

No. 673,838.

Patented May 7, 1901.

W. F. KINTZING.

LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

(Application filed Apr. 3, 1900.)

(No Model.)

Fig. 1.

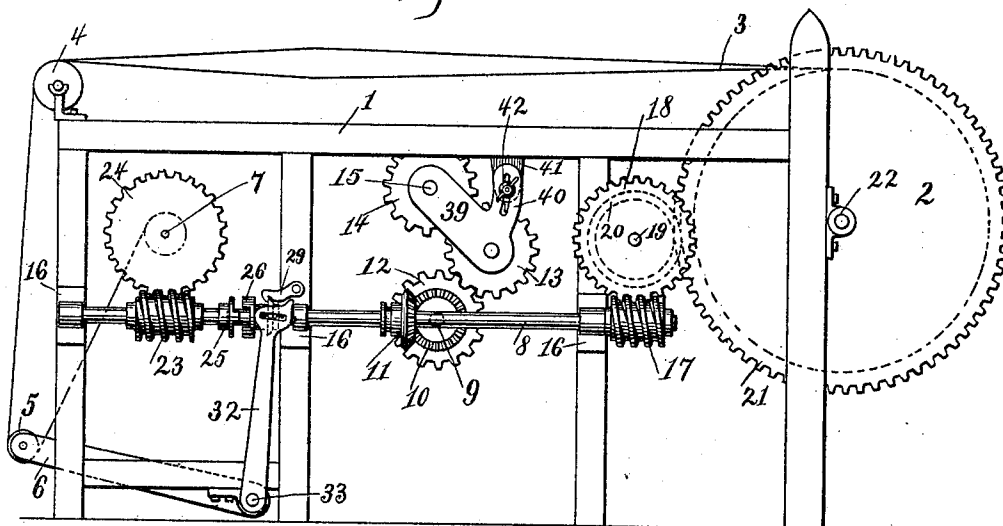


Fig. 2.

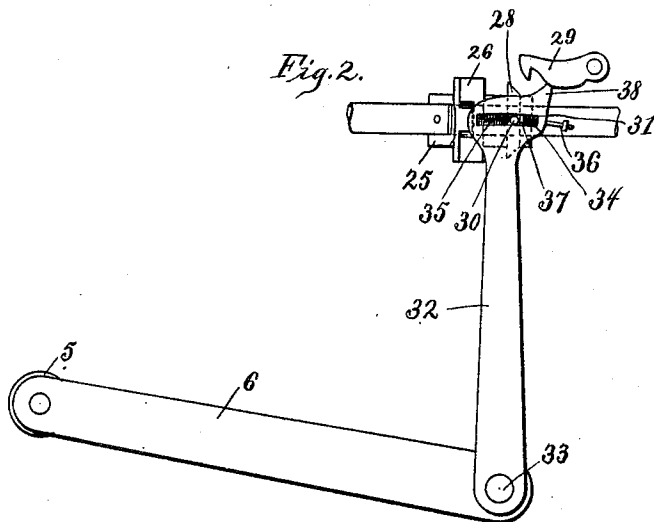
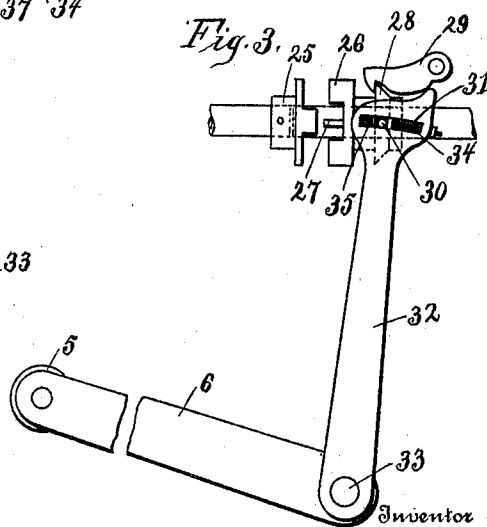


Fig. 3.



Witnesses.
 Chester A. Baker.
 J. D. Stings.

William F. Kintzing,
 by *W. F. Kintzing* Attorney

UNITED STATES PATENT OFFICE.

WILLIAM F. KINTZING, OF GLENROCK, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO ARTHUR S. NORRISH, OF SAME PLACE.

LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 673,838, dated May 7, 1901.

Application filed April 8, 1900. Serial No. 11,340. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. KINTZING, a citizen of the United States, residing at Glenrock, 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 simple and efficient 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 automatically thrown in operation when another given quantity has been woven and is ready to be wound thereon.

It has also for its object to provide simple and efficient means for changing the speed of the shaft through which motion is transmitted to the warp reel or drum and to 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 and showing the invention applied thereto. Fig. 2 is a detail view of the swinging tension-frame and clutch mechanism, showing the position of the parts when the clutching mechanism is clutching the two parts of the driven shaft together, and Fig. 3 is a similar view of the same part when the clutching mechanism is in its unclutched position.

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 driven shaft, which derives motion from a shaft 9, having a bevel-gear 10, which meshes with the bevel-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 a gear 14 on a shaft 15, to which power is communicated in any suitable manner. The driven shaft 8, which is mounted in suitable brackets 16 on the loom-frame, is provided with a worm 17, which imparts motion to worm-wheel 18, mounted on a shaft 19, which also carries a gear 20, which meshes with the gear 21 on the warp-drum 2, whose shaft is journaled in suitable brackets 22, said warp-drum thus having motion imparted thereto. The part of the driven shaft next to the winding-drum is provided with a worm 23, which meshes with the worm-wheel 24 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 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 at the proper time thrown out of operation until the time arrives for winding more cloth on the drum. For the purpose of enabling this coupling and uncoupling to be effected with promptness and efficiency I have devised improved clutch mechanism. This mechanism comprises a clutch member 25, which is fixed to one part of the divided shaft—for illustration, to that part next to the winding-drum—and a clutch member 26, which is movably connected to the other part of the shaft—for instance, by a feather 27—which will permit such member to be moved back and forth into and out of engagement with the other member of the clutch. The movable member of the clutch

is formed with a shoulder or collar 28, designed to have a catch or latch 29 to engage therewith when the parts of the shaft are unclutched. From this shoulder or other part of the movable member 26 of the clutch there projects a pin or stud 30, which enters a slot 31, formed in the upper part of a lever 32, which is secured to the shaft 33, to which the inner end of the swinging frame 6 is secured, so that said lever will be moved in the swinging of the frame 6, and thus cause the movable clutch member to be thrown into clutching engagement as the lever 32 is moved in one direction and out of engagement when said lever is moved in the opposite direction. Within the slot 31 of the lever 32 are located springs 34 and 35, one on each side of the stud or pin 30, which springs are adapted to exert a pressure upon the pin 30 in the movement of the lever 32, and thus give an impelling force to the clutch member to facilitate quick action in clutching and unclutching, as will hereinafter appear. The spring 34 is shown as having a sliding pin or stem 36 passing through it and the lever and as having a head 37 to bear against the stud 30. It is obvious that the other spring 35 may have such a pin or stem passing through it, if desired. The upper end of the lever 32 is formed with a shoulder or cam 38, adapted in the movement of the lever in one direction to bear against the latch 29, so as to release its hold on the shoulder or collar 28 of the movable clutch member 26 when said member is thrown into engagement with its mate.

The operation of this part of my invention is as follows, assuming that the two parts of the shaft 8 are unclutched and the clutch members are in the position illustrated in Figs. 1 and 3 of the drawings: On the downward movement of the swinging frame 6, which keeps the proper tension on the cloth, the lever 32, at its upper end, is thrown forward in the direction of the winding-drum. The clutch member 26 being held by the latch 29, the forward movement of the lever 32 tends first to compress the spring 34, thereby imparting tension to the same. This continues until the cam 38 forces up the latch 29, so as to disengage the same from the collar 28, whereupon the spring 31 expands and by the tension given to it under its compression quickly throws the clutch member 26 into engagement with the clutch member 25, thus joining the two parts of the driven shaft 8, so that the rotary motion of said shaft is imparted to the worm 23, so as to turn the drum 7 and wind up the cloth thereon, the forward movement of the lever 32 also tending to compress to a greater or less extent the spring 35, so as to impart some tension thereto. As the cloth is wound upon the winding-drum and the free end of the swinging frame 6 is raised, the lever 32 is thrown backward, thus moving the member 26 of the clutch away from the member 25 and unclutching the two parts of the shaft 8, the spring 37 during this back-

ward movement of the lever expanding and throwing the clutch member 26 quickly backward from the member 25, which backward movement of the clutch member 26 may to a greater or less extent be influenced by the backward movement of the lever, the cam 38 of the lever in its backward movement passing from under the latch 29 and allowing the same to drop, so as to engage with the collar 28 of the clutch member 26, and thus hold it in its withdrawn position until said member is to be again actuated in the forward movement of the lever 32. It will of course be understood that the several parts will be so proportioned that the two parts of the shaft will be clutched together until a part of the woven cloth is wound upon the winding-drum and unclutched as the swinging frame 6 takes up the slack in the woven cloth until another part of the cloth is to be wound, the operation being automatic and the weaving of the cloth being continuous.

Another part of the invention lies in supporting the gear 13 in a swinging bracket 39, of which there may be two, said bracket being journaled on the shaft 15 of the gear 14, so that the gear 13, whatever may be its size, may be caused to mesh with the gear 12 whatever may be its size, thus admitting of the change of speed of rotation of the shaft 8 by changing the gear 12. The bracket 39 is held to its adjusted position by suitable means—for instance, by a slotted arm 40, extending from the bracket and clamped to a suitable part of the loom-frame—for instance, to a bracket 41 thereof—by means of a clamping-screw 42. By the construction described the speed of rotation of the shaft 8 may be varied by changing the gear 12, as indicated.

I have illustrated and described what I consider to be the preferred details of construction and arrangement of the several parts; but it is obvious 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, the winding-drum and a divided shaft for transmitting motion to the winding-drum, of a clutch having one member fixed to one part of the shaft and another member movably connected with the other part of the shaft, a shoulder and a latch, one of which parts is connected with the movable member of the clutch, a swinging tension-frame for taking up slack in the cloth on its way to the winding-drum, and a lever actuated from said swinging frame for shifting the movable member of the clutch and having a part arranged to actuate said latch to release the movable member of the clutch, substantially as described.

2. In a let-off and take-up mechanism for looms, the combination with the warp-drum, the winding-drum and a divided shaft for

transmitting motion to the winding-drum, of a clutch having one member fixed to one part of the shaft and another member movably connected with the other part of the shaft, a swinging tension-frame for taking up the slack in the cloth on its way to the drum, a pivoted latch adapted to be thrown into and out of engagement with a part of the movable member for temporarily locking the movable member of the clutch in one position, and a lever actuated from the tension-frame and operating on said locking-latch for releasing the same to permit the clutch member to be moved, substantially as described.

3. In a let-off and take-up mechanism for looms, the combination with the warp-drum, the winding-drum and a divided shaft for transmitting motion to the winding-drum, of a clutch having one member fixed to one part of the shaft and another member movably connected with the other part of the shaft, a swinging tension-frame for taking up the slack in the cloth on its way to the winding-drum, means for temporarily locking the movable member of the clutch in one position, a lever actuated from the tension-frame and operating on said locking means for releasing the same to permit the clutch member to be moved, said lever being formed with a slot, a stud projecting from the movable member and entering said slot, and a spring in said slot and bearing against said stud for impelling said movable clutch member, said spring being located to be acted on by the lever for increasing its tension preparatory to releasing the locking means, substantially as described.

4. In a let-off and take-up mechanism for looms, the combination with the warp-drum, the winding-drum and a divided shaft for

transmitting motion to the winding-drum, of a clutch having one member fixed to one part of the shaft and another member movably connected with the other part of the shaft, said moving member being formed with a shoulder, a latch to engage said shoulder, a swinging tension-frame for taking up the slack in the cloth on its way to the winding-drum, and the lever actuated from the tension-frame and provided with a cam for releasing said latch from the shoulder, said lever having a connection with the movable member of the clutch for actuating the same, substantially as described.

5. In a let-off and take-up mechanism for looms, the combination with the warp-drum, the winding-drum, and a divided shaft for transmitting motion to the winding-drum, of a clutch having one member fixed to one part of the shaft and another member movably connected with the other part of the shaft, said moving member being formed with a shoulder, a latch to engage said shoulder, a swinging tension-frame for taking up the slack in the cloth on its way to the winding-drum, a lever actuated from the tension-frame and provided with a cam for releasing said latch from the shoulder, and springs connected with said lever and with a part of said movable member of the clutch, said springs being adapted to have their tension increased in the movement of the lever for the purpose of impelling the movable member of the clutch, substantially as described.

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

WILLIAM F. KINTZING.

Witnesses:

W. H. BURNHAM,
C. B. SEITZ.