

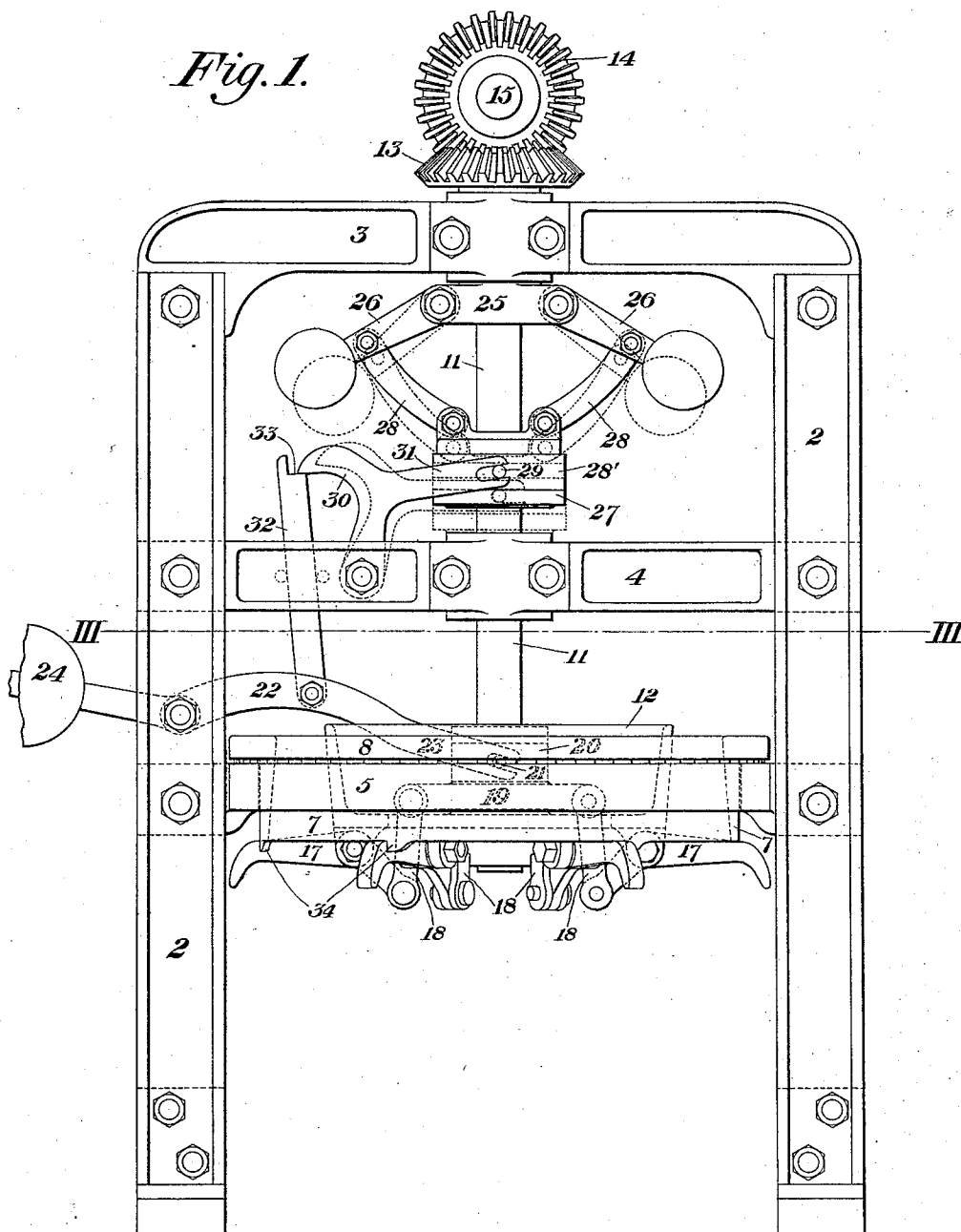
(No Model.)

3 Sheets—Sheet 1.

S. MOLTRUP & E. MAIN.
WIRE ROD REEL.

No. 532,239.

Patented Jan. 8, 1895.



WITNESSES

N. L. Gill
H. M. Carson

INVENTOR

Stephen Moltrup,
Ephraim Main
by their Attorneys W. Baxendell & Sons

(No Model.)

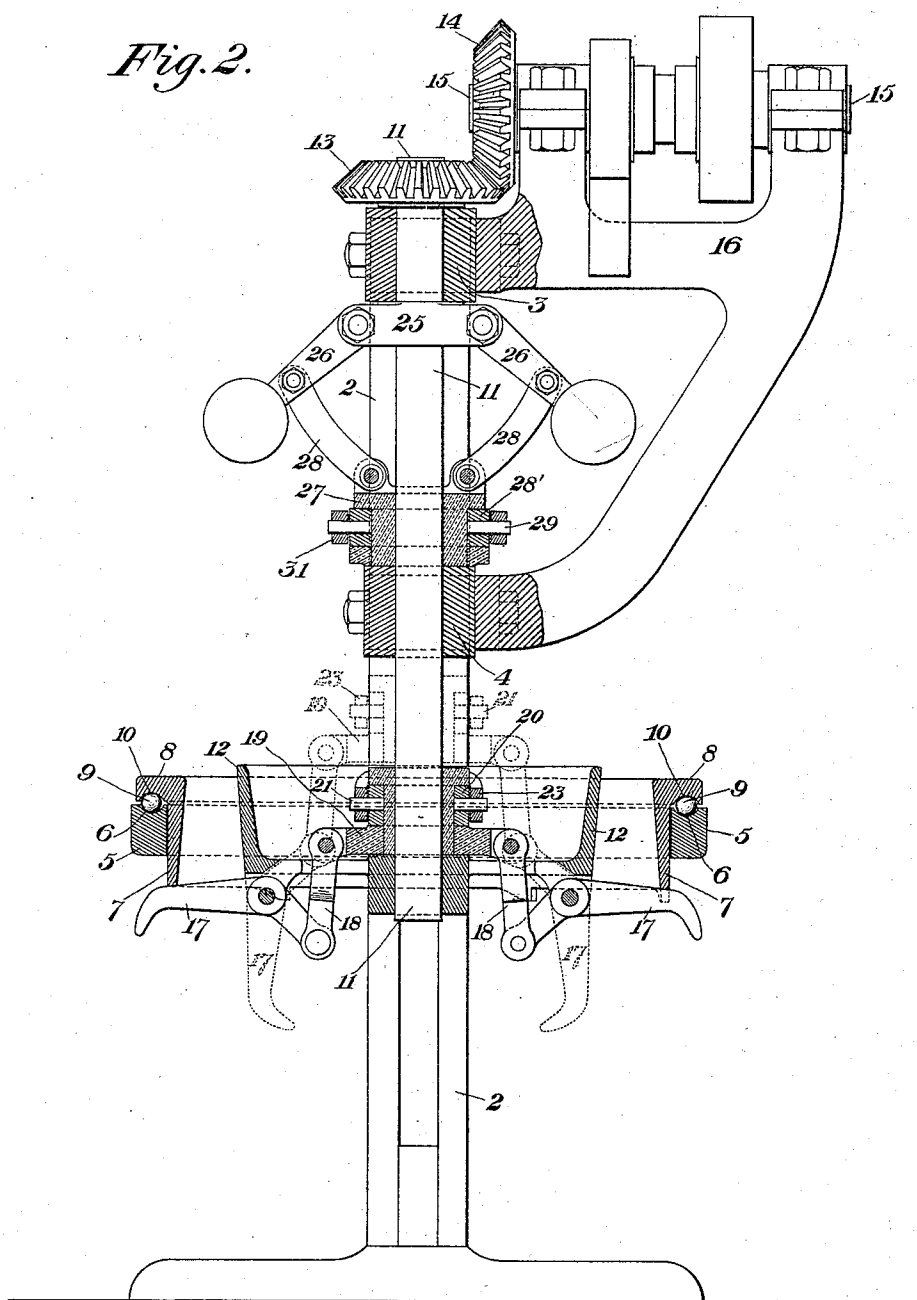
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Fig. 2.



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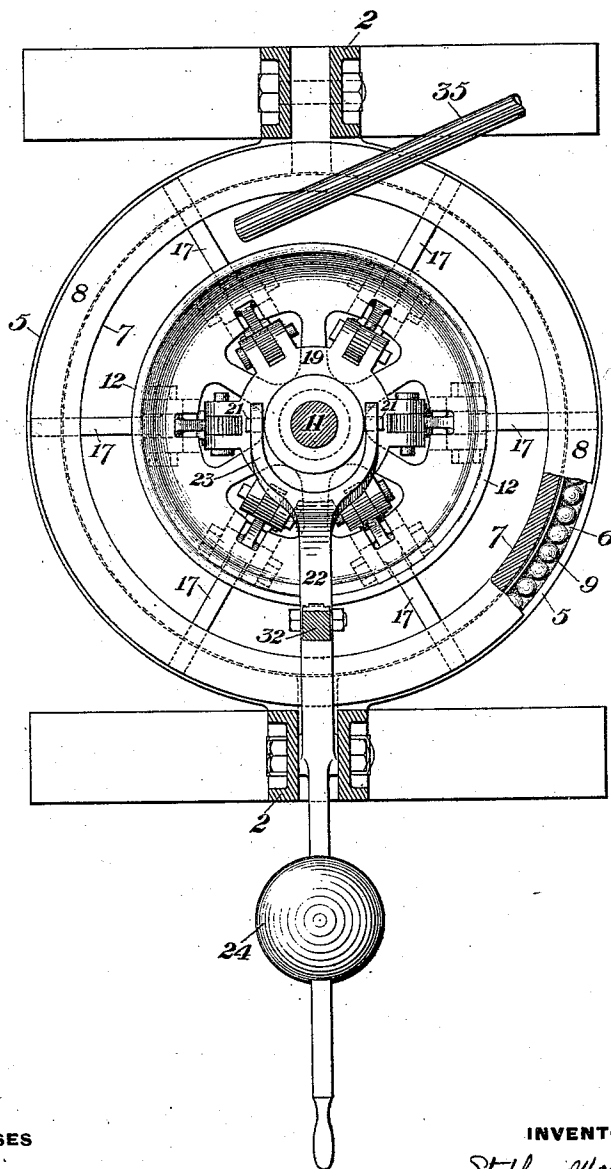
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Fig. 3.



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UNITED STATES PATENT OFFICE.

STEPHEN MOLTRUP AND EPHRAIM MAIN, OF BEAVER FALLS, PENNSYLVANIA.

WIRE-ROD REEL.

SPECIFICATION forming part of Letters Patent No. 532,239, dated January 8, 1895.

Application filed November 4, 1893. Serial No. 490,040. (No model.)

To all whom it may concern:

Be it known that we, STEPHEN MOLTRUP and EPHRAIM MAIN, of Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Wire-Rod Reels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of our improved reel. Fig. 2 is a vertical central sectional view thereof. Fig. 3 is a sectional plan view, the section being on the line III—III of Fig. 1.

In Figs. 1 and 3 we show by full lines the parts of the reel in the position which they occupy when the reel is in the act of coiling the rod, and in Fig. 1 we show by dotted lines the governing and locking devices in the position which they occupy when the reel is in the act of discharging the coil, but to prevent confusion of lines, we do not in this figure show the coil-upholding arms in their discharging position.

In most of the wire-rod reels of the various kinds now in general use, it is necessary, after the coil has been formed, to lift or remove it from the reel, and there is also more or less liability in such reels to kinking or twisting of the rod.

The object of our invention is to provide improved means for discharging the coil from the reel, and also to lessen the liability of the formation of kinks in the rod; and to this end it consists in providing the reel with an improved drop-bottom or delivering device, so arranged that when the coil is formed the bottom or device may be released or withdrawn and the coil allowed to drop from the reel by the force of gravity, and it also consists in devices which present smooth inner and outer rotatory surfaces between which the rod is coiled.

We will now describe our invention so that others skilled in the art may manufacture and use the same.

In the drawings, 2 represents the vertical standards of the reel extending between which are two transverse horizontal bars or beams 3 and 4. Situate below the bar 4 is the annular ring or track 5, which is fixed in a horizontal position to the standards 2, and has a groove 6 in its upper surface for the re-

ception of ball-bearings 9. Supported by the track 5 is a cylindrical ring 7, having a horizontal flange 8, which is provided with a groove 10 on its lower face, which groove is the counterpart of the groove 6 and is adapted to fit over and on the ball-bearings 9. By these means, the ring 7, which forms the outer part of the case within which the coil is formed, is so supported on the track 5 as to be easily rotated thereon. Journaled in the cross-bars 3 and 4, is the vertical spindle-shaft 11, to the lower end of which, within the cylindrical ring 7, is keyed a cylindrical ring 12 of less diameter than the ring 7, so as to leave a space between the inner circumferential face of the outer ring and the outer face of the inner ring within which space the rod is coiled. At the top of the shaft 11 is a beveled gear-wheel 13, which meshes with a beveled gear-wheel 14 on the horizontal power-shaft 15, which is journaled in bearings on the bracket 16; by means of which devices power is applied to rotate the shaft 11 and the ring 12.

The bottom of the space or receptacle formed by the rings 7 and 12, within which the rod is coiled, is composed of radial arms 17, which are so pivoted to the bottom of the ring 12 that a short part or arm of the arms 17 shall extend within the periphery of the ring toward the central shaft, and a longer part or arm of each of the arms 17 shall extend across and below the space between the rings 12 and 7. On the lower face of the ring 7 are lugs 34, with which the arms 17 engage when the ring 12 is caused to rotate, and thereby a rotatory movement is imparted to the ring 7. The outer ends of the arms 17, outside of the ring 7, are bent or curved downward, and the inner ends of these arms, inside of the pivotal point, are also bent downward, and at this end they are pivoted to the links or arms 18, the other ends of which links are pivoted to the sliding head 19 on the shaft 11, which head is supported by the bottom piece of the ring 12 and is adapted to slide up and down on the shaft 11. Fitting in a groove in the head 19 is a loose collar 20, having projecting pins 21. Pivoted to one of the standards 2 is the lever 22, the inner end of which is provided with a yoke 23, which is slotted and engages with the pins 21. By bearing down on the outer end of the lever

22, the head 19 is drawn upward on the shaft 11, and the inner part of the arms 17 being elevated, the outer portions of the arms 17, which form the bottom of the coil receptacle, are dropped to a vertical position, as shown by dotted lines in Fig. 2, leaving the bottom of the receptacle open and allowing the coil to drop therefrom.

Instead of dropping the arms 17 by applying force to the lever 22, we prefer to arrange the parts so that the arms will drop automatically under the weight of the coil, and to this end we provide the lever with a counterweight 24, which may be so adjusted, or increased or lessened, as to overbalance the weight of the head when a given size of coil rests on the drop bottom, and when a certain amount of rod has been coiled in the reel, the arms 17 will drop automatically with the weight of the coil. In order, however, that the coil shall not be dropped from the reel until the entire rod has been coiled, it is preferable that a locking device be connected with the lever so that the arms 17 may be retained in their closed position until the reeling operation is completed, and then, on unlocking the lever, the weight of the coil will cause the arms to drop, allowing the coil to fall from the reel, and as soon as the arms are released from this weight, the weight of the head 19 will bring the arms 17 back to their normal position. This locking device may be so arranged as to lock the lever 22 during the rotation of the reel and to release the same automatically whenever this rotation ceases. To this end a toggle-armed governor may be employed as follows: Keyed to the shaft 11, so as to rotate therewith, is a collar 25, to which the weighted arms 26 are pivoted. Fitting loosely on the shaft 11 is the sliding head 27 to which the toggle-arms 28, extending from the arms 26, are pivoted. Fitting in a seat in the head 27 is a ring 28' having projecting pins 29. Pivoted to the cross-bar 4 is a dog 30 extending from which is a slotted yoke 31, which engages with the pins 29. Extending up from the lever 22 and pivoted thereto is the stop arm 32, having a rest 33 on its upper end adapted to receive the dog 30 when the dog is thrown forward. When power is applied to the shaft 11 and the governor is caused to rotate, the centrifugal force lifting the arms 26 and the head 27, throws the dog 30 on the rest of the stop-arm 32 and thereby prevents the movement of the lever 22, and the arms 17 from dropping under the weight of the coil. As soon as the rotatory movement is stopped, the governor-arms drop, drawing the dog 30 away from the stop-arm 32, and the lever 22 and arms are released.

The operation of our improved reel is as follows:—Power is applied to the power-shaft 15 so as to drive the outer ring 7 at about the same speed as the rolls from which the rod passes are driven, and the rod is fed through the feed-pipe 35 into the space between the two rings 7 and 12. At the same time, the

centrifugal force acting on the governor locks the lever 22 and the arms 17. As the faces of the rings 7 and 12 are smooth and as both rings rotate, the outer ring being driven by the arms 17 engaging with the lugs 34, it moving smoothly on its ball bearings, the danger of kinking of the rod is comparatively small. As soon as the rod is completely coiled, the movement of the reel is stopped, and the arms 17 being thereby released, the coil drops from the reel. As soon as the weight of the coil is removed from the arms, they resume their former position, and the reel is ready for the reception of another rod. Suitable cars or carriers may be arranged on a track below the drop bottom of the reel to receive the coil and carry it to the place desired.

We do not desire to limit our invention to the exact movements and construction of parts described where equivalent movements and parts may be substituted therefor.

The advantages of our invention will be evident to those skilled in the art.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a wire rod reel, the combination of an inner rotatory ring having rotatory mechanism, an outer rotatory ring arranged to leave a coil space between the two rings, devices for imparting a rotatory movement from the inner to the outer ring, and a gravity drop bottom; substantially as described.

2. In a wire-rod reel, the combination of a gravity drop bottom, a centrifugal governor adapted to be rotated with the reel, and mechanism connecting the governor with the drop-bottom, substantially as described.

3. In a wire-rod reel, the combination of a drop-bottom, a rotatory side ring, and lugs projecting from the ring and engaging with the drop-bottom so as to rotate the ring; substantially as described.

4. In a wire rod reel, the combination of a drop-bottom, a locking device for retaining the bottom in its closed position, and means for automatically releasing the locking device; substantially as described.

5. In a wire-rod reel, the combination of an inner rotatory ring, having rotatory mechanism, an outer rotatory ring arranged to leave a coil space between the two rings, a gravity drop-bottom, and devices operated by rotation for retaining the bottom in its closed or elevated position; substantially as described.

6. In a wire-rod reel, the combination of a movable bottom, a receptacle for the coil, and devices operated by rotation for retaining the movable bottom in its closed position; substantially as described.

In testimony whereof we have hereunto set our hands.

STEPHEN MOLTRUP.
EPHRAIM MAIN.

Witnesses:

CHAS. C. GALTON,
JAMES F. MERRIMAN.