





# UNITED STATES PATENT OFFICE.

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## FILLING-REPLENISHING LOOM.

No. 799,130.

Specification of Letters Patent.

Patented Sept. 12, 1905.

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*To all whom it may concern:*

Be it known that I, EVERETT S. WOOD, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Automatic Filling-Replenishing Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to that type of automatic looms wherein the filling in the running shuttle is replenished automatically by the insertion of a fresh filling-carrier or bobbin transferred from a supply in reserve held in a suitable filling feeder or hopper, one form of loom of this type being shown in United States Patent No. 529,940, to Northrop. In such looms the filling-carriers are presented one after another into operative position to be transferred to the shuttle, the filling-carrier next to be removed resting upon a support provided for the purpose and which also forms a guide for one side of the filling-carrier during the transfer of the same from the feeder to the shuttle.

In the form of filling-feeder shown in the patent referred to the filling-carriers are supported at their ends, the several filling ends being led from the tips of the filling-carriers to a suitable end holder, and it has been found in practice that trouble is caused by axial rotation of the filling-carrier next to be removed. Such rotation tends to wind up and draw the filling end too taut or to unwind and unduly slacken it, in either case preventing the proper action of the filling end when the filling-carrier is transferred. This axial rotation of the filling-carrier next to be transferred appears to be due to the fact that when so positioned its head rests on a yielding-mounted support adjacent the path of transfer and the jarring of the loom so vibrates the feeder that the head of the filling-carrier rubs back and forth upon the end of the support, and thereby causes axial rotation. Prior to such engagement of a filling-carrier with the support there seems to be no tendency to rotate, for the filling-carriers then partake bodily of the vibrations of the feeder and move to transferring position and into engagement with the support without any axial rotation.

My present invention has for its object the

production of means to so limit or restrain the tendency to axial rotation of the filling-carrier next to be removed from the feeder that all tightening or slackening of the filling end is obviated.

Figure 1 is a transverse sectional view, taken through the filling-feeder, of an automatic filling-replenishing loom with one embodiment of my invention applied thereto. Fig. 2 is an enlarged side elevation and partial section of the stop for the endmost filling-carrier, showing the means for limiting rotative movement thereof. Fig. 3 is a similar view showing a slightly different relative position of the rotation-limiting means. Fig. 4 is a perspective view, enlarged, of the stop and the means for limiting rotation of the filling-carrier, and Fig. 5 is a modification of my invention to be referred to.

The filling-feeder F, Fig. 1, comprising, essentially, two connected rotatable plates, only one of which, as *a*, is shown, and the transfer *f'* to transfer the filling-carriers *b* one by one to the running shuttle S may be and are all substantially of well-known construction and operate in usual manner. The heads of the filling-carriers are provided with several annular projections, such as split rings 1, to be engaged by suitable holding-jaws in the shuttle in well-known manner.

On the stand *A'*, which supports the filling-feeder, is yieldingly mounted the usual support 10 for the filling-carrier next to be transferred, as shown at *b<sup>x</sup>*, Fig. 1, the support being located adjacent the path of transfer and at such time serving to guide one side of the filling-carrier. On the opposite side of the transferring-path is mounted a stop 2, upturned in front of the head of the filling-carrier *b<sup>x</sup>* next to be removed.

The face of the stop is herein shown as provided with longitudinal grooves 3, Fig. 4, to receive the rings 1 on the head of the filling-carrier, the latter being guided along the grooved face when transfer is effected, the grooves preventing longitudinal movement of the filling-carrier, while the support 10 swings downward on its fulcrum 9 as the filling-carrier descends to the shuttle. Such a stop is shown and described in United States Patent to Stimpson, No. 652,222, dated June 19, 1900.

In accordance with the present embodiment of my invention the stop is cut down or slotted



at the upper end of one of the grooves, as at 4, (best shown in Figs. 2 and 3,) to receive the bent free end 5 of a yielding finger or detent, its shank 6 being fixedly held in a hole in the foot 2<sup>x</sup> of the stop. The resiliency of the detent causes its bent end 5 to project through the slot or opening 4 in the path of and to engage one of the rings 1 of the filling-carrier next to be removed from the feeder when such filling-carrier is brought into operative position for transfer.

When the filling-carrier assumes this position, its head drops down onto the support 10, and the vibrations of the feeder then cause the head to rub back and forth on the support, thereby tending to set up an axial rotation of the filling-carrier, but which tendency is overcome by the engagement of the detent with a ring on the head of the filling-carrier. If the end 5 of the detent enters the space between the two separated ends of the ring, as shown in Fig. 2, it will be manifest that the filling-carrier cannot rotate at all in either direction while operatively positioned, yet the detent will yield easily when the transferer *f'* operates to insert the filling-carrier in the shuttle. Should a portion of the ring itself be engaged by the detent, as shown in Fig. 3, the yielding action of the detent thereon operates as a brake and prevents any objectionable rotative movement. Even should the jarring of the loom be sufficient to overcome the action of the detent but one rotation of the filling-carrier at the most could be effected, for it would be positively held and stopped when the detent entered between the separated ends of the ring.

The filling-carrier is usually provided with three rings, and they are so set thereon that the ring-openings will be staggered with relation to each other about one hundred and twenty degrees apart, and by using a duplex detent arrangement a complete revolution of the filling-carrier cannot occur. Such an arrangement is shown in Fig. 5, wherein the stop is provided with two openings or slots 4, one in each of two of the grooves in the face of the stop, and a detent device such as has been described is arranged to project through each slot and cooperate with two of the rings on the filling-carrier when operatively positioned.

The filling-carriers are of usual construction and require no change or variation in structure by reason of my invention, nor do they have to be placed in the feeder in any particular position, but are inserted in the usual manner without any loss of time.

The movement of the detent is very slight, and it is subjected to very little strain, so that its life should be equal to that of the loom itself to all intents and purposes, and even if it should break no damage could possibly result, nor would the operation of the loom otherwise be in the least altered.

My invention is applicable to any filling-feeder in which the filling-carrier next to be removed always occupies the same given position, as will be manifest.

I have shown my invention as applied to a well-known form of automatic loom and filling-feeder for convenience in illustration and explanation, but it is not restricted thereto, and changes or modifications may be made by those skilled in the art without departing from the spirit and scope of my invention.

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

1. A filling-feeder to contain a plurality of filling-carriers, a support to engage the filling-carrier next to be removed from the feeder, and means to cooperate with one after another of the filling-carriers, as they assume the position requisite for removal, and prevent rotation of such operatively-positioned filling-carrier.

2. A filling-feeder to contain a plurality of filling-carriers adapted to be removed one by one, and means to engage one after another of the filling-carriers, as they assume the position requisite for removal, and thereby limit rotative movement of the filling-carrier next to be removed from the feeder.

3. A filling-feeder to contain a plurality of filling-carriers and in which they are brought singly into operative position, a support to engage the filling-carrier next to be removed from the feeder, and yielding means to cooperate with such filling-carrier when it attains such operative position, to limit axial rotation thereof.

4. A filling-feeder to contain a plurality of filling-carriers having rings on their heads, a support to engage and sustain the head of the filling-carrier next to be removed, and a yielding detent to engage a ring on the head of such filling-carrier and limit rotation thereof.

5. A filling-feeder to contain a plurality of filling-carriers having rings on their heads, a stop having an upright face in front of and adjacent the head of the filling-carrier next to be removed, said stop having an opening therein, and a yielding detent projecting through the opening to bear against the head of the end-most filling-carrier and prevent rotation thereof.

6. A filling-feeder to contain a plurality of filling-carriers adapted to be transferred one by one to a shuttle provided with holding means, each filling-carrier being provided with an instrumentality to be engaged by such holding means in the shuttle, and means to cooperate with said instrumentality to limit axial rotation of the filling-carrier prior to its removal from the filling-feeder.

7. A filling-feeder to contain a plurality of filling-carriers adapted to be transferred one by one to a shuttle having holding means, annular projections on the head of each filling-

carrier to be engaged by said holding means,  
when the filling-carrier is inserted in the shut-  
tle, and means to coöperate with one or more  
of said projections to limit axial rotation of a  
5 filling-carrier prior to its removal from the  
filling-feeder.

In testimony whereof I have signed my name

to this specification in the presence of two sub-  
scribing witnesses.

EVERETT S. WOOD.

Witnesses:

GEORGE OTIS DRAPER,  
ERNEST W. WOOD.