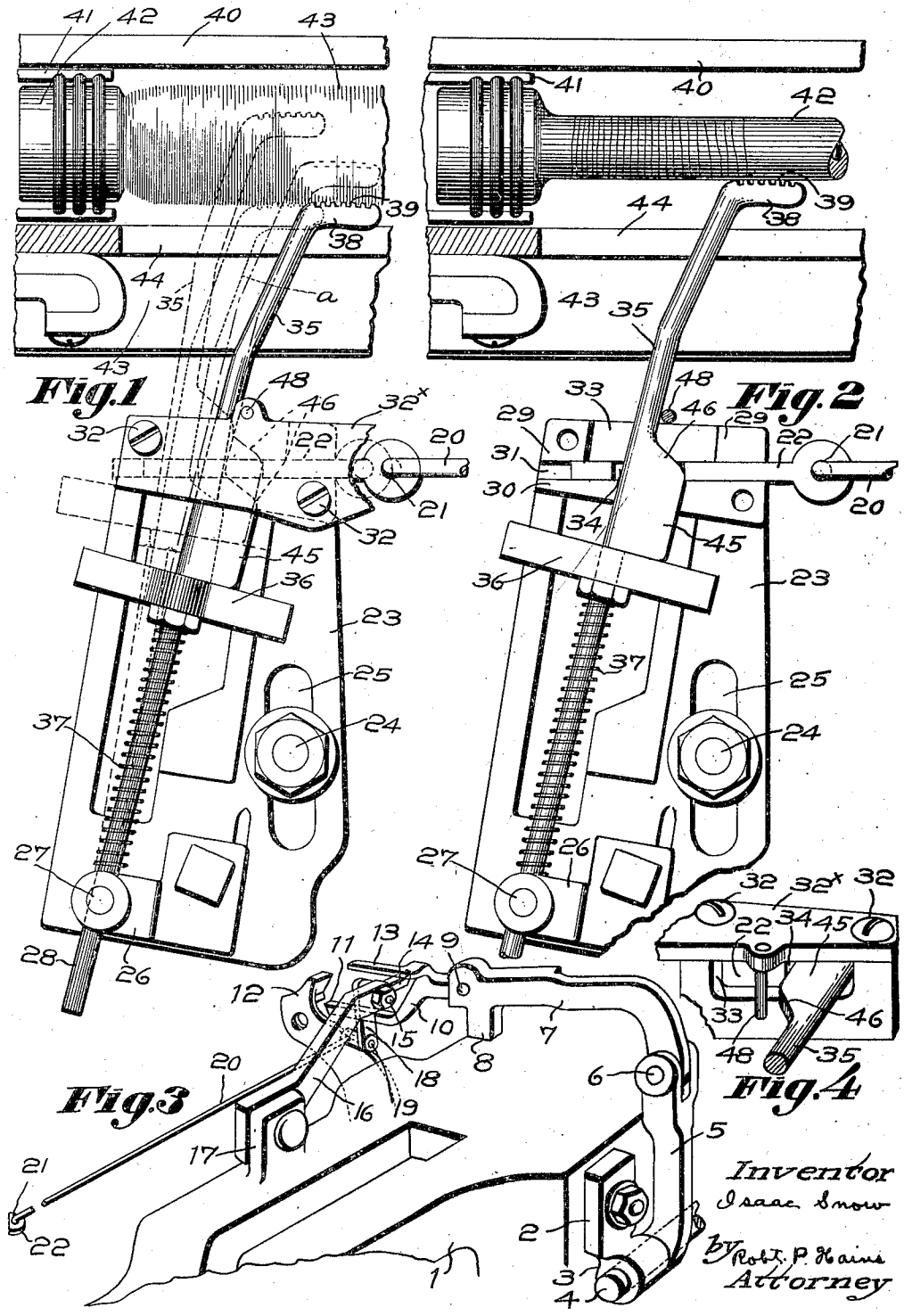
July 24, 1923. 1,463,131

I. SNOW

FEELER MECHANISM FOR LOOMS

Filed March 29, 1922



Patented July 24, 1923. 1,463,131

UNITED STATES PATENT OFFICE.

ISAAC SNOW, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR TO DRAPER CORPORATION, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

FEELER MECHANISM FOR LOOMS.

Application filed March 29, 1922. Serial No. 547,689.

To all whom it may concern:

Be it known that I, ISAAC SNOW, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented an Improvement in Feeler Mechanisms for Looms, of which the following description, in connection with the accompanying drawings is a specification, like characters on the drawings representing like parts.

This invention relates to feeler mechanisms for looms whereby the filling in the shuttle is replenished from time to time.

In that type of feeler mechanisms which has now become known as the "side swipe" the feeler is given a movement in a direction longitudinally of the shuttle to effect replenishment, and when a working supply of filling is present in the shuttle on a detecting beat such movement of the feeler is normally prevented by engagement of the feeler with the filling in the shuttle. Usually the feeler is provided with an engaging end portion formed with teeth or other engaging surface which sink into the filling as the lay beats up and holds the feeler against its side swipe movement.

In some cases the feeler fails to be held by the filling even when a working supply is present in the shuttle and in such case, in the absence of means to prevent, filling replenishment is effected with the result that the filling carrier although it contains a working supply of filling is ejected from the shuttle and the filling thereon becomes waste.

One of the objects of the present invention is to provide a feeler mechanism which will not call the change of filling when the shuttle is properly boxed and a working supply still remains in the shuttle on a detecting beat and notwithstanding the feeler itself fails to be held from its side swipe movement by the filling. In carrying this feature of the invention into effect in accordance with the present invention means are provided to prevent the feeler from calling the train of mechanism into operation for replenishing filling when, on a detecting beat with a working supply of filling in the shuttle, the feeler partakes of its side swipe movement.

The advantages of the invention are particularly observable in a feeler mechanism of the inclined type, that is, in a mechanism wherein the feeler itself enters the shuttle in a direction inclined to the longitudinal axis of the shuttle and is given its side swipe tendency by the frontward pressure of the surface in the shuttle engaged by it, but the advantages of the invention may also be secured in other types of feeler mechanisms wherein the feeler calls the change of filling by its movement longitudinally of the shuttle, and in the present illustration of the invention by the accompanying drawings a feeler mechanism wherein the feeler is of the inclined type is shown.

In the drawings:

Fig. 1 is a plan view with parts broken away showing a feeler mechanism of the inclined type and the relation of parts when, on a detecting beat with a working supply of filling in the shuttle, the feeler fails to be held by the filling by movement longitudinally of the shuttle.

Fig. 2 is a view similar to that of Fig. 1 but showing the action and relation of parts when the filling is substantially exhausted on a detecting beat and filling is to be replenished.

Fig. 3 is a perspective view with parts broken away showing the train of mechanism for effecting replenishment of filling when the feeler is moved longitudinally of the shuttle on a detecting beat.

Fig. 4 is a detached detail showing the relation of the feeler and the replenishing preventer.

The filling replenishing mechanism for placing a fresh supply of filling in the shuttle is not herein shown because it may be of any usual and well known type and the details thereof are not essential to the present invention.

The loom frame 1 as shown is provided with brackets 2 one at each side of the loom having bearings 3 for the usual transverse or rock shaft 4 through which replenishment is called when the rock shaft 4 is rocked clockwise as in Fig. 3. Secured to and extending from the rock shaft 4 is the arm 5 having pivotally connected thereto at 6 the actuator 7 which is moved frontwardly to effect rocking movement of the transverse or rock shaft 4 when filling is to be replenished. In the present instance the actuator 7 has a support 8 which may slide upon the top of the loom frame or breast beam, and pivotally connected to the

actuator 7 at 9 is the arm 10 the rear end portion 11 of which is shown as normally out of the path of movement of an operating member 12 which may be secured to or formed as part of the cam follower or weft hammer. The arm 10 has projecting therefrom the finger 13 under which lies the end 14, Fig. 4, of a bell crank lever pivotally mounted at 15 on an arm or support 16 secured to the lug 17 carried by the loom frame. The other arm 18 of the bell crank lever is connected at 19 to a transmitter 20 the other end of which is connected at 21 to a slide 22 under control of the feeler, the construction being such that upon movement of the slide 22 to the right, in the present construction, the bell crank lever will be turned upon its pivotal support 15 and lift the end 11 of the arm 10 into the path of the operating member 12, so that on frontward movement of the operating member 12 the actuator 7 and perforce the transverse or rock shaft 4 will be operated to effect replenishment of filling. The parts so far described in detail may be of any usual character, the essential being that upon movement of the feeler in a direction longitudinally of the shuttle the train of mechanism described may be operated by the feeler when the filling is substantially exhausted on a detecting beat to cause replenishment of filling.

The feeler mechanism proper as shown comprises the feeler stand 23 which may be secured to the loom frame or extension of shipper stand by a bolt 24 which passes through the slot 25 in the feeler stand as usual.

At the front of the feeler stand is a bracket 26 between which and the feeler stand is a rocking bearing 27 through which the front end portion 28 of the feeler extends. At its rear portion the feeler stand 23 has a rear bearing for the slide 22. The rear bearing as shown is formed by upstanding lugs 29 and 30 which provide a guideway 31 for the slide 22 and in order to maintain the slide in its guideway a cap piece 32* is secured to the lugs 29 and 30 by screws or bolts 32. Between the lugs 29 the rear bearing is cut away as at 33 to provide a space for the side swipe movement of the feeler, and the slide 22 is provided with a passage way or an opening 34 through which the feeler 35 extends.

The feeler carries a bridge piece 36 which may conveniently slide with the feeler upon the top of the feeler stand 23 and between the rocking bearing 27 and the bridge piece 36 is a spring 37 which normally acts to hold the feeler in its rearward or feeling position and return it to such position when it has been frontwardly displaced. The construction of the feeler thus far described may be the same as that more fully shown and described in the patent to Edward S. Stimpson, No. 1,309,226, July 8, 1919, and when the feeler has been laterally displaced or given its side swipe and frontward movement it may be returned to its original feeling position as it moves rearwardly under the action of spring 27. Means for effecting such movement may be the same as described in the Stimpson patent.

The rear end portion 38 of the feeler is provided with a filling engaging surface which may conveniently be formed by a series of teeth 39 which, when a working supply of filling is present in the shuttle on a detecting beat, will normally sink into the filling and hold the feeler from movement longitudinally of the shuttle under the frontward pressure of the filling.

It may happen at times that the feeler may not be held from movement longitudinally of the shuttle by the filling even when a working supply is present in the shuttle on a detecting beat and in such case, in accordance with the present invention, a means is provided to prevent the feeler from calling a change of filling and consequently overcoming the objectionable waste filling that would otherwise occur.

The shuttle 40 is provided with the usual holding jaws 41 for a filling carrier 42 on which the filling 43 is wound, and the front wall of the shuttle box is provided with an opening 43 for the entrance of the feeler. The shuttle 40 is likewise provided with an opening 44 which permits the feeler to enter the shuttle and feel for filling on a detecting beat. These parts may be as usual in filling replenishing looms of the feeler type.

As represented in the present embodiment of the invention the feeler 35 is provided with an enlarged portion 45 which at 46 is inclined towards the main body of the feeler. The extent of the enlarged or widened portion 45 is such that when a working supply of filling is present in the shuttle on a detecting beat and the feeler is consequently moved frontwardly to a greater distance than when the filling is substantially exhausted, the enlarged portion 45 will pass frontwardly beyond the slot 34 in the slide 22, as indicated in Fig. 1. Owing to the inclined type of feeler it will have a normal swinging movement as it moves frontwardly on a detecting beat when its end is held from longitudinal movement of the shuttle by the filling, as indicated by dotted lines *a* Fig. 1, and the enlarged portion 45 of the feeler will be moved frontwardly out of the slot 34 of the slide 22. When, however, the filling is substantially exhausted on a detecting beat, as indicated in Fig. 2, the feeler will have an abnormal swinging movement on its support owing to the slip or slide of the end of the feeler longitudinally of the filling carrier and the enlarged portion 45 will not be moved frontwardly sufficiently

far to pass frontwardly of the slot 34 in the slide 22 so that slide 22 and perforce the train of mechanism for effecting replenishment of filling will be made operative as indicated in Fig. 2.

Should the toothed end of the feeler fail to be held by the filling from movement longitudinally along the filling notwithstanding a working supply is present in the shuttle on a detecting beat the present invention contemplates means for preventing the feeler from operating the train of mechanism to effect replenishment of filling. As a simple and effective means to this end and in connection with the enlargement 45 the present invention provides a filling replenishing preventer which in the present instance is formed by a pin or stop 48 which will be engaged by the feeler 35 when, as indicated by full lines Fig. 1, the end of the feeler slips or slides longitudinally along the working supply of filling in the shuttle on a detecting beat. As such time, as herein before stated, the enlarged portion 45 of the feeler will be moved frontwardly beyond the slot 34 of the slide 22 and the replenishing preventer 48 will be engaged by the feeler and prevent its side slip along the filling longitudinally of the shuttle sufficiently to move the slide 22 and operate the train of mechanism to replenish the filling. Thus although the feeler has not been held from movement longitudinally of the shuttle by the working supply of filling therein, filling replenishment will not be called. This condition is represented by the full lines in Fig. 1 wherein it will be noted that the feeler 35, notwithstanding the fact that it has moved or slipped longitudinally of the working supply of filling in the shuttle, has been moved frontwardly sufficiently far to disengage the enlarged portion 45 of the feeler from the slot 34 of the slide 22 and the replenishing preventer has been engaged by the feeler to prevent the smaller portion of the feeler at the rear of the enlarged portion 45 from moving the slide 22.

The filling preventer 48, as shown, comprises a pin which may be conveniently secured to the cap piece 32 at the rear of the rear bearing in which the slide 22 moves and extends downwardly across the path of the side slip movement of the feeler.

Applicant believes himself the first in the art to provide a feeler mechanism of the "side swipe" type with a means for preventing the feeler from calling a change of filling when the feeler is given its side swipe movement by the frontward pressure upon it and a working supply of filling still remains in the properly boxed shuttle on a detecting beat, and while in the illustrated form of the invention the feeler as shown is of the inclined type and receives its side swipe movement under the frontward pressure of a surface within the shuttle, the invention is not restricted thereto.

What is claimed is:

1. In a feeler mechanism for looms, the combination of a feeler mounted for movement in a direction longitudinally of the shuttle to effect by such longitudinal movement replenishment of filling, a transmitter, an enlarged portion carried by the feeler and normally engaged with the transmitter when the feeler is in rearward feeling position and moved out of engagement with the transmitter by a working supply of filling in the properly boxed shuttle on a detecting beat, and a stop which limits the lateral movement of the feeler to an extent insufficient to actuate the transmitter when the enlarged portion of the feeler is moved out of engagement with the transmitter.

2. In a feeler mechanism for looms, the combination of a feeler mounted for movement longitudinally of the shuttle and to effect replenishment of filling by such longitudinal movement, a transmitter, a part carried by the feeler and operatively positioned relative to the transmitter for actuating the latter by side movement of the feeler when it is in rearward feeling position, said part being constructed and arranged to be moved frontwardly beyond operative relation with the transmitter on a detecting beat when a working supply of filling is present in the shuttle, and a stop to limit the side movement of the feeler to an amount insufficient to call the change of filling when the feeler prematurely slides along the filling and a working supply is in the shuttle.

3. In a feeler mechanism for looms, the combination of a feeler mounted for movement in a direction longitudinally of the shuttle to effect by such longitudinal movement replenishment of filling, a transmitter, having an opening through which the feeler extends, a projecting portion carried by the feeler and normally located in said opening of the transmitter when the feeler is in its rearward feeling position and which is moved frontwardly out of said opening when the feeler is moved frontwardly by a working supply of filling in the properly boxed shuttle that premature lateral movement of the feeler will fail to call for replenishment of filling.

4. In a feeler mechanism for looms, the combination of a feeler that is mounted for movement longitudinally of the shuttle and provided with a lateral projection, a transmitter which normally bears against the lateral projection when the feeler is in rearward feeling position and is moved laterally by the lateral movement of said projection to effect replenishment of filling when the filling is substatnially exhausted on a detecting beat, and a stop which is engaged by the feeler to limit its lateral movement to

an amount insufficient to effect replenishment of filling when the feeler prematurely moves longitudinally along the filling on a detecting beat and the projection on the feeler has been moved out of engagement with the transmitter.

5. In a feeler mechanism for looms, the combination of a feeler mounted for movement longitudinally of the shuttle and having a lateral projection that extends longitudinally of the feeler, a transmitter having a part laterally opposite the lateral projection on the feeler when the feeler is in rearward feeling position and adapted to be moved by the lateral movement of the projection when the filling is substantially exhausted on a detecting beat and frontward of which the projection passes out of cooperative relation therewith when a working supply of filling is in the shuttle.

6. In a feeler mechanism for looms, the combination of a transmitter mounted for movement in a direction transversely of the loom, a feeler mounted for movement in a direction longitudinally of the filling carrier and having a side projection which is laterally opposite the transmitter to cause actuation thereof by the lateral movement of the feeler when the filling is substantially exhausted on a detecting beat and a stop for limiting the lateral movement of the feeler to an extent insufficient to actuate the transmitter when a working supply of filling is in the shuttle on a detecting beat.

7. A feeler mechanism for looms, comprising, in combination, a feeler mounted for movement in a direction longitudinally of the shuttle to effect replenishment of filling, a transmitter, an enlarged portion carried by the feeler to effect actuation of the transmitter when the filling is substantially exhausted in the properly boxed shuttle and the feeler is moved longitudinaly of the shuttle on a detecting beat, and which is moved frontwardly beyond operative relation with the transmitter on a detecting beat when a working supply of filling is present in the shuttle, and a filling replenishing preventer which limits the side swipe movement of the feeler to an extent insufficient to actuate the transmitter.

8. A feeler mechanism for looms, comprising, in combination, a feeler mounted to enter the shuttle in a direction inclined to the longitudinal axis thereof and to be displaced laterally by the frontward pressure upon it, a slide having an opening through which the feeler extends, a lateral enlargement carried by the feeler and located in said opening when the feeler is in its rearmost position and which is moved frontwardly of said opening by the shuttle on a detecting beat, and means for limiting movement of the feeler laterally in said opening to an amount insufficient to move the slide when the feeler is displaced laterally by frontward impact of a working supply of filling in the properly boxed shuttle.

In testimony whereof, I have signed my name to this specification.

ISAAC SNOW.