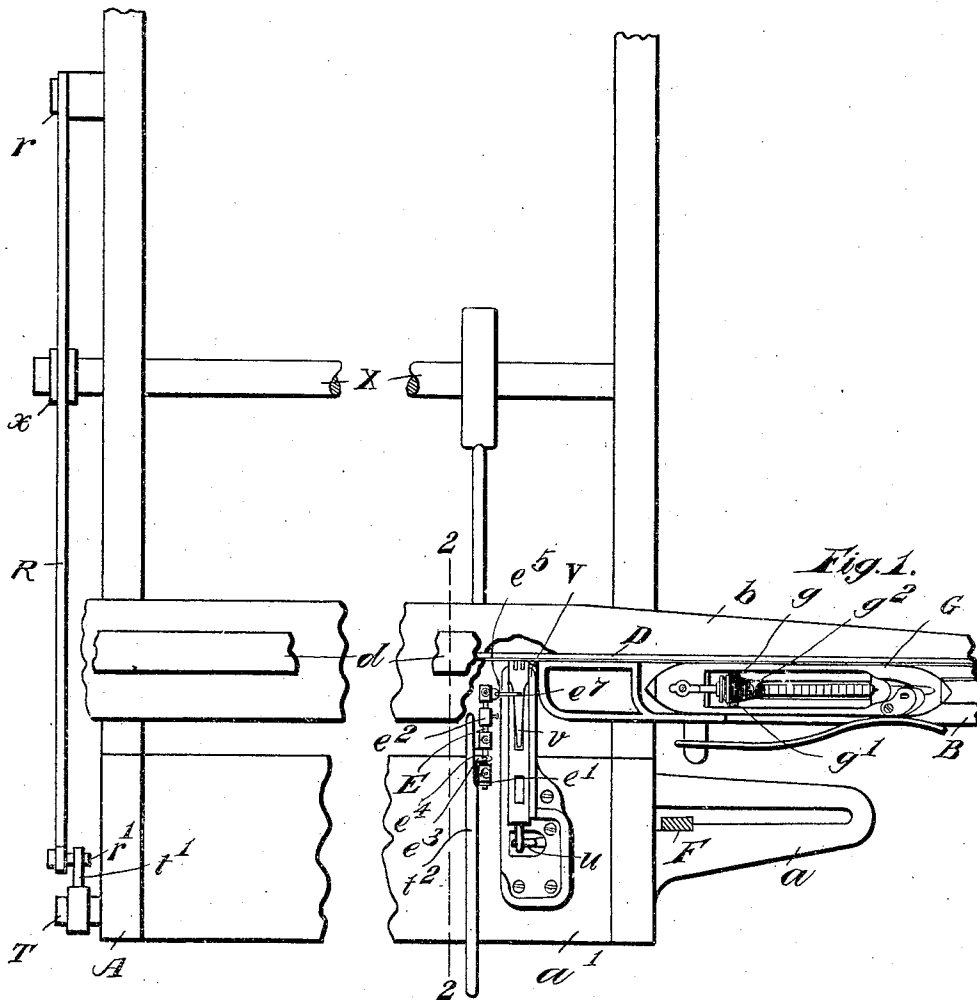
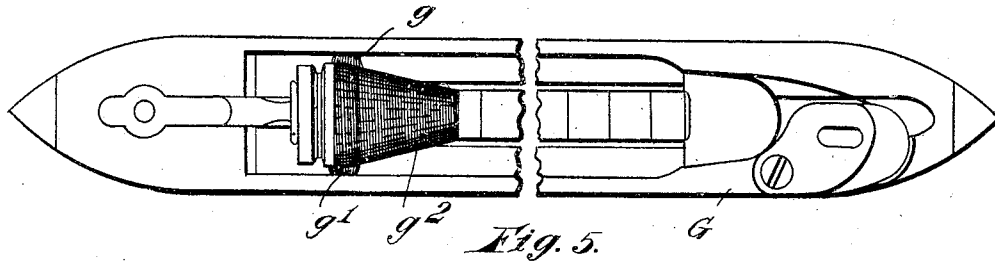


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WEFT REPLENISHING MECHANISM FOR LOOMS.
APPLICATION FILED FEB. 13, 1909.

938,711.

Patented Nov. 2, 1909.
3 SHEETS—SHEET 1.



WITNESSES:

Ludger A. Nicol.

Grace Browley.

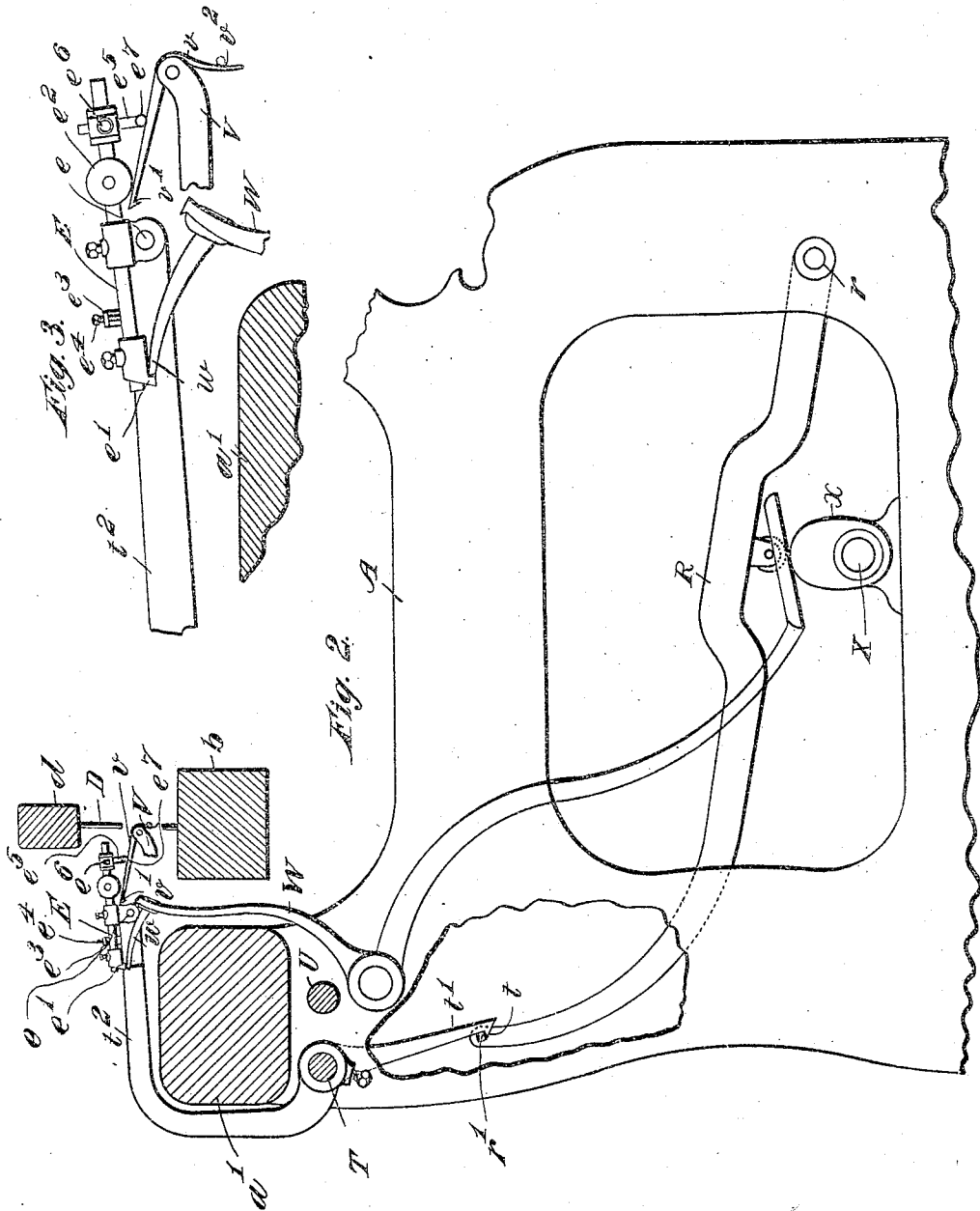
INVENTOR:

Orrin A. Sawyer
By Albert M. Moore,
His Attorney.

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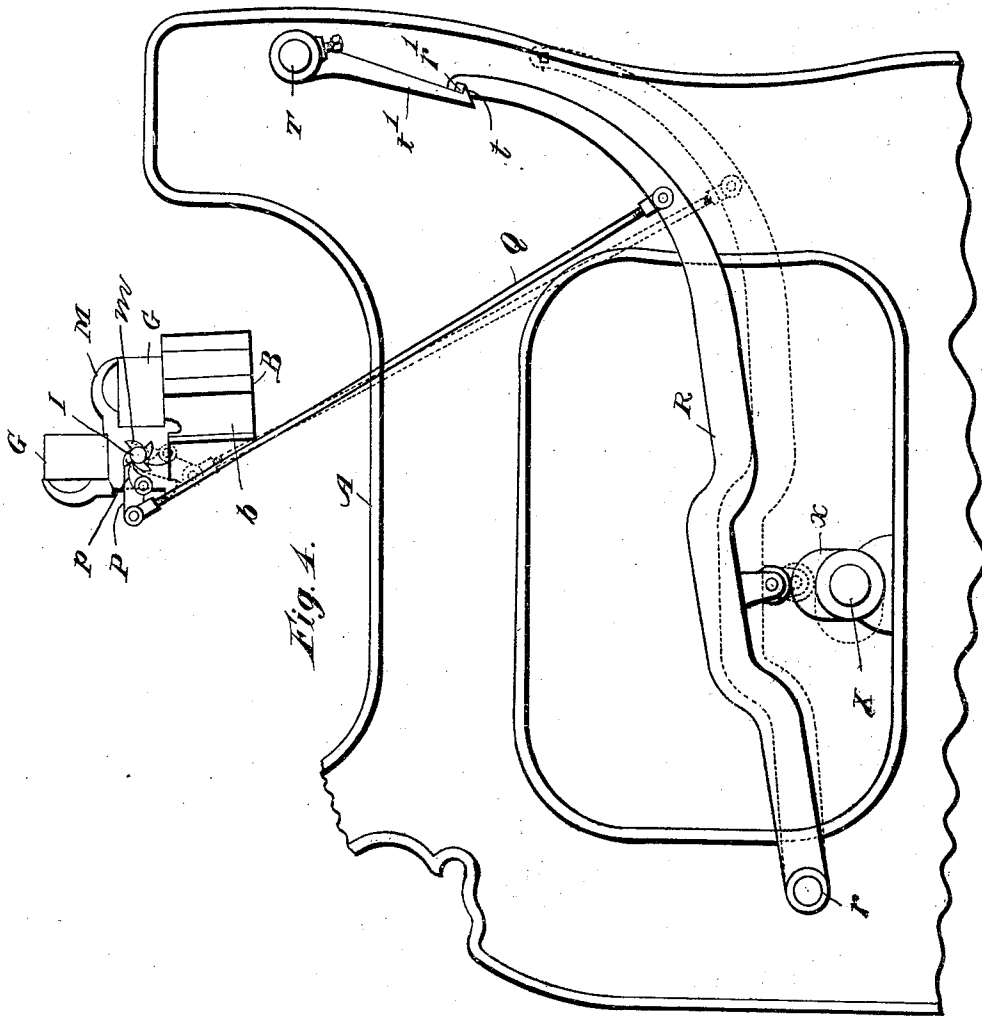
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UNITED STATES PATENT OFFICE.

ORREN A. SAWYER, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO EARL A. THISSELL,
OF LOWELL, MASSACHUSETTS.

WEFT-REPLENISHING MECHANISM FOR LOOMS.

938,711.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed February 13, 1909. Serial No. 477,502.

To all whom it may concern:

Be it known that I, ORREN A. SAWYER, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Weft-Replenishing Mechanism for Looms, of which the following is a specification.

This invention relates to looms and is applicable to "weft-replenishing looms" in which the filling is renewed by automatic means; the object being to prevent a complete exhaustion of the filling before the insertion of a new supply.

This invention serves in a weft-replenishing loom to diminish the number of mis-picks such as occur when the filling or weft at the time of exhaustion reaches only partly across the cloth and a new filling thread is introduced without removing the partial pick of broken or exhausted thread last introduced. In napped and figured goods and generally in the more expensive fabrics such mispicks are serious defects.

In the loom hereinafter described, the breaking or exhaustion of the filling causes the stoppage of the loom and in the case of the breaking of the filling, it will usually be necessary to remove the partial pick of yarn last made, because it would very rarely happen that the last pick of yarn would extend entirely across the cloth.

This invention is incapable of preventing a mispick when the filling breaks but prevents mispicks due to the exhaustion of the filling by introducing a new supply of filling to the weft-replenishing loom before the old supply is entirely exhausted. In this loom I use the well-known stop-motion fork and the slide on which it is pivoted, to stop the loom when the filling breaks or becomes abnormally slack by allowing the hook at the front of said fork to be engaged by the upper end of the weft-hammer, which draws the slide against an arm projecting up from the stop-motion, rocking said rod and causing a finger on said rod to press the shipper out of its notch and shift the belt on to the loose pulley, all in the usual manner. When the filling is unbroken and is of only normal tension, the hook of the weft-fork is raised high enough to be out of the path of the weft-hammer, as heretofore practiced, but when the tension of the filling is excessive,

said weft-fork hook is raised still higher and tilts a hooked latch which I have provided and which is pivoted on a lever which releases another lever allowing the latter to fall and thereby to actuate the weft-replenishing devices. By these means, I am enabled to dispense with the various feeler devices which are operated by the exhaustion of the filling to a predetermined extent and which usually require a special opening in the shuttle-box and another opening in the shuttle through which the feeler may reach the filling, and to dispense with the positioning devices which are necessary to bring the opening in the shuttle opposite the feeler. I thus avoid weakening the shuttle and also avoid injury to the yarn which is weakened by the repeated contacts of the feeler and I lessen the waste of yarn.

This invention adds very little to the cost of the loom and effects a great saving.

The devices for increasing the tension of the yarn are carried by the shuttle and are of trifling cost. A tipping of the weft-fork caused by any jar will not be sufficient to tilt the pivoted latch above mentioned which will only be operated by said fork when the latter is pressed by the increased tension of the yarn. The shuttle above referred to I intend to make the subject of a separate application.

For the sufficient understanding of this invention I will say that a frictional device is arranged in the shuttle-chamber near the pivoted end of the spindle and is adapted to bear upon the first few turns of yarn wound upon the bobbin or cop in such a manner as to retard the unwinding of the same and to increase the tension thereof.

In the accompanying drawing on three sheets, Figure 1 is a plan of so much of a loom provided with my invention as is necessary to the understanding of the accompanying description; Fig. 2, a vertical section of the same on the line 2-2 in Fig. 1; Fig. 3, a side elevation of the tilting-hook, the weft-fork, the weft-hammer and part of the lay; Fig. 4, a left end elevation of a weft-replenishing loom to which my invention is applied; Fig. 5, a plan of a shuttle adapted to produce an increased tension on the yarn when the same is nearly exhausted.

The frame A; breast-beam *a'*; lay B; lay-beam *b*; reed D; reed-cap *d*; cam-shaft X carrying the cam *x*; the weft-hammer W; the weft-fork *v* pivoted on the slide V;—the

stop-motion rod U;—these parts are of the usual construction and operation, except as hereinafter stated.

The lever R pivoted at r on the frame
 5 A,—its free end having a lateral projection r^1 normally engaged by a shoulder t on the lower end of the arm t^1 ,—falls when the arm t^1 is swung away by the rocking of the shaft T and the subsequent raising of said lever R
 10 by the cam x , actuates the filling changing devices by means of a rod Q which connects said lever R to the pawl-lever P, pivoted on the shaft I of the rotary changer M, said pawl-lever carrying a pawl p which engages
 15 a ratchet m fast on said shuttle-changer concentrically therewith, said pawl engaging a new tooth of the ratchet m when the lever R falls;—these parts are all substantially as shown and described in Letters Patent to
 20 Thissell, No. 733,884, granted July 14, 1903, for weft replenishing mechanism for looms, except that the arm t^1 in said patent is represented as fast on the stop-motion rod instead of on a separate shaft T parallel with
 25 said stop-motion rod and except that instead of the pawl p herein shown engaging the ratchet m , the pawl in said patent which serves the same purpose is of peculiar shape and engages the corners of the hub or body
 30 of the shuttle-changer.

A separate shaft T is necessary in the present invention because it is intended to use the ordinary stop-motion which is operated upon the exhaustion breaking or slacking of
 35 the filling in the usual manner, changing mechanism which will be operated not by the exhaustion or breaking of the filling but previously to such exhaustion by an increased tension of the filling. The increased
 40 tension of the filling is caused by a device arranged in the filling-carrier and pressing upon the few turns of the filling which leave the bobbin or cop-tube just before the exhaustion of said filling.

45 Fig. 5 shows a device carried by a shuttle G and consisting of brushes g g^1 secured within the chamber of the shuttle and arranged to press only upon the turns of filling first wound upon the bobbin g^2 or cop-tube and the last to be unwound therefrom,
 50 said turns being placed on said bobbin or tube near the base of the same in the spinning machine (mule or spinning frame) before beginning to build the cop.

55 The normal action of the filling upon the stop-motion fork v in this loom as in plain

looms is to tilt the front end or hook v^1 of said fork high enough to allow the weft-hammer to swing under said hook without engaging it. When the hook v^1 engaged by
 60 the weft-hammer, the slide is drawn forward rocking the stop-motion shaft throwing off the power.

In this loom, when the filling under abnormal tension presses upon the fork v , the
 65 front end of the fork is raised high enough (see Fig. 3) to lift the rear end of a tilting hook E pivoted at e on another arm t^2 which I have secured to the shaft T and which extends upward and backward over the
 70 breast-beam a^1 . When the front end of the tilting hook E is thus depressed it is caught by a projection w which I have secured to the upper arm of the weft-hammer W, the arm t^2 is pushed backward rocking the shaft
 75 T in such a manner as to draw the shoulder t out from under the projection r^1 on the lever R allowing said lever R to fall, so that the filling is changed immediately as above described.

The front end or hook proper e^1 of the tilting hook E is normally held up by a weight e^2 on the shank of said hook in the rear of the pivot e , a stop consisting of a bracket e^3 secured on the arm t^2 and extending over the
 85 front arm of the hook E and carrying a screw e^4 which thrusts down upon said front arm and varies the limit of the upward movement of said front arm. A bunter e^5 , adjustably held on the rear arm of said hook
 90 E by means of a set-screw e^6 , carries an anti-friction roll e^7 , against which the fork v strikes when tilted by the undue tension of the filling thread.

I claim as my invention:—

1. The combination in a loom, of filling-changing devices and a controlling device therefor operated by an excessive tension of the filling.

2. The combination in a loom, of filling-changing devices a weft-fork, a weft-hammer, means adapted to be moved into engagement with said weft-hammer by said weft-fork upon an excessive tension of the filling to operate said filling-changing devices.

In witness whereof, I have affixed my signature in presence of two witnesses.

ORREN A. SAWYER.

Witnesses:

ALBERT M. MOORE,
 GRACE CROWLEY.