

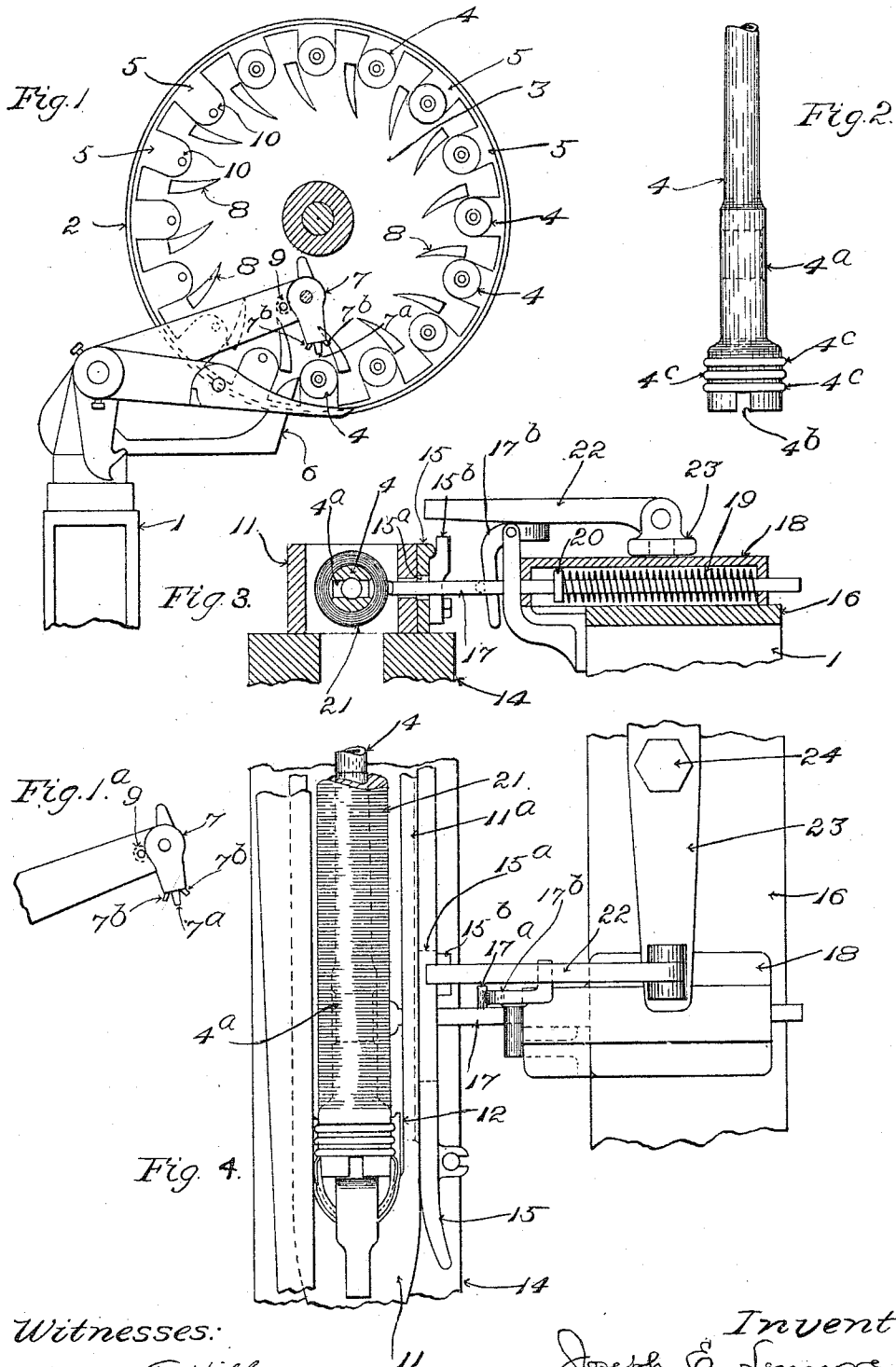
J. E. LEMYRE.

LOOM.

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Witnesses:
Oscar F. Hill
Edith J. Anderson.

Inventor:
Joseph E. Lemyre
by Char. F. Randall
Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH E. LEMYRE, OF MANCHESTER, NEW HAMPSHIRE, ASSIGNOR TO PATENT SALES
COMPANY, OF KITTERY, MAINE, A CORPORATION OF MAINE.

LOOM.

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To all whom it may concern:

Be it known that I, JOSEPH E. LEMYRE, a citizen of the United States, residing at Manchester, in the county of Hillsboro, State of New Hampshire, have invented a certain new and useful Improvement in Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention has relation in part to the bobbin-feeding devices of looms of the class in which weft-replenishment is effected by automatically replacing the bobbin contained in the working shuttle on the lay
15 by a fresh one.

It also relates in part to the feeler-devices which are employed in looms for the detection of the predetermined degree of exhaustion of the weft-contents of the shuttle.

20 One object of the invention is to insure that the bobbin-feeder shall occupy the correct position at the time when a fresh or reserve bobbin is driven or transferred therefrom into the shuttle on the lay. Ordinarily, the bobbin-feeder is expected to move
25 until the leading bobbin carried thereby makes contact with a fixed stop, and such contact is depended upon to arrest the movement of the bobbin-feeder, with the said bobbin located in proper position to be transferred when the lay in its swinging movement presents the shuttle beneath the feeder. It happens occasionally, however, that the
30 bobbin-feeder fails to move far enough to carry the leading bobbin into engagement with the fixed stop, or by reason of jarring or other causes the bobbin-feeder may shift in such manner that at the moment when a transfer takes place the said bobbin is out
40 of contact with the stop. Hence, at times the bobbin is not inserted fairly into the cavity of the shuttle and between the holding jaws of the latter. Instead, it may strike upon one side-wall of the shuttle,
45 with resulting injury to either the bobbin or the shuttle, frequently breaking or splitting the shuttle. The bobbin may strike so far out of place that it cannot pass into the cavity of the shuttle, and will be thrown
50 out or glance and fly to a distance. In thus being thrown, or flying, it sometimes enters among the warps of the same loom or an adjoining one, and getting caught or woven therein causes breakage thereof, often on an
55 extensive scale, resulting in stoppage of the

loom for repairs, and consequent loss of production. In carrying this object into effect I provide means by which the bobbin-feeder is actuated, just prior to a transfer, to place the leading bobbin carried thereby
60 in contact with the fixed stop, and keep it in contact until it has been pushed down into the shuttle.

Another object of my invention is to provide improved means for preventing the
65 bobbin from turning while being transferred. In carrying this object into effect, I provide the transferrer with a plurality of teeth or projections for engagement with the exterior of the said head. The general
70 purpose in view is to insure that the slot or depression which is formed in the barrel of each bobbin, to receive the working end of the feeler when the weft-supply carried
75 by the bobbin has become unwound sufficiently to expose such slot or depression, shall be presented to such working end when the bobbin occupies its place in the shuttle.

Another object of the invention is to provide an improved construction of feeler-
80 devices.

The different features of the invention are shown embodied in preferred form in the drawings, in which latter,—

Figure 1 is a partly-sectional view showing bobbin-feeding devices with certain of the said features applied thereto. Fig. 1^a is a detail view of a portion of the pusher or transferrer. Fig. 2 shows a portion of a bobbin, on an enlarged scale. Fig. 3 is a
85 partly sectional view showing a portion of a loom-lay, a shuttle, and the feeler-devices. Fig. 4 is a partial plan of the parts shown in Fig. 3.

In the drawings,—at 1, Fig. 1, is shown a
95 portion of the frame of a loom, and at 2 a fixed portion of the frame of a bobbin-feeder.

3 is one of the disks of a rotary bobbin-feeder, it being the one which supports the
100 head-ends of the bobbins that are shown at 4, 4, etc. The pockets for the reception of the bobbin-heads are marked 5, 5, etc. In general, the construction and mode of operation of the bobbin-feeder and associated
105 parts are or may be as usual.

At 6 is the fixed stop, into contact with which the leading bobbin 4 is carried by the tendency of the bobbin-feeder to rotate, and
110 against which such bobbin is expected to

press until it is pushed or transferred to the shuttle on the lay.

At 7 is the pusher or transferrer, which is arranged and actuated as usual.

5 For the purpose of correcting the improper position of the bobbin-feeder and the leading bobbin, in case the bobbin-feeder in its turning movement should have failed to carry the said bobbin into contact with the acting portion of the fixed stop 6, or in case
10 the bobbin-feeder should have swung or jarred backward so as to carry the leading bobbin away from the said stop, the bobbin-feeder is furnished with the cam-surfaces
15 8, 8, etc., and the pusher or transferrer is furnished with a roll 9 for engagement with such cam-surfaces. The cam-surfaces are formed upon portions of disk 3 which project slightly, and are so disposed that as the
20 pusher or transferrer is moved for the purpose of pushing or transferring the leading bobbin 4 from its pocket 5 into the shuttle the roll 9 will engage with one of them and travel along the same. In case the bobbin-feeder should not have turned to the required full extent so as to place the leading
25 bobbin in contact with fixed stop 6, and thus in correct position for entering the shuttle, or in case the bobbin-feeder should have shifted or jarred backward out of position, the engagement referred to will cause the roll to pass the bobbin-feeder around far enough to carry the leading bobbin against
30 the fixed stop and thereby locate it properly for the transfer. When the pusher or transferrer is in its raised and retracted position, the roll 9 is clear of the projections on which the surfaces 8, 8, are formed, being then located nearer the center of rotation than
35 the inner portions of such projections. In this position of roll 9 it does not interfere with the turning movement of the feeder.

Having reference to the separate view of a bobbin in Fig. 2, at 4^a is shown the slot
45 that is made through the bobbin-barrel to accommodate the working end of a feeler, and at 4^b is a transverse notch which is made in the head-end of the bobbin for the reception of the devices by which the bobbin is
50 held from turning while supported by the bobbin-feeder, and while being transferred. The means of preventing the bobbin from turning while held in the bobbin-feeder consists of a small pin or projection 10 occupying
55 the inner portion of each pocket 5, and entering the notch or slot 4^b of the bobbin-head when the latter is placed in a pocket. This pin or projection occupies the notch or slot only when the bobbin-head is fairly
30 seated within the pocket, and is not intended to serve as a radial guide as the bobbin-head moves outward from the pocket.

The means for preventing the bobbin from turning or rotating while being transferred
65 consists of a pin 7^a, Figs. 1 and 1^a, on the

transferrer, adapted to enter the notch or slot 4^b in the bobbin-head, and short projections 7^b, 7^b, located on the transferrer at opposite sides of the said pin and adapted to engage with the exterior of the bobbin-head
70 adjacent the rings 4^c, 4^c, of Fig. 2, etc. In case bobbins are used with head-ends unprovided with notches or slots 4^b, the pin 7^a may be dispensed with, and simply a plurality of projections 7^b, 7^b, for engagement
75 with the exterior of the bobbin-head at one side of or between the rings 4^c, 4^c, be used.

At 11, Figs. 3 and 4, is shown the body of a shuttle, it containing a bobbin 4 within the yarn-cavity thereof. At 11^a is the opening in the front wall of the shuttle-body for the admission of the feeler. When the bobbin is properly disposed within the shuttle its slot 4^a is in line with opening 11^a.

In Figs. 3 and 4, which show my improved
85 feeler devices, a portion of the lay of a loom is shown at 14. 15 is the front-plate of the shuttle-box at one end of the lay, the said front-plate having therein a slot 15^a for the passage of the feeler. 16 is a stand or
90 bracket extending outward from one end of the loom-frame 1. At 17 is a feeler, mounted to slide in guides which are provided in the front and rear ends of a casing 18 which is mounted upon the said stand or bracket
95 16. 19, Fig. 3, is an expanding spiral spring that surrounds the stem of the feeler between the front end-wall of casing 18 and a collar 20 upon such stem, and acts with a tendency to hold the said feeler normally in
100 its rearwardly projected position, and to return the feeler to such position after being moved forward. As usual, at each advance of the lay the acting end of feeler 17 passes through the slot 15^a in the front-plate 15 of
105 the shuttle-box shown in Figs. 3 and 4, and when the shuttle occupies such shuttle-box at the time of the advance of the lay the said end of the feeler passes through the slot 11^a in the front wall of the shuttle-body
110 also, and makes contact with the weft-yarn 21 carried by the bobbin 4 within the shuttle. So long as such weft-yarn covers the slot 4^a in the barrel of the bobbin, it acts to push the feeler toward the front of the loom. The
115 movement thus communicated to the feeler is made instrumental by means of a projection 17^a extending from the stem thereof, to tilt a bell-crank 17^b, and lift a dog 22 through the engagement of a bent arm
120 of such bell-crank with the under side of the said dog. The said dog is connected pivotally with the controller-lever 23, which last is mounted pivotally at 24 upon stand or bracket 16. The controller-lever
125 23 is connected in practice with the devices for controlling the working of the loom, which devices may be as heretofore either weft-replenishing devices or stopping devices. When such controller-lever is turned, 130

as by carrying forward the end thereof which is shown in Figs. 3 and 4, the said devices are called into action and the required change in the working of the loom is brought about.

In conformity with the invention, I arrange the dog 22 to be engaged and actuated by the front-plate 15 of the shuttle-box of the lay, or a piece carried thereby as 15^b, Figs. 3 and 4, which is the same thing in effect. Thus, when the dog 22 is permitted to remain in its depressed position, as in consequence of the uncovering of slot 4^a of the bobbin 4 within the shuttle by the practical exhaustion of the supply of weft-yarn carried by the bobbin, in which case the feeler is permitted to enter such slot and remain in its rearward position and the bell-crank 17^b is not turned, the end of the dog is engaged by piece 15^b on the shuttle-box front-plate as the lay comes forward, and the dog is driven thereby toward the front of the loom, thereby turning the controller-lever.

My means of insuring the correct positioning of the bobbin-feeder at the time of a transference is not necessarily restricted to use in all instances in connection with rotary feeders alone.

What is claimed as the invention is:—

1. Bobbin-feeding devices for looms comprising, essentially, a rotary bobbin-feeder, a transferrer, a bobbin-stop, and means adapted to turn such bobbin-feeder at the time of the transferring movement, in case it occupies an improper position, to insure engagement of the leading bobbin with the said bobbin-stop during such movement.

2. Bobbin-feeding devices for looms comprising, essentially, a rotary bobbin-feeder, a transferrer, a bobbin-stop, and means actuated by the transferrer to turn the bobbin-feeder at the time of the transferring movement, in case of misplacement thereof, to insure engagement of the leading bobbin with the said bobbin-stop during such movement.

3. Bobbin-feeding devices for looms comprising, essentially, a movable bobbin-feeder, a transferrer, and means acting intermit-

tingly and positively at the time of the transferring movement to insure correct positioning of the said bobbin-feeder during the transferring operation.

4. Bobbin-feeding devices for looms comprising, essentially, a movable bobbin-feeder, a transferrer, and means actuated by the transferrer and operating positively at the time of the transferring movement to set the bobbin-feeder in correct position during the transferring operation.

5. Bobbin-feeding devices for looms comprising, essentially, a bobbin-feeder having in connection therewith a series of cam-surfaces, a transferrer, and means in connection with the said transferrer for engaging with the said cam-surfaces to set the bobbin-feeder in correct position for the transferring operation.

6. Bobbin-feeding devices for looms comprising, essentially, a bobbin-feeder having in connection therewith a series of cam-surfaces, a moving arm, and means in connection with the said arm for engaging with the said cam-surfaces to set the bobbin-feeder in correct position for the transferring operation.

7. Bobbin-feeding devices for looms comprising a bobbin-feeder, and a transferrer having a plurality of projections engaging with the exterior of a bobbin-head to prevent turning of the bobbin during transference.

8. In a loom, the following instrumentalities, the lay, its shuttle-box having a front-plate, a shuttle adapted to contain a bobbin carrying weft-yarn, a feeler mounted upon the loom-frame, a controller-device, and a dog operatively connected with the said controller-device and itself controlled as to its position by the feeler, and adapted to be engaged and operated by the shuttle-box front-plate.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH E. LEMYRE.

Witnesses:

CHAS. F. RANDALL,
ANNA F. RANDALL.