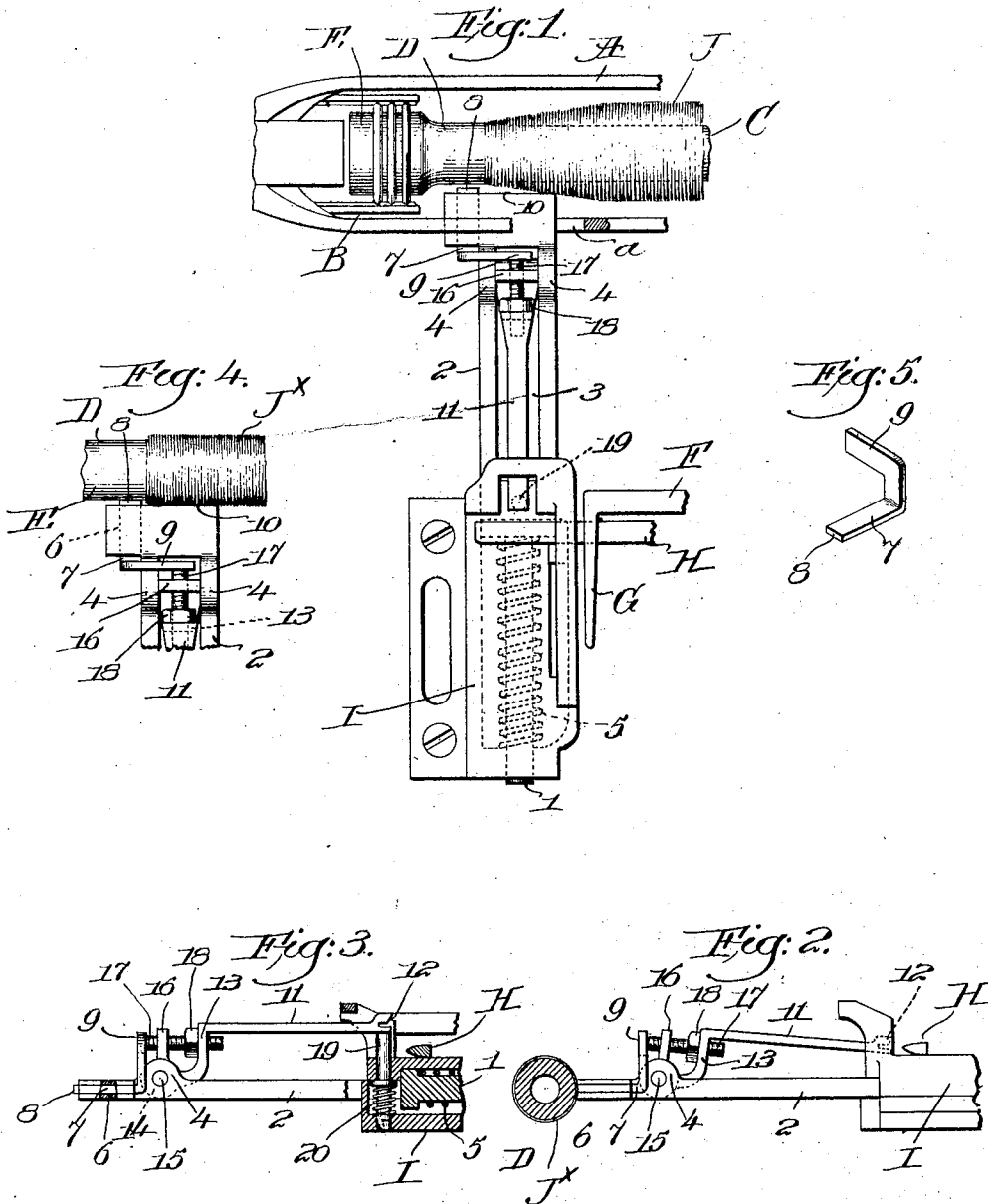


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FILLING FEELER FOR LOOMS.  
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968,708.

Patented Aug. 30, 1910.



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# UNITED STATES PATENT OFFICE.

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FILLING-FEELER FOR LOOMS.

968,708.

Specification of Letters Patent.

Patented Aug. 30, 1910.

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*To all whom it may concern:*

Be it known that I, GEORGE A. SONTAG, a citizen of the United States, and resident of Clinton, county of Worcester, State of Massachusetts, have invented an Improvement in Filling-Feelers 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 relates to automatic filling-replenishing looms wherein the filling is replenished automatically before complete exhaustion of the working filling. Looms of this type are technically termed "feeler" looms because of the instrumentality which intermittingly coöperates with and feels the filling in the running shuttle, such instrumentality so controlling the filling-replenishing mechanism as to bring about its actuation when the desired or predetermined exhaustion of the filling in the shuttle occurs.

Various feeler or filling-exhaustion-indicating mechanisms have been devised to accomplish the results desired, and the most successful and extensively used devices of this character are arranged to coöperate or act in conjunction with a preliminary winding or bunch of yarn laid upon the barrel of the filling-carrier before the main or service winding is laid. In order to provide filling-carriers with such preliminary winding or bunch it is necessary to equip the spinning frame with a special form of builder-motion.

My present invention has for its object the production of a simple and effective feeler instrumentality which is not dependent for its operation upon the presence of a preliminary winding or bunch of yarn on the filling-carrier, and thus filling-carriers can be used upon which the yarn has been spun in the ordinary manner on spinning frames of usual construction.

The various 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 top plan view of the filling feeder mechanism of a loom embodying my present invention, with part of a shuttle and the filling-carrier or bobbin therein, such a substantial quantity of filling being shown as will prevent the functional operation of the feeler; Fig. 2 is a left-hand side eleva-

tion of the major portion of the feeler mechanism shown in Fig. 1, with the filling-carrier in cross-section, but with the filling thereon substantially exhausted so that the feeler is in readiness to perform its functions; Fig. 3 is a view similar to Fig. 2 but with portions in section and with the feeler in the condition illustrated in Fig. 1; Fig. 4 is a detail in plan showing the filling very near its predetermined point of exhaustion, almost ready to cause the functional operation of the feeler; Fig. 5 is a perspective view of the part or member of the feeler which never impinges on the filling.

In Fig. 1, A is a shuttle of suitable character, provided with usual holding jaws B to grasp the ringed head of the removable filling-carrier or bobbin C, the latter having a substantially cylindrical barrel D adjacent the head E. The front wall of the shuttle has a slot *a* through which the feeler device may enter, in usual manner, and in practice the front wall of the shuttle-box (not shown) has an aperture with which the slot *a* registers when the shuttle is boxed at the feeling side of the loom, all as is usual in well known feeler looms. The outer end of a transmitter F is shown in Fig. 1, having a forwardly extended part G provided in practice with a cam-slot through which is extended a controller H, such parts being substantially like the corresponding parts in United States Patent No. 789,471, granted May 9, 1905 to Wood and Northrop. Through such parts the action of the feeler mechanism is transmitted to effect the desired change in the loom operation.

Herein it will be understood that the actuation of the transmitter F is arranged to bring about filling replenishment, and as the replenishing mechanism is well known in the art it is not illustrated herein, but it may be of the well known Northrop type, one embodiment of which is shown in patent to Northrop No. 686,903 dated November 19, 1901.

The free end of the controller H is beveled, Figs. 2 and 3, to insure certainty of full engagement thereof at times with an actuator, to be described, to effect forward movement of the controller and the resultant rocking of the transmitter F on its fulcrum, in well known manner.

I have herein shown a chambered stand or support I which in practice is mounted

on a fixed part of the loom opposite the feeling shuttle-box, and adapted to receive the shank 1 of a reciprocating feeler 2, shown as longitudinally slotted at 3 and having near its rear end upturned and opposite ears 4, the projection of the feeler and its adjuncts being effected by a spring 5, substantially as in Patent No. 789,471 referred to.

The rear end of the feeler is widened at its outer side and provided with a longitudinal guide-way 6 in which is slidably mounted the governor, as it is herein termed, said governor being made as a straight, flat bar 7 having at its rear end a contact face 8, the front end of the governor being upturned and extended transversely at 9 across the feeler and above the same.

The transverse rear edge 10 of the feeler constitutes its contact face, more or less of which intermittently contacts with the filling mass J, Fig. 1, on the carrier until substantial exhaustion thereof, and during such period of intermittent filling engagement of the feeler the contact face 8 of the governor is projected a slight distance beyond the face 10, as in Fig. 1. This contact face 8 of the governor is in the path of movement of the exposed part D of the barrel of the filling-carrier, but it is withheld from engagement therewith so long as sufficient filling remains on the carrier to contact with the face 10 of the feeler. Thus the governor, while movable relatively to the feeler, remains quiescent thereon and moves back and forth in unison with it as the feeler reciprocates in its stand or support I on every alternate beat of the lay until substantial exhaustion of the filling.

Referring to Fig. 4 the remaining filling J\* is so far reduced in quantity that the contact face of the governor 7 touches the exposed part D of the carrier barrel when the contact face of feeler 2 touches the filling, and on the next feeling pick, say, the further diminution of the filling permits the governor to contact first with the barrel D. Thereupon the governor is moved forward upon the feeler and this movement is transmitted to an actuator, to position the latter for engagement with the controller II as the feeler and governor move forward while the lay beats up.

The actuator is herein shown as a forwardly extended arm 11 notched at its front end at 12 and bent down at its rear end, at 13, to join a hub 14 between the ears 4 on the carrier and fulcrumed on a transverse pivot pin 15, clearly shown in Figs. 2 and 3.

An upturned lug 16 on the hub is apertured to receive the rear end of a bunter shown as a threaded stud 17 which is screwed into a hole in the bend 13 of the actuator, and held in longitudinally adjusted position by a check-nut 18, the rear

end of said bunter contacting with the part 9 of the governor.

A plunger 19, Fig. 3, elevated by a light spring 20, engages the actuator and normally maintains its front end lifted and in inoperative position, shown in Fig. 3, said plunger being mounted on the support I, but permitting sliding movement of the actuator thereupon as the feeler reciprocates under normal conditions. At such time the notched end 12 of the actuator travels above the beveled end of the controller H, as will be obvious, and the bunter acting upon the governor maintains its contact face 8 projected the proper distance beyond the contact face 10 of the feeler 2.

When the filling is woven off far enough to permit the governor to contact with the filling-carrier and be moved forward on the feeler the part 9 of the governor presses upon the bunter 17 and rocks the actuator 11 into operative position, Fig. 2; depressing its notched end 12 so that it engages with the controller H and moves it as the feeler and governor move forward. Such operation of the controller rocks the transmitter F in usual manner and the replenishing mechanism of the loom is caused to effect a replenishment of filling in the shuttle, all in the manner common to the Northrop type of loom.

By adjusting the bunter 17 the relative normal position of the contact faces 8 and 10 of the governor and the feeler are varied according to the amount of filling which is to remain on the filling-carrier when the functional operation of the feeler mechanism is performed. That is to say, the closer the contact faces are brought into alinement the less the amount of filling on the carrier when the functions of the feeler mechanism are performed, and conversely, the greater the projection of the face 8 beyond the face 10 of the feeler the more filling will remain when the governor operates. Thus a most delicate, accurate and effective adjustment can be made, for filling of various degrees of fineness, or for the amount of filling which is to remain on the carrier when filling replenishment is to be effected.

The construction of the mechanism is simple, strong and durable, there are very few parts, and the operation of such mechanism depends upon the difference in level between the residue of filling on the filling-carrier and the bare portion of the carrier barrel adjacent the base of the filling mass, and no preliminary winding or bunch of filling is required.

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

1. An automatic filling-replenishing loom having, in combination, a shuttle equipped with a filling-carrier having its barrel al-

ways exposed at the base of the filling mass thereupon, a feeler to intermittingly contact with the filling in the shuttle until substantial exhaustion thereof, a normally inoperative actuator on the feeler, a governor movably mounted on the feeler and adapted to be moved thereupon when engaged by the exposed part of the barrel of the filling-carrier adjacent the filling mass upon failure of the feeler to contact with the filling, said governor having an upturned end to cooperate at such time with the actuator and operatively position the same, and a controller for the replenishing mechanism, actuated by the operatively-positioned actuator.

2. An automatic filling-replenishing loom having, in combination, a shuttle equipped with a filling-carrier having its barrel always exposed at the base of the filling mass, a feeler to intermittingly contact with the filling in the shuttle until substantial exhaustion thereof, a normally inoperative actuator on the feeler, a governor movably mounted on the feeler and adapted to be moved thereupon when engaged by the exposed part of the barrel of the filling-carrier upon failure of the feeler to contact with the filling, said governor having an upturned end to cooperate at such time with the actuator and operatively position the same, a controller for the replenishing mechanism, actuated by the operatively-positioned actuator, and adjustable means on the actuator to cooperate with the upturned end of the

governor and vary the normal relation between the contact faces of the governor and feeler.

3. An automatic filling-replenishing loom having, in combination, a shuttle equipped with a filling-carrier having its barrel always exposed at the base of the filling mass thereon, a feeler to intermittingly contact with the filling in the shuttle until substantial exhaustion thereof, said feeler having a guideway at right angles to its contact face, a governor longitudinally movable in the guideway and having its contact face normally projecting beyond the contact face of the feeler, to engage the exposed part of the barrel of the filling-carrier adjacent the filling mass and be moved in the guideway upon failure of the feeler to contact with the filling on the barrel, the forward end of the governor being upturned and laterally extended, an actuator fulcrumed on the feeler and having a part to be engaged by said upturned end of the governor when the latter operates, to rock the actuator into operative position, and a controller for the replenishing mechanism, actuated by said actuator when operatively positioned.

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

GEORGE A. SONTAG.

Witnesses:

JOHN GUTMAN,  
GEORGE C. HUDSON.