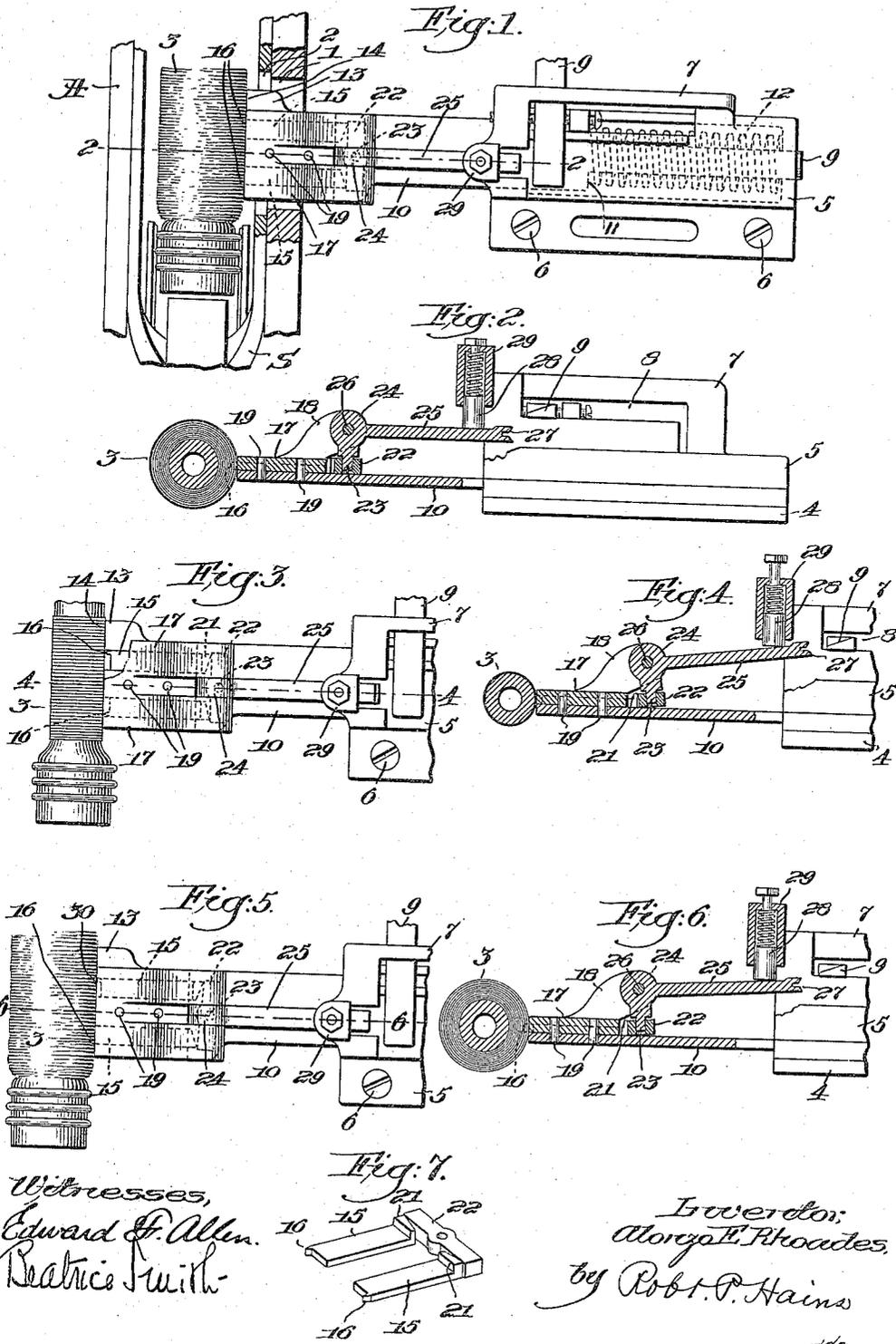


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 FEELER DEVICE FOR FILLING REPLENISHING LOOMS.  
 APPLICATION FILED NOV. 28, 1914.

1,167,364.

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# UNITED STATES PATENT OFFICE.

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FEELER DEVICE FOR FILLING-REPLENISHING LOOMS.

1,167,364.

Specification of Letters Patent.

Patented Jan. 4, 1916.

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*To all whom it may concern:*

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

The invention hereinafter described relates to filling replenishing looms, and more particularly to devices of such looms for detecting substantial exhaustion of filling in the shuttle and thereupon to initiate filling replenishment.

As well understood by those skilled in the art, various forms of feeler devices have been devised for acting upon the filling in the shuttle, and upon the occurrence of substantial exhaustion thereof, have set in operation certain trains of mechanisms to secure filling replenishment when the shuttle has reached the replenishing side of the loom. In some of these cases, the feeler device has comprised two members, one an impinging member to impinge against the mass of filling on the carrier in the shuttle and the other a penetrating member having a penetrating portion to penetrate or sink into the filling on the forward movement of the lay following a detecting pick, the said two members being so related that upon substantial exhaustion of the filling, filling replenishment was initiated. In this type of feeler device, it is desirable to provide the penetrating member with two penetrating portions separated in a direction longitudinally of the filling carrier in the shuttle, so that if either of the two penetrating portions of the penetrating member should engage the hard surface of the bobbin or carrier, the desired action would take place as set forth in the Roper Patent No. 821,123, dated May 22, 1906; and devices of this character have, to a large extent, worked satisfactorily. The character of the filling and its condition on the carrier, however, is not always uniform. A hard place not infrequently occurs in a working supply of filling, caused by some foreign substance being carried along with the yarn as it is spun and wound upon the carrier, or a variation in the yarn itself. Regardless of the particular cause for such hard place,

should it be presented opposite one of the penetrating portions of the feeler, it will act upon the feeler in substantially the same way that the hard body of the carrier itself acts upon substantial exhaustion of the filling and call for filling replenishment, with the result that a larger amount of yarn will be on the carrier or bobbin when it is ejected than is desirable.

With the above matters in mind, the present invention aims to provide means for overcoming the objectionable operations described and economizing in the amount of waste on filling carriers discharged from the loom incident to the filling replenishing operation.

The various features of the present invention will best be made clear from the following description and accompanying drawing of one form of means for carrying the invention into practical effect, it being understood that changes and variations may be made in details without departing from the true scope of the actual invention.

In the drawings:—Figure 1 is a plan view of a feeler device embodying the present invention, and showing parts of the shuttle, shuttle-box, and the filling carrier having a working supply of filling; Fig. 2 is a side elevation and part section of the feeler device and filling carrier on the line 2—2. Fig. 1; Fig. 3 is a view similar to that of Fig. 1 with parts omitted and showing the filling on the carrier practically exhausted; Fig. 4 is a sectional elevation on line 4—4, Fig. 3; Fig. 5 is a plan view substantially as in Fig. 1, showing the action of the feeler when a hard place is presented to one of the penetrating portions of the penetrating member while there still remains a working supply of filling on the carrier; Fig. 6 is a sectional elevation on the line 6—6, Fig. 5; and Fig. 7 is a detached detail of the parts of the penetrating member and its cooperating element.

As hereinbefore noted, the present invention is adapted for application to a so-called filling replenishing loom, wherein, upon substantial exhaustion of the filling in the running shuttle, a fresh supply of filling is placed therein. To those skilled in the art, the filling replenishing mechanism and its general characteristics and operations are well understood and need not therefore, be herein shown and described, the parts for

initiating filling replenishment being sufficiently exploited, to make clear the characteristics of the invention.

The shuttle S, Fig. 1, is provided in its side wall, with an opening 2 and the shuttle-box A is likewise provided with an opening 1, the said openings being adapted for registration when the shuttle carrying the filling 3 is properly boxed at the filling replenishing side of the loom, all as usual in the so-called class of feeler looms.

Mounted in suitable position preferably upon a front portion of the loom framework, is a stand for supporting the feeler device, the said stand comprising a base portion 4 and a cover 5 adapted to be held in associated relation and in position on the loom frame by suitable means such as the screws 6. Rising from the said stand is an arm 7 providing a guideway 8 for directing movement of the controller 9, which is or may be operatively connected with suitable means for positioning the parts to cause filling replenishment upon the forward movement of the lay and under conditions well understood by those skilled in the art.

Between the base portion 4 and the cover 5 of the stand, there is formed a chamber for the reception of the stem 9<sup>c</sup> carried by a feeler slide 10, the said slide 10 having a shouldered portion 11 against which bears one end of a spring 12, the other end of which is seated upon the end wall of the cover 5—the construction being such that the spring 12 normally holds the feeler slide 10 in rearward position, substantially as indicated in Fig. 1, but permitting the feeler slide to be moved toward the front of the loom, or to the right, Fig. 1, upon the advancing movement of the lay when the shuttle is in the box at the replenishing side of the loom.

The present invention contemplates that the feeler device shall comprise an impinging and a penetrating member, the latter being provided with a penetrating element to penetrate or sink into the filling as the lay beats up, so long as there is a working supply of filling in the shuttle, and to contact with the more dense surface of the filling carrier when the filling has been practically exhausted to thereby initiate filling replenishment.

In the present form of the invention, the impinging member is primarily formed by the head 13, the edge surface 14 of which is adapted to engage the mass of filling on the carrier while the penetrating member is formed of two relatively or independently movable parts 15 having the penetrating portions 16 to sink into the mass of filling when a working supply is present, and to contact with the more dense surface of the filling carrier when the filling has been practically exhausted. In connection with the

two relatively movable penetrating portions of the penetrating member, there is provided means adapted to permit such relative movement of said portions as the lay beats up, without causing initiation of filling replenishment, and to effect initiation of such filling replenishment when said two relatively movable portions are moved conjointly or simultaneously. In carrying this feature of the invention into practical effect, there is mounted upon the filling slide 10 at the rear portion thereof, the plate 17 having extending bracket portions 18 and secured to said slide by suitable means such as the pins 19. Between the plate 17 and rear portion of the filling slide, suitable guideways are formed for two relatively movable portions 15 of the penetrating member; and to this end the plate 17 is provided on each side of its central portion through which pass the pins 19 for securing it in place upon the feeler slide, with suitable guideways in which are slidably mounted for relative and independent movement, the two portions 15 of the penetrating member. The portions 15 of the penetrating member are preferably formed as indicated in Fig. 1, each one being provided with a penetrating part or point 16, adapted to sink into the mass of filling, and from such penetrating point, the portions 15 extend toward the front and are provided with heads 21, adapted to bear against a rocking member 22, pivotally mounted upon a pin 23 extending from the hub 24 of a finger 25 pivoted at 26 to the bracket portions of the plate 17.

The finger 25 is provided with an operating end portion 27 and is normally under the influence of a spring-actuated pin 28 movable in a guideway 29, the construction being such that the finger 25 has its end portion 27 normally depressed and the end portions of the rocker 22 forced against the heads of the portions 15 of the penetrating member, substantially as indicated in Fig. 2.

From the construction described, it will be seen that in the present form of the invention, the points 16 of the relatively movable portions 15 of the penetrating member, will be normally held projected beyond the impinging member, and upon forward movement of the lay, when the shuttle is in the box at the filling replenishing side of the loom, as indicated in Fig. 1, and contains a working supply of filling, that the penetrating points 16 will first engage the filling 2 and penetrate or sink thereinto, and upon further forward movement of the lay, the filling will be engaged by the impinging surface 14 of the impinging member, with the result that the feeler slide will be moved toward the front of the loom without disturbing the inoperative position of the finger 25, as indicated in Fig. 2. When, however, the filling has become practically ex-

hausted, as indicated in Figs. 3 and 4, the impinging parts 16 will engage the more dense surface of the bobbin and on forward movement of the lay, will be moved simultaneously or in unison, toward the front of the loom, thereby bodily moving the rocker 22 and turning the finger 25 into operative position with respect to the controller 9; and upon further forward movement of the lay, the impinging member 13 will contact with the filling on the carrier and the feeler slide be moved frontward to thereby engage the end 27 of the finger 25 with the controller 9, and initiate filling replenishment.

Should the working mass of filling 3 contain a relatively hard portion 30 with which one of the penetrating points 20 contacts as the lay beats up, as indicated in Figs. 5 and 6, said penetrating point 20 and its associated portions 15 of the penetrating member will be forced forward into the dotted line position indicated in Fig. 5, independent of the other penetrating portion 15 of the penetrating member, thereby turning the rocker 22 on its axis without moving the finger 25 into operative position, so that upon further forward movement of the lay, and perforce, the filling slide, filling replenishment will not be initiated.

An important feature of the present invention, therefore, consists in the penetrating member formed of a plurality of parts having penetrating portions and adapted for independent or relative movement without initiating filling replenishment, but operative upon conjoint or simultaneous movement, to effect filling replenishment; and while the present invention has been herein exploited by the embodiment shown and described, it will be evident that it is adaptable to any feeler device wherein initiation of filling replenishment is dependent upon the different densities of the substance with which the parts of the penetrating member are adapted to contact.

What is claimed is:—

1. In a filling replenishing loom, the combination of a shuttle to contain a filling carrier, means to initiate filling replenishment, a feeler comprising an impinging member and a plurality of penetrating members, means in coöperative relation to each of said penetrating members and operatively positioned to effect filling replenishment by simultaneous movement of said penetrating members relative to the impinging member and remaining ineffectual to initiate filling replenishment when only one of the penetrating members is moved relatively to the impinging member by a denser portion of the working filling.

2. In a filling replenishing loom, the combination of a shuttle adapted to contain a carrier or bobbin having a supply of filling wound thereon, means to initiate filling re-

plenishment, and a feeler having an impinging member and relatively movable penetrating portions to effect actuation of said means by simultaneous movement of said penetrating portions when the filling has become practically exhausted and remaining ineffectual for the actuation of said means when said penetrating portions are moved independently.

3. In a feeler device for looms, the combination of an impinging member and a penetrating member, said penetrating member having two independently movable penetrating portions, and means to initiate filling replenishment operatively positioned only upon simultaneous movement of said two penetrating portions relative to the impinging member when the filling in the shuttle has become practically exhausted.

4. In a feeler device for looms, the combination of an impinging member and two relatively movable penetrating members, a finger for initiating filling replenishment, means between the finger and penetrating members to operatively position the finger upon movement of both said penetrating members relative to the impinging member and to permit the said finger to remain in inoperative position when only one of said penetrating members is moved relative to the impinging member.

5. In a feeler device for looms, the combination of an impinging member and a penetrating member, said penetrating member being carried by the impinging member and comprising two separated and relatively movable penetrating portions, a rocker co-operating with said penetrating portions, and means connected to said rocker for initiating filling replenishment upon substantial exhaustion of the filling.

6. In a filling replenishing loom, the combination of a shuttle to contain a filling carrier or bobbin, a feeler to feel for the filling in the shuttle and comprising an impinging member and a penetrating member, said penetrating member being formed of two relatively movable parts each provided with a penetrating end adapted to sink into the filling at separated points and be relatively moved by different densities of the working filling opposite said two parts and means operative only on simultaneous movement of said two parts to effect filling replenishment.

7. In a filling replenishing loom, the combination of a shuttle to contain a filling carrier or bobbin, a feeler to feel for the filling in the shuttle and comprising an impinging member and a penetrating member, said penetrating member being formed of two relatively movable parts, each provided with a penetrating end adapted to sink into the filling at separated points, a rocker adapted to be rocked by either of said two parts and to be moved bodily by movement of said

parts in unison, and means for initiating filling replenishment when said parts are moved in unison.

5 8. In a filling replenishing loom, a shuttle to contain filling, a feeler to feel for the filling in the shuttle, and including an impinging member and a penetrating member, said penetrating member comprising two relatively movable parts each having a penetrating portion, and filling replenishment initiating means remaining inoperative to cause filling replenishment by movement of one of said two parts and rendered effective to initiate filling replenishment upon simultaneous movement of said two parts.

15 9. In a filling replenishing loom, a shuttle adapted to contain a filling carrier having filling wound thereon, a feeler including an impinging member and two relatively movable penetrating portions to sink into the filling when a working supply is present in

the shuttle, means operative upon simultaneous movement of said two penetrating members to initiate filling replenishment and inoperative to cause replenishment when said penetrating members are moved independently.

10 10. In a feeler device for looms, an impinging member and a penetrating member, said penetrating member comprising two independently movable portions, a pivotally mounted finger, a rocker interposed between said finger and penetrating member and movable by said two portions of the penetrating member.

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

ALONZO E. RHOADES.

Witnesses:

FRANK B. DAVIS,  
DANA OSGOOD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."