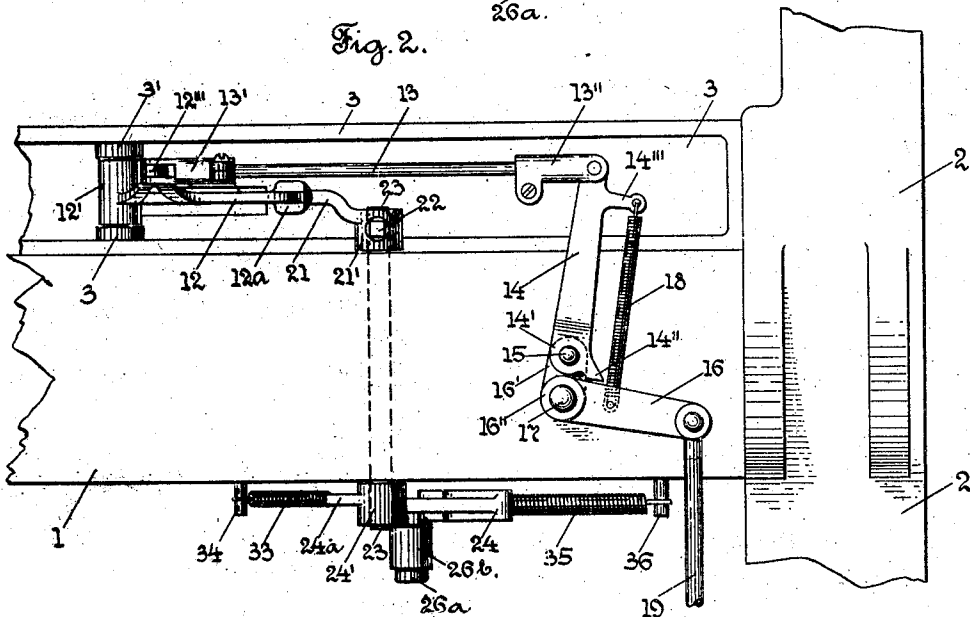
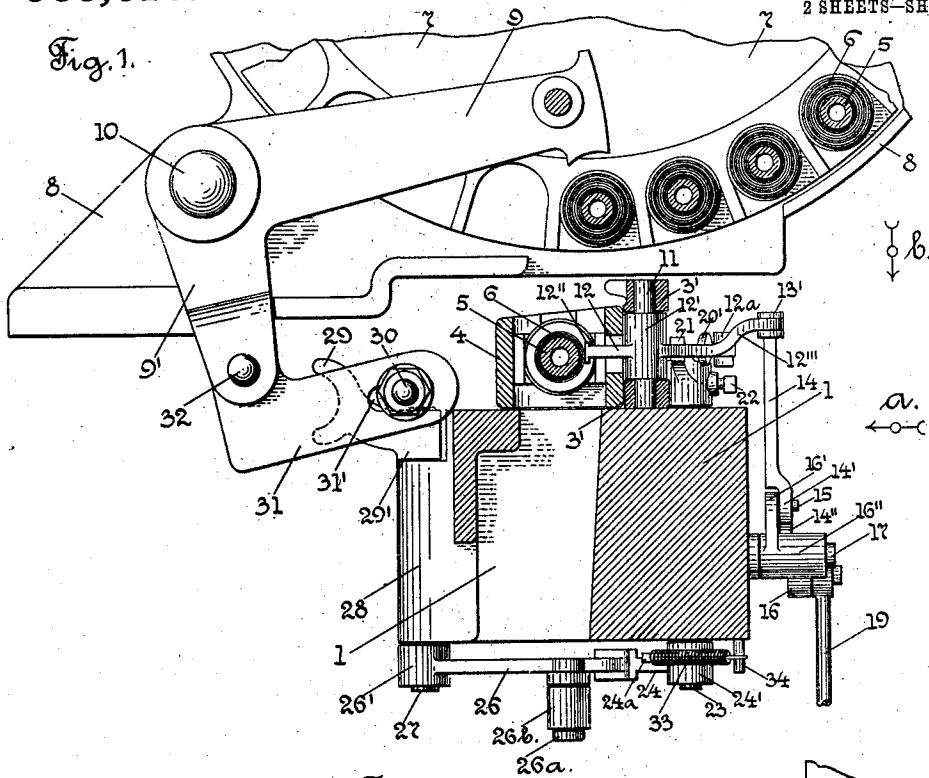


G. B. AMBLER.
WEFT REPLENISHING LOOM.
APPLICATION FILED OCT. 30, 1908.

933,613.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1



Witnesses

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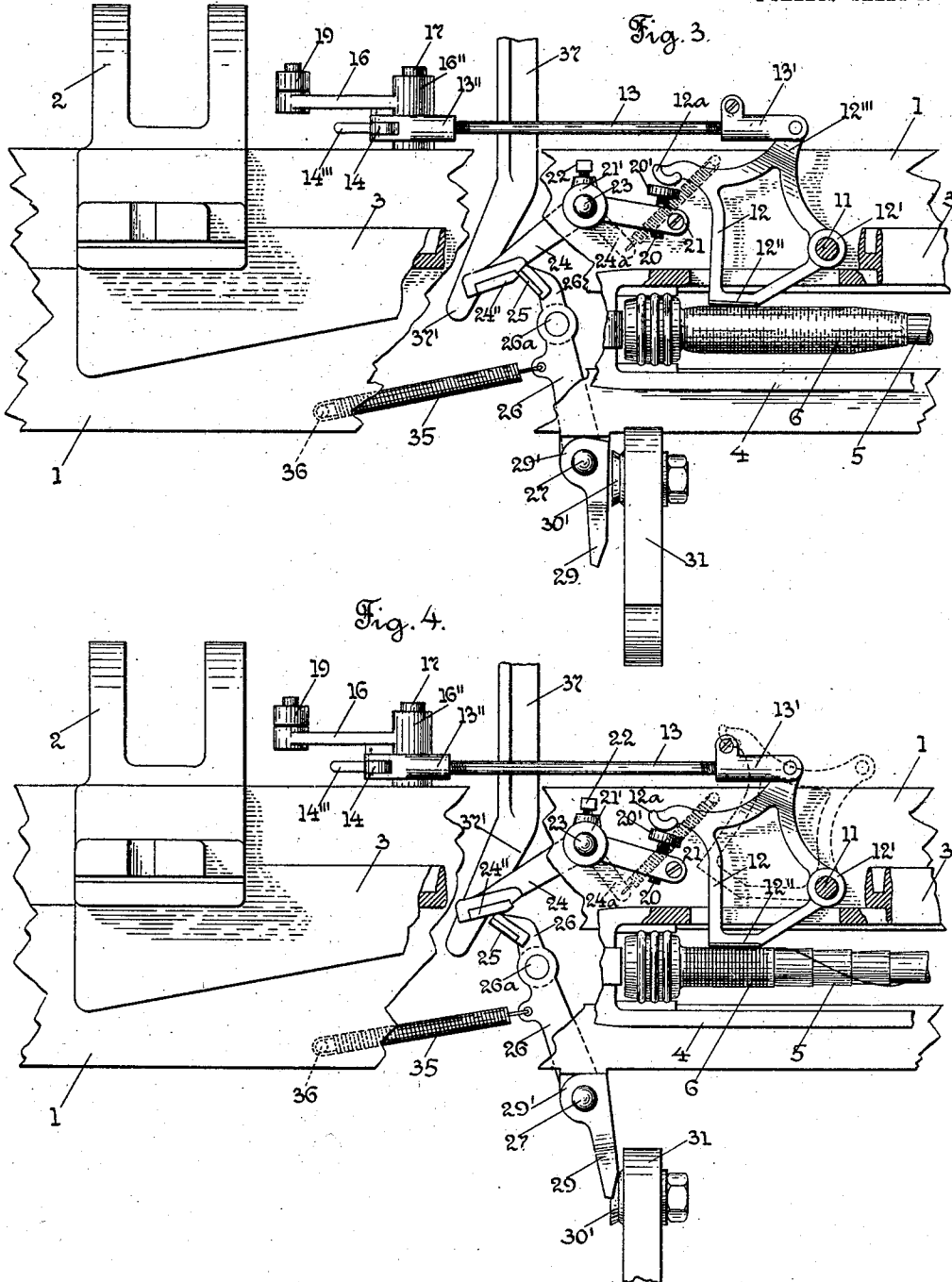
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE BERTRAM AMBLER, OF LEOMINSTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WEFT-REPLENISHING LOOM.

933,613.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed October 30, 1908. Serial No. 460,235.

To all whom it may concern:

Be it known that I, GEORGE B. AMBLER, a citizen of the United States, residing at Leominster, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Weft-Replenishing Looms, of which the following is a specification.

My invention relates to a weft replenishing loom, and more particularly to a filling detector mechanism for a weft replenishing loom.

The object of my invention is to provide an improved filling detector mechanism of simple construction, and having a filling feeler or detector, preferably located on the magazine end of the loom, and which is adapted to enter, preferably through an opening in the rear wall of the stationary shuttle box at said end, and through an opening in the rear wall of the shuttle, to engage the filling on the bobbin, at every other forward movement of the lay, when the active shuttle enters the stationary shuttle box at the magazine end of the lay, and on the practical or substantial exhaustion of filling in said shuttle to put into operation mechanism to cause the operation of the weft replenishing mechanism, to supply fresh filling on the same pick, and without the shuttle going over to the other end of the loom, and returning to the magazine end.

My invention consists in certain novel features of construction of my improvements which are adapted to be applied to and used on any ordinary weft replenishing loom.

I have shown in the drawings a detached portion of the magazine end of a loom, and a stationary shuttle box, and a magazine of the rotary type for filling carriers, with my improvements combined therewith.

Referring to the drawings:—Figure 1 is a sectional end view of the magazine end of the lay, and of my improvements in filling detector mechanism, showing the lower portion of a rotary magazine. Fig. 2 is a rear view of the lay shown in Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 is a plan view of a portion of the magazine end of the lay, and of the shuttle box, looking in the direction of arrow *b*, Fig. 1. Some parts are shown in section, and some parts are broken away. Fig. 4 corresponds

to Fig. 3, but shows some of the parts in different positions.

In the accompanying drawings, 1 is a portion of a lay beam carried on the lay sword 2; 3 is a detached portion of a stationary shuttle box at the magazine end of the loom, and 4 a shuttle therein, carrying a bobbin having filling 6 thereon.

7 is the lower detached portion of a stationary magazine of the ordinary type, which is mounted to rotate on a stand 8, secured at the front of the loom side, not shown, in the usual way.

9 is the transferrer arm, which is pivotally mounted on a stud 10, and has a downwardly extending arm 9'.

All of the above mentioned parts may be of any usual and well known construction.

I will now describe my improvements.

The back wall of the stationary shuttle box 3 has in this instance two bosses 3', see Fig. 1, for a vertically extending stud 11. On the stud 11 is loosely mounted the hub 12' of the filling feeler 12. The filling feeler 12 is in this instance of frame-like construction, as shown, and has a pivotal motion toward and away from the shuttle; said feeler 12 has in this instance a flattened end 12'' which is adapted to enter through an opening in the back wall of the shuttle box 3, and through an opening in the rear of the shuttle 4, to feel against the filling 6 on the bobbin 5, see Figs. 3, and 4. A rearwardly extending part 12''' on the feeler 12, has pivotally connected thereto the rod-head 13' on a rod or connector 13. The opposite end of said connector 13 has the rod-head 13'' thereon, which is pivotally connected to the upper end of a lever 14, see Fig. 2. The lever 14 has its hub 14' loosely mounted on a stud 15 on a projection 16' on the hub 16'' of a lever 16, see Fig. 1. The hub 16'' of the lever 16 is loosely mounted on a stud 17 on the rear of the lay beam. Extending out from the hub 14' of the lever 14 is a side projection or foot 14'' which extends in the path of and is adapted to be engaged by the upper edge of the lever 16, see Fig. 2. A helically coiled contraction spring 18 is attached at one end to an extension 14''' on the lever 14, and at its other end to a pin on the lever 16. The spring 18 acts to form a yielding connection between the lever 16 and

the extension 14''' on the lever 14, so that on the downward movement of the lever 16, the spring 18 will expand and leave the lever 14 practically stationary without moving the connector 13 and the filling detector 12, in case the amount of filling 6 on the bobbin 5 prevents the filling detector 12 from moving into the shuttle, as shown in Fig. 3. The upward movement of the lever 16, through the engagement of its upper edge with the projection or foot 14'' on the lever 14, will positively move said lever 14, and through the connector 13, move the feeler 12 out of the shuttle and out of engagement with the filling, as shown by broken lines in Fig. 4.

A downwardly extending rod or connector 19 is attached to the lever 16, and is connected at its lower end with suitable cam operating mechanism, not shown, to operate the lever 16 and the lever 14, and through intermediate connections to the feeler 12, to operate said feeler, as above described, to engage with the filling on the bobbin in the shuttle every other pick, in the usual way.

The feeler or detector 12 has in this instance thereon a projection 12^a, having a curved or cam-shaped end, which is adapted to engage, on the practical exhaustion of filling, see Fig. 4, with the headed end 20' of a screw 20, which is adjustably secured in the end of an arm or lever 21. The lever 21 in this instance has its hub 21' secured by a set screw 22 on the upper end of a vertically extending shaft 23, which has bearings in the lay beam 1. On the lower end of the shaft 23 is secured the hub 24' of an arm or lever 24, which in this instance has at its outer end a plate 24'', preferably detachable, and made of hardened steel. The plate 24'' extends in the path of and is adapted to engage the end of a hardened steel plate 25, which is preferably detachably secured on the inner end of a lever 26, see Fig. 3, which lever in this instance has a hub 26' secured on the lower end of a vertically extending shaft 27. The shaft 27 is mounted in bearings 28 on the front of the lay beam 1, and on the upper end of the shaft 27 is secured in this instance the hub 29' of a bunter 29, which extends upwardly and with its upper end in the path of and adapted to engage, in this instance, the rounded grooved end 30' on a bolt 30, adjustably secured in a slot 31' in a latch 31, which latch is pivotally mounted on a stud 32 on the downwardly extending arm 9' of the transferrer arm 9, in the usual way.

A helically coiled contraction spring 33 is attached at one end to an extension 24^a on the hub 24' of the lever 24, and at its other end to a pin 34 on the lay beam 1. The spring 33 acts to yieldingly move the lever 24 toward the lever 26, and to hold the lever 26 in its locked position, as shown in Fig. 3. In this locked position the bunter 29 is held out of the path of the grooved end 30'

on the bolt 30, see Fig. 3, and the loom is operated normally.

When the filling 6 on the bobbin 5 is practically or substantially exhausted, as shown in Fig. 4, the engagement of the projection 12^a on the feeler or detector 12 with the head 20' of the screw 20 on the lever 21, will move said lever 21, and also move the lever 24, sufficiently to disengage the end of the plate 25 on the lever 26, with the plate 24''' on the lever 24, and allow the helically coiled contraction spring 35, which is attached at one end to a pin 36 on the lay beam 1, and at its other end to the lever 26, to act to move the bunter 29 into the path of the grooved head 30' on the bolt 30 on the latch 31 of the transferrer mechanism, so that on the forward movement of the lay, the transferrer 9 will be operated to transfer a fresh bobbin from the magazine 7 into the active shuttle.

The lever 26 carries in this instance a stud 26^a, on which is mounted a roll 26^b, on the lower side of the lever 26. The roll 26^b is in position to be engaged by the cam-shaped or inclined end 37' on an arm 37, secured to or extending out from the loom side, not shown. The engagement of the roll 26^b with the cam-shaped or inclined end 37' of the arm 37, on the backward movement of the lay, will move the lever 26 back to the position shown in Fig. 3, and cause the lever 26 to be locked by the plate 24'' on the lever 24, to hold the bunter 29, in its inoperative position, as shown in Fig. 3.

From the above description in connection with the drawings, the operation of my improvements will be readily understood by those skilled in the art. As long as there is a sufficient supply of filling 6 on the bobbin 5 in the active shuttle, the feeler or filling detector, at every other pick of the loom, will engage the filling on the forward movement of the lay, and be moved outwardly, as shown in Fig. 3, and through intermediate mechanism above described, the bunter 29 will be held in its inoperative position, as shown in Fig. 3 and stationary relatively to the feeler. When the filling 6 on the bobbin 5 is practically or substantially exhausted, as shown in Fig. 4, the filling detector or feeler 12 will enter farther into the shuttle, and through the extension 12^a thereon, cause the movement of the lever 21 and the lever 24, to release the lever 26 and allow the spring 35 to act to move the bunter 29 into the path of the end 30' of the bolt 30 on the latch 31, so that on the next forward movement of the lay, the transferrer mechanism will be put into operation, and a fresh bobbin or filling carrier will be supplied to the shuttle to take the place of the substantially exhausted bobbin, on the same pick, the filling feeler or detector 12 being positively moved away from the bobbin and out of the opening in the shuttle, through its operating mechanism.

anism, to allow of the discharge from the shuttle of the exhausted bobbin.

It will be understood that the details of construction of my improvements may be varied if desired.

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

1. In a weft replenishing loom, a filling detector, pivotally mounted at the magazine end of the loom, and adapted to enter the shuttle to engage the filling, mechanism connected with said filling detector to move it into and out of engagement with the filling in the shuttle, a bunter, and connections intermediate said filling detector and said bunter, to hold said bunter in an inoperative position and stationary relatively to the filling detector, and said bunter released through the operation of said intermediate connections on the practical exhaustion of filling, to put into operation the transferrer mechanism.

2. In a weft replenishing loom, a filling detector, pivotally mounted at the magazine end of the loom, and adapted to enter the shuttle to engage the filling, mechanism connected with said filling detector to move it into and out of engagement with the filling in the shuttle, a bunter, and connections intermediate said filling detector and said bunter, to hold said bunter in an inoperative position and stationary relatively to the filling detector, and said bunter released through the operation of said intermediate connections on the practical exhaustion of filling, to put into operation the transferrer mechanism, and means to move the bunter out of operative position.

3. In a weft replenishing loom, a filling detector pivotally mounted at the magazine end of the loom, and adapted to enter the shuttle to engage the filling, mechanism connected with said filling detector to move it into and out of engagement with the filling in the shuttle, said mechanism having a yielding lever, a lever adapted to be engaged by the filling detector on the practical exhaustion of the filling in the active shuttle, adjusting means intermediate said last

named lever and the filling detector, and connections intermediate said last named lever and a bunter, and said bunter held in an inoperative position and stationary relatively to the filling detector, and released on the practical exhaustion of filling, and actuated by a spring, to be moved into position to put into operation the transferrer mechanism.

4. In a weft replenishing loom, a filling detector pivotally mounted on the lay at the magazine end of the loom, at the rear of the shuttle box, and adapted to be moved, through an opening in the shuttle box and shuttle, to engage the filling in the active shuttle, a lever fast on the upper end of a vertically extending rock shaft, and carrying an adjusting screw extending in the path of and adapted to be engaged by a projection on the filling detector, on the practical exhaustion of filling in the active shuttle, a second lever on the lower end of said vertically extending rock shaft, and extending in the path of and adapted to engage and hold a lever fast on a vertically extending shaft, and said shaft, having a bunter fast thereon, to be moved into the path of and operate the transferrer arm, on the substantial exhaustion of filling in the active shuttle, and means for moving said lever, to move the bunter out of operative position.

5. In a weft replenishing loom, a filling detector pivotally mounted at the magazine end of the loom, and adapted to enter the shuttle to engage the filling, mechanism connected with said filling detector to move it into engagement with the filling in the shuttle, a bunter, and connections intermediate said filling detector and said bunter, to hold said bunter in an inoperative position and stationary relatively to the filling detector, and said bunter released through the operation of said intermediate connections on the practical exhaustion of filling, and actuated by a spring, to be moved into position to put into operation the transferrer mechanism.

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