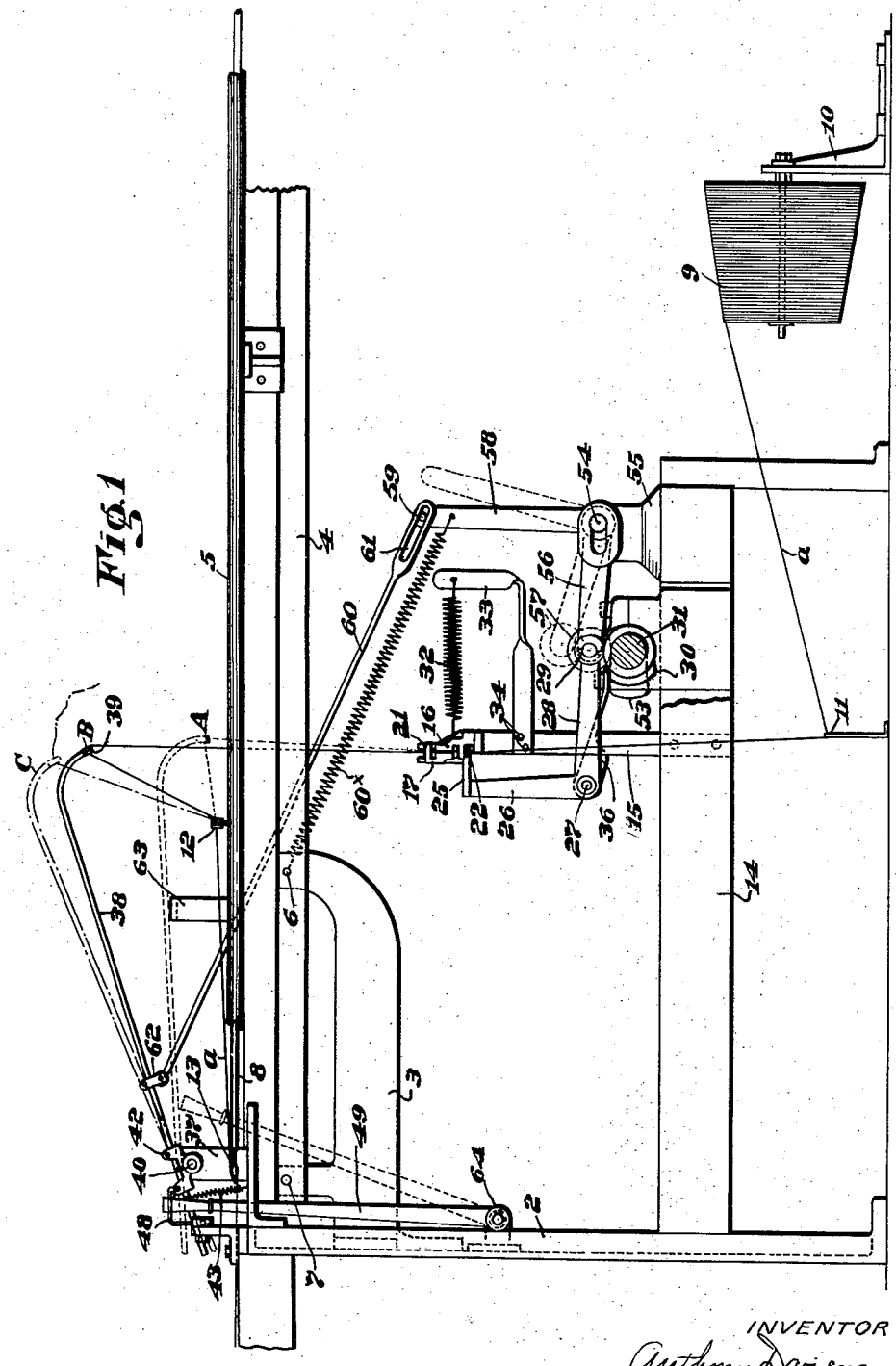
March 7, 1933. A. DARIENZO 1,900,545

FILLING STOP MOTION FOR LOOMS

Filed Aug. 3, 1932 3 Sheets-Sheet 1

Fig. 1



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Filed Aug. 3, 1932 3 Sheets-Sheet 2

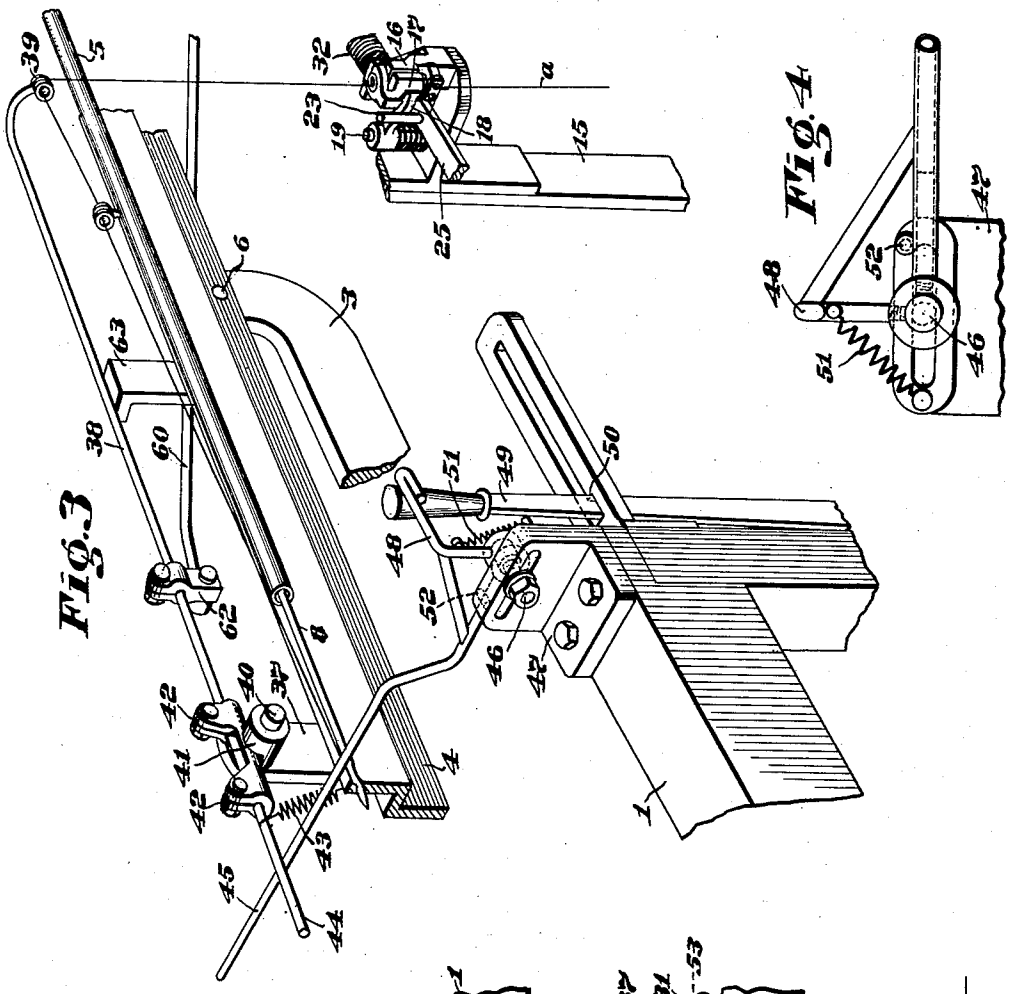

Fig. 3

Fig. 4

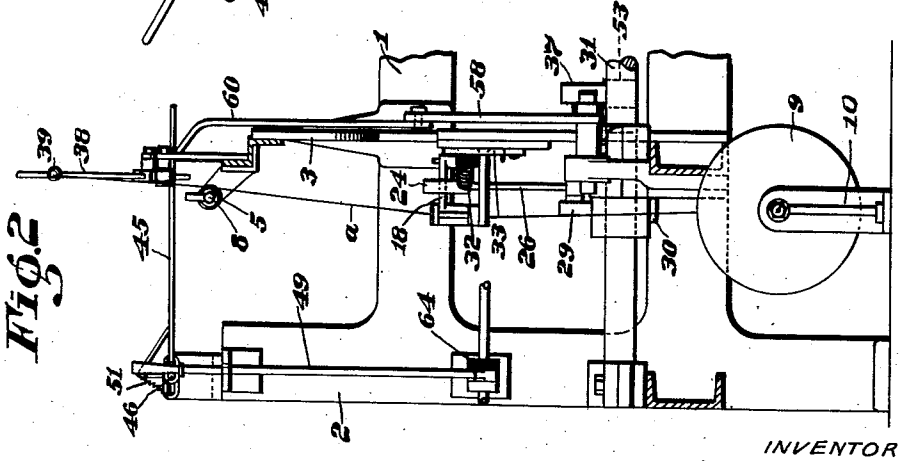

Fig. 2

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Filed Aug. 3, 1932 3 Sheets-Sheet 3

Fig. 5

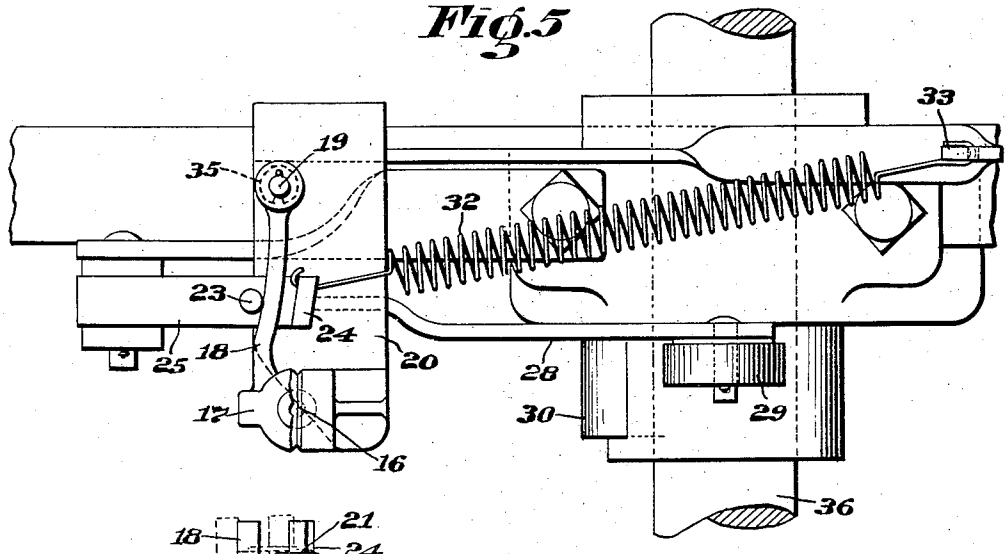
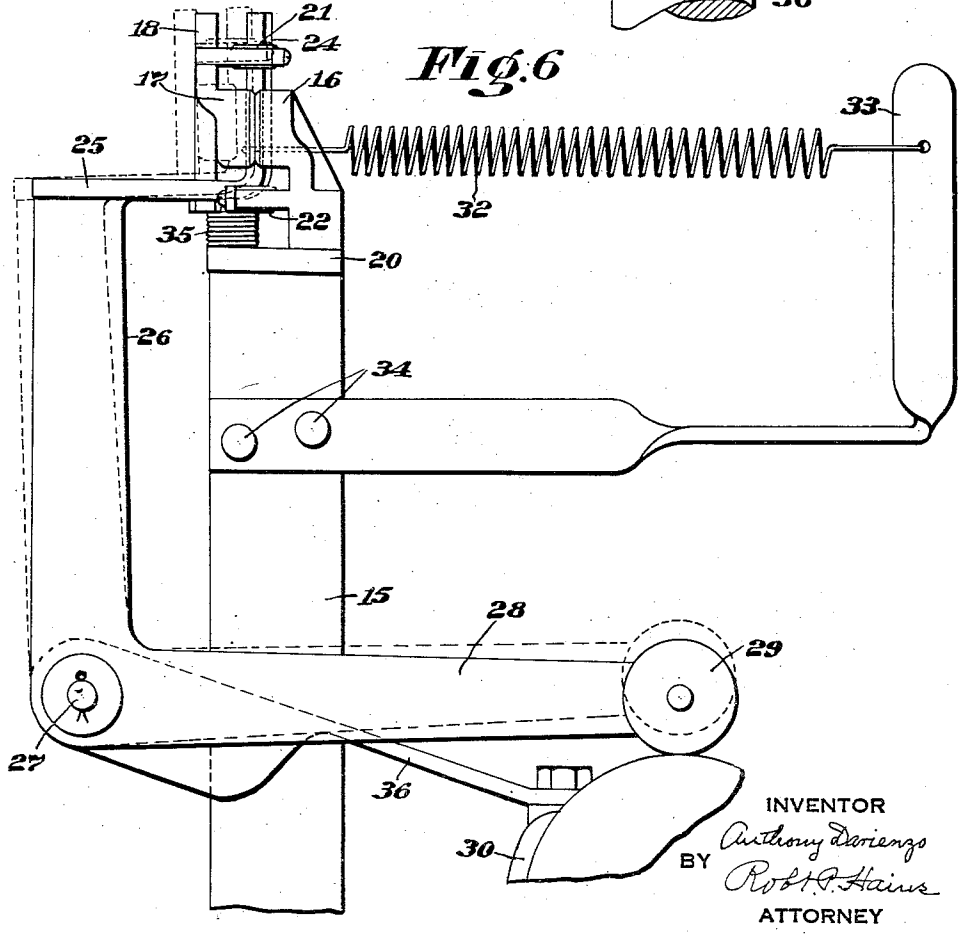


Fig. 6



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UNITED STATES PATENT OFFICE

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FILLING STOP MOTION FOR LOOMS

Application filed August 3, 1932. Serial No. 627,331.

This invention relates to filling stop motion for looms and more particularly is directed to a filling stop motion for looms where the filling is passed through the shed by a needle as it is done in the usual Axminster looms.

In looms of the above general type the filling thread is taken from a source of supply and passed through the shed by a reciprocating needle. At the opposite side of the loom means are provided such for instance as a selvage shuttle to engage the loop of the filling thread introduced by the needle to form a selvage.

During that period of the needle reciprocation which passes the filling through the shed to the selvage shuttle side of the loom the filling thread should be substantially free to be drawn from the supply by the needle, and after the needle has presented the filling to the selvage shuttle side of the loom the filling thread should be tensioned in order that the selvage may be made uniform and substantially tight. When the filling thread is tensioned breakage of the filling is liable to occur and the present invention provides a filling stop motion in connection with tensioning means, such that the needle may pass the filling through the shed free of substantial tension thereon and when the filling thread has been presented to the selvage shuttle side of the loom the tension may be automatically applied and any slack in the filling taken up.

In accordance with the present invention the filling passes from a source of supply through a main tensioning mechanism and then is engaged by a whip normally under the influence of means for taking up any slack in the filling after the needle has passed the filling through the shed, and in order that the needle may freely draw the filling from the source of supply means are provided for releasing the action of the main tensioning mechanism upon the filling and for rendering the whip ineffective to take up slack as the needle passes the filling through the shed and thereupon to restore the main tensioning mechanism to its tensioning action and the whip to its take-up function. In accordance with a further feature of the invention means are provided which may be actuated by the whip after the filling has been passed through the shed to effect loom stoppage should the filling break or become too slack.

It is a further object of the present invention to provide a simple and effective means for accomplishing the purposes stated, all of which will best be made clear from the following description and accompanying drawings of one good form thereof.

In the drawings:—

Fig. 1 is a front elevation of an Axminster loom at the needle side thereof and containing the present invention;

Fig. 2 is an end elevation of the parts shown in Fig. 1;

Fig. 3 is an enlarged detail showing the whip of the present invention in its non-take-up position;

Fig. 4 is an enlarged detail of a shipper knock-off, some of the parts being omitted;

Fig. 5 is a plan view on an enlarged scale showing the main tensioning mechanism; and

Fig. 6 is a side elevation of the main tensioning mechanism.

The needle operating mechanism for passing the filling through the shed is not herein shown and described because the details thereof form no essential part of the present invention and are now well understood by those skilled in the art.

The loom frame 1 may be of any usual or suitable construction for the support of the operating parts, and mounted on the side portion 2 of the loom frame is a bracket 3 upon which is mounted a bar or support 4 extending outwardly from the side portion of the loom on which the needle guide 5 may be mounted. In order to give stability to the bar or support 4 it is connected to the bracket 3 at the points 6 and 7. In the present instance of the invention the needle guide 5 as shown is of the tubular type in which the needle 8 is reciprocated. The filling to be passed through the shed is supplied from a source of supply 9 which may be conveniently mounted on a bracket 10 at the side of the loom, and

from the supply 9 the filling *a* passes through a guide 11, then upwardly through a main tensioning mechanism and a whip, to be further described, and is led through a guide 12 so located as that the lead of the filling from the guide 12 may extend in substantial parallel relation with the needle movement, and from the guide 12 the filling *a* passes through the usual eye 13 of the needle, the construction being such that upon reciprocation of the needle by any usual needle operating mechanism the filling *a* will be passed through the shed and presented to the opposite or selvage shuttle side of the loom.

Rising from a side frame 14 is a support 15 for the main tensioning mechanism.

The main tensioning mechanism as shown more particularly in Figs. 5 and 6 in detail, comprises a fixed tensioning member 16 and a movable member 17, each of which may be appropriately faced with porcelain to effect a slip tension on the filling. The movable tensioning member 17 is carried by an arm 18 pivotally mounted at 19 on a side projecting portion 20 carried by the upright 15.

Above and below the main tensioning members are the thread guides 21 and 22 through which the filling passes from the source of supply.

As hereinbefore suggested the filling should be free to be drawn from the source of supply by the needle as the latter passes the filling through the shed and as one form of means for effecting this purpose the arm 18 which carries the movable tensioning member 17 passes between the projections 23 and 24 of a movable member 25 carried on the upper arm 26 of a bell crank lever pivotally mounted at 27 and having the laterally extending arm 28 on which is mounted a roller 29 which bears upon a cam 30 secured for rotative movement with the under or cam shaft 31, the construction being such that when the roller 29 is lifted by the cam the movable member 17 of the tensioning device will be withdrawn from its tensioning relation with the fixed tensioning member 16 and the filling will thereby be freed from tension by the main tensioning mechanism.

In order that the arm 25 of the bell crank lever may be moved in the opposite direction to cause the movable tensioning member 17 to act with tensioning effect upon the filling, a spring 32 is connected to the arm 25, as indicated in Fig. 6, and its opposite or outer end is connected to a bracket 33 which may be conveniently secured to the upright 15, as at 34.

As a further means for moving the movable tensioning member 17 into thread tensioning position the arm 18 is under the influence of a coiled spring 35 which surrounds the pivotal mounting 19 of the arm 18 and normally acts to move the movable tensioning member into thread tensioning position.

Any convenient support may be provided for the pivotal mounting 27 of the bell crank lever, but, as shown, it comprises an arm or bracket 36 secured to the journal box of the under or cam shaft 31.

Rising from the bar or support 4 is a bracket 37, Figs. 1 and 3, on which is pivotally mounted an arm or whip 38, the outer end portion of which is provided with a filling engaging device or eye 39.

In the present instance of the invention the whip 38 is mounted for pivotal movement upon a stud 40 extending from the bracket 37 and having mounted thereon a hub portion 41 provided with clamps 42 between the members of which the whip 38 passes, and connected to the whip beyond its pivotal mounting is a yielding member or spring 43 which normally acts upon the whip to turn it in contra-clockwise direction, viewing Figs. 1 and 3.

As hereinbefore stated one of the main functions of the whip 38 is to take up slack in the filling after the needle has presented the filling to the selvage shuttle side of the loom and to effect loom stoppage should the filling break or become too slack after the needle has presented the filling to the selvage shuttle side of the loom.

Any suitable means may be employed under control of the whip for throwing the power off the loom when the filling breaks or becomes too slack under the conditions noted, but in the illustrated form of the invention the end portion 44 of the whip extends over and above a stop member 45 which is pivotally mounted at 46 on a bracket 47 secured to the loom frame. Extending upwardly and outwardly from the pivotal mounting of the stop member 45 is the shipper knock-off 48 which rests lightly against the upper end of the shipper 49, the construction being such that should the whip 38 detect breakage of the filling or undue slackness thereof it will be turned upwardly in contra-clockwise direction to thereby cause the end 44 to depress the stop member 45 and detach the shipper from its holding notch 50 and thereby effect loom stoppage.

Ordinarily the friction of the shipper in the holding notch will be sufficient to locate the stop member 45 in position under the whip, but, as shown in the present instance the stop member 45 is normally under the influence of a light spring 51 which serves to raise the stop member 45 into its operative position under the end 44 of the whip and a limiting stop 52 serves to define the position of the stop member 45 under the dictates of the spring 51, Fig. 4.

As hereinbefore stated the main tension on the filling and the take-up action of the whip should be rendered ineffectual as the needle passes the filling through the shed to the opposite or selvage shuttle side of the loom and

means to this end so far as the main tensioning mechanism is concerned has been hereinbefore described with relation to Figs. 5 and 6.

To render the take-up action of the whip on the filling ineffectual during the passage of the needle through the shed, cam mechanism is provided which, as shown, may consist of a cam 53 conveniently secured to the under or cam shaft 31, and pivotally mounted at 54 on a bracket 55 is a bell crank lever, one arm 56 of which carries a roll 57 adapted to be raised by the cam 53 to thereby throw the other arm 58 of the bell crank laterally. Connected to the upper end of the arm 58 by a pin 59 is a link 60 having a slot 61 in which the pin 59 rides, and the opposite end of the link 60 is connected at 62 to the whip 38 so that when the arm 58 is moved outwardly the pin 59 will draw upon the link 60 and move the whip to the lower or dotted line position A, Fig. 1, where it will be held by the cam until the needle has passed the filling through the shed to the selvage shuttle side of the loom. A spring 60^x normally acts upon the arm 58 to hold the roll 57 in cooperative relation with the actuating cam.

At this time also the main tensioning mechanism will be ineffectual so that the filling may be drawn from the source of supply through the main tensioning mechanism without tension and the whip will be ineffectual to take-up slack. When the needle has passed the filling through the shed for the action of the selvage shuttle the main tensioning mechanism will again go into action to place tension on the thread and the whip will likewise be freed by its cam actuating mechanism to move from the position shown in dotted lines A to the full line position B, and the filling will thereupon be subject to the tension of the main tensioning mechanism and to the take-up action of the whip as the needle is withdrawn from the shed.

Should the filling break or become too slack after the needle has presented the filling to the selvage shuttle side of the loom the whip 38 under the action of the spring 43 will rise from the position B, Fig. 1, to the dash-and-dot position C, Fig. 1, thereby operating the loom stopping means to effect loom stoppage or throw the power off the loom.

When the whip 38 is rendered ineffectual to take up slack by its cam actuating mechanism, as described, it may be convenient at times to provide a stop 63 against which the whip may rest when moved to its dotted line position A, Fig. 1.

Where the loom stopping mechanism comprises a shipper, as illustrated in the present instance of the invention, a spring 64, Fig. 1, may act upon the shipper 49 to move it outwardly when it is relieved from the holding notch 50, but as hereinbefore noted, the invention is not restricted to the type of loom stopping means, but on the contrary, any means which may be actuated by the whip upon breakage or undue slackness of the filling may be utilized within the true scope of the present invention.

What is claimed is:—

1. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a whip for taking up slack in and tensioning the filling, a main tensioning mechanism for the filling, means for rendering the whip and the main tensioning mechanism ineffectual during the travel of the needle into the shed to permit the needle to draw filling from the supply until the needle reaches the selvage shuttle side of the loom and thereupon freeing the whip and main tensioning mechanism to take up slack and tension the filling as the needle is withdrawn from the shed, and means controlled by the whip to effect loom stoppage should the filling break or become too slack as the needle is being withdrawn from the shed.

2. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a whip for taking up slack in and tensioning the filling, means for rendering the whip functionally ineffective during the passage of the needle through the shed to the selvage shuttle side of the loom, and means controlled by the whip to effect loom stoppage should the filling break or become too slack on the withdrawal movement of the needle from the shed.

3. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a whip for taking up slack in and tensioning the filling, means for rendering the whip functionally ineffective during the passage of the needle through the shed to the selvage shuttle side of the loom, a main tensioning mechanism for the filling to apply tension on the filling after the needle has advanced the filling through the shed, and means controlled by the whip to effect loop stoppage should the filling break or become too slack on the withdrawal movement of the needle from the shed.

4. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a whip, means normally acting to cause the whip to tension and take up slack in the filling, devices for rendering said normally acting means ineffective as the needle passes the filling through the shed to the selvage shuttle side of the loom and for restoring said normally acting means to the performance of its tensioning and take up functions after the needle has presented the filling to the selvage shuttle side of the loom and during its withdrawal movement, and means rendered effective by the whip to stop the loom should the filling break or become too slack after the needle has presented

the filling to the selvage shuttle side of the loom.

5. In a filling stop motion for Axminster looms, the combination of a needle for passing the filling through the shed, a pivotally mounted whip, yielding means normally acting to cause the whip to tension and take up slack in the filling, cam actuated means for rendering said normally acting means ineffective as the needle passes the filling through the shed and for freeing said normally acting means to the performance of its tensioning and take-up functions after the needle has presented the filling to the selvage shuttle side of the loom, and loom stopping means actuated by the whip should the filling break or become too slack after the needle has presented the filling to the selvage shuttle side of the loom.

6. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a pivotally mounted whip having a filling engaging portion, yielding means normally acting to cause the whip to take up slack and tension the filling, power operated means connected to the whip and acting to render the whip ineffective to tension the filling and take up slack as the needle passes the filling through the shed and to free the whip when the needle has presented the filling to the selvage shuttle side of the loom that the whip may then act to tension the filling and take up slack as the needle is being withdrawn from the shed, and means actuated by the whip to effect loom stoppage should the filling break or become too slack after the whip has been freed from control of the power operated means.

7. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a main filling tensioning member, a whip engaged with the filling to take up slack, means acting upon the main tensioning member and the whip to free the filling from tension as the needle passes the filling through the shed and to restore tension upon the filling after the needle has presented the filling to the selvage shuttle side of the loom, and loom stopping means actuated by the whip to throw the power off the loom should the filling break or become too slack after the tension on the filling has been restored.

8. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a pivotally mounted whip engaged with the filling, a spring normally acting upon the whip to take up slack in the filling, a cam connected to the whip to prevent its take-up action on the filling as the needle passes the filling through the shed and to free the whip to its take-up action after the needle has passed the filling through the shed, and means actuated by the whip to effect loom stoppage should the filling break or become too slack after the whip has been freed to its take-up action.

9. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a pivotally mounted whip engaged with the filling, a spring normally acting upon the whip to take up slack in the filling, a cam connected to the whip to prevent its take-up action on the filling as the needle passes the filling through the shed and to free the whip to its take-up action after the needle has passed the filling through the shed, a shipper for throwing the power on and off the loom, and a shipper knock-off actuated by the whip to throw the power off the loom should the filling break or become too slack after the whip has been freed to its take-up action.

10. In a filling stop motion for looms, the combination of a needle for passing the filling through the shed, a whip engaged with the filling, yielding means to cause the whip to take up slack in the filling, a cam actuated member, a connection between the cam actuated member and the whip to prevent the whip from taking up slack in the filling as the needle passes the filling through the shed and to free the whip to its take-up action after the needle has passed the filling through the shed that an even and uniform selvage may be formed, and means actuated by the whip on the occurrence of a filling fault to effect loom stoppage after the whip has been freed to its take-up action.

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

ANTHONY DARIENZO.