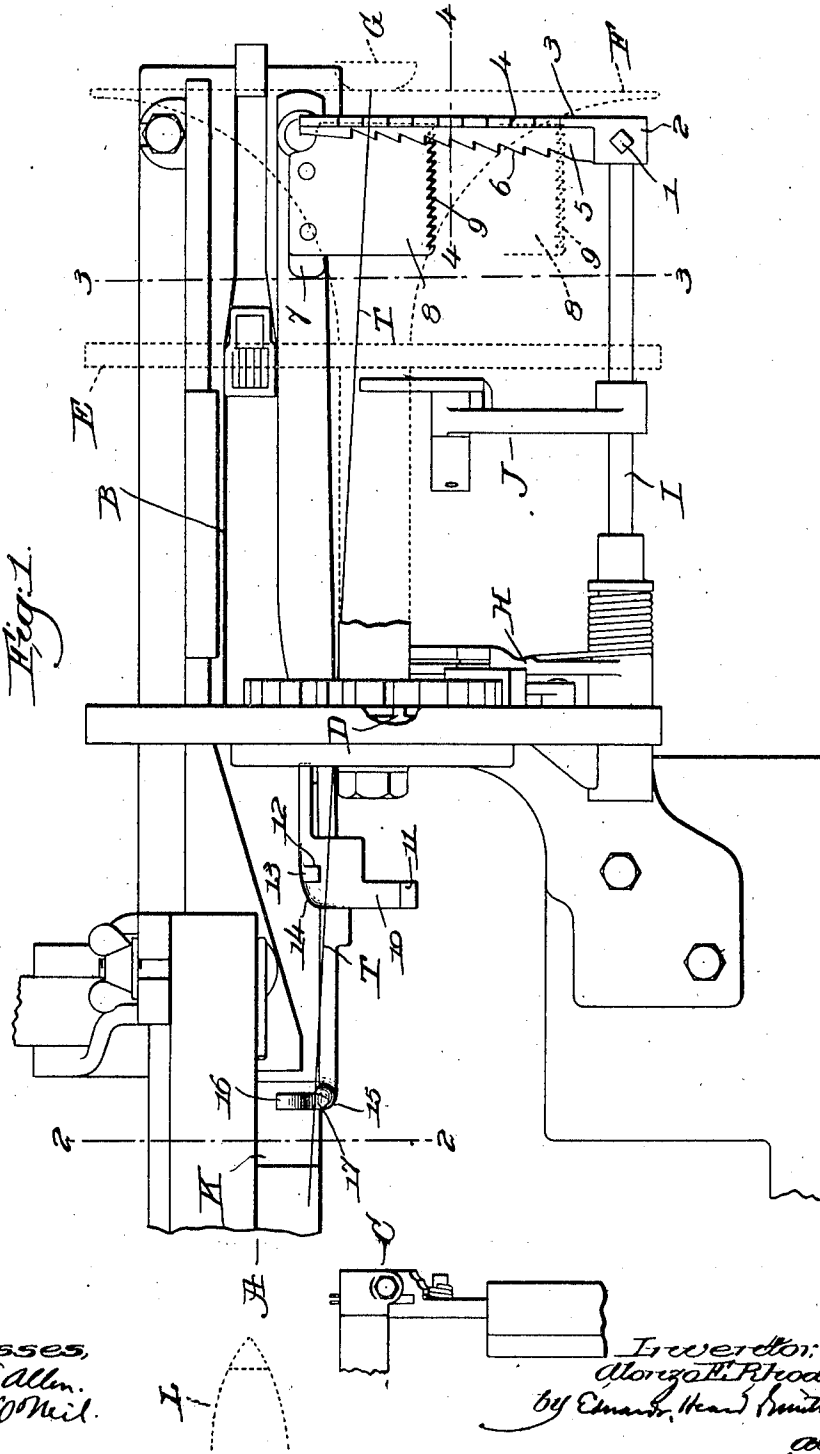


A. E. RHOADES.
 THREAD COLLECTING MEANS FOR AUTOMATIC LOOMS.
 APPLICATION FILED DEC. 13, 1911.

1,020,662.

Patented Mar. 19, 1912.

2 SHEETS—SHEET 1.



Witnesses,
 Edward B. Allen,
 Warren O'Neil.

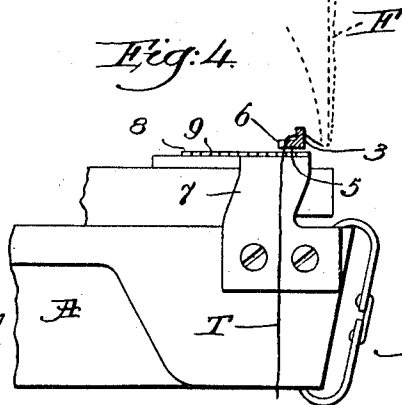
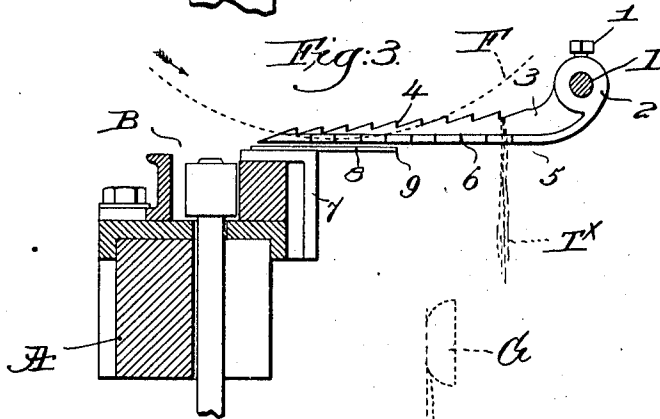
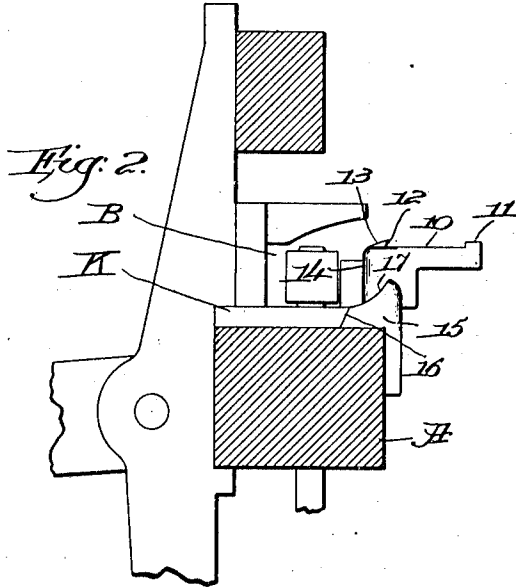
Inwitness:
 Alonzo H. Rhoades
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Witnesses,
 Edward F. Allen.
 Warren O'Neil.

Inventor:
 Alonzo E. Rhoades,
 by Edward Heard & Smith.

Atty.

UNITED STATES PATENT OFFICE.

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

THREAD-COLLECTING MEANS FOR AUTOMATIC LOOMS.

1,020,662.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed December 13, 1911. Serial No. 665,423.

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 Thread-Collecting Means for Automatic 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 relates to automatic filling-replenishing looms wherein a fresh supply of filling is inserted in the working shuttle while the loom is in operation, and it has for its object the production of means to collect promptly and automatically the filling-ends left by the replenishing operation and to retain them out of the way of the shuttle or other moving parts of the loom.

In the Northrop type of loom the filling-carriers or bobbins are held by their butts and tips in a rotatable hopper, from which they are transferred to the shuttle as required, the filling-ends being led outward around a disk-like guide attached to the outer end of the hopper and thence to a central holding stud or knob. Such arrangement holds the end of the filling while the shuttle is picked after replenishment, and it also provides the requisite amount of slackness to prevent breakage, and after the new filling is carried through the shed the filling-end is severed adjacent the cloth at the replenishing side. This severed filling-end is still held at the outer end of the hopper and hangs down therefrom, so that it is necessary for the weaver to wind it around the stud or knob to keep it out of the way of the shuttle, as otherwise it would tend to be carried into the cloth. The weaver should thus attend to the filling end immediately after each operation of the replenishing mechanism, and the accumulation of yarn on the holding stud must be removed from time to time in a tangled bunch or mass, as otherwise the loose ends would tend to shake off and hang down in the way of the shuttle.

In accordance with my present invention I have provided means for collecting

promptly and automatically the severed filling-ends into the form of a loose rope depending from the central stud of the end-holding means, and retaining such ends at a point toward the front of the loom, at such a distance from the shuttle path as to be out of the reach of the shuttle as it is picked back and forth. This loose rope of waste filling can be cut off and removed from time to time, but the weaver is relieved of the necessity of looking after a filling-end when replenishment is effected; the waste does not collect in an indiscriminate, tangled mass on the holding stud, and it can be quickly and easily removed.

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

Figure 1 is a top plan view of the replenishing side of an automatic loom of the Northrop type, with one embodiment of my present invention applied thereto, a part of the hopper and the end-holding means carried thereby being shown in dotted lines; Fig. 2 is a transverse sectional detail on the line 2—2, Fig. 1, looking toward the right, showing the guiding means for the filling-end adjacent the mouth of the replenishing shuttle-box; Fig. 3 is a similar detail, on the line 3—3, Fig. 1, looking toward the right, showing in elevation the stationary retainer for the filling-ends, and the device on the lay by which the severed filling-ends are pushed frontward along the retainer; Fig. 4 is a front elevation of the replenishing end of the lay with the plate-like pusher thereon by which the severed filling-ends are pushed frontward on the retainer, the latter being shown in section, taken on the line 4—4, Fig. 1.

The lay A having a shuttle-box B at the replenishing side of the loom, the thread-cutting temple C, Fig. 1, to sever the fresh filling-end adjacent the selvage of the cloth, the rotatable hopper to contain the filling-carriers or bobbins in reserve, and comprising essentially the connected disks or plates D, E to sustain the bobbins at their butts and tips; the end-holding means consisting of the bell-like guide disk F and central stud or knob G (shown only in dotted lines,

Fig. 1) the transferrer H, and the stud I on which it is mounted to rock, are and may be all substantially of well known construction, such for instance as are shown in United States Patent No. 529,940 granted November 27, 1894 to Northrop.

In the present embodiment of my invention the fulcrum-stud or shaft I is prolonged beyond the usual tip-supporting device J, to a point near the plane of the periphery of the guide F, and has fixedly attached to it by a set-screw 9 the hub 2 of the thread-retainer, herein shown as a down-curved and rearwardly extended arm, L-shaped in cross-section. The vertical portion or web 3 of such arm has a series of teeth or notches 4 in its upper edge, the web tapering from front to rear, as does the flange 5, which latter is horizontal for the greater part of its length, and also toothed or notched on its inner edge, at 6, said web being at the inner side of the flange, as clearly shown in Figs. 1 and 3. The two series of teeth preferably alternate, or are staggered with relation to each other, with their vertical faces toward the front of the loom, the retainer as a whole being extended rearward just above the path of movement of the top of the shuttle-box B, Figs. 3 and 4, and inside but adjacent the periphery of the guide F.

When a bobbin is positioned for transfer by the feed of the hopper that part of its filling-end between the hopper disk E and guide F will ride forward over and rest upon the toothed edge of the flange 3, near its rear end, as will be apparent from an inspection of Fig. 3, and just after replenishment, when the shuttle has been picked from the box B, the fresh filling-end will be positioned substantially as indicated at T, Fig. 1.

A bracket 7 fixedly mounted on the front of the lay near the outer end of the box B has attached to it a pusher, shown as a flat plate 8 frontwardly extended and moving just beneath the web 5 of the retainer, the front edge of the pusher being notched or toothed at 9. When the lay beats up to front center the toothed edge of the pusher is about in dotted line position, Fig. 1, and from a point immediately under the retainer extends inward quite a distance. As the lay swings rearward the edge 9 of the pusher will move back behind the severed filling-end, the free end of which by that time will have dropped down and depend from the retainer, see Fig. 4, so that on the next beat-up the pusher will engage such depending part of the thread and will push it forward along the retainer. The teeth 4 and 6 will catch the filling-end thus pushed frontward and will keep it from being shaken rearward, and while the said filling-end may not be retained in its extreme frontward po-

sition on the retainer the first time it is pushed forward it cannot go back very far, and on a subsequent beat-up of the lay the pusher 8 will move the filling-end to its extreme frontward position on the retainer, substantially as indicated by dotted lines at T^x, Fig. 3.

It will be remembered that while the severed filling-end is held by the stud or knob G it hangs loosely therefrom, bends around the periphery of the guide F, and passes over the toothed retainer, its loose end hanging down therefrom, all as shown in Fig. 4, partly in dotted lines, and the pusher is toothed at 9 in order that it may more securely control the loose, hanging end of thread as the lay beats up. Manifestly the teeth 9 prevent lateral movement of the loose end of thread after it is engaged by the pusher, and as the filling-end is pushed frontward along the retainer the upright faces of the teeth thereon prevent any material retrograde movement of the filling-end.

As the bobbins are transferred one after another the severed filling-ends will be gradually collected in a loose rope or chain at the front of the retainer, and held thereby at such a distance from the shuttle path that there is no possibility of the shuttle catching and taking back a filling-end into the cloth. The collected ends will be very slowly wound up on the knob or stud G as the hopper is rotated step by step, but it will be apparent that the loose rope or chain can be quickly unwound from such stud, or it can be cut from time to time before it has an opportunity to accumulate on the stud to any extent.

I have provided means at or near the mouth of the replenishing shuttle-box to control the filling-end thereat, so that the loose extremity of the severed filling-end cannot drop into the shuttle-box. To this end I provide the inner end of the front box wall at its top with a frontwardly extended shelf-like support 10 having at its front end an upturned stop 11, and at its rear end a second stop 12, preferably undercut, as shown in Fig. 2, the top of the said stop being frontwardly and upwardly beveled, as at 13.

It will be seen from an inspection of Figs. 1 and 2 that the back of the casting of which the support 10 forms a part is rounded or convexed at 14. The usual transverse recess K in the lay, for the entrance of the shuttle-feeler (not shown) is entered at its front end, and at one side of the feeler path, by a thread director, preferably a casting 15 fixedly mounted on the lay and provided with a cam surface 16, 17, the part 16 being upwardly and frontwardly inclined from the bottom of the recess K, the part 17 being slightly concaved and extending upward and forward from the incline 16. As shown in

Fig. 2 the concave surface 17 spans the corner between the lay raceway and the inner face of the front box-wall, prolonged.

After filling replenishment the shuttle D, (see dotted lines Fig. 1) is picked from the box B, the filling leading from the moving shuttle to the end-holding means on the hopper, and as the lay swings back the filling-end T will travel up the cam surfaces 16, 17 and it will be thereby directed upward and frontward, first against the convex rear end 14 of the support casting, and then over the beveled top of the stop 13 onto the support 10, the pull or tension of the filling-end assisting in this movement.

The filling-end T is shown at the time it has been directed onto the support 10, in the manner just described, and it is retained by the stops 11 and 12 on the support in front of the shuttle-box B, while the shuttle passes through the shed. On the following beat-up the filling-end will generally be severed by the thread-cutting temple C, or after one or two succeeding forward beats of the lay, the undercut stop 12 preventing the filling-end from moving rearward off the support 10, and when the filling-end is severed it either sags down in a loop between the support 10 and the retainer 3, 5, or it will draw over such stop and drop down between it and the said retainer. In either case the severed filling-end will be in the path of the pusher 8 and the latter will push such filling-end frontward along the retainer, as previously described.

The thread directing devices located at the mouth of the replenishing shuttle-box prevent the filling thread from dropping into or across the shuttle-box after the filling end has been parted, thus obviating any tendency of the incoming shuttle to become fouled, and such devices also serve to position the filling-end so that when parted or severed it will be in the path of the pusher, to be thereby moved forward along the toothed retainer and held by it out of the way.

Various changes or modifications in details of construction and arrangement may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the annexed claims.

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

1. In a loom provided with automatic filling-replenishing mechanism including a filling-feeder having an attached filling-end holder, a lay, and means to sever the fresh filling-end between the cloth and the feeder, in combination, a stationary retainer extended rearwardly below and between the filling-end holder and the feeder, to catch and retain a severed filling-end, and means on the lay to engage such filling-end and

push it frontward along the retainer on the beat-up of the lay, successive severed filling-ends being thereby massed together and held by the retainer away from the lay and out of the shuttle path.

2. In a loom provided with automatic filling-replenishing mechanism including a filling-feeder having an attached filling-end holder, a lay, and means to sever the fresh filling-end between the cloth and the feeder, in combination, a stationary retainer extended rearwardly below the filling-end holder and having a toothed edge, to catch and retain a severed filling-end depending from the end holder, and means on the lay moving adjacent the retainer to engage the severed filling-end and push it frontward along the retainer on the beat-up of the lay, successive severed filling-ends being massed together on the retainer and held thereby out of reach of the shuttle.

3. In an automatic filling replenishing loom, a rotary hopper, a filling-end holder at the outer end thereof, and means to sever the filling-end after filling replenishment, in combination, a stationary, rearwardly extended thread-retainer at the replenishing side of the loom, to engage and sustain a severed filling-end, means on the retainer to prevent movement of a filling-end toward the lay, and a device carried by the lay and movable adjacent the retainer, to engage a severed filling-end hanging over the retainer and push such filling-end frontward on the beat-up of the lay.

4. In an automatic filling replenishing loom, a hopper, a holder for the filling-ends of the bobbins contained by the hopper, means to sever the filling adjacent the cloth after filling replenishment, and a lay having a shuttle-box at the hopper side of the loom, combined with thread directing means on the lay adjacent the mouth of the box to direct the filling-end frontward out of the shuttle path after replenishment, a stationary thread retainer extended rearward above the lay path between the hopper and the filling-end holder, to support a severed filling-end, and means on the lay to engage such a filling-end and push it forward along the retainer and away from the shuttle path.

5. In an automatic filling replenishing loom, a hopper, a holder for the filling-ends of the bobbins contained by the hopper, means to sever the filling adjacent the cloth after filling replenishment, and a lay having a shuttle-box at the hopper side of the loom, combined with a stationary, toothed retainer extended rearwardly across the said shuttle-box on the beat-up and beneath the filling-end of a bobbin removed from the hopper upon replenishment, to uphold such filling-end when severed, and a pusher on the lay and moving adjacent the retainer, to push the severed filling-end frontward

thereon as the lay beats up, the teeth of the retainer preventing rearward movement of a filling-end thereon.

6. In an automatic loom having filling replenishing mechanism, including a hopper and filling-end holding means, and a temple thread-cutter, in combination, a stationary, rearwardly extended retainer projecting beneath the said holding means, a device on the lay to engage a severed filling-end adjacent the retainer and push such filling end frontward upon the retainer, and means on the lay adjacent the mouth of the replenishing shuttle-box to engage and direct the filling-end out of the path of the shuttle.

7. In an automatic loom having filling replenishing mechanism, including a hopper and filling-end holding means, a temple thread-cutter, and a lay having a shuttle-box at the replenishing side of the loom, in combination, a frontwardly extended support near the mouth of such box, a thread-director on the lay having a cam surface to engage a filling-end after filling replenishment and direct it upward so that it may pass onto said support, front and rear stops on the support, to prevent displacement of the filling-end on the same, and means to collect the severed filling-ends at a point in front and out of the way of the shuttle, said means comprising a stationary retainer and a cooperating pusher mounted on the lay.

8. In an automatic loom having filling replenishing mechanism, including a hopper and filling-end holding means, and a temple thread-cutter, in combination, a stationary, rearwardly extended retainer projecting beneath the said holding means, the retainer having an upright web and a lateral flange, each having a toothed edge, over which a

severed filling-end hangs, and means reciprocating fore and aft in a path adjacent the retainer, to engage a severed filling-end and push it frontward thereon away from the shuttle-path.

9. In an automatic loom having filling replenishing mechanism, including a hopper and means to hold the filling-ends of the bobbins in the hopper, and a device to sever the filling-end adjacent the cloth after filling replenishment, in combination, a stationary retainer extended rearward below the filling-end holding means, to support and hold a severed filling-end, and means reciprocating fore and aft in a path adjacent the retainer, to engage the severed filling-end depending therefrom and move it frontward along the retainer away from the shuttle-path.

10. In an automatic loom having filling replenishing mechanism, including a hopper and means to hold the filling-ends of the bobbins in the hopper, and a device to sever the filling-end adjacent the cloth after filling replenishment, in combination, means to collect the loose and severed filling-ends, attached at their outer extremities to said holding means, and to hold them in the form of a loose rope at the front of the loom away from the shuttle path, said collecting means comprising a stationary member and a cooperating reciprocating member actuated by a moving part of the loom.

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.