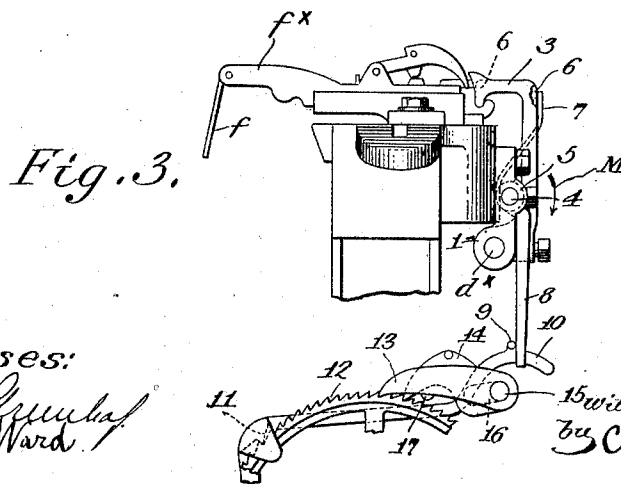
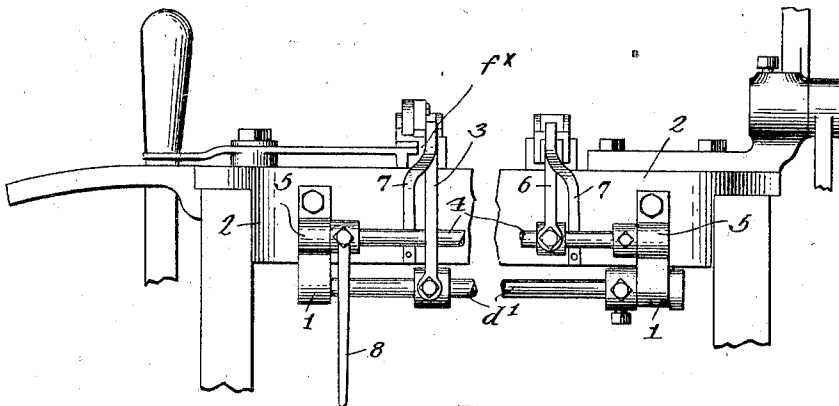
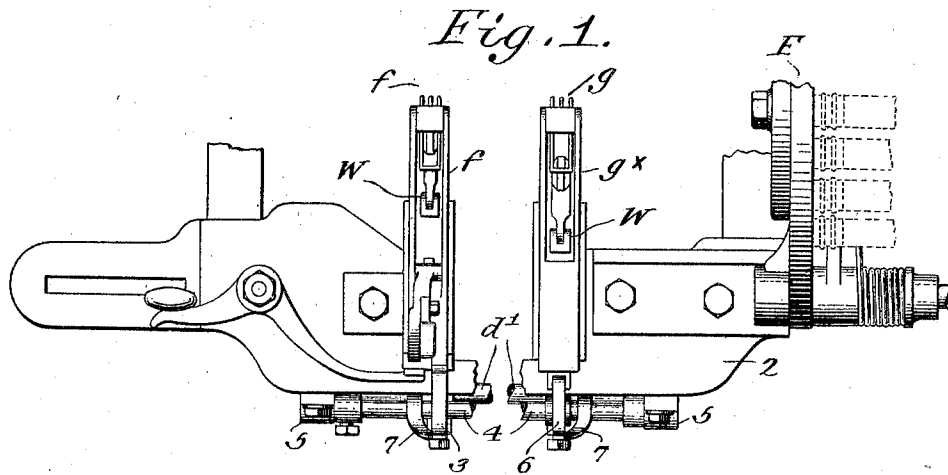


W. R. WIDDUP.  
 AUTOMATIC FILLING REPLENISHING LOOM.  
 APPLICATION FILED APR. 9, 1910.

967,282.

Patented Aug. 16, 1910.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC FILLING-REPLENISHING LOOM.

967,282.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed April 9, 1910. Serial No. 554,476.

*To all whom it may concern:*

Be it known that I, WILLIAM R. WIDDUP, a citizen of the United States, and resident of Spartanburg, county of Spartanburg, State of South Carolina, have invented an Improvement in Automatic Filling-Replenishing 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 looms and it has for its object the production of simple and effective means for temporarily arresting take-up when a change in the operation of the loom is effected, such for instance as the automatic replenishment of filling.

In Northrop looms, such as are shown in United States Patent No. 529,940 dated November 27, 1894, the filling replenishing mechanism is located at one side of the loom, and the filling-detector or fork which controls its operation is located at the opposite side of the loom. With this arrangement detection of filling-failure on the pick of the shuttle toward the detector or fork is followed by replenishment of filling when the shuttle is boxed on the next pick, and an arrest of take-up is provided for by well-known means. When filling fails on the pick toward the replenishing side of the loom, however, with but a single fork, several picks may be made when no filling is laid, and a fault in the cloth results, because the take-up operates for one or more picks when no filling is being laid in the shed.

In accordance with my present invention I provide a second filling-detecting instrumentality, located at the replenishing side of the loom, and having no other function than to arrest take-up when filling absence is detected on the pick of the shuttle toward the replenishing side of the loom, a let-back device permitting the cloth to be let back the desired number of picks.

The detecting instrumentality at the other side of the loom is arranged to control the operation of the replenishing mechanism, only, and has no control over the take-up.

Any ordinary single-detector loom of the Northrop type can be readily equipped in accordance with my invention and thereby will prevent the formation of thin places in the cloth due to improper operation of the take-up.

The various novel features of my inven-

tion will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a top plan view, centrally broken out, of a portion of an automatic filling replenishing loom of the Northrop type equipped with one embodiment of my present invention; Fig. 2 is a front elevation of the apparatus shown in Fig. 1; Fig. 3 is a left hand end elevation of a portion of the apparatus shown in Figs. 1 and 2, but omitting the shipper.

Referring to Fig. 1, F is the filling-replenishing mechanism of the well-known Northrop type, substantially as illustrated in the patent referred to, its operation being controlled by the rock-shaft *d'* in usual manner. Said rock-shaft is mounted in bearings 1 on the loom-frame 2 and has an upturned, rigidly attached arm 3 adapted to be swung forward by outward movement of the slide *f*<sup>\*</sup> on which a filling-detector or fork *f* is mounted, in usual manner. The weft-hammer W, Fig. 1, effects such movement of the slide upon detection of filling absence by fork *f* on the pick of the shuttle to the left, away from the replenishing mechanism.

In accordance with the usual operation of the apparatus so far referred to the replenishing mechanism F is caused to effect a replenishment of filling when the shuttle is boxed at the right-hand side of the loom on the pick next after that one on which the fork *f* detected filling absence. Herein I have shown a second rock-shaft 4 mounted in bearings 5 on the loom-frame, somewhat above and parallel to the controlling rock-shaft *d'*, and to the rock-shaft 4 is rigidly attached an upturned arm 6 adapted to be swung forward by outward movement of a second fork-slide *g*<sup>\*</sup>, provided at the right-hand side of the loom and equipped with a detector or fork *g*, Fig. 1. Outward movement of slide *g*<sup>\*</sup> is effected in a well known manner by a second weft-hammer W', when filling absence is detected by the fork *g* on the pick of the shuttle toward the replenishing side of the loom. Springs 7 are provided to effect return movement of the slides *f*<sup>\*</sup>, *g*<sup>\*</sup>, such springs coöperating with the arms 3 and 6, as shown. A depending arm 8 on the shaft 4 is arranged to coöperate with a lug 9, Fig. 3, on a pawl-carrier 10 having a take-up pawl 11 adapted nor-

mally to engage and rotate step by step a take-up ratchet 12, so that when rock-shaft 4 is turned in the direction of arrow M, Fig. 3, the arm 8 acts through lug 9 to disengage said pawl and ratchet, thereby arresting take-up.

I have shown a let-back device in connection with the take-up mechanism, comprising the two pawls 13 and 14, the longer pawl 13 rocking on a fixed fulcrum stud 15, while the shorter pawl 14 is slotted at 16 to embrace and slide on said stud when pawl 13 is raised from engagement with the ratchet 12. Pawl 13 has a lateral projection 17 extended over the pawl-carrier 10, and said pawl acts normally as a detent for and to prevent retrograde movement of the ratchet 12. When the arm 8 disengages the pawl 11 and ratchet 12, arresting take-up, the pawl-carrier 10 engages and lifts the projection 17 and thereby disengages the detent pawl 13 from the ratchet, whereupon the pawl 14 slides along stud 15 and permits the ratchet to let back the cloth as much as desired.

The take-up mechanism and let-back device may be of any suitable character, that herein illustrated being in general such as shown in United States patent to Clement No. 643,284 dated February 13, 1900.

From the foregoing description it will be apparent that the operation of the filling-fork *f* upon detection thereby of filling absence results in the operation of the replenishing mechanism when the shuttle is boxed at the replenishing side of the loom on the next pick, but the take-up is not in any way affected by such fork. Inasmuch, however, as the fork *g* detects filling absence on the pick toward the replenishing mechanism the shaft 4 will be turned and the arm 8 swung to effect arrest of take-up and let-back, so that there will not be a thin place in the cloth. If the absence of filling is first detected by the fork *g* there will be arrest of take-up and let-back of the cloth, and a repetition of this action on the second succeeding pick, the fork *f* detecting absence of filling on the intervening pick to the left, Fig. 1. Such double arrest of take-up, with the accompanying let-back, is not objectionable, for the amount of cloth let back can be regulated as desired, for the length of the slot in the let-back pawl 14 determines the extent to which the cloth will be let back, and it may be one pick, or two or more picks for

each operation, just as may be required by the circumstances of the case.

It will be apparent that the fork *g* and its adjuncts have nothing to do with the operation of the replenishing mechanism under any circumstances, the whole function of such instrumentality being to govern the operation of take-up and let-back devices, while the detecting instrumentality of which the fork *f* forms a part has no other function than the control of the replenishing mechanism.

I thus am enabled to accomplish the desired results with a very simple and direct acting construction, as will be manifest from the drawings.

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

1. In a loom, filling-replenishing mechanism, a filling-fork, controlling connections, including a rock-shaft, between said mechanism and fork, to effect the actuation of the former only upon detection of filling absence by the latter, a second filling-fork, take-up and let-back mechanisms, and controlling connections, including a second rock-shaft, between said second fork and the take-up and let-back mechanisms, to arrest take-up and cause let-back only upon detection of filling absence by the second fork.

2. In a loom having filling-replenishing, take-up and let-back mechanisms, in combination, two filling-detecting instrumentalities, located at opposite sides of the loom, two independent rock-shafts, each having an upturned arm coöperating with and swung outward by one of said instrumentalities when filling-absence is detected thereby, one of said shafts when so turned effecting the actuation of the replenishing mechanism only, and a depending arm on the other of said shafts to effect arrest of the take-up mechanism and cause the let-back mechanism to operate only when such rock-shaft is turned through detection of filling-absence by the detecting-instrumentality coöperating with its upturned arm.

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

WILLIAM R. WIDDUP.

Witnesses:

JNO. B. WARDLAW,  
E. M. MATHEWS.