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W. F. KINTZING.

LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

Fig. 1.

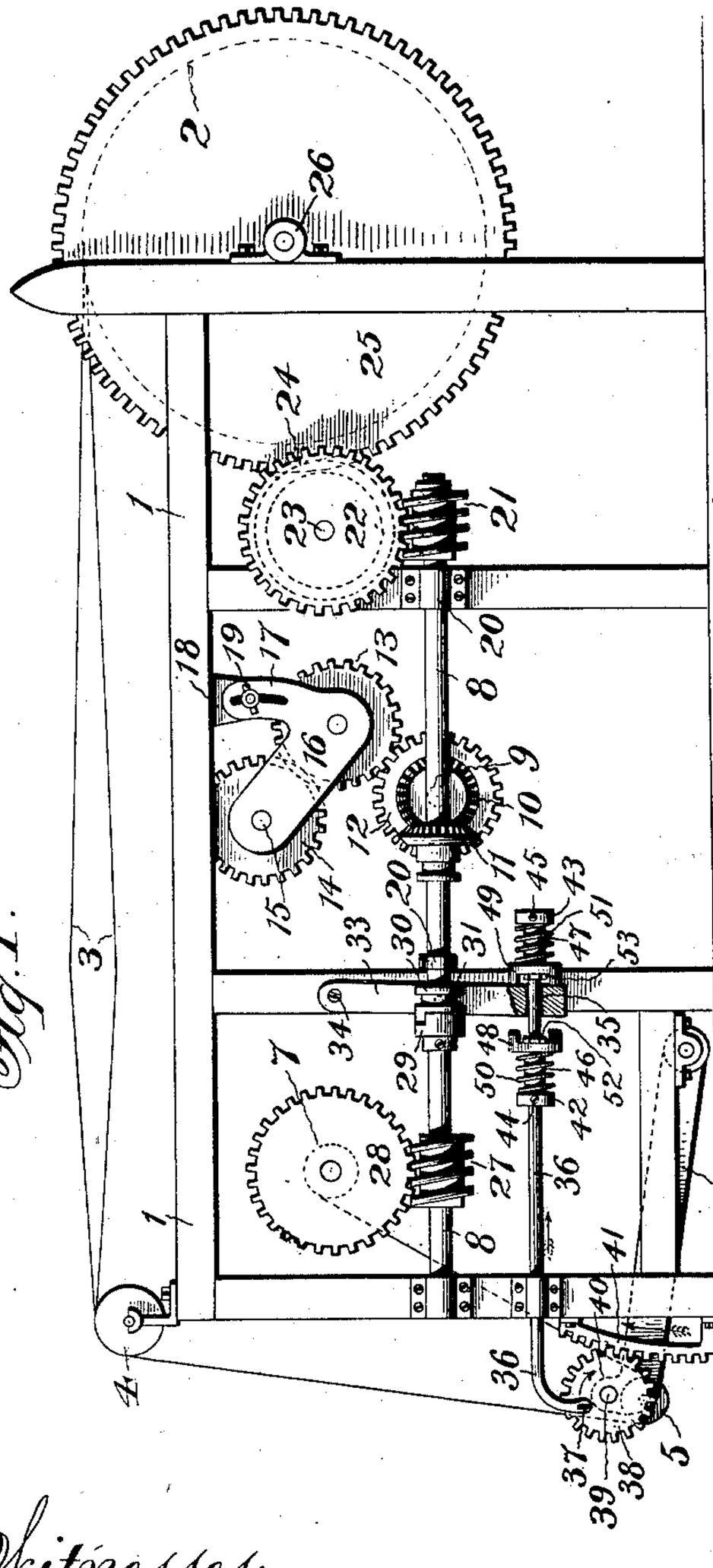
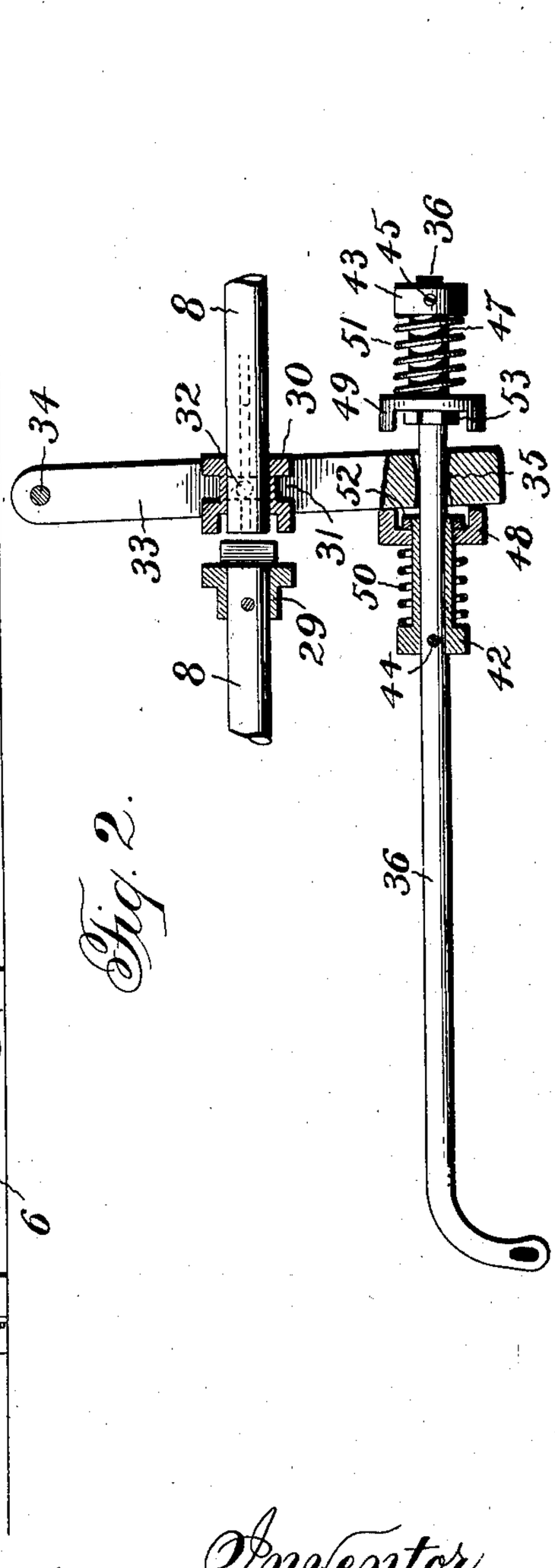


Fig. 2.



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No. 737,938. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM F. KINTZING, OF NEW FREEDOM, PENNSYLVANIA.

LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 737,938, dated September 1, 1903.

Application filed March 2, 1903. Serial No. 145,719. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. KINTZING, a citizen of the United States, residing at New Freedom, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Let-off and Take-up Mechanism for Looms; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to let-off and take-up mechanism for looms, more particularly for looms designed for weaving wire-cloth; and it has for its object to provide improved means for automatically winding the cloth upon the winding-drum as a given quantity of the cloth is woven, said drum being automatically thrown out of operation when a given quantity of cloth has been wound thereon and into operation when another given quantity has been woven and is ready to be wound upon the winding-drum.

To the accomplishment of the foregoing and such other objects as may hereinafter appear the invention consists in the construction and in the combination of parts hereinafter particularly described and then sought to be clearly defined by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a side elevation of so much of a loom-frame as is necessary to illustrate my invention with the invention applied. Fig. 2 is a detail view of a portion of the clutch-operating mechanism.

In the drawings the numeral 1 designates the loom-frame, and 2 the warp reel or drum from which the wire 3 is fed and which after passing through the heddles of the harness, as ordinarily in wire-cloth looms, then passes over a guide-roller 4 and from thence around a roller 5, carried by a swinging tension-frame 6, and thence to the winding-drum 7.

The numeral 8 designates a divided or two-part driven shaft which derives motion from a shaft 9, having a beveled gear 10, which meshes with the beveled gear 11 on the shaft 8, the shaft 9 being also provided with a gear 12, with which meshes a gear 13, deriving motion from the gear 14 on the shaft 15, to which power is communicated in any suitable manner. The gear 13 may be supported in a swinging bracket 16, of which there may be two, said bracket being journaled on the shaft 15 of the gear 14, thus permitting change of speed of rotation of the shaft 8 by changing the size of the gears 12 and 13, one or the other, and the bracket 16 may be held to its adjusted position, for instance, by a slotted arm 17, extending from the bracket and clamped to a suitable part of the loom-frame—for instance, to a bracket 18 thereof—by means of a clamping-screw 19.

The driven shaft 8, which is mounted in suitable brackets 20 on the loom-frame, is provided with a worm 21, which imparts motion to a worm-wheel 22, mounted on a shaft 23, which also carries a gear 24, which meshes with the gear 25 on the warp-drum 2, whose shaft is journaled in suitable brackets 26, said warp-drum thus having motion imparted to it.

The part of the driven shaft next to the winding-drum is provided with a worm 27, which meshes with the worm-wheel 28 on the shaft of said drum, so as to impart motion to the winding-drum. The part of the shaft 8 toward the warp-drum is made separate from the part of the same shaft next to the winding-drum, and the two parts of the shaft, at their adjacent ends, are to be provided with a clutch mechanism by which the two parts of the shaft may be coupled and uncoupled in order that the winding-drum at the proper time may be thrown into operation to wind the cloth thereon and out of operation until the time arrives for winding more cloth on the drum.

The parts so far described are similar in construction and mode of operation to the corresponding parts illustrated in my Patent No. 673,838, dated May 7, 1901, and are herein illustrated and described merely as an illustration of a suitable type of machine in connection with which my present invention may be employed.

To enable the winding-drum to be automatically rotated when a sufficient amount of cloth has been woven to be wound thereon and to have its rotation automatically stopped

until another given quantity of cloth has been woven, I provide the following instrumentalities: The numeral 29 designates one member of a clutch secured to the end of that portion of the driven shaft 8 toward the winding-drum, and 30 designates another member of the clutch, which is feathered to the adjacent end of the other member of the driven shaft, the clutch member 30 being formed with a peripheral groove 31, in which fits a pin 32, projecting from a swinging member 33, which is pivoted by a pivot-pin 34 or otherwise to a suitable support, so that by swinging the arm 33 the clutch member 30 will be caused to slide on the shaft 8, so as to engage and disengage the other member of the clutch for the purpose of rotating or stopping the rotation of the winding-drum as may be necessary, the pin-and-groove connection between the arm 33 and clutch member 30 permitting the latter to rotate with the portion of the shaft 8 to which it is feathered. A suitable part of the swinging arm 33 is formed with a slot 35, through which passes a pitman or throw-rod 36, one end of said rod being pivotally connected by a pin 37 to a toothed wheel 38, which is attached to a shaft 39, journaled in suitable bearings 40, carried by the tension-frame 6, the toothed wheel 38 being so mounted that its teeth will mesh with a rack 41, attached to a suitable part of the frame 1, the function or purpose of the wheel 38 and rack 41 being to reciprocate the pitman or throw-rod 36 for engaging and disengaging the clutch members 29 and 30 by swinging the arm 33 through the reciprocation of the pitman 36, the toothed wheel 38 by its teeth meshing with the rack 41 being turned in one direction on the downward movement of the tension-frame, and thus moving the pitman 36 in one direction, said wheel being turned in the opposite direction on the upward movement of the tension-frame, and thus moving the pitman in the opposite direction, so as to unclutch the clutch members and stop the rotation of the winding-drum, the several parts being so proportioned that the clutch members will be thrown into engagement when the tension-frame reaches a given point in its downward movement and thrown out of engagement when the tension-frame reaches a given point in its upward movement, thus automatically rotating and stopping the rotation of the winding-drum at given points in the downward and upward movement, respectively, of the tension-frame and whereby a constant tension is maintained on the cloth.

To the pitman or throw-rod 36 at opposite sides of the swinging arm 33 are secured nuts or collars 42 and 43 by set-screws 44 and 45 or otherwise, from which collars extend hollow sleeves or shanks 46 and 47, respectively, upon which are mounted so as to slide collars or shoes 48 and 49, respectively, between which collars or shoes and the fixed collars are springs 50 and 51, respectively, which springs will keep the movable collars or shoes pressed toward the swinging arm, said movable collars or shoes being prevented from being pressed from off the shanks or sleeves by flanges or nuts 52 and 53, respectively, screwed or otherwise attached to the ends of the hollow shanks or sleeves and fitting in the countersunk faces of the movable collars or shoes. These sliding collars or shoes are designed to be brought into contact with the swinging arm 33 in the movement of the pitman or throw-rod 36, so as to throw the arm 33 in the direction necessary for engaging and disengaging the clutch members 29 and 30. By making the collars or shoes 48 and 49 slidable and placing them under the pressure of the springs 50 and 51 they are pressed against the swinging arm 33 in the reciprocation of the pitman or throw-rod by a spring or yielding pressure, thus preventing binding or cramping and insuring easy operation of the parts and the exerting of a gradual pressure of the moving collars or shoes against the swinging arm.

Under the construction illustrated and described the weaving of the cloth is not only continuous and the operation of the winding-drum automatic, but the mechanism for actuating the winding-drum is rendered prompt and efficient and without injurious strain upon the parts and without racking and clashing of the members.

I have illustrated and described what I consider to be the best details of construction and arrangement of the several parts; but it is to be understood that changes can be made therein and essential features of my invention still be retained.

Having described my invention and set forth its merits, what I claim is—

1. In a let-off and take-up mechanism for looms, the combination with the warp-drum and the winding-drum and a two-part shaft provided with a clutch for coupling the shaft and actuating the winding-drum, of a swinging arm connected with the clutch, a tension-frame carrying a toothed wheel, a rack with which said wheel engages, and a throw-rod connected to said toothed wheel and having a part to engage the swinging arm for locking and releasing the clutch of the two-part shaft, substantially as and for the purposes described.

2. In a let-off and take-up mechanism for looms, the combination with the warp-drum, winding-drum and two-part shaft provided with a clutch for actuating the winding-drum, of a throw-rod and connecting member between it and the clutch of the two-part shaft, sliding shoes mounted upon the throw-rod upon opposite sides of the connecting member between the throw-rod and two-part clutch-shaft, fixed abutments on the throw-rod for the springs to bear against, springs interposed between said sliding shoes and fixed abutments for the springs on the throw-rod, and means for reciprocating the throw-

rod for locking and releasing the clutch of the two-part shaft, substantially as and for the purposes described.

3. In a let-off and take-up mechanism for looms, the combination with the warp-drum, winding-drum and two-part shaft provided with a clutch for actuating the winding-drum, of a swinging arm connected with the clutch, a tension-frame carrying a toothed wheel, a rack with which said wheel engages, a throw-rod connected with the toothed wheel and passing through the swinging arm, the collars fixed to the throw-rod on each side of the swinging arm and each provided with a tubular shank having a headed end, a sliding shoe mounted upon each tubular shank, and a spring mounted upon each shank between the sliding shoe and fixed collar, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. KINTZING.

Witnesses:
SPENCER D. WAREHEIM,
JACOB E. WEAVER.