

1,045,438.

Fig. 2.

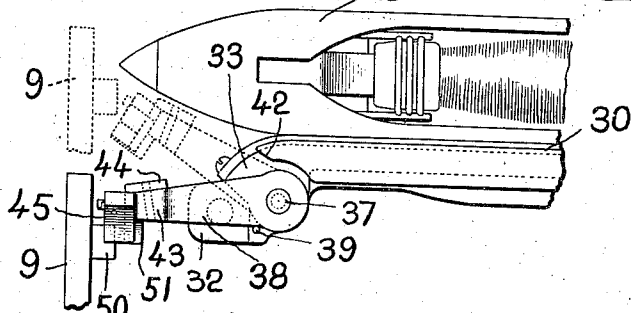


Fig.3.

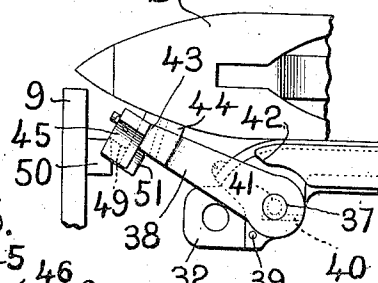


Fig. 4.

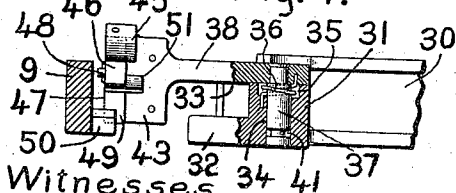
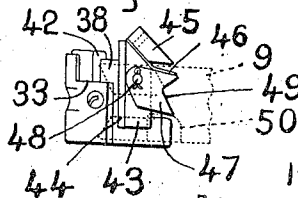


Fig. 5.



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UNITED STATES PATENT OFFICE.

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THREAD-PARTING MECHANISM FOR LOOMS.

1,045,438.

Specification of Letters Patent. Patented Nov. 26, 1912.

Application filed July 15, 1912. Serial No. 709,343.

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 Thread-Parting Mechanism for Looms, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention applies to looms of the type wherein the running filling is replenished prior to complete exhaustion, the old or spent filling being parted between the cloth and the shuttle by parting means usually mounted on a swinging support or arm, and which latter is generally arranged to perform the function of a shuttle-feeler. Ordinarily the engagement of the feeler with an improperly boxed shuttle will prevent the parting of the spent filling and it will also restrain the operation of the replenishing mechanism, but if the shuttle is so positioned that its steel tip is engaged by the feeler the filling will be caught and severed almost invariably. When such severance occurs without replenishment, two empty picks will be made in the cloth, which is most objectionable.

In my prior Patent No. 913,916 granted March 2, 1909 I show a loom structure in which the parting device is mounted on a swinging support or carrier of usual construction but which does not act as a shuttle-feeler, the shuttle-feeler being pivoted on the lay to swing in a vertical path toward and from the raceway adjacent the mouth of the replenishing box. This feeler is moved to feeling position by engagement with an actuating member on the swinging support as the latter moves rearward when replenishment is called for, and if the shuttle is boxed properly the feeler movement is completed and the parting device is positioned and operated to part the spent filling, the support and the feeler remaining in co-operative engagement. Should the shuttle be improperly positioned the feeler is arrested thereby, and it in turn prevents the operation of the parting device and restrains the replenishing mechanism from operating. My present invention, in its broad aspect, is quite similar to such patented device, for the shuttle-feeler and the support for the

parting device are separate members and the feeling action of the former is effected by or through operative movement of the latter to position the parting device for operation.

My present invention has for its object the production of improved mechanism of the general character disclosed, and so constructed that the feeler is released automatically immediately after it has performed the feeling action, provided the shuttle is boxed properly. If the shuttle is boxed improperly the feeler is not released, and it acts through the swinging support to prevent not only the operation of the parting device but also the actuation of the replenishing mechanism. The release of the feeler after it has performed its proper function removes it from the immediate vicinity of the shuttle, so that any accidental pinching or catching of the filling by the feeler is obviated. If the shuttle is boxed improperly and is engaged by the feeler the latter is arrested in its movement, and as the feeler is disengaged by its actuating device simultaneously with the completion of its feeling stroke the arrested feeler will act to prevent the complete movement of the actuating device, herein shown as the support for the parting device. Consequently the said support cannot contact with any part of the shuttle, nor can the parting device be operated while the shuttle-feeler is in engagement with the support, and the spent filling end cannot be cut by the parting device or by being nipped between the support and the shuttle.

In my present invention, I have mounted the feeler upon the lay to swing in a lateral path parallel to the raceway into and out of feeling position, a spring retracting the feeler to normal position. I have also provided the feeler with a spring-controlled dog which is engaged by a suitable bunter member on the swinging support of the parting device, to effect the feeling action of the feeler when replenishment is called for, the dog yielding to permit the return movement of the bunter member after the replenishing action has been completed.

The present mechanism has proved highly efficient in actual practice, and the location and operation of the shuttle-feeler as herein set forth is most satisfactory.

The various novel features of my inven-

tion will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a transverse section of a portion of an automatic filling replenishing loom having one embodiment of my present invention applied thereto, the parts being shown in normal position; Fig. 2 is a top plan view of a portion of the replenishing shuttle-box showing the shuttle properly boxed therein, with the shuttle-feeler indicated in two positions, to illustrate the release of the feeler after its feeling stroke has been effected; Fig. 3 is a similar view, but showing the shuttle boxed improperly, with the feeler arrested thereby and acting to prevent the rearward movement of the support for the parting device; Fig. 4 is a front elevation and part section of the portion of the mechanism illustrated in Fig. 2; Fig. 5 is an inner end elevation of the shuttle-feeler, showing the yielding of the dog thereon when the swinging support returns to normal position.

I have illustrated my invention in connection with a loom structure substantially such as is shown in my Patent No. 1,009,178 granted November 21, 1911, and herein the lay A^3 , filling feeder F , transferrer f' , the controlling rock-shaft d' turned in the direction of the arrow d^* when filling replenishment is called for, the swinging support 9 on which the blades 16' and 17' of the parting device are mounted, the heel 20 for operating the movable blade 17', and the upturned arm 21 having the spring-controlled cam-rib 25 for coöperating with the pin 28 to open the parting blades, are and may be all substantially as in said patent.

When the rock-shaft d' is turned the support 9 swings rearwardly and positions the parting device to part the spent filling end, and in said patent the support 9 performs also the function of a shuttle-feeler, its notched end 9* engaging the shuttle if improperly boxed and serving as a guide for the filling if the shuttle is boxed properly and the filling is to be parted.

In my present invention the arm 9 has no function as a shuttle-feeler, and in fact it is positively prevented from contacting at any time with the shuttle, one end of which is shown at S in Figs. 2 and 3.

In accordance with my present invention the front box-plate 30 of the replenishing box is peculiarly shaped at its inner end, to present an upright hub or bearing 31 supported on a forwardly and laterally extended foot 32, the box-plate being reduced in height adjacent the bearing, to present an enlarged flat surface 33 flush with the upper end of the hub.

The hub has a central hole 34, counter-bored at its upper end at 35 to receive a spring 36, coiled about a spindle 37 mounted

to rock in the bearing, one end of the spring being fixed in the latter.

As shown best in Fig. 4 the spindle is fixed to and depends from a feeler, shown as a laterally extended, flat arm 38 which rests upon the top of the hub and the supporting surface 33, said arm being movable in a lateral path parallel to the shuttle raceway and into and out of feeling position. The spring 36 has one of its ends attached to the arm 38, Fig. 4, and said spring is so wound that it acts normally to maintain the feeler in full line position, Fig. 2, against a stop 39 on the foot 32, the feeler being retained in place on its bearing by any suitable means, as by a retaining pin 40 driven into the hub and entering an annular groove 41 in the pivot spindle 37. Any undue inward movement of the feeler is guarded against by the abutment formed at 42 by the higher portion of the box-plate. The abutment, however, permits the full feeling movement of the feeler when the shuttle is boxed properly. At its outer end the arm 38 is widened vertically at 43 and its rear face has an attached impact pad or cushion 44, of leather or other non-metallic material, and said part 43 has at its top a frontwardly extended, undercut projection 45, to the underside of which is secured a leaf spring 46. On the outer end of part 43, beneath the projection 45, a notched dog 47 is pivoted at 48, the spring bearing on the dog and normally holding it in the position shown in Fig. 1, with its face 49 in an upright position, and in the path of a lateral ear or bunter 50 secured to or forming a part of the swinging support 9. Said dog is held in the normal position by the spring, and by a stop 51 on the dog, which stop rests against the front face of the part 43 of the feeler arm.

The parts being in normal position, Fig. 1, and with the shuttle-feeler swung to its frontward position, as shown in full lines Fig. 2, let it be supposed that replenishment of filling is called for. The shaft d' is turned in the direction of arrow d^* , and the support 9 with the parting device is swung rearward and laterally, as in the Patent No. 1,009,178, and during such movement the bunter 50 is brought into engagement with the face 49 of the feeler dog 47. As the support continues its rearward movement to operative position the parting device the bunter, in engagement with the dog, swings the shuttle-feeler from its full line position, Fig. 2, rearward across the raceway of the lay and into position to feel for the shuttle, and just as the feeler completes this feeling movement the continued rearward movement of the support 9 causes the bunter to slide past and out of engagement with the dog.

The dotted lines in Fig. 2 show the sup-

port 9 at the extreme of its rearward movement, and the bunter has released the dog, the feeler being on its frontward or return stroke under the influence of spring 36. This presupposes that the shuttle S is boxed properly for replenishment, and that being the case the replenishing action is performed, and as the lay beats up the heel 20 is struck to close the parting blades and the spent filling is parted. Now the swinging support 9 and its adjuncts return to their normal position, and remembering that the shuttle-feeler has returned, as soon as released, to full line position, Fig. 2, it will be manifest that the returning bunter 50 will strike the back of the dog 47. When it does strike it the dog is swung up on its pivot 48, see Fig. 5, against the spring 46, and the bunter slides underneath the dog, which latter is immediately returned to its proper position by the spring 46.

Should the shuttle be boxed improperly, as shown in Fig. 3, then the feeler engages it prior to the point in the path of the feeler at which the bunter disengages itself from the dog, and as the shuttle arrests the feeler the dog 47 in turn arrests the bunter 50 and prevents the support 9 from completing its rearward movement. Consequently the parting device is held back from operative position, and the holding back of the support 9 acts through the usual devices between it and the transferrer f' to prevent the actuation of the latter, and there is no operation of the replenishing mechanism or of the parting device.

Whether the shuttle is or is not properly boxed for replenishment it is impossible for the rear end of the support 9 to contact with the steel tip of the shuttle or with any part of the shuttle. Referring to Fig. 2, it will be seen that if the shuttle is boxed properly the support 9 completes its rearward movement at a considerable distance laterally from the shuttle tip, and if the shuttle is boxed improperly the continued coöperation of the bunter 50 and feeler dog 47 arrests the support 9 before it has moved back far enough to contact with the shuttle. The impact pad 44 prevents the feeler from damaging the shuttle should the latter be improperly in the box.

The construction and operation of the mechanism is simple, positive and accurate, the shuttle-feeler is firmly supported and easily moved, and as it is at the front of the lay at the level of the front box-plate normally it is out of the way of the shuttle and of the weaver.

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

1. An automatic filling-replenishing loom in which the filling is replenished before complete exhaustion having, in combina-

tion, a device to part the spent filling, a swinging support therefor movable rearwardly to position said device for operation when replenishment is called for, a bunter on the support, a shuttle-feeler pivoted on the lay to swing in a lateral path and having a spring-controlled dog in the path of and temporarily engaged by the bunter, to effect feeling movement of the feeler upon rearward movement of the support and then to release the feeler, and a spring to return to normal position said feeler while the support completes its rearward movement, the dog yielding to permit the passage of the bunter past it upon return of the support to normal position, arrest of the feeler by the shuttle when positioned improperly preventing disengagement of the dog and bunter and withholding the support from contact with the shuttle.

2. An automatic filling-replenishing loom in which the filling is replenished before complete exhaustion having, in combination, a device to part the spent filling, a swinging support therefor movable rearwardly to position said device for operation when replenishment is called for, the lay having a replenishing shuttle-box, the front box-plate having an upright bearing at its inner end, a shuttle-feeler having a spindle mounted to rock in the bearing, a spring to retract the feeler from the path of the shuttle, a spring-controlled dog on the feeler, and a bunter on the swinging support, to temporarily engage the dog when the support moves rearward, to effect feeling movement of the feeler and then to release it when the shuttle is positioned for replenishment, the dog yielding to permit return movement of the support to normal position, engagement of the feeler with an improperly positioned shuttle maintaining the dog and bunter in coöperation and preventing operation of the parting device or contact of the support with the shuttle.

3. The combination, in a loom having mechanism to replenish the filling before complete exhaustion, of a lay, a normally inoperative shuttle-feeler pivoted thereon to swing in a lateral path, and means to effect feeling movement of the feeler when replenishment is called for, said means including a member to temporarily engage and move the feeler to operative position and then to release automatically said feeler, arrest of the feeler by an improperly positioned shuttle preventing such disengagement and acting thereby to prevent filling replenishment.

4. The combination, in a loom having mechanism to replenish the filling before complete exhaustion, of a lay, a shuttle-feeler laterally movable over the lay at the mouth of the shuttle-box, an upright pivot for the feeler, mounted on the lay, a spring to maintain the feeler normally in inopera-

tive position, a yielding dog on the feeler, and means to temporarily engage and then release the dog when replenishment is called for, thereby to effect feeling movement of the feeler and to permit return thereof to normal position when the shuttle is boxed properly, arrest of the feeler by the shuttle maintaining the dog and said means in co-operation, to prevent replenishment of filling.

5. In a loom of the type described, the lay, the front box-plate thereon having at its inner end an upright bearing having a flattened and extended top, a laterally swinging shuttle-feeler having a spindle mounted to rock in said bearing, the top of the hub sustaining the feeler, a non-metallic impact member on the feeler, a spring to retract the latter to inoperative position, and a spring-controlled dog carried by the feeler, combined with means, including a swinging arm, to cause filling replenishment when the shuttle is boxed properly and a bunter on said arm, to engage the dog, move the feeler to feeling position, and then to release the dog when replenishment is called for and the shuttle is boxed properly, arrest of the feeler by the shuttle when boxed improperly maintaining engagement of the dog and bunter and thereby preventing filling re-

plenishment, the dog yielding to the bunter upon return movement of the swinging arm after replenishment has been effected.

6. In a loom of the type described, in combination, a device to part the spent filling, a swinging support therefor having a notched end to receive the filling to be parted when the support is swung rearward to position the parting device for operation, a shuttle-feeler pivotally mounted on the lay and movable laterally toward and from the mouth of the shuttle-box, a dog on the feeler and a bunter on the support, to cooperate when replenishment is called for and effect feeling movement of the feeler and then release it, and a spring to return the released feeler to normal position, arrest of the feeler by an improperly boxed shuttle maintaining the dog and bunter in cooperation, and preventing contact of the notched end of the feeler with the shuttle while also withholding the parting device from action.

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

ALONZO E. RHOADES.

Witnesses:

ROBERT JAMIESON,
E. D. OSGOOD.

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