

A. E. RHOADES.
TAKE-UP MECHANISM FOR LOOMS.
APPLICATION FILED AUG. 9, 1909.

948,024.

Patented Feb. 1, 1910.

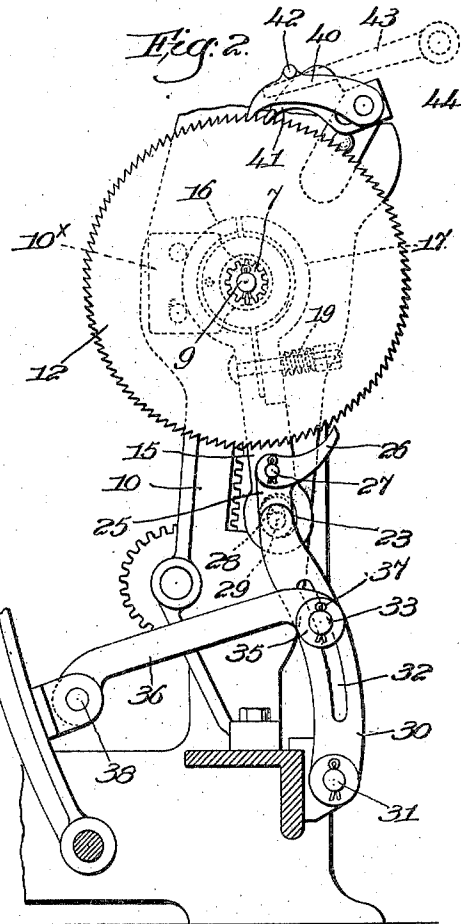
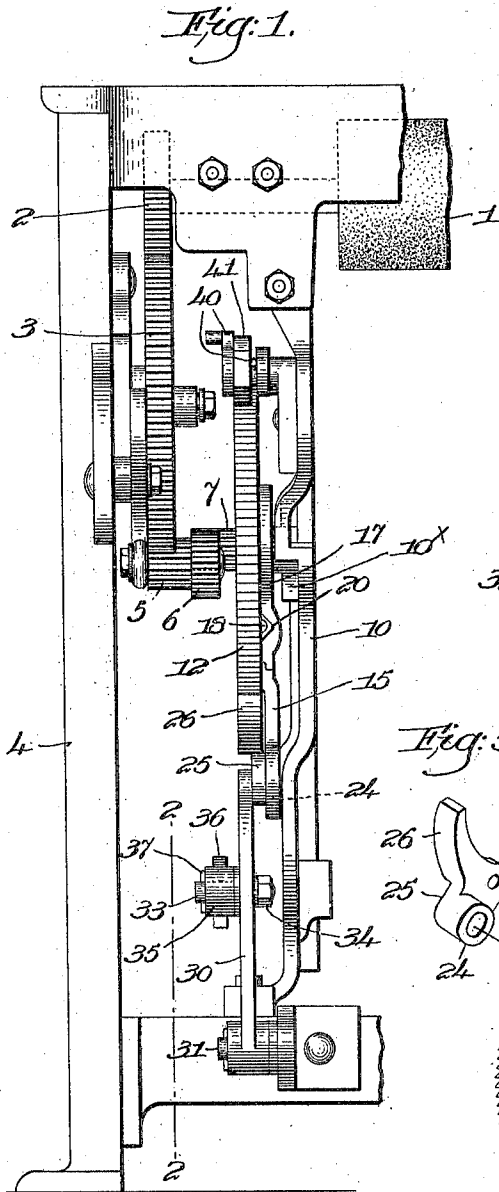


Fig. 5.



Fig. 3.

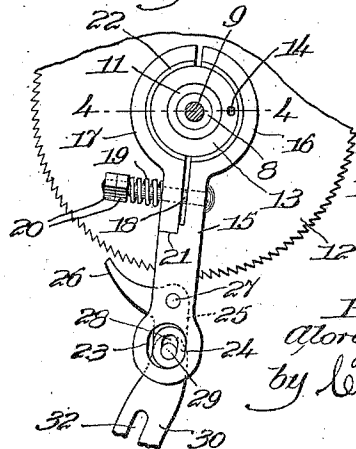
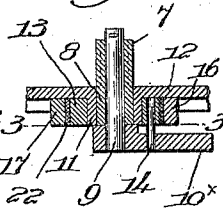


Fig. 4.



Witnesses,
Edward H. Allen.
Thomas H. Hammond.

Inventor:
A. E. Rhoades.
by Crosby Gregory.
attys.

UNITED STATES PATENT OFFICE.

ALONZO E. RHOADES, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

TAKE-UP MECHANISM FOR LOOMS.

948,024.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed August 9, 1909. Serial No. 511,843.

To all whom it may concern:

Be it known that I, ALONZO E. RHOADES, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Take-Up Mechanism for Looms, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of take-up mechanism for looms of simple and efficient construction and so arranged that the amount of cloth to be taken up at each pick can be readily and quickly adjusted without the use of change-gears or similar devices.

The take-up instrumentality is actuated from a going part of the loom, such, for instance, as a lay-sword, connected with a vibrating member which operates the pawl-carrier and the take-up pawl, the latter being moved automatically into and out of engagement with a ratchet from which rotative movement is transmitted to the take-up or sand-roll.

As will appear hereinafter the mechanism is simple and very direct in its operation.

The various novel features of the invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a front elevation of a portion of a loom having applied thereto take-up mechanism embodying one practical form of my invention; Fig. 2 is a left-hand side elevation of the mechanism at the right of the dotted line 2—2, Fig. 1, and showing more clearly the novel features of the invention; Fig. 3 is an inner side view of the ratchet, pawl-carrier and take-up pawl thereon, taken on the line 3—3, Fig. 4; Fig. 4 is a sectional detail on the line 4—4, Fig. 3; Fig. 5 is a perspective view of the take-up pawl, detached.

In Fig. 1 of the drawing 1 is the usual take-up or sand-roll, having an attached gear 2 meshing with a larger gear 3 mounted on the loom-side 4 and driven by a pinion 5 having an attached larger pinion 6 meshing with a pinion 7 provided with an elongated hub 8, Fig. 4, the train of gearing between pinion 7 and the take-up roll being of usual construction. Said pinion 7 is mounted to rotate on a stud 9 extended laterally from a

bracket 10* on the usual frame 10 which forms a guide for the cloth-roll, (not shown) the frame being set in from the loom-side in usual manner and forming no novel part of this invention. The hub 11 of a toothed disk or ratchet 12 receives and is fixedly secured to the pinion hub 8, the ratchet hub 11 being located adjacent the outer side of the guide frame 10. A metallic collar 13 loosely surrounds the hub 11 and is held from rotation by a pin 14, Figs. 3 and 4, extended from the frame 10, the collar providing a fixed fulcrum for a swinging pawl-carrier 15, having a two-part head 16, 17 embracing the collar, the parts being held together yieldingly by a stud 18, surrounding spring 19 and check-nuts 20, clearly shown in Fig. 3.

The part 17 seats in a socket 21 in the pawl-carrier, and by setting up or letting off the nuts 20 the pressure of the head upon the fulcrum is increased or diminished, a friction ring 22 of leather or other suitable material being interposed between the collar 13 and the concave faces of the head. The lower end of the depending pawl-carrier is enlarged and provided with an elongated aperture 23 to loosely receive a lateral lug 24 on the tail 25 of the take-up pawl 26, fulcrumed at 27 on the pawl-carrier. Said lug has some play from side to side in the aperture 23, as shown, and as the pivot 27 is above the aperture the swinging movement of the pawl on its pivot permits the point of the pawl to be moved into and out of engagement with the teeth of the ratchet 12, as will be evident, the clearance between the lug 24 and the sides of the aperture 23 being sufficient for the purpose. Thus the pawl is movable with the pawl-carrier 15 and it is also movable relatively thereto, and owing to the retarding action of the friction connection between the pawl-carrier and its fulcrum, previously described, the pawl will be moved on its pivot 27 in one or the other direction before movement in unison with the pawl-carrier begins, the power being applied at the tail of the pawl. To this end the lug 24 is provided with an elongated slot 28 which receives a stud 29 projecting laterally from a slightly curved vibrating member or arm 30 fulcrumed at its lower end at 31 on a part of the loom-frame, said member having a segmental slot 32 formed therein. The slot receives the shank of a shouldered coup-

ling pin 33, held in adjusted position on the member 30 by a suitable nut 34, Fig. 1, so that the coupling pin can be moved toward or from the fulcrum 31. A hub 35 of a link 36 is loosely mounted on the pin and held thereon by a cotter-pin 37 or other suitable device, the rear end of the link being pivotally connected at 38 to a going part of the loom mechanism, herein shown as one of the lay-swords 39.

The lay-sword swings forward at each pick and hence provides a convenient and proper means for effecting the feed movement of the take-up, for as the lay beats up the link 36 operates to swing forward the vibrator 30, and the latter, through its slot and pin connection with the pawl, first rocks the pawl 26 on its pivot 27 into engagement with the ratchet 12, and then as the vibrator continues its forward movement the pawl-carrier 15 and pawl are swung in unison, to effect the feed stroke of the pawl. As the lay swings back the vibrator 30 is swung back with it, the pawl being lifted out of engagement with the ratchet teeth before the return stroke of the pawl-carrier and pawl is actually begun. This disengagement of the pawl from the ratchet reduces the wear on both parts, as there is no clicking or drawing back of the pawl over the teeth.

It will now be seen that the friction connection between the pawl-carrier and its fulcrum is necessary to allow the movement of the pawl relatively to the pawl carrier at each end of the stroke of the pawl-carrier before movement of the latter begins, and it will be manifest that the lost motion between the pawl and pawl-carrier at such time performs an important function.

On the return stroke of the vibrator the engagement of the hub 24 with the side of the aperture 23 effects the retraction of the pawl-carrier, while on the feed stroke such engagement is not so necessary, for then the pawl is in firm engagement with a ratchet tooth.

If the effective or feed stroke of the take-up pawl is to be lengthened, to take up more cloth on each pick then the coupling between the link 36 and the vibrator 30 is moved nearer the fulcrum 31 of the latter, while the shortest feed stroke is attained by setting the coupling at the extreme upper end of the slot 32, the stroke of the actuator, that is, the lay-sword being constant at all times.

The adjustment is easily and quickly made, as will be apparent, and a very accurate adjustment can be effected by the mechanism shown without the employment of cumbersome change-gears or similar devices.

A detent pawl 40 engages the ratchet 12, see Fig. 2, and said pawl is bifurcated to receive the let-back pawl 41, a lug 42 on the pawl 40 being arranged to be engaged and lifted by an arm 43 on the usual controlling

shaft 44 commonly employed in automatic filling replenishing looms, so that when said shaft is turned, to effect loom stoppage or filling replenishment, as the case may be, the detent pawl 40 is rendered inoperative and the let-back pawl 41 assumes control of the take-up. A similar arrangement of detent and let-back pawls with means to disengage the detent pawl, is shown in Patent No. 643,284 granted February 13, 1900 to Clement, and such device *per se* is not of my invention and no claim thereto is made herein.

If the let-back pawl is arranged to let back a certain number of teeth, corresponding to the feed of the take-up pawl it will be apparent that take-up will be arrested when the detent pawl is rendered inoperative, for the ratchet will then turn back at each pick just as far as it has been turned forward, and no cloth will be taken up.

My invention is not restricted to the details of construction and arrangement herein shown and described as forming one practical embodiment of my invention, for various changes or modifications may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In take-up mechanism for looms, the combination, with a ratchet, and its actuating pawl, of a pawl-carrier fulcrumed coaxially with the ratchet and on which carrier the pawl is pivoted, means to limit pivotal movement of the pawl relatively to the pawl-carrier, to effect engagement or disengagement of the pawl and ratchet, a vibrating member pivotally connected with the pawl and acting first to rock it relatively to the pawl-carrier and then to swing the latter as a unit with the pawl, and a friction device to retard movement of the pawl-carrier until relative movement of the pawl is completed.

2. The combination, with a take-up ratchet, and its actuating pawl, of a pawl-carrier fulcrumed coaxially with the ratchet, said pawl being pivotally mounted on the pawl-carrier, means to limit such pivotal movement of the pawl while permitting it to engage or be disengaged from the ratchet, a vibrator operatively connected with the pawl, to first effect relative movement thereof and then movement bodily with the pawl-carrier, and means to retard the movement of the latter at each end of its stroke, to insure the relative movement of the pawl.

3. The combination, with a take-up ratchet, of a pawl-carrier fulcrumed coaxially therewith, an adjustable friction detent to retard its movement, a pawl pivoted on the pawl-carrier and having a tail extended

beyond its pivot, the pawl being movable on the pawl-carrier into and out of coöperation with the ratchet, a vibrating arm pivotally connected with the pawl tail, to rock the pawl and then through it to swing the pawl-carrier on its fulcrum, means to limit relative movement of said pawl and pawl-carrier, and means to vary the amplitude of movement of the vibrating arm, to thereby increase or decrease the active stroke of the pawl-carrier.

4. In take-up mechanism for looms, in combination, a ratchet and its actuating pawl, an oscillating pawl-carrier on which the pawl has a limited relative movement, means to effect such movement of the pawl to cause it to engage with or be disengaged from the ratchet and thereafter to move the pawl and pawl-carrier in unison, and means to retard movement of the pawl-carrier until movement of the pawl relatively thereto has been effected.

5. In take-up mechanism for looms, in combination, a ratchet and its actuating pawl, an oscillating pawl-carrier on which the pawl has a limited relative movement, means to effect such movement of the pawl to cause it to engage with or be disengaged from the ratchet and thereafter to move the pawl and pawl-carrier in unison, and manually adjustable friction means to retard movement of the pawl-carrier until relative movement of the pawl has been effected.

6. In take-up mechanism for looms, in combination, a ratchet, a pawl-carrier, a pawl mounted thereon and movable relatively thereto to a limited extent, a vibrating member operatively connected with said pawl, to move it relatively to the pawl-carrier into and out of engagement with the ratchet and then to effect movement of the pawl and pawl-carrier in unison, and means to retard movement of the latter after each bodily movement of the pawl-carrier and pawl, to enable the relative movement of the latter to be effected.

7. In a loom, a take-up ratchet, its actuating pawl, a swinging pawl-carrier on which the pawl is mounted and relative to which it has a limited movement, to engage or be disengaged from the ratchet, a vibrator pivotally connected with the pawl, to first cause relative movement thereof and then movement in unison with the pawl-carrier, a going part of the loom, a link connecting it with the vibrator, to vibrate the latter, and an adjustable coupling between said link and vibrator, to increase or decrease the amplitude of its vibrations and thereby vary the stroke of the pawl-carrier.

8. In a loom, a take-up ratchet, its actuating pawl, a swinging pawl-carrier on which the pawl is mounted and relative to which it has a limited movement, to engage or be disengaged from the ratchet, a vibrator

having a fixed fulcrum and pivotally connected with the pawl, to cause relative movement thereof and then movement in unison with the pawl-carrier, a friction detent to retard the latter at each change in the direction of movement of the vibrator, and means to increase or decrease the amplitude of vibration of the latter, to thereby vary the advance movement of the ratchet.

9. In a loom, a take-up ratchet, its actuating pawl, a swinging pawl-carrier on which the pawl is mounted and relative to which it has a limited movement, to engage or be disengaged from the ratchet, a vibrator having a fixed fulcrum and pivotally connected with the pawl, to cause relative movement thereof and then movement in unison with the pawl-carrier, a friction detent to retard the latter at each change in the direction of movement of the vibrator, a lay-sword, a link connected at one end therewith, and a coupling connecting the other end of the link and the vibrator and adjustable on the latter toward and from its fulcrum, to vary the amplitude of movement of the vibrator.

10. The combination with the ratchet of a loom take-up, of a swinging pawl-carrier, a fixed fulcrum therefor coaxial with the ratchet, a friction connection between the pawl-carrier and its fulcrum, a pawl pivoted on the pawl-carrier and movable into and out of engagement with the ratchet, means to limit such movement, and means acting through the pawl to first rock it relatively to the pawl-carrier and then to move it in unison with the pawl-carrier, to effect feed movement of the ratchet, the friction connection holding the pawl-carrier from movement until relative movement of the pawl is effected.

11. The combination with the ratchet of a loom take-up, of a swinging pawl-carrier, a fixed fulcrum therefor coaxial with the ratchet, a friction connection between the pawl-carrier and its fulcrum, a pawl pivoted on the pawl-carrier and movable into and out of engagement with the ratchet, means to limit such movement, and manually adjustable means acting through the pawl to first rock it relatively to the pawl-carrier and then to move it in unison with the pawl-carrier, to effect feed movement of the ratchet, the friction connection holding the pawl-carrier from movement until relative movement of the pawl is effected.

12. The combination with the ratchet of a loom take-up, of a swinging pawl-carrier, a fixed fulcrum therefor coaxial with the ratchet, an adjustable friction connection between the pawl-carrier and its fulcrum, a pawl pivoted on the pawl-carrier and movable into and out of engagement with the ratchet, means to limit such movement, and means acting through the pawl to first rock it relatively to the pawl-carrier and then to

move it in unison with the pawl-carrier, to effect feed movement of the ratchet, the friction connection holding the pawl-carrier from movement until relative movement of the pawl is effected.

13. The combination with the ratchet of a loom take-up, of a swinging pawl-carrier having a compressible head and apertured at its free end, a fixed collar coaxial with the ratchet and acting as a fulcrum for the pawl-carrier, a friction band interposed between said collar and the head, a pawl pivoted on the pawl-carrier and having a tail provided with an enlargement entering and having limited movement in the aperture, to enable the pawl to engage or be disengaged from the ratchet, and a vibrator having a slot and pin connection with the enlargement of the pawl tail, to first rock the pawl on its pivot and then move the pawl and pawl-carrier in unison.

14. In a take-up mechanism, in combination, a ratchet, detent and let-back pawls

therefor, means to disengage the detent pawl and permit the let-back pawl to control the ratchet, an actuating pawl, a pawl-carrier fulcrumed coaxially with the ratchet and on which the actuating pawl is pivoted, means to limit relative movement of the said pawl on the pawl-carrier, a vibrator connected with the actuating pawl, to effect its relative movement and thereafter its movement in unison with the pawl-carrier, and operating means adjustably connecting the vibrator with a going part of the loom, to vary the amplitude of movement of said vibrator and thereby vary the feed movement of the ratchet.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALONZO E. RHOADES.

Witnesses:

ROBERT JAMIESON,
E. D. OSGOOD.