

No. 700,713.

Patented May 20, 1902.

G. F. & G. M. WRIGHT.  
MACHINE FOR COVERING COILS OF WIRE.

(Application filed Jan. 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.

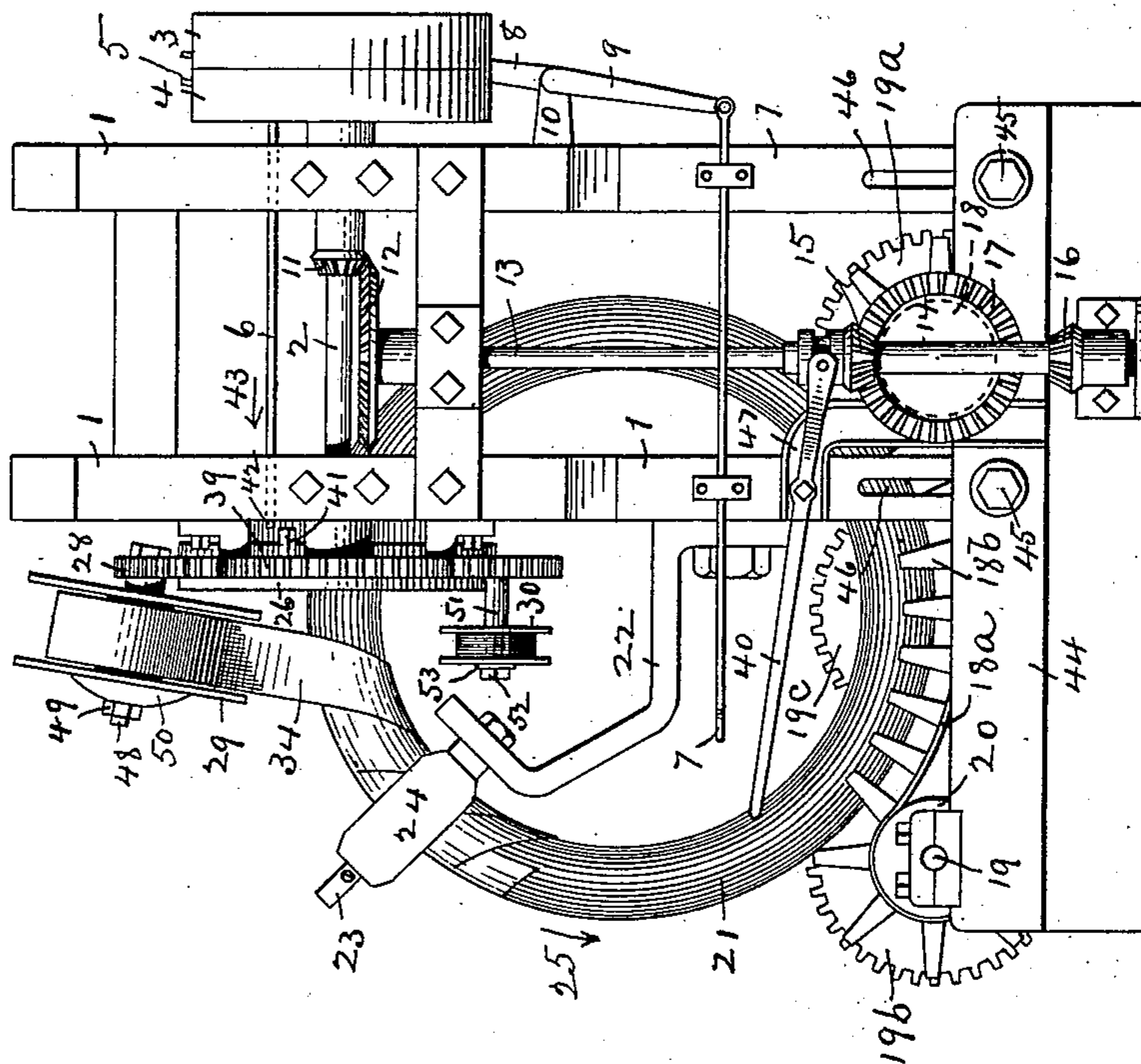


Fig. 2.

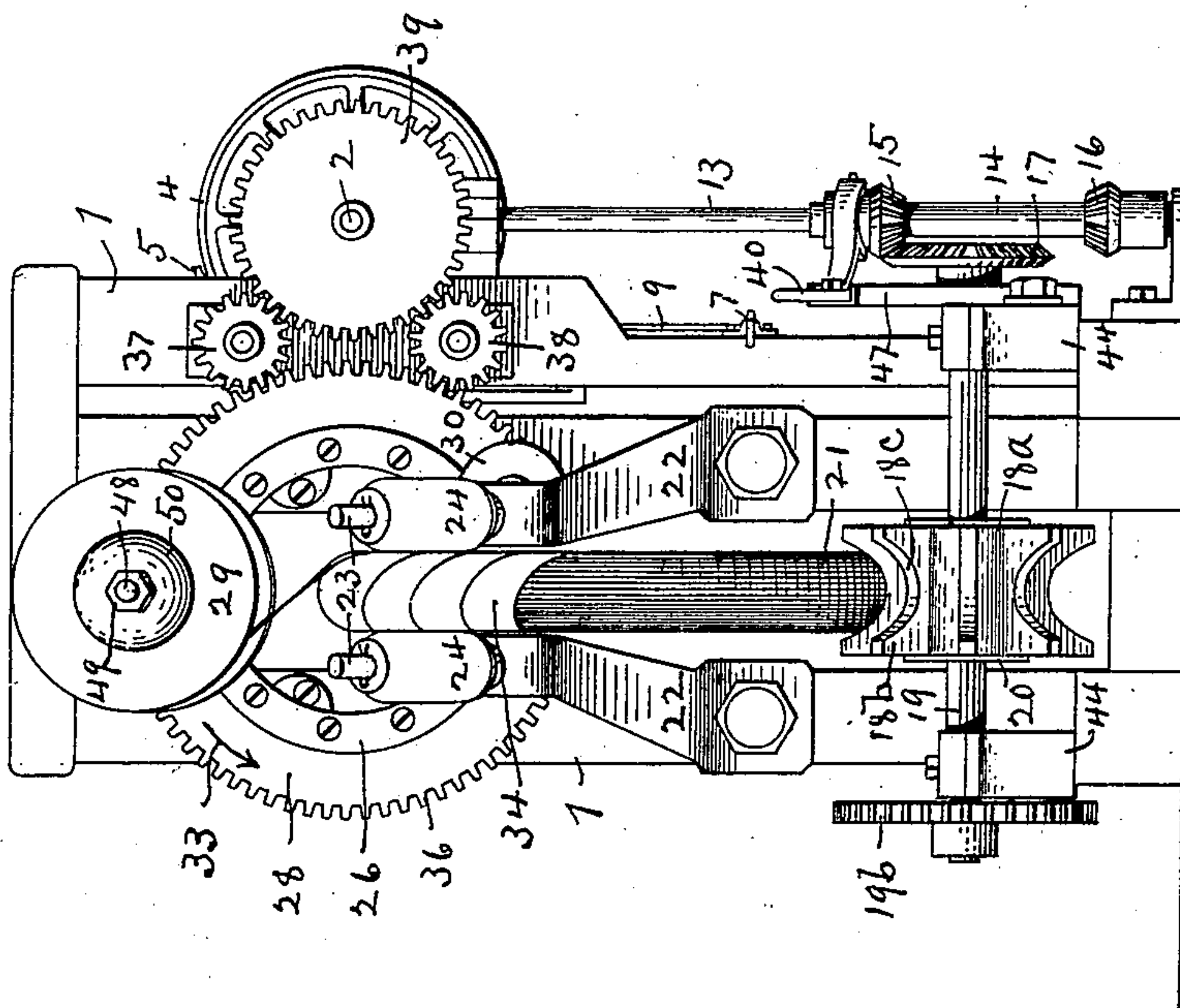


Fig. 1.

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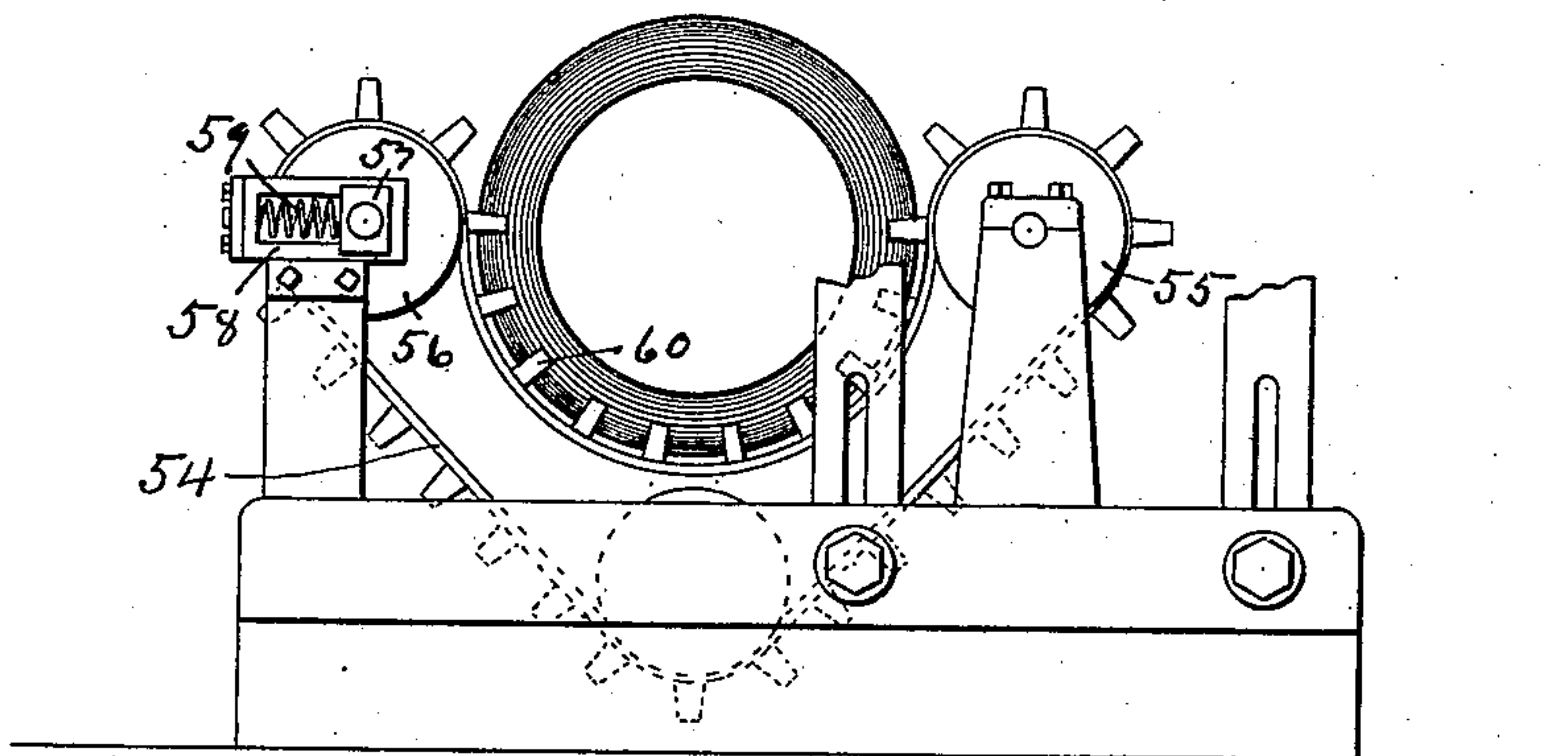


Fig 5.

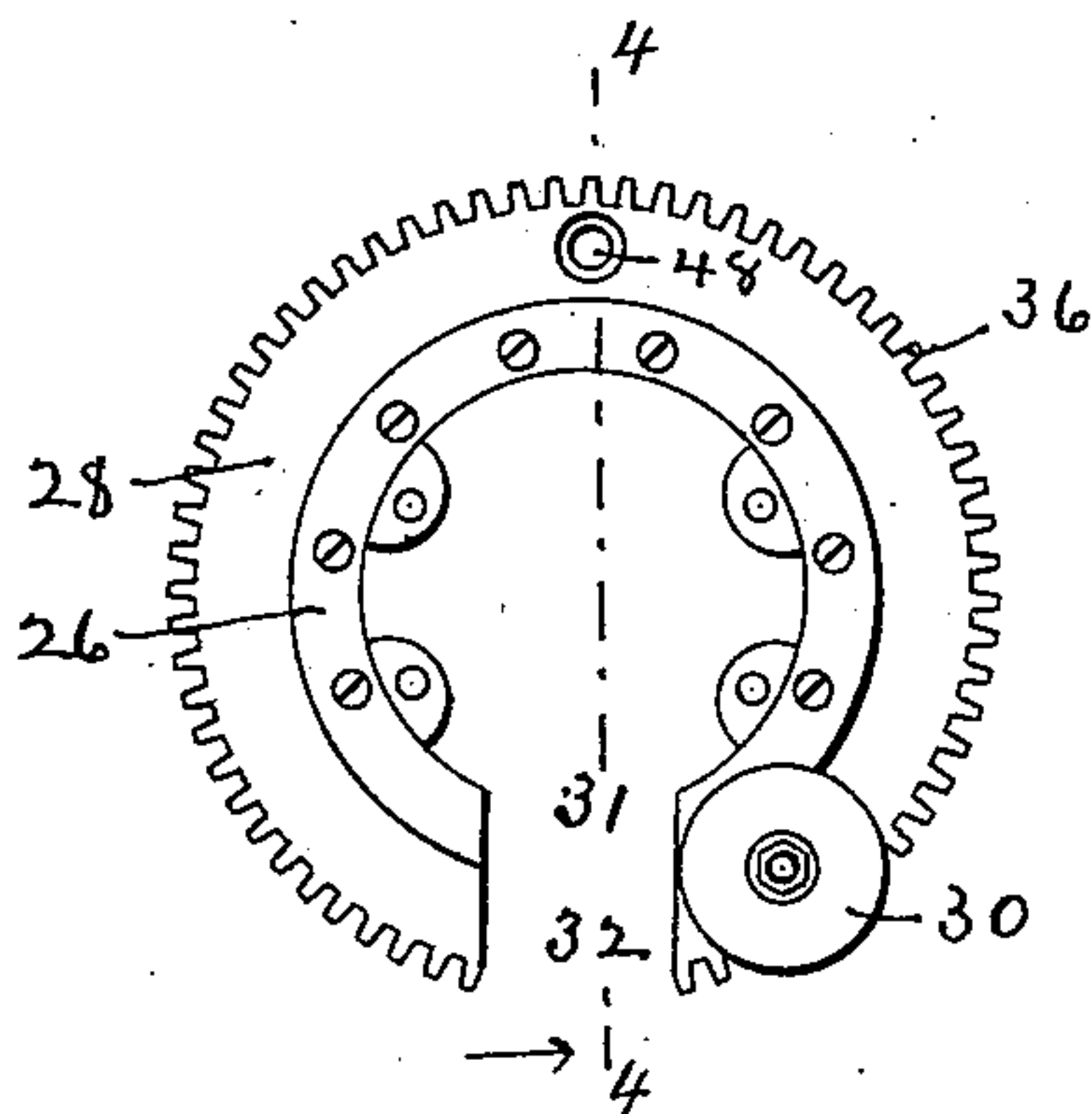


Fig 3.

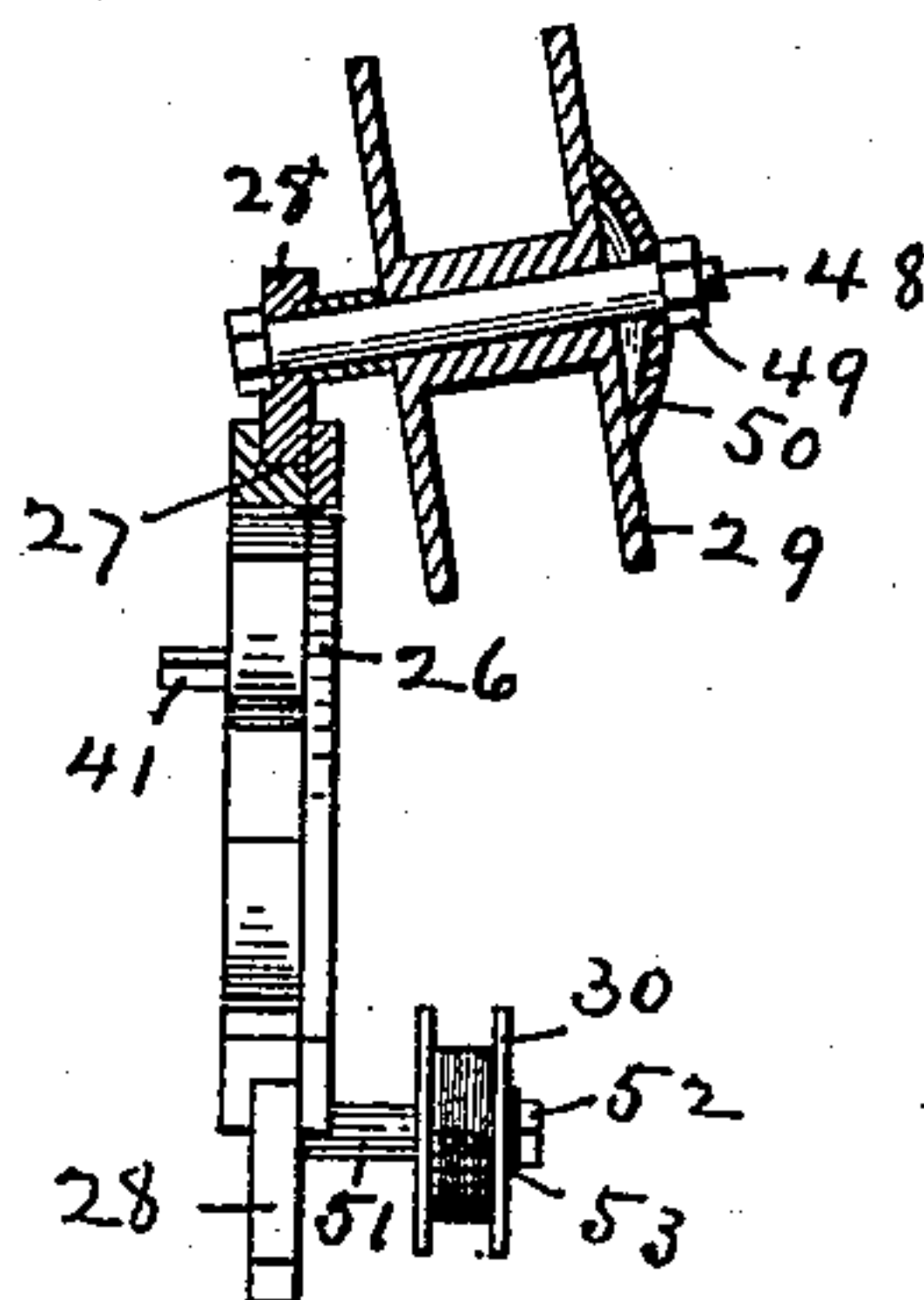


Fig 4.

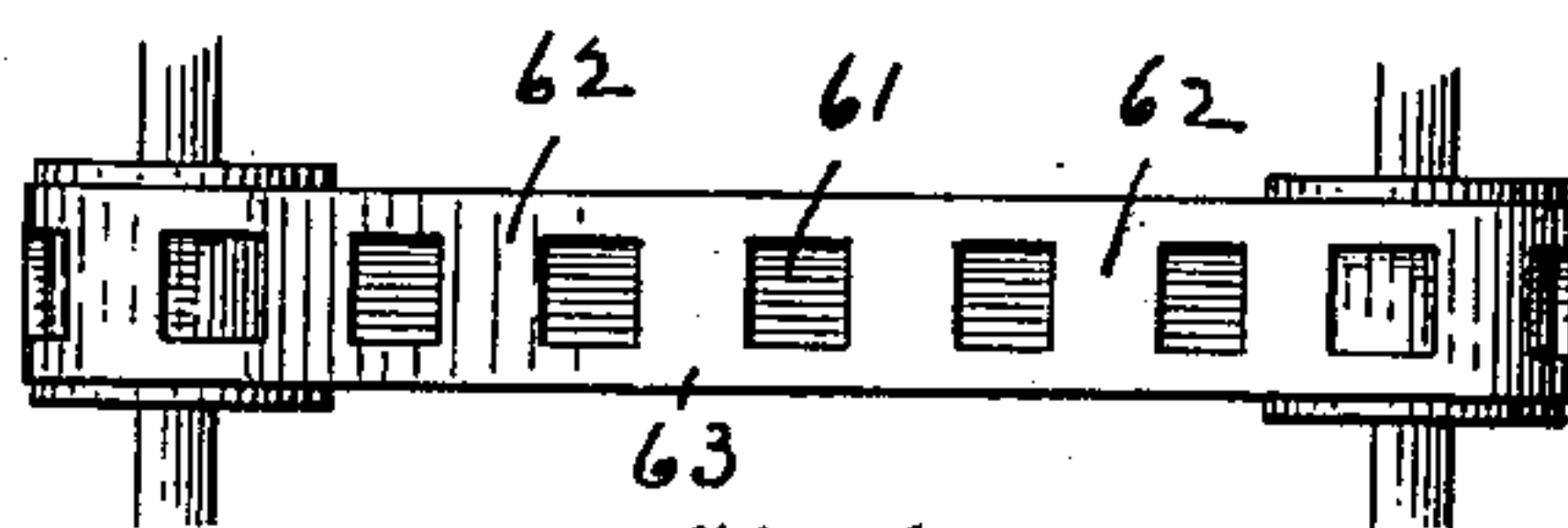


Fig 6.

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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR COVERING COILS OF WIRE.

SPECIFICATION forming part of Letters Patent No. 700,713, dated May 20, 1902.

Application filed January 8, 1901. Serial No. 42,495. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE F. WRIGHT and GEORGE M. WRIGHT, citizens of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Machines for Covering Coils of Wire, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a front view of a machine for covering coils of wire embodying our invention. Fig. 2 is a side view of the same. Fig. 3 is a front view of the rotating carrier and carrier-track detached from the machine. Fig. 4 is a sectional view of the carrier and carrier-track on line 4 4, Fig. 3. Fig. 5 shows a modified form of the carrying-belt for supporting and rotating small coils of wire, and Fig. 6 is a top view of a carrying-belt for supporting the coil of wire and having a series of openings throughout its length, in order to secure greater frictional resistance between the belt and the coil of wire and prevent the coil of wire from slipping on the belt.

Similar reference-figures refer to similar parts in the different views.

The object of our present invention is to provide a machine for covering coils of wire by spirally winding a strip of paper, cloth, or similar material around the coil of wire, by which the wire is completely covered, and thereby protected from dirt, moisture, and oxidation by its exposure to the air. It is now customary to protect coils of wire by winding a narrow strip of paper in short lengths around the coil, overlapping the edges of the turns of paper and also overlapping the ends of the several lengths required to cover a coil, and holding the covering-paper in place by spirally winding a cord or wire over the covering-paper.

It is the object of our present invention to provide a machine by which this winding may be automatically performed at much greater speed and with a continuous strip of paper of sufficient length to completely inclose the coil of wire, and the machine forming the subject of our present invention we believe to be the

first designed for the automatic winding of a coil of wire with a covering-strip.

Referring to the drawings, 1 denotes the framework of the machine, in which is journaled a driving-shaft 2, provided with tight and loose pulleys 3 and 4 and driven by a belt which is controlled by a shipper-fork 5, carried upon a longitudinally-sliding bar 6 and operated by means of a handle 7 and connecting rocking levers 8 and 9, journaled in a bracket 10.

The driving-shaft 2 carries a beveled pinion 11, engaging a beveled gear 12, attached to a vertical shaft 13, which is journaled in bearings on the framework of the machine and has a spline connection with a sleeve 14, which carries the beveled pinions 15 and 16, arranged to alternately engage a beveled gear 17, attached to a horizontal shaft, (not shown,) which also carries a flanged pulley 18. Directly in front of the horizontal shaft carrying the flanged pulley 18 and gear 17 is a similar horizontal shaft 19, carrying a similar flanged pulley 20, said pulleys 18 and 20 being in alinement and carrying a belt 18<sup>a</sup>, provided with lugs 18<sup>b</sup>, having notches 18<sup>c</sup> to receive the coil of wire 21 to be covered.

Attached to the frame 1 and projecting in front of the machine are a pair of brackets 22, with their upper ends supporting the studs 23, upon which the rolls 24 turn loosely, arranged to bear against the sides of the coil of wire and hold it in an upright position. When the upper beveled pinion 15 engages the beveled gear 17, as represented in the drawings, the rear pulley 18 will be rotated, and by gears 19<sup>a</sup> and 19<sup>b</sup> and an intermediate gear 19<sup>c</sup> the belt 18<sup>a</sup> will be moved, thereby imparting a rotary movement to the coil of wire 21 in the direction of the arrow 25.

Attached to the framework of the machine is a circular track 26, lying in a vertical plane at right angles to the vertical plane of the coil of wire 21. The track 26 is provided with an annular groove 27 to receive a rotating circular carrier 28, upon which are mounted a spool 29 for carrying the covering-strip of paper and a spool 30 for holding a wire or cord to be wound over the covering-strip. The circular strip 26 is cut away on one side, form-



ing a gap 31, and the circular carrier 28 is cut away on one side to form a similar gap 32 to receive the coil of wire, and the track 26 and the supporting flanged pulleys 18 and 20 are relatively placed in proper position to support the coil of wire with its upper portion inclosed within the circular track 26, so that the rotation of the carrier 28 in the direction of the arrow 33 will cause the paper and wire spools 29 and 30 to be carried around the coil of wire. By attaching one end of the covering-strip 34 to the coil of wire and rotating the carrier in the direction of the arrow 33, while the coil of wire is rotated in the direction of the arrow 25, the covering-strip will be wound spirally around the coil, Figs. 1 and 2.

The rotation of the carrier 28 is accomplished by providing its periphery with teeth 36, engaged by pinions 37 and 38, which are driven by a spur-gear 39 on the driving-shaft 2.

The pinions 37 and 38 are placed farther apart than the width of the gap 32 in the carrier, so that one of the pinions is always in engagement with the teeth 36. When the coil of wire has been wrapped with the covering-strip 34, the end of the cord or wire carried upon the spool 30 is attached to the coil, and the rotation of the coil 21 is then reversed by sliding the sleeve 14 upward on the vertical shaft 13 by means of the shipper-lever 40, thereby carrying the beveled pinion 15 out of and the beveled pinion 16 into engagement with the pinion 17. When the covering of the coil has been completed and a new coil is inserted in its place, the carrier 28 is stopped with its gap 32 coincident with the gap 31 in the circular track by means of a stud or pin 41, projecting from the side of the carrier and arranged to strike the end 42 of the sliding bar 6 when it is moved in the direction of the arrow 43 in order to ship the belt from the tight to the loose pulley. The contact of the pin 41 with the bar 6 occurs before the driving-belt has entirely left the tight pulley, so the carrier 28 will continue to rotate until it is positively stopped in proper position to allow the coil of wire to be withdrawn and a new coil inserted in the machine. The pulleys 18 and 20, upon which the coil of wire is supported while it is being covered, are carried upon parallel shafts journaled in the bars 44 44, which are adjustably attached to the framework of the machine by means of bolts 45 passing through slots 46 in the framework, so that the supporting-pulleys 18 and 20 can be vertically adjusted to accommodate coils of wire of different diameters. The shipper 40, by which the beveled pinions 15 and 16 are raised and lowered, is pivoted upon a bracket 47, carried by one of the bars 44, so that the pinions 15 and 16, with their shipping-lever 40, will be raised and lowered with the vertical adjustment of the bars 44.

Instead of employing the pair of sliding beveled pinions 15 and 16 for the purpose of reversing the coil of wire, a single pinion may be employed, capable of rotating the coil of

wire in one direction only, in which case the wire from the spool 30 is wound around the coil in the same direction as the covering-strip 34. The rolls 24 are placed the proper distance apart to bear upon opposite sides of the coil of wire and hold it concentrically with the circular track 26, and if coils of different thicknesses are to be covered the rolls 24 can be adjustably held upon the brackets 22, or the brackets themselves can be adjustably attached to the frame.

The spool 29 turns on a stud 48, placed at an oblique angle to the side of the carrier 28 in order to present the covering-strip at the proper angle to the coil of wire, and the requisite tension is given to the covering material by means of a nut 49, which presses an elastic friction-washer 50 against the side of the spool. The wire-spool 30 turns on a stud 51, held in the carrier 28, and a tension is given to the wire by means of a nut 52 and a friction-washer 53.

The use of notched lugs upon the carrying-belt affords a sufficient grip upon the wire coil to insure its continued rotation when the wire is wound into a coil which is circular in its cross-section; but when the coil of wire is square in its cross-section it may be conveniently rotated by allowing it to rest directly upon the face of the belt with the lugs omitted. When very small coils are to be covered, we prefer to employ a rotating belt which sags between the supporting-pulleys, as shown in Fig. 5, in which the belt 54 is shown as supported on pulleys 55 and 56, which are rotated by any suitable driving mechanism, with the belt 54 sagging between the pulleys to inclose a portion of the periphery of the coil of wire. One of the pulleys is supported by boxes 57, held in ways 58, and pressed by springs 59 toward the inner end of the ways in order to crowd the belt-lugs 60 against the coil of wire. In Fig. 6 we have shown a carrying-belt for supporting the coil of wire with the notched lugs omitted, the requisite frictional resistance between the coil of wire and the belt being secured by forming a series of openings 61, through which the edge of the coil of wire projects, the coil being supported upon the cross-bars 62, which connect the sides of the belt and which are curved by the weight of the coil, so they fit closely against the edge of the coil, causing the edges of the bars 62 to resist the slipping of the coil on the belt. The employment of a perforated belt 63 when sagged by the weight of the coil adapts itself to coils of different sizes and affords a larger surface in contact with the coil of wire than can be obtained by the use of the notched lugs 18<sup>b</sup>.

We are aware that mechanism has been devised to wrap coils of wire with covering material, such a machine being shown in the United States patent to J. A. Dixon, issued October 26, 1886, No. 351,584, in which the coil rested in a horizontal position on the



flanges of pulleys and the carrier was a continuous ring, with a removable piece to allow the insertion and removal of a coil of wire and driven by its contact with a series of revolving rolls. The machine forming the subject of our invention employs a different method of rotating the coil, with a fixed track and a rotating carrier having a permanent gap for the insertion of the coil, and it embodies various novel features of construction and arrangement, as hereinafter set forth.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a machine for covering coils of wire, the combination of means for supporting a coil of wire in a vertical position and on its lower edge, a fixed annular track for a rotating spool-carrier placed above said coil-support, said track having on its lower side a gap to receive the coil of wire with said gap in the vertical plane of said coil-support and a carrier adapted to rotate on said annular track, substantially as described.

2. In a machine for covering coils of wire, the combination of means for supporting a coil of wire in a vertical position and on its lower edge, a fixed annular track for a rotating spool-carrier placed above said coil-support, said track having on its lower side a gap to receive the coil of wire, with said gap in the vertical plane of said coil-support and a carrier adapted to rotate on said annular track, said carrier having a gap to receive the coil of wire, means for rotating said carrier, and means for stopping said carrier with its gap corresponding with the gap in said track, substantially as described.

3. The combination of means for supporting and rotating the coil of wire to be covered, an annular carrier for carrying the covering material around the coil of wire, means for rotating said carrier, a shipper for controlling the rotation of said carrier, a projection on said carrier, and a movable stop arranged to be carried into the path of said projection synchronously with the movement of said shipper, substantially as described.

4. The combination of means for support-

ing and rotating the coil of wire to be covered, an annular carrier for carrying the covering material around the coil of wire, means for rotating said carrier, a projection on said carrier, and a movable stop arranged to be carried into the path of said projection, substantially as described.

5. The combination of means for supporting the coil of wire on its edge in an upright position, means for rotating the coil, a pair of rolls bearing against the sides of the coil near its upper edge to maintain it in an upright position, an annular track inclosing one side of the coil, a carrier rotating in said track, and means for rotating said carrier, substantially as described.

6. The combination of means for supporting the coil of wire on its lower edge and in an upright position, means for rotating the coil, means for maintaining the coil in an upright position, an annular track inclosing one side of the coil, a carrier rotating in said track, and means for rotating said carrier, substantially as described.

7. In a machine for covering coils of wire, the combination with a fixed annular track for a rotating carrier inclosing the coil to be covered, a pair of rolls and a belt carried by said rolls and forming the support for the coil and means for raising and lowering said coils to bring the inclosed section of the coil concentric with said annular track, substantially as described.

8. In a machine for covering coils of wire, the combination with rotating covering mechanism, of a coil-support consisting of a pair of pulleys having parallel, horizontal axes, and a notched belt carried by said pulleys, said belt having a sagging upper surface whereby the notched edges of the belt engage the sides of the coil, substantially as described.

Dated this 1st day of January, 1901.

GEO. F. WRIGHT.  
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Witnesses:

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