

(No Model.)

C. H. HEINDEL.

LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

No. 574,326.

Patented Dec. 29, 1896.

Fig. 1.

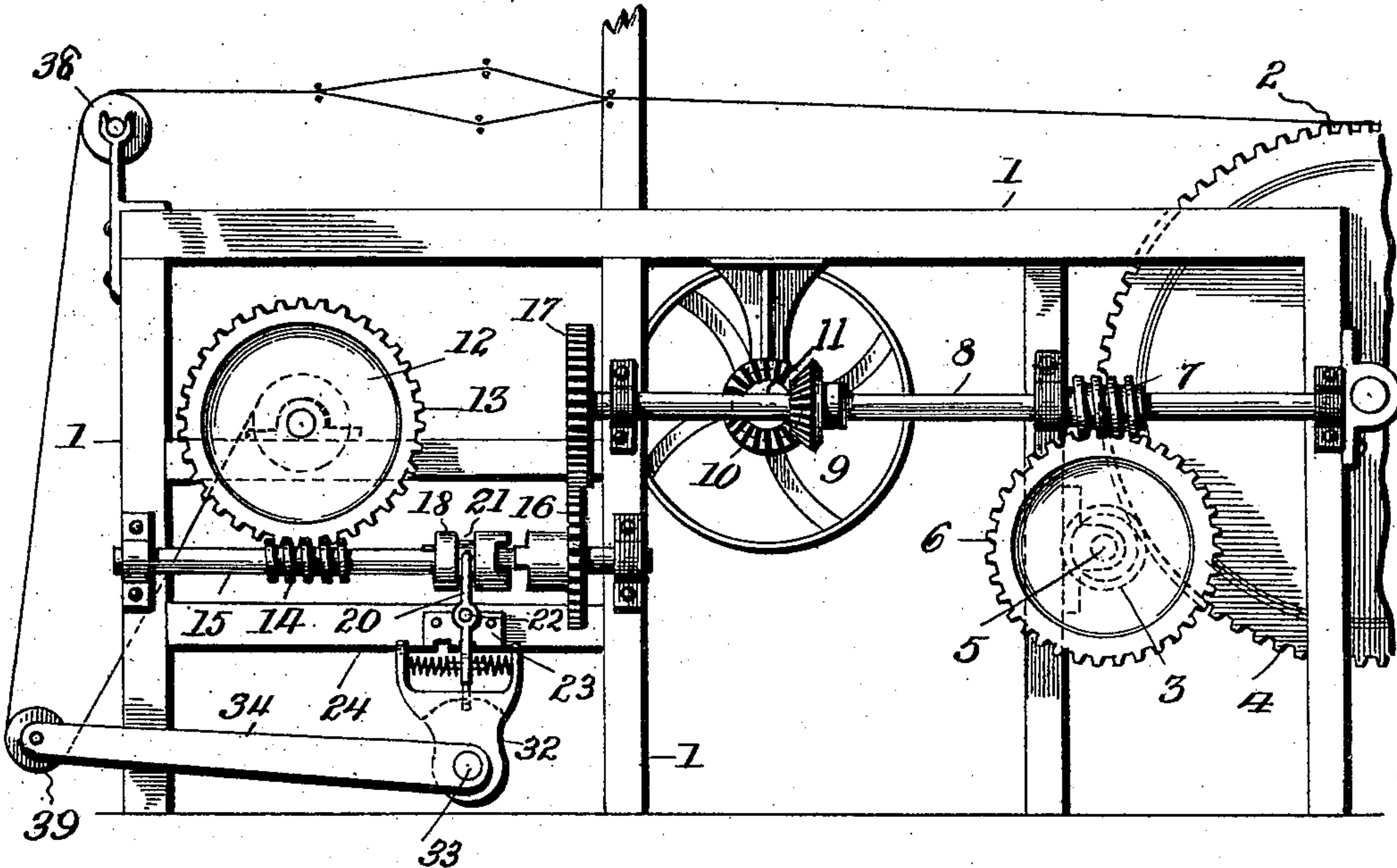


Fig. 2.

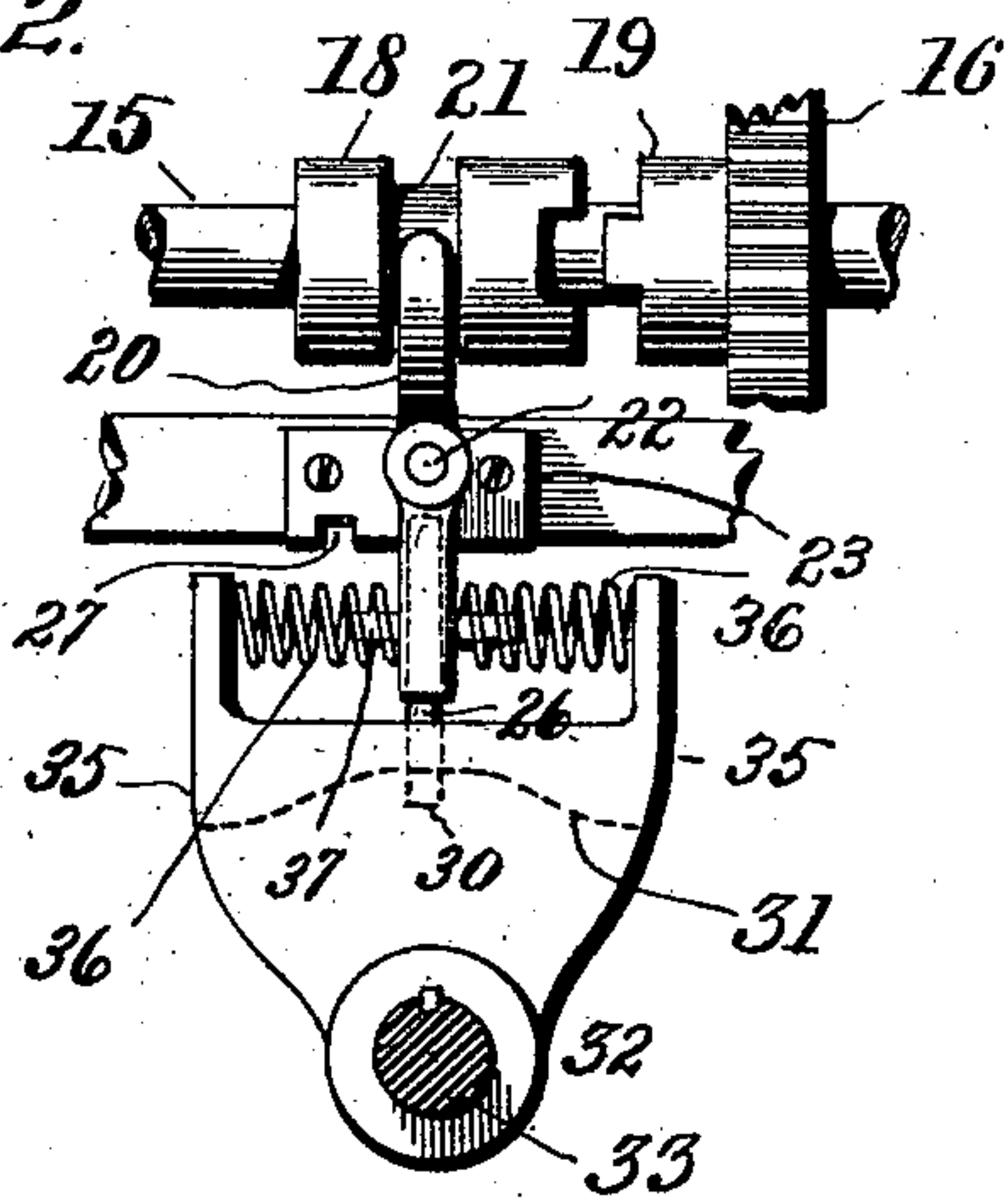
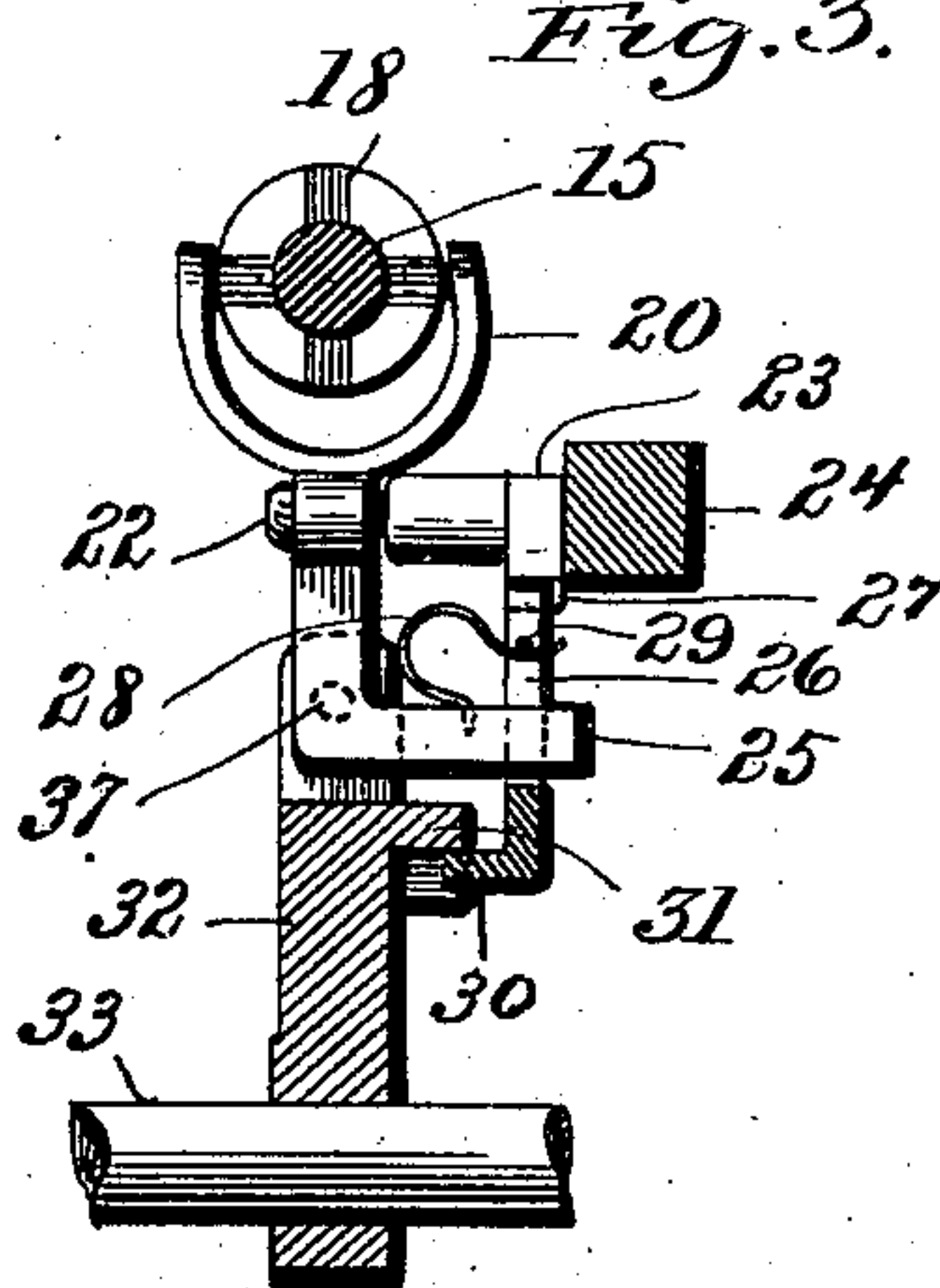


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 574,326, dated December 29, 1896.

Application filed March 9, 1896. Serial No. 582,387. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. HEINDEL, a citizen of the United States, residing at Glen Rock, 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; and it has for its object to provide simple and efficient means for clutching and unclutching certain parts for the purpose of intermittently throwing into and out of operation the cloth-winding drum, so as to take up a given quantity of the cloth as it is woven and then permit said winding-drum to remain at rest while another given quantity is being woven.

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 specifically 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 wire-weaving loom as is necessary to illustrate the invention. Fig. 2 is a detail side view of the clutch engaging and releasing mechanism; and Fig. 3 is a detail view of the same mechanism, looking at the end thereof.

In the drawings the numeral 1 designates the loom-frame, and 2 the drum from which the wire is unwound in the operation of weaving. This drum is revolved by means of a gear-wheel 3, engaging a larger gear-wheel 4 on the drum. The gear-wheel 3 is on a shaft 5, which carries a worm-wheel 6, with which engages a worm 7 on a shaft 8, which carries a pinion 9, with which meshes a bevel-wheel 10 on the drive-shaft 11.

The cloth-winding drum is designated by the numeral 12 and carries a worm-wheel 13, with which meshes a worm 14 on a shaft 15, which shaft has mounted loosely on it a gear-

wheel 16, which meshes with a gear-wheel 17, keyed to the end of the shaft 8.

The shaft 15 has feathered to it a clutch 18, adapted to be thrown into and out of engagement with the clutch-hub 19 of the gear-wheel 16 by means of a pivoted yoke 20, the arms of which fit in a groove 21, formed in the clutch 18. This yoke is pivoted by a bolt-pin 22 to a plate 23, secured to a cross-bar 24 of the loom-frame. The lower arm of the yoke 20 has an inwardly-extending foot 25, through which passes a vertically-moving finger 26, whose upper end is adapted to engage in different positions one of the two notches 27, formed in the plate 23. The finger 26 is held in engagement with one or the other of the notches 27 by means of a spring 28, connected to the foot 25 of the yoke 20 and engaging a stud 29 on the finger. The lower end of the finger is formed with an outward projection 30, adapted to be engaged by a cam 31, which may be in the form of a flange extending from the side of a casting 32 and so shaped that in the back-and-forth movement of the casting the cam will bear on the projection of the finger 26, so as to draw it down to disengage the finger from the notch in the plate 23. This casting 32 is secured to a shaft 33, to which are connected the arms 34, which constitute a part of the cloth-stretching beam, said shaft 33 being rotated back and forth as the arms 34 are raised and lowered.

The casting 32 has two arms 35, which lie on opposite sides of the lower member of the yoke 20, and between these arms and the lower member of the yoke 20 are coiled springs 36, which are held in place by means of pins 37, projecting from the lower member of the yoke and entering the coil of the springs. These springs serve to make an elastic connection between the arms 35 of the casting and the lower member of the yoke and permit the arms of the casting to act on the yoke, so as to shift the clutch 18 first in one direction and then in the other to clutch and unclutch the gear-wheel 16 in the operation of winding the cloth-drum and releasing it, so as to permit it to stand at rest.

As the wire-cloth is woven it passes over the roll 38, and thence around the roll 39 of the cloth-stretching beam and to the drum 12. When the winding-drum is at rest, the clutch-



ing mechanism is in the position shown by full lines in Fig. 1 of the drawings, and as the cloth is woven it is stretched or the slack taken up by the gravitation of the arms 34 of the cloth-stretching beam. As these arms 34 move downward they turn the shaft 33 and move the right-hand arm 35 of the casting 32, so as to compress the spring 36 between that arm and the lower member of the yoke 20. This movement also carries over the cam 31, so as to cause it to bear down on the projection of the finger 26. By the time that the arms 34 have nearly reached the limit of their downward movement the cam releases the finger 26 from engagement with one of the notches in the plate 23, and the right-hand arm 35, continuing to compress the spring 36, causes the yoke to be thrown so as to engage the clutch 18 with the hub of the gear-wheel 16. By this time the finger 26 has been carried by the foot 25 of the yoke to a point opposite the other notch in the plate 23, and the spring 28 has thrown the finger 26 into locking engagement with the other notch of the plate 23, and consequently holds the clutch 18 in engagement with the hub of the gear-wheel 16. As soon as this clutch engages the hub of the wheel 16 the rotation of that wheel is transmitted to the shaft 15 and through the worm 14 to the cloth-winding drum 12, so that said drum is caused to wind upon it the woven cloth. This winding of the cloth lifts the arms 34 of the cloth-stretching beam and as they are raised the shaft 33 is turned in the opposite direction and carries with it the left-hand arm 35 of the casting 32, so as to compress the spring between it and the lower member of the yoke. By the time that the arms 34 have reached the limit of their upward movement the cam 31 will act on the projection of the finger 26, so as to release it from the notch in the plate 23, and then the pressure of the arm 35 on the lower member of the yoke 20 is such as to throw the clutch 18 out of engagement with the hub of the gear-wheel 16, which will stop the rotation of the shaft 15 and the cloth-winding drum, the finger 26 at the same time being thrown into engagement by the spring 28 with the other notch in the plate 23, and thus holding the clutch 18 away from the gear-wheel 16. The arms 34 of the cloth-stretching beam now begin to descend, and as the beam descends it stretches the woven cloth and takes up the slack until the clutch 18 is thrown into engagement, as before, with the gear-wheel 16, and this operation continues in succession during the working of the machine to weave the cloth.

The construction described is certain in its operation and efficient and comparatively simple.

I have illustrated and described with particularity the preferred details of construction and arrangement of parts, but changes can be made therein without departing from the essential features of the invention.

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 cloth-winding drum, of a shaft for transmitting motion to said drum, a gear-wheel loosely mounted on said shaft, a driven gear meshing therewith, a clutch to engage said loosely-mounted wheel, a lever connected with said clutch, a shaft, a cloth-stretching beam connected to said shaft and adapted to rotate it, and arms arranged on opposite sides of said lever and connected to said rotating shaft to be oscillated thereby so as to alternately bear against opposite sides of the lever to clutch and unclutch the shaft which transmits motion to the cloth-winding drum, substantially as and for the purpose described.

2. In a let-off and take-up mechanism for looms, the combination with the cloth-winding drum, of a clutch-shaft for transmitting motion to said drum, a lever connected with the clutch of said shaft, a shaft, a cloth-stretching beam connected to said shaft and adapted to rotate it, arms arranged on opposite sides of said lever and connected to said rotating shaft to be oscillated thereby so as to alternately bear against opposite sides of the lever to clutch and unclutch the shaft which transmits motion to the cloth-winding drum, and means for locking the clutch in opposite positions, substantially as and for the purposes described.

3. In a let-off and take-up mechanism for looms, the combination with the cloth-winding drum and the cloth-stretching beam, of a shaft for transmitting power to said drum provided with a clutch, a pivoted lever connected with said clutch, a locking-finger passed through a part of said lever and carried thereby, a rotatable shaft provided with arms one lying on each side of said pivoted lever and actuated by the cloth-stretching beam so as to shift said lever to clutch and unclutch the shaft which transmits motion to the winding-drum, and a cam actuated from the shaft of the cloth-stretching beam and located to be brought into and out of contact with said locking-finger to retract the same and permit said arms to shift the pivoted lever by contact therewith, substantially as and for the purposes described.

4. In a let-off and take-up mechanism for looms, the combination with the cloth-winding drum and the cloth-stretching beam, of a shaft for transmitting motion to the winding-drum, a clutch for throwing said shaft into and out of operation, a lever for shifting said clutch provided with a foot, a locking-finger movable vertically in the foot of said lever and provided with a projection, a casting formed with arms lying on opposite sides of said lever and having a cam to actuate said locking-finger, and the shaft of the cloth-stretching beam having said casting connected thereto so as to be operated therefrom, substantially as and for the purposes described.



5. In a let-off and take-up mechanism for looms, the combination with the cloth-winding drum and the cloth-stretching beam, of a shaft for transmitting motion to said drum, a  
5 clutch for throwing said shaft into and out of operation, a lever for shifting said clutch provided with a foot, a locking-finger movable vertically in the foot of said lever, a locking-plate with which said finger is adapted to en-  
10 gage, a spring for throwing said finger into engagement with said plate, a cam for releas-

ing said finger, and means connected with the shaft of the cloth-stretching beam for shifting said lever, substantially as and for the purposes described.

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

CHAS. H. HEINDEL.

Witnesses:

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