

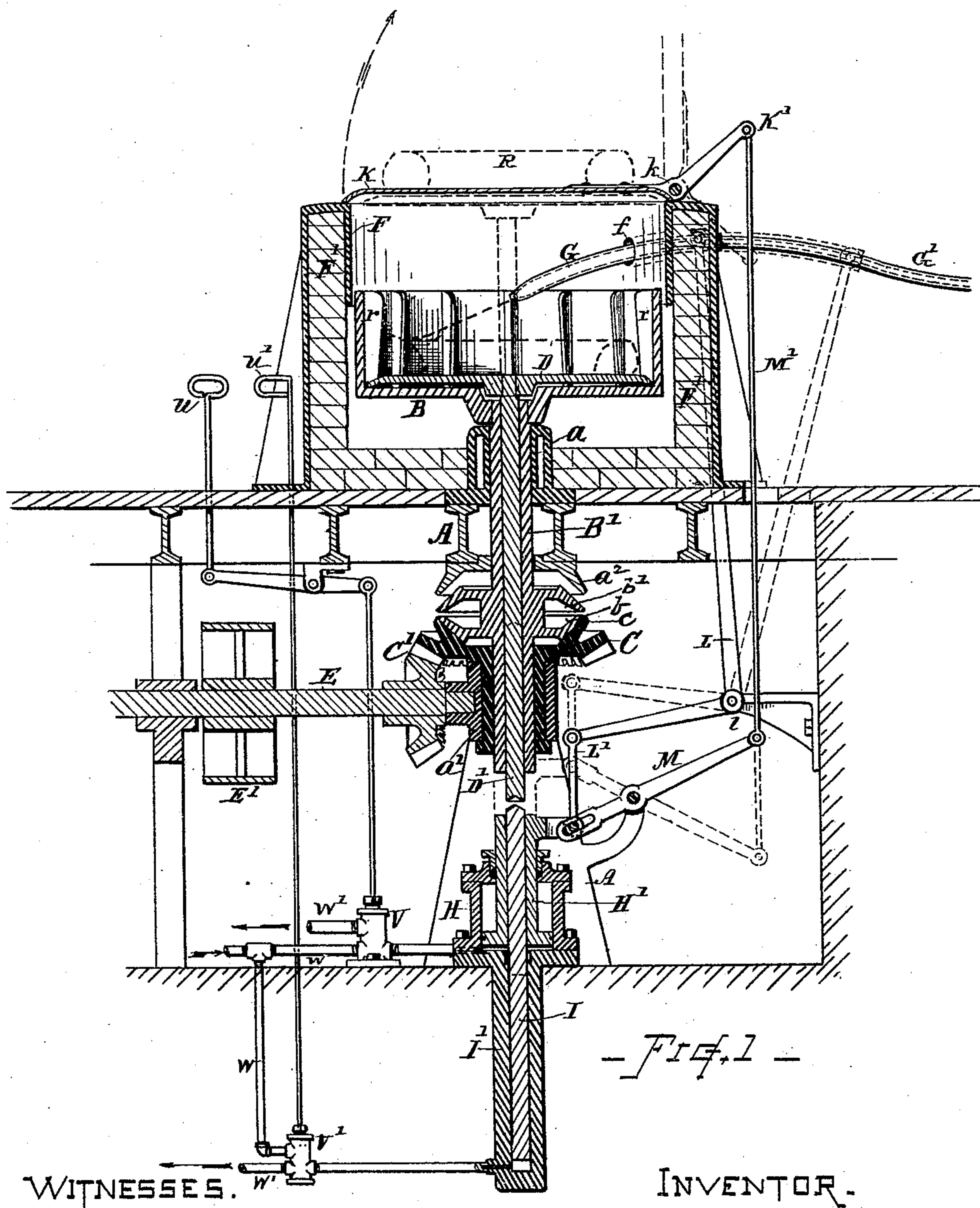
(No Model.)

2 Sheets—Sheet 1.

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

No. 444,551.

Patented Jan. 13, 1891.



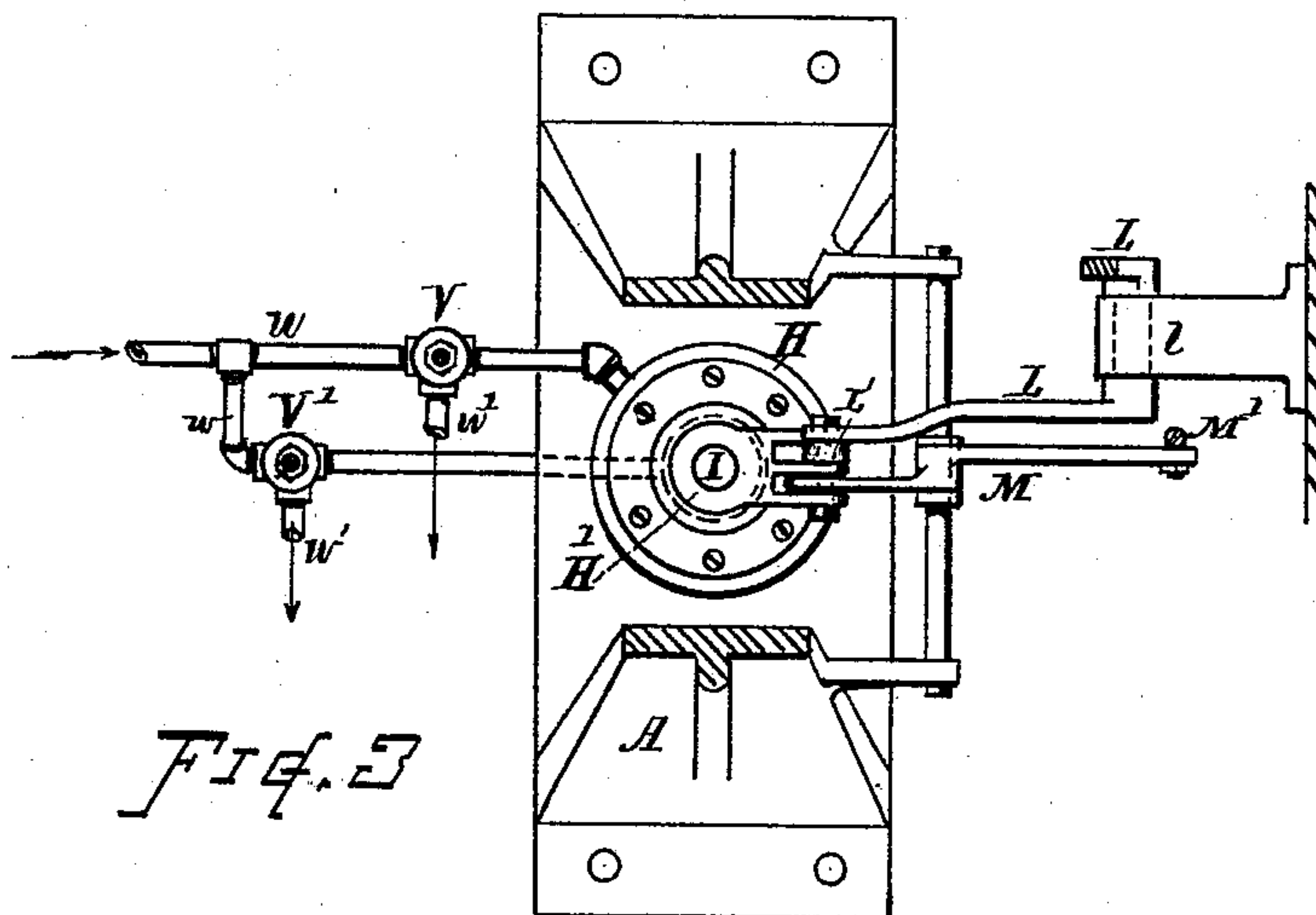
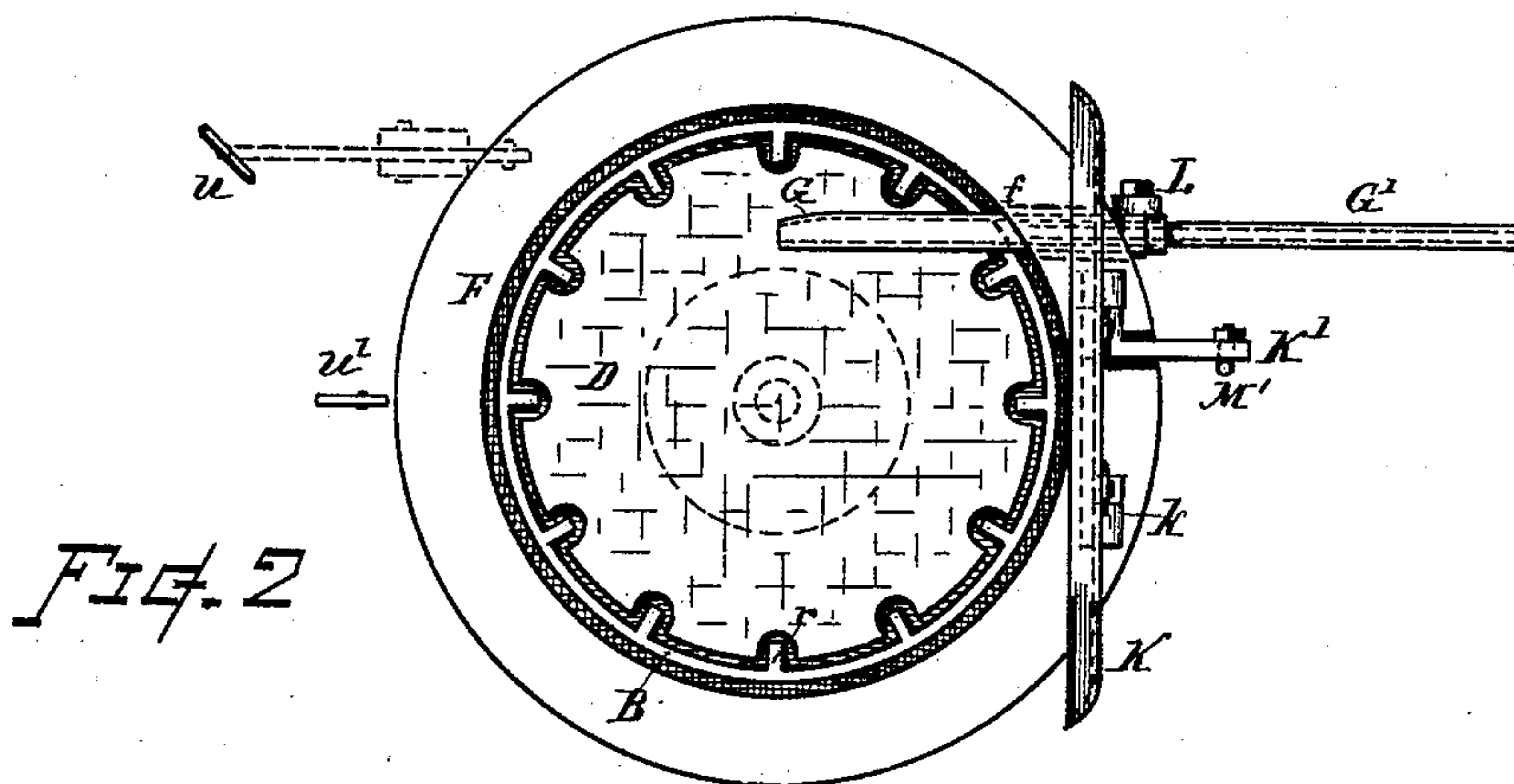
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WITNESSES.

*Ella P. Blenck*  
*H. J. Fay*

INVENTOR.

*Fred H. Daniels*  
*By Chas. H. Burleigh*  
*Attorney*



# UNITED STATES PATENT OFFICE.

FRED H. DANIELS, OF WORCESTER, MASSACHUSETTS.

## APPARATUS FOR COILING WIRE RODS.

SPECIFICATION forming part of Letters Patent No. 444,551, dated January 13, 1891.

Application filed November 26, 1886. Serial No. 219,869. (No model.) Patented in England March 26, 1887, No. 4,551; in France November 29, 1887, No. 187,279; in Sweden November 29, 1887, No. 1,820; in Belgium November 30, 1887, No. 79,742, and in Germany November 30, 1887, No. 45,202.

*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 Apparatus for Coiling Wire Rods, (for which Letters Patent have been granted to me in the several countries here named, dated and numbered as follows, viz: in England March 26, 1887, No. 4,551; in France, November, 29, 1887, No. 187,279; in Belgium November 30, 1887, No. 79,742; in Germany November 30, 1887, No. 45,202; in Sweden November 29, 1887, No. 1,820,) 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 this my present invention is to provide a practical and convenient apparatus for coiling or reeling hot wire rods, wherein the revolving coiling devices are surrounded by a stationary guard or curb, which extends above the top of the reel to a sufficient height to prevent liability of accident by throwing off loops of the rod while in motion and also having an elevating-platform and means for raising the same level with or above the open top of the guard to facilitate the convenient discharge of the coils.

Another object of my invention is to provide a stationary guard having a movable cover for closing the top of the guard, as hereinafter more fully explained.

Another object is to provide a telescoping guide-pipe, in combination with the reel and its elevating platform or spider, which pipe can be retracted to permit the platform to rise without coming in contact therewith.

Another object of my invention is to afford facilities for operating the cover of the guard and also the guide-pipe automatically in connection with the platform-elevating mechanism. These objects I attain by mechanism the nature of which is illustrated and explained, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a vertical sectional view showing a rod-coiling apparatus embracing the features of my invention. Fig.

2 is a plan view of the same, and Fig. 3 is a horizontal sectional view showing the lower portion of the mechanism.

In referring to parts, A denotes the supporting-frame. B indicates the revolving reel or coil-receiving device, which in the present instance is formed as a tub having a series of inwardly-extending ribs on its peripheral rim and mounted on an upright revoluble shaft B', supported in suitable bearings *a a'*, as indicated. If preferred, in lieu of the rim and ribs shown, a series of pins or fingers might be employed on the reel for receiving the rod; also, if desired, the fingers or ribs on the peripheral rim may be vertical instead of inclined, as the purpose of their inward inclination is simply to press inward any outlying loops or ends as the coil is discharged, there being ample space for the coil to be raised between the tops of the two rows of ribs or fingers, since the circle on which the rod is delivered is at a position intermediate between said rows of fingers or ribs.

C indicates the driving-gear, supported in the bearing *a'*, and provided with a friction-rim *c*, that engages with the friction-rim *b*, fixed on shaft B', for revolving the reel, and *b'* denotes a suitable friction-rim fixed on said shaft, which engages with the stationary friction-rim *a*<sup>2</sup>, fixed on the frame for stopping rotation of the reel, the stopping and starting being effected by depressing and raising the reel-shaft, substantially as explained in a former application.

E denotes the driving-shaft, provided with a suitable gear C' for turning the gear C and with a pulley E' or other suitable and convenient means for transmitting the motive power thereto.

D indicates the elevating platform or spider-frame, onto which the rod is deposited as it comes from the rolling-mill by the guide-pipe G. Said platform is fixed to the end of the upright shaft D', that extends down through the hollow of the reel-shaft B'. The platform extends out between the ribs or fingers *r* of the reel B in a manner to insure the lifting of all of the coil when said platform is raised.

F indicates a stationary guard or curb surrounding the reel B and extending above the top thereof some twelve inches, more or less.



Said guard consists of a cylinder of sheet metal or other suitable material, and the end of the guide-pipe G enters through an opening in the guard, as at *f*. In the present instance the guard is provided with a lining or backing *F'*, of brick or other refractory or non-conducting material, for inclosing the reel. The top of the guard has an opening sufficient to allow the platform to rise level with or above the top thereof for presenting the coiled rod at a position where it can be conveniently seized with transferring-tongs and discharged.

H indicates the hydraulic lifting mechanism, provided with a plunger *H'*, for raising the reel-shaft *B'* and friction-rims or plates *b b'* into and out of contact with the rims *a<sup>2</sup>* and *c*, for stopping and starting the reel, and with a plunger *I*, which passes through the plunger *H'* and is worked by pressure in the cylinder *I'*, adapted for raising the shaft *D'* and platform *D*.

*w w'* indicate the water supply and discharge pipes for the lifting-cylinders, and *v v'* denote the controlling-valves, worked by suitable connections having handles *u u'* at convenient positions for the attendant.

The end G of the guide-pipe is arranged to slide back or telescope with the portion *G'* of said guide, so that it can be retracted from the space within the guard when the platform *D* is to be raised and then again advanced or thrust forward when said platform is dropped. The operation of this telescoping guide-pipe is in the present instance effected automatically by means of the lever *L*, fulcrumed at *l* and having one of its arms connected with the movable end of said guide-pipe and its other arm connected by a suitable link *L'* or otherwise with the piston *H'* of the hydraulic lifting apparatus, so that the upward movement of the piston swings back the lever and retracts the end of the guide-pipe, substantially as indicated in dotted lines, Fig. 1.

K indicates a cover arranged for closing the top opening of the guard, and thus shutting in the reel during the delivery and coiling of the rods, so as to avoid in a measure the rapid cooling, oxidation, and scaling of the rod. Said cover is in the present instance hinged at the side *k* to the guard *F*, so that it can swing upward, and is provided with an arm or lever *K'*, from which a rod *M'* connects with an actuating-lever *M*, that works in conjunction with the piston *H'*, whereby said cover *K* is automatically raised and depressed in accordance with the movement of the lifting devices when stopping and starting the reel. (See dotted lines, Fig. 11.)

The arrangement of the connections and levers for effecting operation of the cover *K* and guide-pipe end *G* may be modified to meet the convenience of any particular situation of the mechanism as circumstances may require, this operation when effected automatically with the operation of the reel and platform-lifting action being a feature of and included within the scope of my invention.

In the operation of my improved apparatus the reel and platform, being in depressed position, are revolved by the friction at *cb*. The hot rod enters through the guide-pipe *G* and is deposited upon the platform *D*, where it is laid in coils by the rotative action of the reel. When the coil is complete, the valve *v* is shifted to put the hydraulic force onto plunger *H'*, which raises the reel-shaft *B'*, releasing the friction at *cb* and closing the friction-surfaces at *b' a<sup>2</sup>*, thus stopping the rotation, and also at the same time actuates the levers *L* and *M* to retract the guide-pipe *G* and to raise the cover *K*. (See dotted lines at *R* in Fig. 1.) The valve *v'* is then shifted to let force onto the piston *I*, which forces upward the platform *D*, so as to present the coil above the top of the guard, (see dotted lines, Fig. 1,) where it can be seized with the transfer-tongs and taken off, after which the valves *v v'* are shifted, relieving the pressure in the cylinders *H* and *I'*, and the parts drop to their original positions, as in full lines in Fig. 1, ready for receiving another coil of rod.

Two or more reeling mechanisms, such as are shown and herein described, may be employed for taking care of the product from a single rolling-mill or reducing-train, the reels being in operation alternately.

As I have in previous applications shown and described a rod-reeling apparatus embracing the features of an elevating platform or spider and a hydraulic lifting mechanism for operating the same, it will be understood that I do not include such features, broadly, in the claims herewith presented. I have also in a previous application described a movable guard in combination with a revoluble reel. Hence it will be understood that I do not herein make claim, broadly, to a guard irrespective of its construction and arrangement.

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

1. In a mechanism for coiling wire rods, the combination, with a reel, of a stationary guard surrounding said reel and extending above the top of the same, and means for ejecting or presenting the completed coil at the open end of the guard for its discharge bodily from the reel, substantially as set forth.

2. In a mechanism for coiling wire rods, the combination, with a revoluble reel, of a stationary guard surrounding said reel and extending above the top of the same, having an open top end through which to discharge the coil, and an elevating platform or spider adapted for raising the coil from the reel to a position above the guard, substantially as set forth.

3. In an apparatus for coiling wire rods, the combination, with a revolving reel, of a stationary guard surrounding said reel having an opened end for permitting the discharge of the coil of rod, and a movable cover over said opening for inclosing the reel and coil of rod within the guard and for opening to per-



mit the discharge of the rod, as and for the purpose set forth.

4. In an apparatus for coiling hot rods or wire, the combination of a table or platform onto which the rods are coiled, and a stationary guard surrounding and extending above the cooling-receptacle, having an open end through which the supporting-platform and coil can be elevated for delivering the coil clear of the guard, and means, substantially as described, for raising and depressing said platform, as and for the purpose set forth.

5. The combination, with a reel for coiling wire rods, of a table or platform onto which the wire is coiled, a guard surrounding and extending above the reel and having a cover, and means whereby said cover can be automatically closed or opened for retaining the rod within the guard or permitting the discharge of the coiled rod by elevating the supporting-platform, as and for the purpose set forth.

6. In an apparatus for coiling wire rods, the combination, with a reel and a surrounding guard or casing, of a guide-pipe for directing the wire onto said reel, having a telescoping end adapted to be retracted from its normal position, and means, substantially as described, for retracting and advancing the end of said guide, for the purpose set forth.

7. The combination, in an apparatus for coiling wire rods, of a reel, an elevating-plat-

form, a lifting mechanism for stopping the reel and raising said platform, a stationary guard surrounding said reel, having an opening at the top through which the coiled rod is discharged, a movable cover adapted to close the top of the guard, and connections for automatically raising said cover when said platform-lifting mechanism is brought into action, substantially as set forth.

8. The combination of a guide-pipe having the movable telescoping end G, the hydraulic lifting-plunger H', and a connecting-lever, as L, whereby said guide-pipe can be retracted, substantially as and for the purpose set forth.

9. The combination, with the reel and its shaft having intermatching friction-rims for rotating and stopping the same, and the elevating-platform with its shaft extending through the reel-supporting shaft, of the cylinder H, provided with the hollow plunger H', and the cylinder I, provided with the plunger I', extending through said hollow plunger, and valves for independently controlling the pressure within said cylinders, substantially as shown and described.

Witness my hand this 24th day of November, A. D. 1886.

FRED H. DANIELS.

Witnesses:

CHAS. H. BURLEIGH,  
ELLA P. BLENUS.