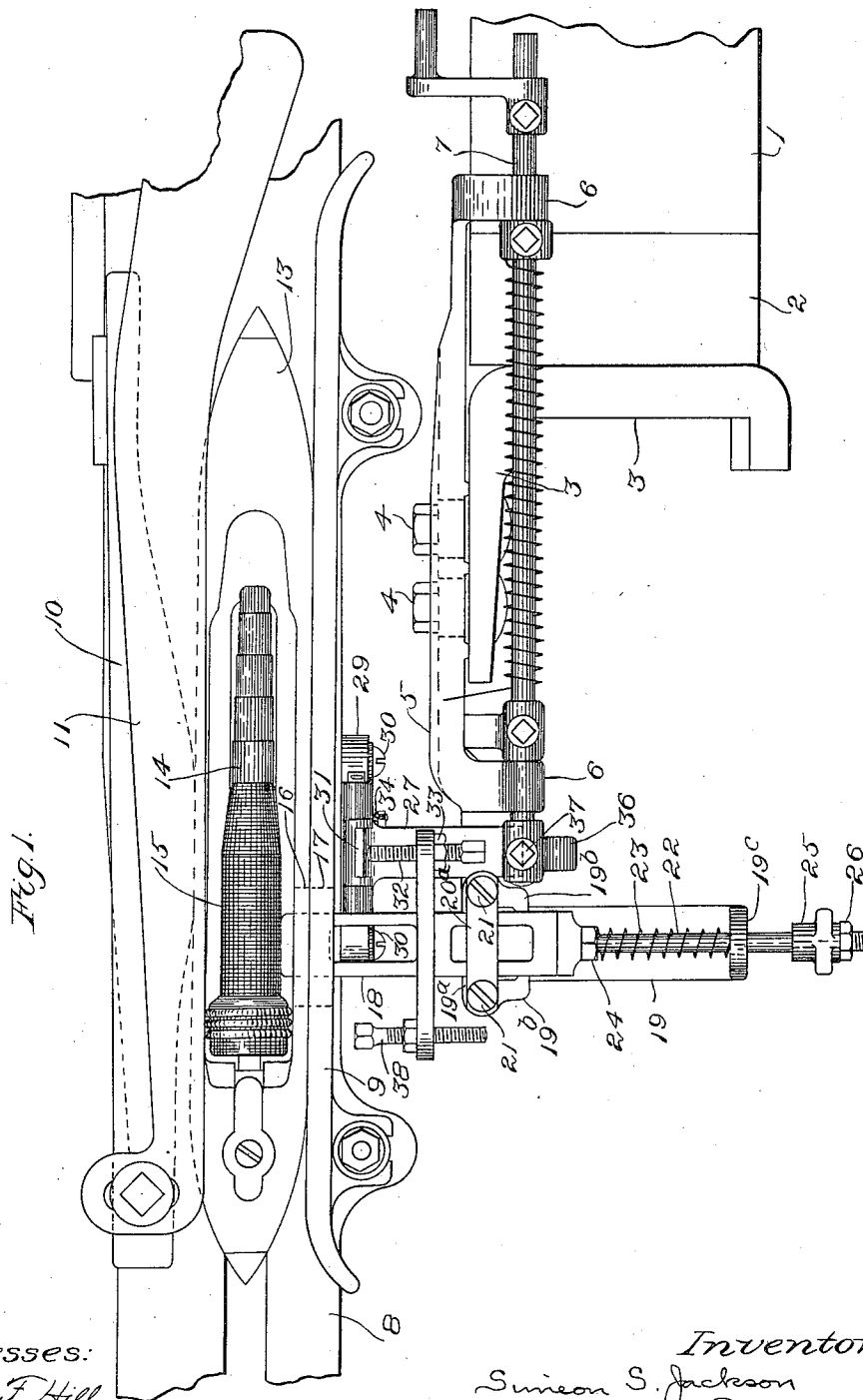


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WEFT FEELER DEVICE FOR LOOMS.
APPLICATION FILED SEPT. 27, 1911.

1,017,055.

Patented Feb. 13, 1912.

2 SHEETS—SHEET 1.



Witnesses:
Oscar F. Hill
Edith A. Wiseman.

Inventor:
Simeon S. Jackson
by Chas. F. Randall
Attorney.

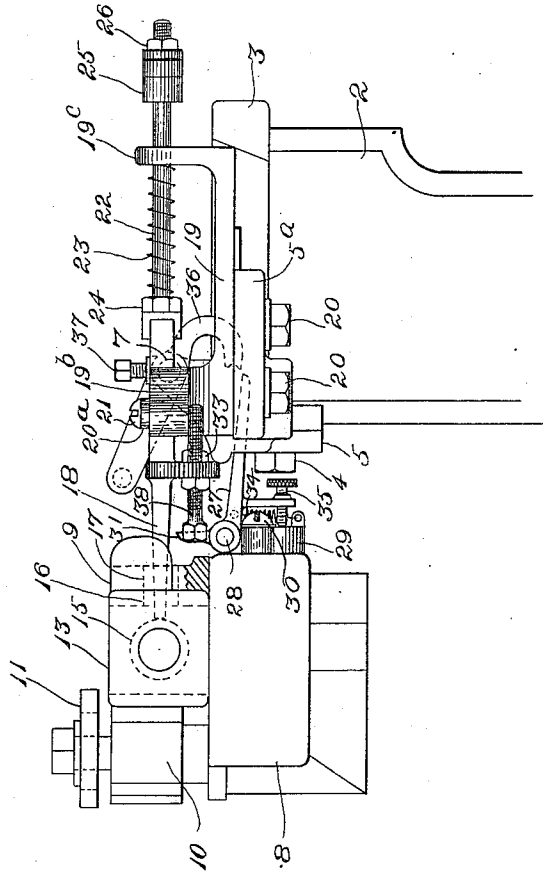
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2 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

Oscar F. Hill
Edith A. Vieman.

Inventor:

Simon S. Jackson
by Chas. F. Randall
Attorney.

UNITED STATES PATENT OFFICE.

SIMEON S. JACKSON, OF READVILLE, MASSACHUSETTS, ASSIGNOR TO THE STAFFORD COMPANY, OF READVILLE, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

WEFT-FEELER DEVICE FOR LOOMS.

1,017,055.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed September 27, 1911. Serial No. 651,531.

To all whom it may concern:

Be it known that I, SIMEON S. JACKSON, a subject of Great Britain, residing at Readville, in the county of Norfolk, State of Massachusetts, have invented a certain new and useful Improvement in Weft-Feeler Devices for Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to feeler-devices of the class employed for detection of a predetermined degree of depletion or exhaustion of the weft-contents of a shuttle upon the lay of a loom. On detection of predetermined volumetric change within the shuttle the feeler of a feeler-loom usually operates to call into action what sometimes is termed a controller or controller-means, whereupon through other parts associated with the said controller or controller-means and controlled thereby a predetermined change in the working of the loom is brought about. This change may consist in stopping the loom, or in automatic replenishment of the working weft-supply, and in some cases involves both stopping and weft-replenishment, followed by automatic restarting of the loom. United States Letters Patent No. 940,600, granted to me under date of November 16, 1909, shows and describes one construction and arrangement of feeler-devices, controller, and associated parts.

The invention provides, in combination with a feeler that is mounted independently of the lay, a controller-actuator which moves in unison with the lay, mounted independently of both the feeler and the shuttle, and rendered operative by the feeler to call the controller into action when the predetermined volumetric change within the shuttle is ascertained by the feeler.

A convenient embodiment of the invention is illustrated in the drawings, in which latter,—

Figure 1 shows in plan portions of the lay and breast-beam at one side of a loom, the shuttle-box at such side, a shuttle in the said shuttle-box, feeler-devices embodying the principles of the invention, and means for supporting the said feeler-devices upon the loom-frame at the end of the breast-beam. Fig. 2 is a view of the said parts looking from the left-hand side in Fig. 1, the shuttle-box front-plate being partly broken away.

Referring to the drawings,—A portion of

the breast-beam of a loom is indicated at 1, 2 being a portion of one side-frame of the loom, and 3 being a bracket secured to the said side-frame and provided with a fixed arm projecting outward, the said arm having attached thereto by means of bolts 4, 4, the stand 5 of the feeler-devices. The said stand supports the controller, which in this instance is like that of the Letters Patent aforesaid, the stand being formed with upstanding portions 6, 6, in which are provided bearings receiving the controller rock-shaft 7. The lay-beam is designated 8, 9 being the front wall of the shuttle-box, 10 the binder at the back of the said box, and 11 the top-plate of the shuttle-box. The shuttle is marked 13, a bobbin contained therein being marked 14, and the yarn-load on said bobbin being marked 15. Preferably, though not necessarily in all cases, the invention is carried into effect through the employment of a feeler which, as in the case of that shown, enters the shuttle through the front side of the latter, the front wall of the shuttle-body having formed therein a feeler-slot 16, shown by dotted lines, and the front-plate 9 of the shuttle-box being formed with a feeler-slot 17, also shown by dotted lines, such slots enabling the working portion of the feeler to enter the shuttle from the front as the lay advances, as usual.

The form and construction of the feeler, and the mode of mounting the same independently of the lay may vary in practice. In this instance the feeler is shown at 18, formed as a slide and mounted upon a feeler-stand 19 fixed by bolts 20, 20, upon an outward extension 5^a, Fig. 2, of stand 5. The flattened body-portion of the said feeler rests upon a supporting and guiding surface 19^a, Fig. 1, of feeler-stand 19, it being confined between side-guides 19^b, 19^b, on said stand, and being held from rising by means of a top-plate 20^a which is fastened by means of screws 21, 21, upon the upstanding side-portions of the feeler-stand. A rod or stem 22 projecting forward from the feeler-body works in a hole made through an upwardly-extending lug 19^c upon the front portion of the feeler-stand 19. An expanding spiral spring 23 surrounding the said stem is confined between the lug 19^c and the nut or collar 24 upon the rear portion of the stem, and by its tendency to expand operates with a tendency to press the feeler rearward into its normal position. The extent of the rear-

ward movement of the feeler is limited by the contact of the collar 25, carried by the forward extremity of stem 22 in advance of lug 19^c, with the front surface of the said
 5 lug. The said collar screws upon the front portion of the stem, which is screw-threaded, and is adjustable in the direction of the length of the stem by turning it upon the latter, a lock-nut 26 being provided to prevent
 10 loss of adjustment.

As usual in the operation of devices of this class, the feeler 18 occupies normally the rearward position which is given to it by means of the spring 23, as determined
 15 through the engagement of the collar 25 with the stop-lug 19^c. By adjustment of the collar the normal position of the feeler is regulated. As the lay advances, the feeler-slot 17 in front-plate 9 of the shuttle-box admits the working portion of the feeler,
 20 and if the shuttle occupies the shuttle-box the feeler-slot 16 in the front wall of the shuttle admits the said working portion of the feeler so that contact may occur between
 25 such portion and the exterior of the wound mass of weft or filling 15 upon the bobbin 14 within the shuttle. Through such contact the feeler is pressed forward. While in this instance the feeler makes contact
 30 with the said wound mass and is directly actuated thereby, it may instead coact with an intermediate device carried by the shuttle, as heretofore in various instances in the art.

The actuator-controller which, in conformity with the invention, is mounted upon the lay, is constituted in this instance by a dog 27. It is mounted upon a pivot 28 in connection with a stand 29 secured by screws 30, 30, to the front of the lay-beam.
 40 Its acting portion projects forwardly. A lug 31 extends upward from the dog for co-action with the feeler. A contracting spiral spring 34, Fig. 2, engaging with the dog and also with a lug on the stand 29, aids
 45 gravity in holding the dog in its normal depressed position. Gravity alone may be depended upon, but a spring is preferred to prevent vibration of the dog up and down. The normal position is fixed by means of
 50 suitable stops in connection with the dog, the stop-arrangement being constituted in the present instance by an adjusting screw 35, fitted to a threaded hole tapped in a downwardly-projecting part of the dog, and
 55 engaging by its free end with the front face of the stand 29. By adjustment of the said screw 35, the position occupied by the front end of the dog 27, when the latter is not acted upon by the feeler, may be varied
 60 relative to the arm 36 which is fixed upon the outer end of the controller rock-shaft 7 by means of clamping-screw 37 and extends downward from the said rock-shaft. The arm 36 has a rearwardly-extending portion
 65 that is notched to receive the acting end of

the dog 27 as the lay comes forward, when the said acting end occupies a position in line with the said notched rearwardly-extending portion. In this embodiment of the invention, as preferably in practice, the
 70 feeler is furnished with an adjustable contact-piece 32 for engagement with lug 31 of the actuator-controller. Such contact-piece is constituted by a screw fitted to a threaded hole that is tapped in a laterally-
 75 extending lug on the feeler, the said screw having a conveniently shaped head to enable it to be turned for purposes of adjustment, and the adjustment operating to vary the extent of rearward projection of the
 80 acting end of the screw. A lock-nut 33 is provided in connection with the screw to prevent accidental loss of adjustment.

In operation, as the lay advances with the shuttle in the shuttle-box at the feeler-side
 85 of the loom, and so long as the wound mass of filling 15 at the place presented to the feeler exceeds the predetermined diameter, the contact of the exterior of the said wound mass of weft or filling with the rear end
 90 of the feeler will drive the feeler and its contact-piece 32 forward before such contact-piece is reached by the lug 31. Consequently, the dog 27 will be unaffected and will remain in its normal depressed position
 95 shown in Fig. 2, so that its engaging end passes forward below the notched portion of the arm 36 of the controller rock-shaft without engagement with such arm. Hence the arm 36 is not engaged and the controller
 100 is unacted upon. When, however, the portion of the wound mass of weft or filling 15 which is presented against the acting end of the feeler becomes reduced in diameter so that the exterior of such portion
 105 does not encounter the feeler until later after the lug 31 of the dog 27 makes contact with the screw 32, the dog 27 will be turned upon its pivot and its acting end thereby raised. When the extent of the depletion
 110 of the wound mass 15 is sufficient to cause the acting end of the dog 27 to be raised into line with the notch of the arm 36, the said acting end will be carried into the said notch by the advance of the lay and through
 115 the engagement of the dog 27 with the arm 36 the latter will be pushed forward, thereby rocking the controller rock-shaft, and through the instrumentalities employed in practice in connection with the controller
 120 bringing about the predetermined change in the working of the loom.

By turning the contact-screw 32 so as to shift its acting end nearer to or farther from the acting end of the feeler, the controller-actuator may be caused to act at an
 125 earlier or later stage in the unwinding of the weft or filling from the wound mass within the shuttle.

When the shuttle is absent from the shut- 130

tle-box at the feeler-side of the loom and occupies the shuttle-box at the other side of the loom at the time of the beat-up, so that there is nothing in line with the feeler to engage therewith and push it forward, the contact of the lug 29 with the screw 32 as the lay comes forward tilts the dog 27 on its pivot as before, but this time the acting end of the dog is moved to a greater extent and passes entirely above the notched portion of the arm 36. Consequently, as the lay advances the said acting end passes over the said notched portion of the arm 36 without engaging therewith. The extent to which the feeler enters the empty shuttle-box, and to which the dog is tilted through the engagement of the lug 31 with the screw 32 as just explained, is regulated by means of the stop-screw 38 fitted to a threaded hole tapped in a lug projecting from the feeler, this screw being struck by the front surface of the front-plate 9 so that thereby the feeler is driven forward by the lay.

It will thus be seen that so long as there is a proper supply of weft or filling within the shuttle the dog 27 will be caused to pass forward below the arm 36 each time the lay beats up with the shuttle in the shuttle-box at the feeler-side of the loom, and at each beat-up with the shuttle in the shuttle-box at the opposite side of the loom the dog 27 will pass above the notched portion of the arm 36, but when the said supply has become depleted to the predetermined extent the dog will be caused to engage the said notched portion of arm 36 and as a result of such engagement will actuate the controller to bring about the predetermined change in the working of the loom.

By reason of causing the controller-actuator to move in unison with the lay, which preferably although not necessarily in all cases is provided for by pivoting the said actuator upon the lay, the action of the feeler upon the actuator is unaffected by variations in the length of forward stroke of the lay, due for instance to overthrow.

What is claimed is:

1. In combination, controller-means, a feeler mounted independently of the lay and controlled by means carried by a shuttle on the lay, and an actuator mounted independently of the shuttle and feeler, moving in unison with the lay, and rendered operative by said feeler to call said controller-means into action when the predetermined volumetric change within the shuttle is ascertained.

2. In combination, controller-means, a feeler mounted independently of the lay and

controlled as to the extent of its entrance into a shuttle on the lay by wound weft or filling within the shuttle, and an actuator mounted independently of the shuttle and feeler, moving in unison with the lay, and moved by said feeler into position to call said controller-means into action when the feeler passes a predetermined distance into the shuttle.

3. In combination, controller-means, a lay, a feeler mounted independently of the lay and controlled by means carried by a shuttle on the lay, and an actuator movably mounted on the lay and independently of the shuttle and rendered operative by said feeler to call said controller-means into action when the predetermined volumetric change within the shuttle is ascertained.

4. In combination, controller-means, a lay, a feeler mounted independently of the lay and controlled as to the extent of its entrance into a shuttle on the lay by wound weft or filling within the shuttle, and an actuator movably mounted on the lay independently of the shuttle and rendered operative by said feeler, when the latter passes a predetermined distance into the shuttle, to call said controller-means into action.

5. In combination, a lay, controller-means mounted upon a support independent of the lay, a feeler mounted independently of the lay, and an actuator for said controller-means, pivoted upon the lay, and given operative position by the feeler when the predetermined volumetric change within the shuttle takes place.

6. The combination with controller-means, and a lay, of a feeler mounted independently of the lay, and an actuator for said controller-means moving in unison with the lay, one thereof having an adjustable contact-piece by the adjustment of which the action of the feeler upon the actuator may be regulated.

7. The combination with controller-means, and a lay, of an actuator for said controller-means moving in unison with the lay, and a feeler mounted independently of the lay, adapted to coöperate with said actuator to render the same operative, and provided with a stop engaging with a part carried by the lay to limit the extent of the entrance of the feeler into the adjacent shuttle-box.

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

SIMEON S. JACKSON.

Witnesses:

NATHAN B. DAY,
CHAS. F. RANDALL.