

(No Model.)

2 Sheets—Sheet 1.

F. H. DANIELS.
MECHANISM FOR COILING WIRE RODS.

No. 415,448.

Patented Nov. 19, 1889.

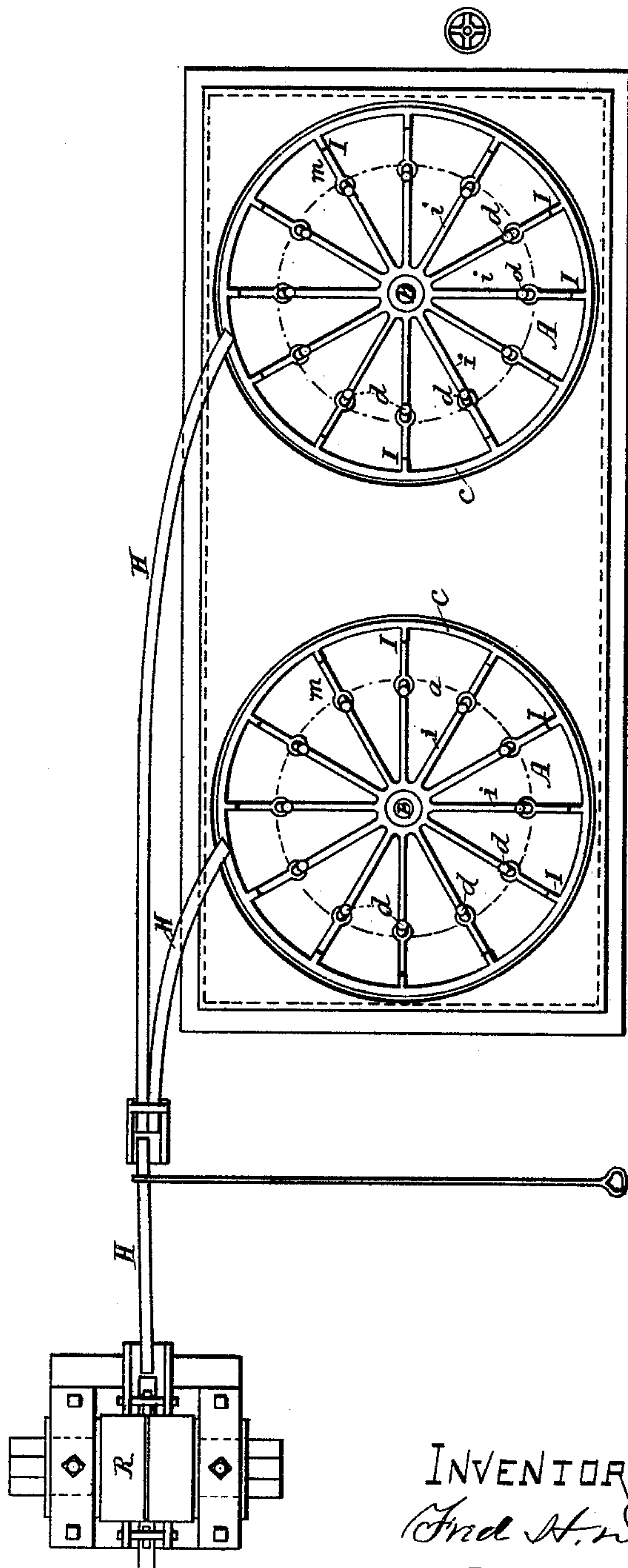


Fig 1.

WITNESSES

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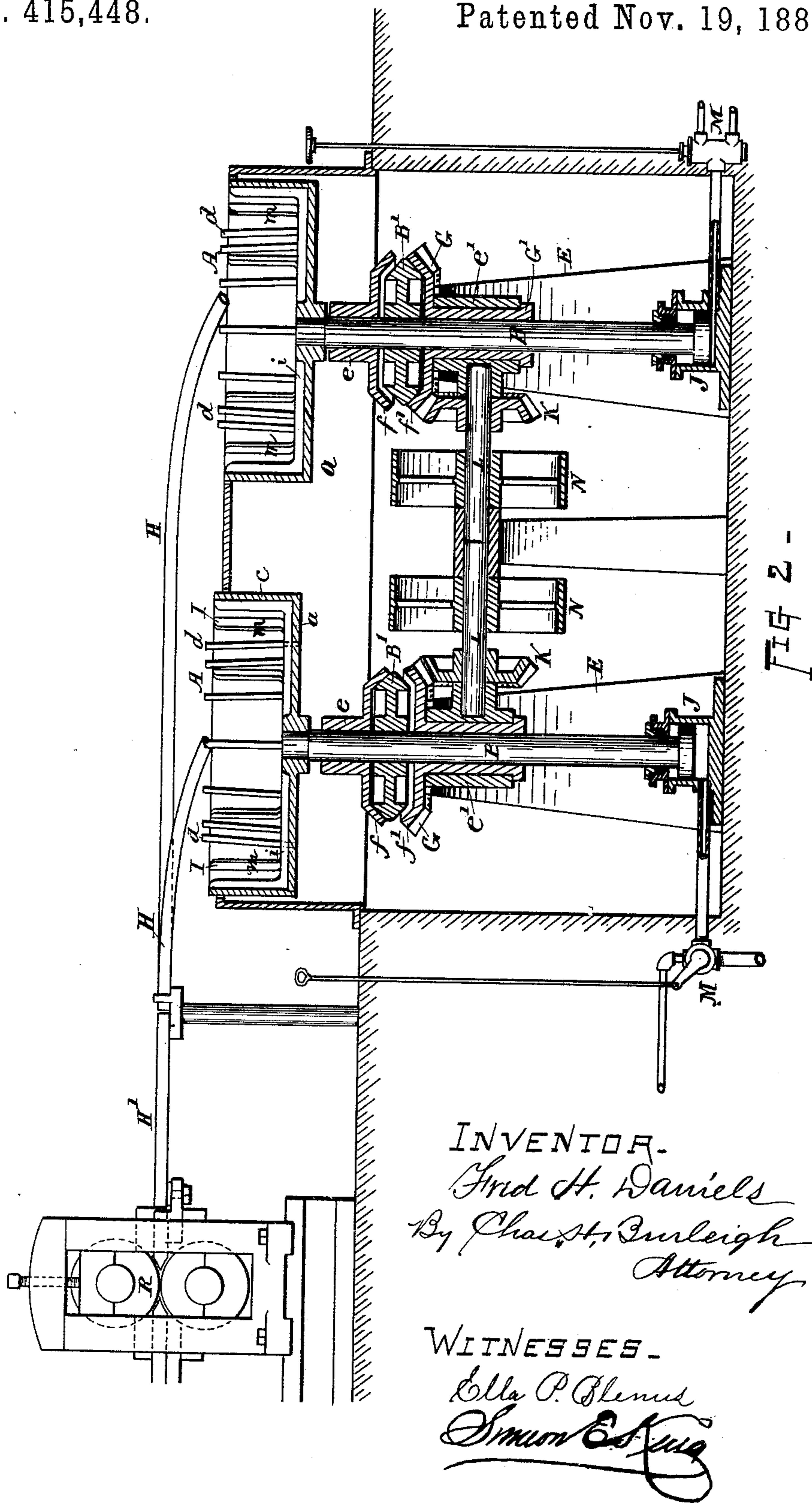
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UNITED STATES PATENT OFFICE.

FRED H. DANIELS, OF WORCESTER, MASSACHUSETTS.

MECHANISM FOR COILING WIRE RODS.

SPECIFICATION forming part of Letters Patent No. 415,448, dated November 19, 1889.

Original application filed June 26, 1886, Serial No. 206,323. Divided and this application filed May 11, 1889. Serial No. 310,364. (No model.) Patented in England February 24, 1887, No. 2,876; in France November 29, 1887, No. 187,278; in Sweden November 29, 1887, No. 1,800; in Belgium November 30, 1887, No. 79,741, and in Germany November 30, 1887, No. 45,201.

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 Mechanism for Coiling Wire Rods, 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; and for my said improved mechanism, or certain parts thereof, I have obtained Letters Patent in the following countries, viz: in Great Britain, No. 2,876, dated February 24, 1887; in France, No. 187,278, dated November 29, 1887; in Belgium, No. 79,741, dated November 30, 1887; in Germany, No. 45,201, dated November 30, 1887, and in Sweden, No. 1,800, dated November 29, 1887.

The object of my present invention is to provide an efficient and practical mechanism for reeling or coiling hot wire rods directly and as fast as they are delivered from the rolling-mill, consisting of a rotatable reel having an annular coil-receiving space, with an inner barrier composed of a row of upright pins and an outer surface or barrier composed of a continuous rim, preferably provided with a series of ribs to sustain the coils, which rim protects the fine wire rods from cooling too rapidly and thereby tempering the rod, and also prevents liability of the ends of the rod escaping or being thrown beyond the peripheral circle of the reel; also, to afford in combination with such class of reeling mechanism a suitable pipe or guiding conductors for directing or conducting the rods as they issue from the final rolls of the rolling-mill into the reel, or to either one of two or more of such reels, as hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of my improved coiling mechanism for hot wire rods, showing two reels, the guides, and the final rolls of the rod-rolling mill. Fig. 2 is a vertical sectional view of the same.

The reel A, for receiving and coiling the hot wire rods, which is the important feature

of my present invention, consists, essentially, of a circular plate *a*, mounted upon an upright rotatable shaft B, and having permanently attached to its periphery a continuous upright rim or cylindrical wall *c*, which extends upward from the bottom plate *a*, forming therewith a close tub or circular box for containing the coils; and in addition to said continuous rim the reel is also provided with a series of upright pins or fingers *d*, disposed in a circular row concentric to the upright rim *c*, and at such distance therefrom as to form an annular space or channel within which the hot rod is received and laid in coils by the rotative action of the reel as it comes from the final pair of rolls R of the rolling-mill in which the rod is formed.

The upright rim *c* is preferably formed of boiler-plate or other suitable material, about sixteen inches (more or less) in height, or so as to give a close protecting-wall about the hot rod to cut off air-currents and prevent the small sections of rod from cooling too rapidly, and thus becoming hard or tempered in parts, while it also prevents the ends of the rods from escaping or being thrown by centrifugal action beyond the periphery or circumferential circle of the revolving reel, and thus causing derangement in the working of the machinery or tangling of the coils. The lower ends of the pins are rigidly fixed in the plate *a*, from which they project upward to a height sufficient for sustaining a coil of rod of the required size, or as indicated. The rim or outer cylindrical wall *c* is best provided at intervals on its interior with inwardly-projecting ribs *l*, that prevent the strands of rod from coming in contact with the surface of the rim or walls of the tub, and radial upright ribs *i* can also be formed on the top of the bottom plate *a*, for sustaining the coils clear from said plate.

A stationary conductor or guide-pipe H, of suitable dimensions, leads from the final rolls R of the rod-rolling mill to the reel A, for guiding and delivering the rod as it issues from the rolls into the annular area or coiling-space *m* between the upright cylindrical rim *c* and the row of pins *d*. The end of said

conductor is properly curved to give the rod a somewhat downward inclination into the coiling-space *m*.

The reel-shaft B is supported to rotate in bearings *e e'* or a suitable frame or standard E, and said shaft is furnished with a drive-wheel or friction-clutch disk B', having upper and lower frictional surfaces that engage with friction-clutch rims *f* and *f'*, for starting and stopping the rotative action of the reel. The upper bearing *e* carries a fixed friction-rim *f*, that matches the upper surface of the wheel B', and arranged in the bearing *e'* is a sleeve G', which supports the gear G, having formed upon or connected therewith the friction-rim *f'*, which matches the lower surface of the wheel B'. Power is applied to the gears G for rotating the reel by means of gears K, shafts L, and belts on the pulleys N, or by other suitable convenient mechanism. The shaft B is longitudinally movable in its bearings, and the clutching-surfaces are thrown into and out of engagement by raising and depressing the reel-shaft, in the present instance by means of the hydraulic lift, which is arranged at the lower end thereof, as at J, and controlled by the valves M. When depressed, as at the right in Fig. 2, the friction contact of clutch-surfaces *f'* imparts rotary movement to the shaft B and coil-receptacle; and when elevated, as at the left in Fig. 2, the frictional contact of the stationary clutch-surface *f'* stops the rotation and holds the shaft B and coil-receptacle at fixed position to facilitate removal of the coiled rod, which can be effected by means of a suitable hook, tongs, or other discharging implement.

In practice two reels are generally employed for coiling the product of a single rolling-mill, arranged adjacent to each other, as illustrated. Such reels take alternate rods, and thus allow time for removing the coil from one reel while a coil is being formed on the other. When thus arranged, a switch or shifting-section H' is provided in the conductor H to direct the rods either to the right or left reel.

In the operation the reel A is rotated at such speed that the median circle of the annular coil-receiving space *m* will travel at substantially the same velocity as that at which the rod issues from the final rolls R of the rolling-mill, and as the rod is poured from the downwardly-inclined end of the conducting-guide into space *m* it is laid in coils within the reel-tub A, between the upright rim *c* and the pins *d*.

In my application for Letters Patent heretofore filed and now pending, Serial No. 206,323, I have illustrated a rod-coiling mechanism having an improved reel of substan-

tially similar nature to that herein described; but it will be understood that the subject-matter herein claimed is withdrawn from the above-named application, and the peculiar construction of the coiling-reel is separately embraced in this my present application as a distinct division of the invention illustrated.

In a former application I have shown and described a tub-reel, and therefore do not herein broadly claim a tub irrespective of its construction and combination; but I have found in practice that such a reel without an internal row of pins is practically useless for coiling hot wire rods of small section.

What I claim as of my invention, herein to be secured by Letters Patent, is—

1. A reel composed of a plate mounted on a rotatable upright axis and having attached thereto a continuous upright peripheral rim, and provided with a row of upright pins concentric with said rim and forming therewith an annular space for receiving the coils of rod, in combination with the final pair of rolls in a rod-rolling mill and a stationary rod-guiding conductor leading from said final rolls to said reel.

2. A reel composed of a plate mounted on a rotatable upright axis and having attached thereto a continuous upright peripheral rim, said plate and rim having inwardly-projecting ribs and provided with a row of upright pins concentric with said rim and forming therewith an annular space for receiving the coils of rod, in combination with the final pair of rolls in a rod-rolling mill and a stationary rod-guiding connection leading from said final rolls to said reel.

3. A rod-coiling reel consisting of a circular plate mounted on a rotatable shaft and having an outer cylindrical rim provided on its inner side with a series of inwardly-projecting ribs, and an inner circle composed of a series of upwardly-projecting pins having their lower ends fixed in the plate, all substantially as and for the purpose set forth.

4. A wire-rod reel composed of a plate *a*, mounted on a rotatable upright axis and having an attached continuous upright peripheral rim *c*, and provided with a row of upright pins *d*, concentric with said rim and forming therewith an annular space *m* for receiving the coils of rod, all substantially as set forth.

Witness my hand this 7th day of May, A. D. 1889.

FRED H. DANIELS.

Witnesses:

CHAS. H. BURLEIGH,
ELLA P. BLENUS.