No. 897,403. PATENTED SEPT. 1, 1908.

A. E. RHOADES.

SHUTTLE FEELER FOR FILLING REPLENISHING LOOMS.

APPLICATION FILED NOV. 16, 1907.

Fig: 1.

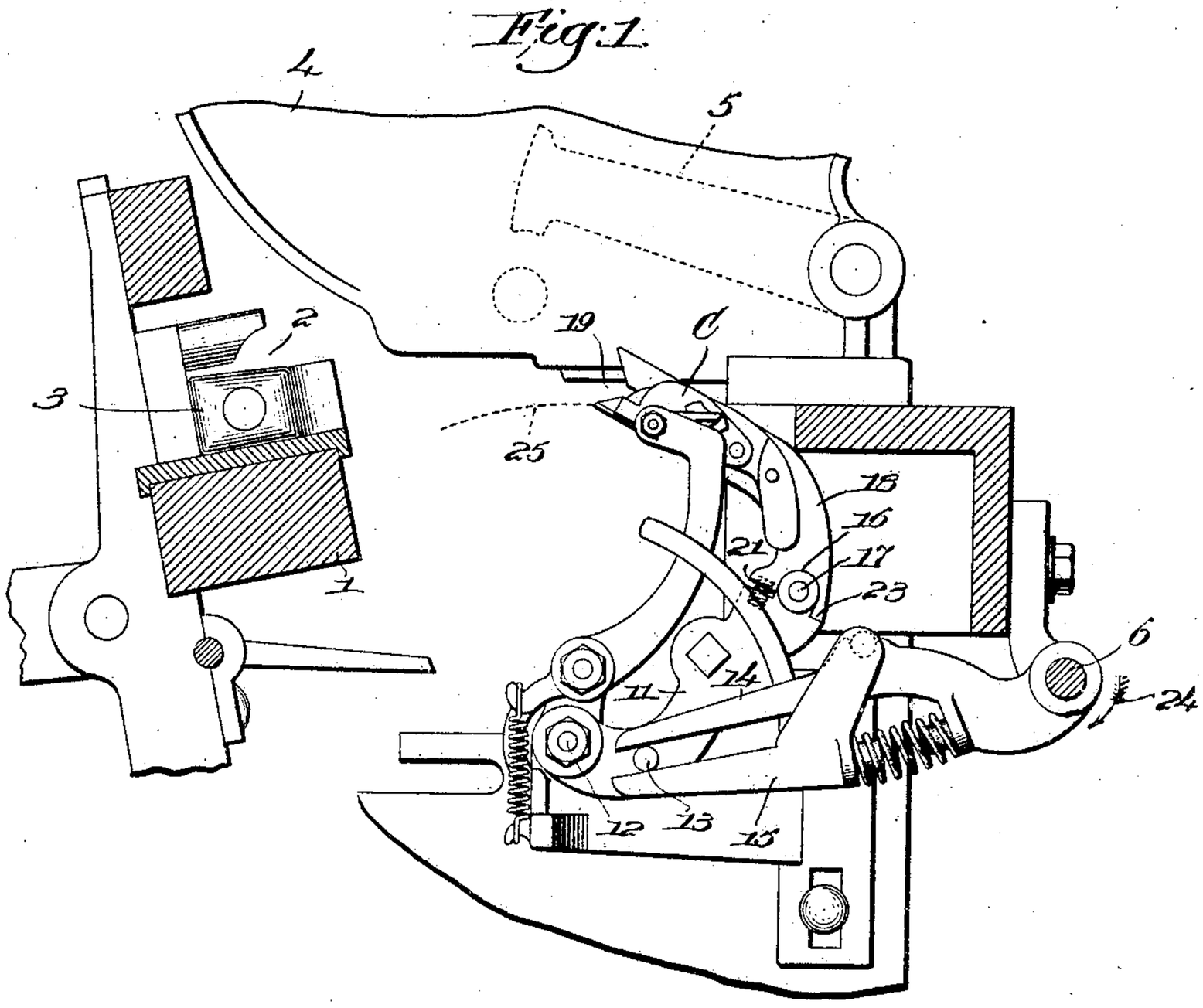


Fig: 2.

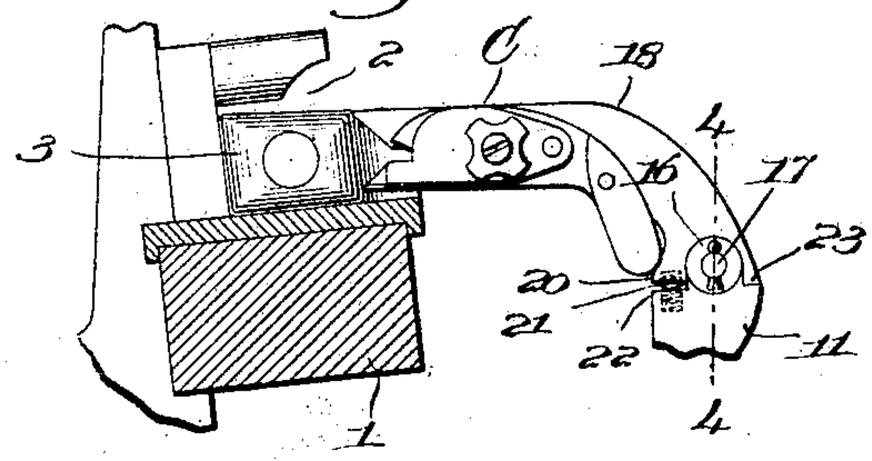


Fig: 4.

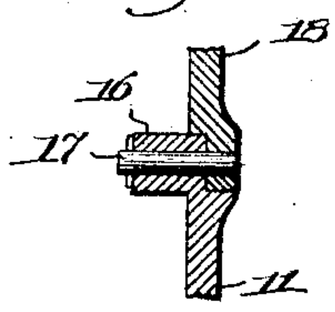
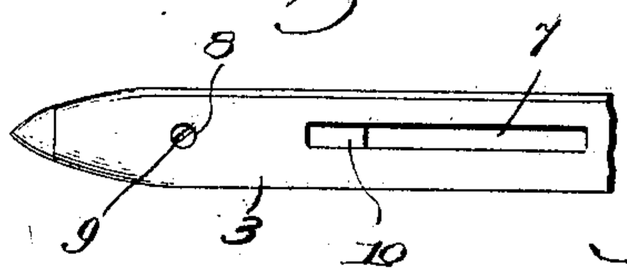


Fig: 3.



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UNITED STATES PATENT OFFICE.

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SHUTTLE-FEELER FOR FILLING-REPLENISHING LOOMS.

No. 897,403. Specification of Letters Patent. Patented Sept. 1, 1908.

Application filed November 16, 1907. Serial No. 402,397.

To all whom it may concern:

Be it known that I, ALONZO E. RHOADES, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Shuttle-Feelers for Filling-Replenishing Looms, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates more particularly to automatic filling-replenishing looms wherein the running filling is replenished prior to complete exhaustion, the shuttle-feeler in looms of such type generally carrying a thread-cutting device to cut the old filling-end between the cloth and the shuttle. Such a shuttle-feeler provided with a thread-parting device is shown in United States Patent No. 834269 granted to Cunniff October 30, 1906, the parting device being mounted on the upper and rearwardly extended end of the rigid but pivotally mounted shuttle-feeler.

As is well-known to those skilled in the art the shuttle used in "feeler" looms has a slot or opening in its front wall to enable the feeler to intermittingly pass into the shuttle and feel the filling on the bobbin, and at times the shuttle may be so far out of the replenishing box when replenishment is called for that the notched end of the shuttle-feeler will engage the slot in the shuttle and as the lay continues to advance the shuttle will be damaged, or it may be lifted up off the lay. The same result may be caused by the notched end of the shuttle-feeler entering or catching in the counterbore for the head of the bolt which holds in place the bobbin-engaging jaws in the shuttle. In either case the forward movement of the lay tends to press the tip of the shuttle-feeler downward and forward, but as the tip is rigid with the feeler it can only move forward and upward as it swings on its fulcrum, eccentric to the fulcrum on which the lay swings, and as the shuttle wood is the weakest of the parts in engagement it must give, and damage is inflicted.

My present invention has for its object the production of means whereby such damage will be obviated, and the novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a transverse sectional view of a sufficient portion of an automatic filling-replenishing loom, taken inside the filling-feeder, with one embodiment of my invention applied thereto; Fig. 2 is a detail showing the shuttle-feeler in engagement with the shuttle, improperly boxed at the replenishing side, to illustrate the operation of my invention; Fig. 3 is a side elevation of the slotted end of a shuttle used in so-called "feeler" looms; Fig. 4 is an enlarged sectional detail on the line 4—4, Fig. 2.

Referring to Fig. 1 the lay 1, replenishing shuttle-box 2, the shuttle 3, filling-feeder or hopper 4, the transferrer 5 and the rock-shaft 6 by or through which the operation of the replenishing mechanism is controlled may be and are all of well known construction and operation, the shuttle 3 having a longitudinal slot 7 in its front wall, for the intermittent entrance of the filling-feeler, and having a counterbore 8, Fig. 3, for the bolt 9 which holds in place the bobbin-engaging jaws 10.

In the present embodiment of my invention I make the shuttle-feeler in two parts, so connected that the upper or shuttle-engaging part may at times move with relation to the lower part, the thread-cutting device being carried upon the upper part.

Referring to Fig. 1 the lower part or member of the feeler is shown as an upturned arm 11 fulcrumed at 12 on a bracket secured to the loom side and is provided with a lateral pin 13 extended between the jaw-like members 14, 15 through which connection is established between the shuttle-feeler and the rock-shaft 6, substantially as in United States Patent No. 846700 granted March 12, 1907 to Smith and Stimpson. The upper end of the member 11 is provided with a lateral hub 16, see Fig. 4, which serves as a bearing for a stud 17 fixedly secured to the upper member of the shuttle-feeler and shown as an upwardly and rearwardly extended arm 18 notched or bifurcated at its rear end, as at 19, to guide the filling-end into position to be cut. The foot of the member 18 is cut away to leave a shoulder 20, socketed to receive one end of a coiled spring 21, the other end of the spring entering a socket or seat in the shoulder 22 at the upper end of the member 11, the spring normally separating said shoulders and closing the front end of the joint, at 23, between the two

feeler members. Under ordinary conditions the spring 21 thus acts to effect movement of the two members of the feeler as a unit, the member 18 having mounted upon it any suitable thread-cutting device, indicated at C and of itself forming no part of my invention. When the rock-shaft 6 is turned in the direction of the arrow 24, Fig, 1, to bring about filling replenishment the jaws 14, 15 act upon the stud 13 and swing the feeler bodily on its fulcrum 12, moving the upper member 18 rearwardly across the mouth of the shuttle-box 2 if the shuttle is properly boxed, and replenishment is effected, the thread-cutting device C being moved into operative position as usual. Should the shuttle project from the mouth of the box far enough to engage the feeler the member 18 will rock on the pin 17 as the lay moves forward, compressing the spring 21, and the shoulders 20, 22 approach each other as the front end of the joint opens at 23. This yieldingly controlled downward movement of the upper part of the feeler conforms to the movement of the shuttle as it is carried forward with the lay, and hence there will be no upward force exerted upon the shuttle by the notched end 19 of the feeler.

Referring to the broken line 25, Fig. 1, which indicates the curvature of the path along which the upper end of the feeler normally travels, it will be understood that if the feeler be a rigid body the movement of its notched tip would of necessity be upward and forward when engaged by the shuttle, while the shuttle would move forward and along a curved path crossing the path indicated at 25. By permitting the feeler tip to be depressed, however, as has been explained, while the feeler as a whole swings forward, the tip moves with the shuttle, obviating any tendency to lift the shuttle, and there will be no scraping of the feeler tip upon its front wall. Even should the tip catch in the slot 7, Fig. 3, or in the counterbore 8, no damage will result. While the shoulders 20 and 22 are separated a relatively slight distance by the spring 21 it will be manifest that said shoulders are very close to the pivot stud 17 while the tip of the feeler is at a distance therefrom, closing of the shoulders providing for a much greater depression of the tip.

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

1. In an automatic filling-replenishing loom, a shuttle-feeler comprising two connected members movable in unison and also relatively to each other, and a spring to normally effect their movement in unison when the feeler is moved into operative position, engagement of the feeler by the shuttle when improperly boxed compressing the spring to effect relative movement of the two members of the feeler and obviating damage to or lifting of the shuttle.

2. In an automatic filling-replenishing loom, a shuttle-feeler movable automatically into feeling position when replenishment is called for, and yielding means to permit downward movement of the tip of the feeler when engaged by the shuttle.

3. In an automatic filling-replenishing loom, a two-part shuttle-feeler movable automatically into feeling position when replenishment is called for, the upper member having a rearwardly extended tip, and a spring-controlled joint connecting said members and permitting depression of the tip when engaged by the shuttle.

4. In an automatic filling-replenishing loom, a two-part shuttle-feeler movable automatically into feeling position when replenishment is called for, the upper member having a rearwardly extended, notched tip, a thread-cutting device on said upper member adjacent the notched tip, a horizontal pivot connecting the members and a spring normally effecting movement of the members as a unit but permitting the upper member to swing downward on the connecting pivot when the tip engages the shuttle, to prevent lifting of the latter or injury thereto.

5. In an automatic filling-replenishing loom, a two-part shuttle-feeler movable automatically into feeling position when replenishment is called for, the upper member having a rearwardly extended tip, a fixed, horizontal fulcrum for and upon which the feeler normally swings as a unit, a horizontal pivot connecting the upper and lower parts of the feeler, and a spring adjacent the pivot and normally preventing relative movement of the parts of the feeler.

6. In an automatic filling-replenishing loom, a shuttle-feeler movable automatically into feeling position when replenishment is called for, a thread-cutting device mounted on the feeler and moved thereby into operative position when the shuttle is boxed properly, and yielding means to permit depression of the tip of the feeler when engaged by the shuttle.

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

ALONZO E. RHOADES.

Witnesses:

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