is guided, when forced down by cover V, so as to throw the wire in between the arms of the reel, and also to one side by means of a slot, Y<sup>2</sup>, formed in standard X'. (Shown by Fig. 4 of the drawings.)

By this arrangement of slot Y<sup>2</sup> the rod is guided to one side of the reel, and, consequently, is coiled upon the reel-arms without undue friction as it passes from the finishing-rolls through guide-pipe Y to the reel.

A coil of wire rod having been completed upon one of the reels, the attendant then raises cover V into the position represented by dotted lines V<sup>3</sup>, Fig. 3, by depressing the outer end of a lever, Z, pivoted, at the point *k*, upon frame-work O<sup>2</sup>, and at its inner end, at *m*, to the spindle of said cover, where it is held by means of a catch-spring, *n*, secured to the upright part O<sup>4</sup> of frame-work O<sup>2</sup>, as fully indicated in the drawings. The attendant then presses down spring U at its end U', and rotates frame K so as to bring the other reel under cover V, when he then swings up the part W', and allows the cover to drop so that it will rest upon pin *f*, thereby completing the operation of preparing the reeling apparatus for receiving the next rod to be coiled upon one of the reels of the same. While said rod is being coiled the one previously coiled upon the other reel is removed from the latter, thereby economizing time and greatly expediting the operation of rolling and coiling iron and steel rods.

We do not claim in this application the swivel guide-pipe Y, the slotted standard X', nor their combination with reels and finishing-rolls of a wire-rod-rolling mill, such being substantially the subject-matter of a claim in an application filed by us of even date herewith.

Having described our improvements in reels for rolling-mills for automatically coiling wire rods, what we claim therein as new and of our invention, and desire to secure by Letters Patent, is—

1. The combination, with the reel in a rod-rolling mill, of a guide-pipe, Y, conical swinging head W, and movable disk or cover V, substantially as and for the purposes set forth.
2. The combination, with guide-pipe Y and disk or cover V, of slotted standard X', spring *h*, and looped guide-arm V<sup>2</sup>, substantially as and for the purposes set forth.
3. The combination, with movable reel disk or cover V, guide-pipe Y, and reels J J', of swinging arm W', conical head W, and supporting-pin *f*, substantially as and for the purposes set forth.

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FRED H. DANIELS.

Witnesses:

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