I. SNOW.

LOOM ATTACHMENT.

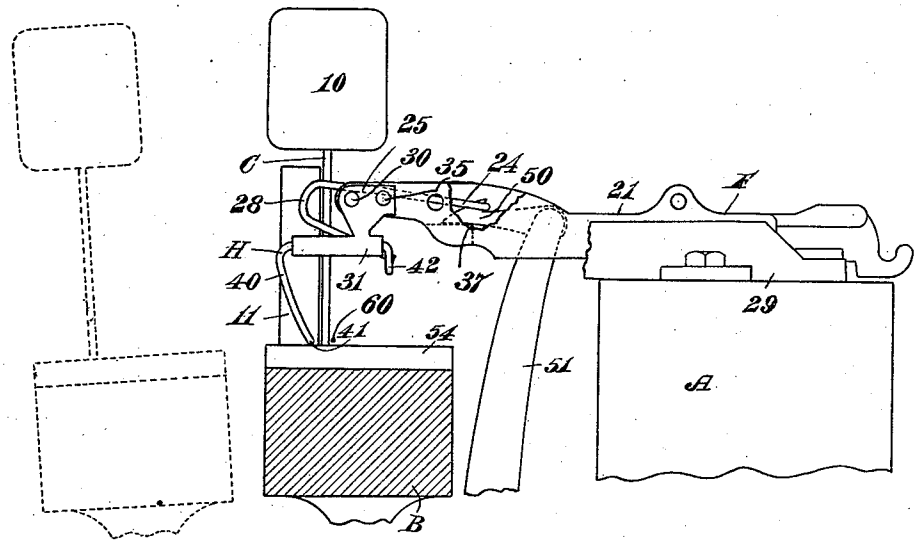
APPLICATION FILED JUNE 16, 1911.

1,046,669.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



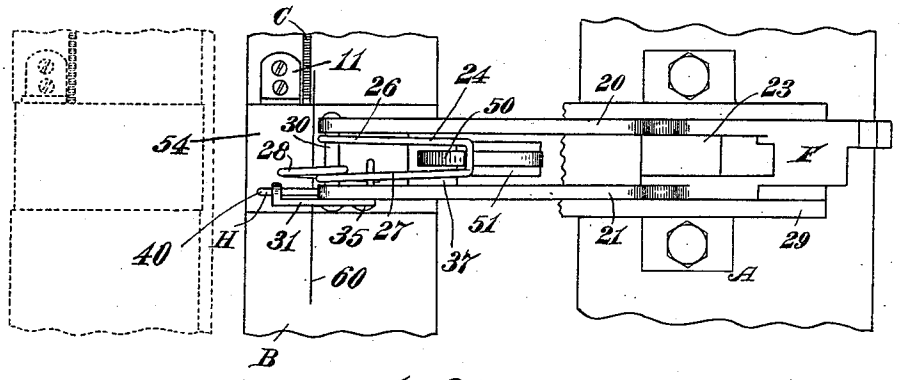


Fig. 2.

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3 SHEETS—SHEET 2.

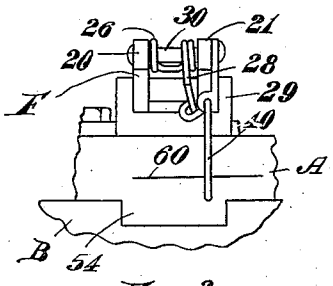

Fig. 3.

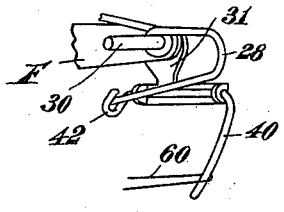

Fig. 4.

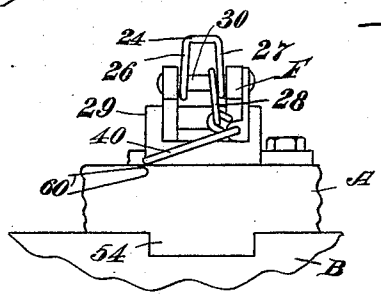

Fig. 5.

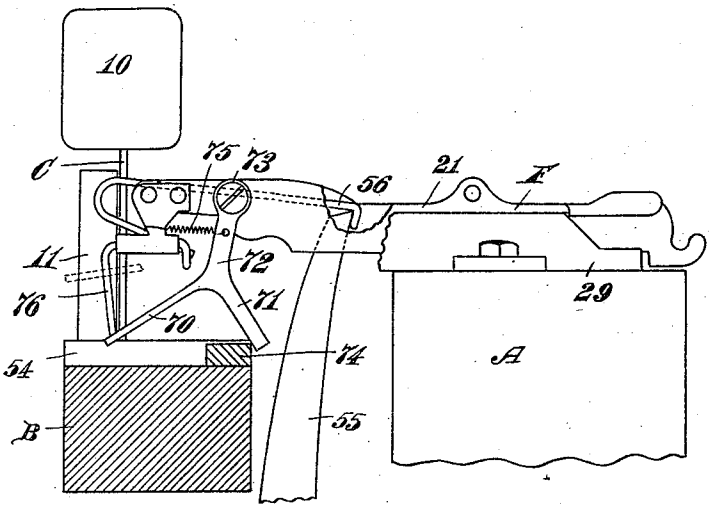

Fig. 6.

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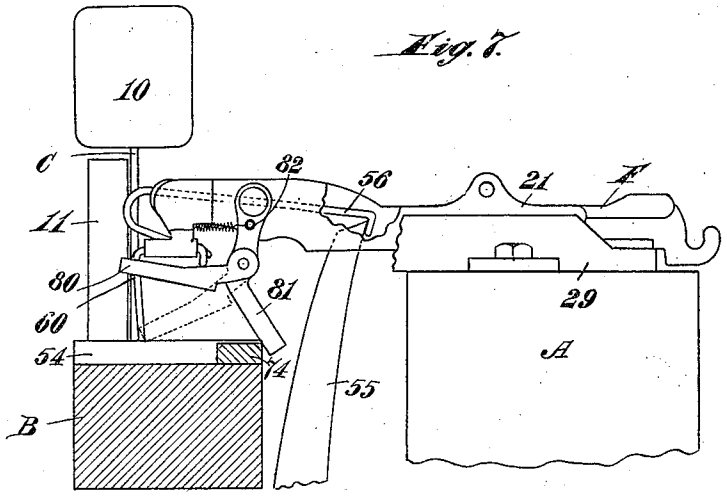
3 SHEETS—SHEET 3.

Fig. 7.



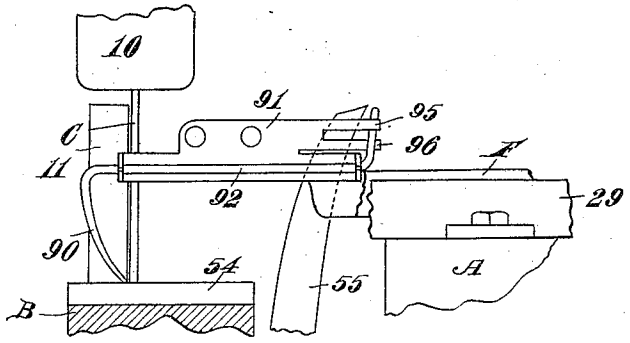


Fig. 8.

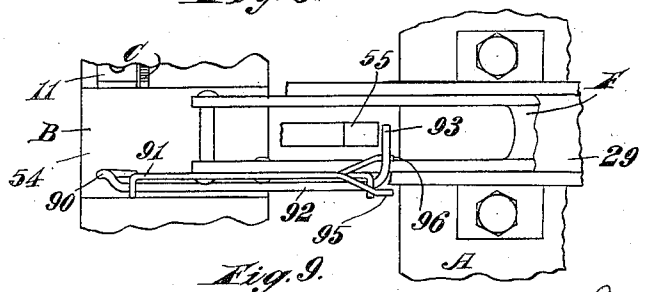


Fig. 9.

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ISAAC SNOW, OF LAWRENCE, MASSACHUSETTS.

LOOM ATTACHMENT.

1,046,669. Specification of Letters Patent. Patented Dec. 10, 1912.

Application filed June 16, 1911. Serial No. 633,505.

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 certain new and useful Improvements in Loom Attachments, of which the following is a specification.

This invention relates to filling stop motions for looms and belongs to the type wherein filling forks are used in connection with racks so arranged that when the filling runs out or breaks, the loom is stopped or the bobbin or the shuttle is changed depending upon the type of loom and the manner in which the parts are set.

My device takes the place of the usual type of pivoted fork and rack. The other connections are the same or similar to those in common use.

Figure 1 is a side view in partial section of portions of the end of the breast beam and lay beam of a loom. Fig. 2 is a top view of such parts of a loom. Fig. 3 is a front view of my device with its swinging arm hanging vertically. Fig. 4 is a perspective view of Fig. 3 showing the filling looped around the swinging arm. Fig. 5 is a front view showing the swinging arm as it is pulled aside by the filling and with the looped filling slipping off. Fig. 6 shows an addition to the device which I may use to advantage and Fig. 7 shows a modification of this construction. Fig. 8 is a side view and Fig. 9 is a top view of a simple modification of my device.

The operation of my device depends upon the fact that when the filling is beaten up by the reed into the shed of the warp, the part of the filling which is between the warp threads is held there while the lay beam recedes and the shuttle is thrown back along the lay in a parallel line at a distance from the held portion. It is evident that if any member lies outside the warp between these two lines, the filling will be looped around it as the shuttle is thrown back and the looped filling, in seeking to follow the shuttle, will exert a very considerable pull on said member. I utilize this pull to lift a catch of any usual construction which normally lies in the path of the stop motion lever. By this means, I replace the usual pivoted fork and rack.

A represents the breast beam and B represents the lay beam while C is the reed carried by the lay beam and 10 is the reed cap thereof.

The frame F which carries my device consists of two parallel side strips 20 and 21 connected by webs 23 and 37 all of a common construction. Frame F is carried transversely by breast beam A in guideways 29 so that it can slide back and forth. The frame F is so placed that its back end 25 normally extends back from the breast beam to a point just outside the end of reed C when the lay beam B is carried forward toward the breast beam A as shown by the full lines in Figs. 1 and 2. The guideway 29 is so located on breast beam A as to bring frame F in its proper position.

Fastened to the side 21 of frame F at end 25 by means of a rivet 35 and a pin 30 is a depending plate 31 by bearings in which is carried the swinging member H. This swinging member is preferably made of stiff wire and is bent to form a swinging arm 40 from which it extends through bearing holes in plate 31 and out therefrom toward the front in substantially the shape of a scythe as shown in Fig. 1. The end 41 of arm 40 may extend downward so as to barely enter a slot 54 transverse of lay beam B or it may be entirely above the lay beam.

I prefer to attach a guard plate 11 to lay beam B adjoining the end of reed C to prevent the end 41 of arm 40 from swinging and being caught behind the reed. The other end of swinging arm 40 is bent at an angle to form a short arm 42 and preferably into a hook for a purpose to be described.

The stop motion lever or weft hammer 51 of the usual construction extends upward between the sides 20 and 21 of frame F and may be provided with a latch 50 as shown in Figs. 1 and 2. This stop motion lever moves back and forth at every other pick in a well known manner between the sides 20 and 21 of frame F.

The pin 30 is extended through sides 20 and 21 to form a pivot for the catch 24.

This catch 24 normally by its own weight would be down and would engage the nose of latch 50 if it were not raised or held up by some means. By a well known construction, if latch 50 engages catch 24 as the stop motion lever 51 advances it carries frame F with it and as frame F is connected with the loom stopping devices or with the bobbin or shuttle changing devices, either the loom is stopped or the bobbin or shuttle is changed. The wire of one leg 26 of catch 24 is looped around pivot pin 30 and of the other leg 27 is looped around pivot pin 30 and then extended outward to form a bent arm 28 the end of which engages the short arm or hook 42 of swinging arm 40. Thereby, when swinging arm 40 is pulled sidewise as shown in Fig. 5, short arm 42 acting on arm 28 lifts catch 24 clear of latch 50 in which case they do not engage as latch 50 passes. It is also clear that if catch 24 is raised or lowered swinging arm 40 will be correspondingly swung through the medium of short arm 42 and bent arm 28.

The operation of my device is as follows:—When the shuttle is thrown across the loom along the race of lay beam B at a point between the position shown by the full lines and the dotted lines in Fig. 1, the filling is carried across and considerably beyond the position of swinging arm 40. As the lay beam approaches the breast beam toward the position shown by the full lines, the filling is beaten up by the reed until it strikes the outer curve of swinging arm 40. As the motion continues, it is carried along and downward toward the end 41 until it slips over that end and reaches the position shown at 60 in Fig. 1 and Fig. 2. As the lay beam returns to the position shown by the dotted lines, the filling 60 is caught on the inside of swinging arm 40 and when the shuttle is thrown back across the loom, the filling yarn is looped about arm 40 as shown in Fig. 4. As the shuttle continues its motion, it carries arm 40 from the position shown in Fig. 3 to that shown in Fig. 5 when the filling slips off. In the meantime however it has so moved arm 40 that it has lifted catch 24 so that latch 50 has cleared it as it passes. Stop motion lever 51 is so timed, and catch 24 is so arranged that it is lifted just before it would be caught by latch 50 if not lifted. After the filling runs out or a break occurs, catch 24 is not lifted but remains in the path of latch 50 whereat on the return stroke of stop motion lever 51, catch 24 and latch 50 being engaged move frame F forward as described, thereby stopping the loom or changing the bobbin or shuttle.

In the ordinary type of stop motion, if any loose filling, a hanging end or even lint gets between the fork and rack, the loom will not be stopped even although the filling runs out or breaks. With my device, unless the filling is endless that is, unless it is not only attached to the bobbin but to the cloth, there will not be sufficient tension to move my swinging arm and consequently the loom will stop or the bobbin or shuttle will be changed. As the filling is ordinarily under tension and is continually sweeping downward along my swinging arm, it is continually clearing that arm of any lint or loose ends. Moreover in order to operate my device, as stated above, both ends of the filling must be attached. A loose end flying from the bobbin would not ordinarily slide over the end 41 of arm 40 and if it did do so, it would merely slip around arm 40 on the return throw of the shuttle, but would not move arm 40. Besides this, the filling of my device will not be kinked between the tines of the fork as happens in the old style device.

As in some kinds of work, the filling may not readily slip under the end 41 of arm 40 as the lay moves forward, I may use a positive sweeping device such as shown in Fig. 6. This device comprises a strip of metal which has three arms 70, 71 and 72 which extend substantially radially in three different directions. Arm 72 is pivoted at 73 to the side 21 of frame F. Arm 70 extends over adjoining swinging arm 76 of the swinging member and arm 71 extends downward into the path of a block 74 attached to lay beam B. By examining Fig. 6, it will be seen that as lay beam B advances toward breast beam A, block 74 engages arm 71 and thereby forces downward arm 70 along swinging arm 76 thus sweeping the filling positively downward until it clears the end of arm 76. This action being positive there can be no chance of the filling not slipping over the end of arm 76. A spring 75 returns this sweeping device to its original position as the lay beam recedes. In this construction, arm 76 may be substantially straight as shown in Fig. 6, as the filling is swept positively off the end instead of merely sliding off from a curved surface. With this construction, if the filling catches on the shuttle or on the bobbin, the sweeping device will either force it over arm 76 or break it. A modification of this positive sweeping device is shown in Fig. 7 wherein the sweep arm 80 is pivoted at the junction of arms 81 and 82 and is held in position by its own weight. Ordinarily its own weight will sweep the filling down off the end of the swinging arm but if there is any extra tension on the filling, it will hold up arm 80 and in such case the filling will not go over the end of arm 40, no loop will be formed and the loom will be stopped or the bobbin or shuttle will be changed. This will occur when, as sometimes happens, the

filling yarn is caught in the shuttle and broken leaving a long end which catches in the warp after being broken and is being pulled through by the shuttle. This happens sometimes on loose woven cloth wherein the filling is tough. The filling practically never breaks unless it is caught in the bobbin or in the shuttle, and if that happens it is desirable that the loom should be stopped or the bobbin or shuttle changed so as to get rid of the cause of the stoppage.

In Fig. 8 and Fig. 9, I show a simple construction wherein the swinging arm 90 is supported by bearings in a plate 91 attached to the side of frame F and considerably longer than plate 31 shown in Fig. 1. Swinging arm 90 extends forward horizontally at 92 through bearings in plate 91 and terminates in a short arm 93 which is bent in a double bend to extend up and over the top of frame F into the path of the stop motion lever 55. It is evident that with this construction when swinging arm 90 is pulled aside, it lifts short arm 93 so as to clear the end of stop motion lever 55. Preferably plate 91 carries prongs 95, 96 to limit the movement of short arm 93.

In Figs. 6, 7, 8 and 9, I show a construction wherein latch 50 is dispensed with. In the construction shown therein, the upper end of stop motion lever 55 terminates in a shoulder or corner which engages directly with the catch operated by the swinging arm. This catch as shown in Figs. 6 and 7 at 56 may be of the old construction with a hooked end instead of with a loop.

The details of the catch mechanism and connections between the swinging member and the stop motion lever or other devices for stopping the loom or changing the shuttle or bobbin are of no particular importance as there are many ways by which the connection can be made.

It is well known that the action of the stop motion lever is adjustable by means of its cam and that it can be so timed and adjusted as to move toward the lay beam at the instant desired and then out to its original position where it normally remains almost stationary. It is apparent that if the stop motion lever is timed by means of its cam so that the catch will drop on top thereof, after the swinging arm has been swung to one side sufficiently to clear the filling, the catch will remain thereon until the stop motion lever moves again toward the lay beam. Therefore, it may not be necessary to use an outer curved surface or to use a positive sweeping device to get the filling inside of the swinging arm. When so adjusted and the stop motion lever starts to move toward the lay beam, the catch will fall before it or before latch 50 and, unless lifted by the looped filling as the shuttle is thrown across, it will be caught by the return stroke of the stop motion lever and the loom will be stopped or the bobbin will be changed. On the other hand, if the catch is so lifted, it will clear the stop motion lever or latch 50 and will fall on top thereof when the stop motion lever has returned to its normal position.

What I claim as my invention and desire to cover by Letters Patent, is:

1. In a loom having a lay beam which carries a reed, a breast beam, and a stop motion lever, the combination of a frame slidable transversely on the breast beam and in operative relation with the stop motion lever, with a swinging arm carried by said frame at a point between the position of the filling after it is beaten up by the reed and its position while being carried by the shuttle along the lay beam and adapted to swing laterally to a point higher than the path of the filling, and catch mechanism in operative relation with the stop motion lever and operative by the swinging arm.

2. In a loom having a lay beam which carries a reed, a breast beam, and a stop motion lever, the combination of a frame slidable transversely on the breast beam, and a laterally movable arm carried by the frame at a point between the position of the filling after it is beaten up by the reed and its position while being carried across the loom by the shuttle and adapted to catch a loop of the filling without moving itself, and mechanism operative by said arm which engages or disengages with the stop motion lever.

3. In a loom having a lay beam which carries a reed, a breast beam, and a stop motion lever, the combination of a frame slidable transversely on the breast beam and in operative relation with the stop motion lever, with a swinging arm adapted to swing laterally and having an outer curved surface adjoining the lay beam and carried by said frame at a point between the position of the filling after it is beaten up by the reed and its position while being carried across the loom by the shuttle, and catch mechanism in operative relation with the stop motion lever and operative by the swinging arm.

4. In a loom having a lay beam which carries a reed, a breast beam, and a stop motion lever, the combination of a frame slidable transversely on the breast beam and in operative relation with the stop motion lever, with a swinging arm, carried by said frame at a point between the position of the filling after it is beaten up by the reed and its position while being carried along the lay beam by the shuttle, a positive sweeping device pivoted to the frame and having one arm which adjoins the swinging

arm and another arm which extends into the path of the lay beam, a returning spring for the sweeping device, and catch mechanism in operative relation with the stop motion lever and operative by the swinging arm.

5. In a loom having a lay beam which carries a reed, a breast beam, and stopping mechanism, the combination of a swinging member adapted to swing laterally and so supported outside the reed as to be at a point between the position of the filling after it is beaten up by the reed and its position while being carried by the shuttle across the loom and so arranged that as it is being beaten up by the reed the filling will pass behind the swinging member without it being moved vertically, and mechanism in operative relation with the stopping mechanism and operative by the swinging member.

6. In a loom having a lay beam which carries a reed, a breast beam, and stopping mechanism, the combination of a swinging member adapted to swing laterally and so supported outside the reed as to be at a point between the position of the filling after it is beaten up by the reed and its position while being carried by the shuttle across the loom and so arranged that the filling will be carried downward under the end thereof as it is being beaten up by the reed, and mechanism in operative relation with the stopping mechanism and operative by the swinging member.

7. In a loom having a lay beam which carries a reed, a breast beam, and stopping mechanism, the combination of a member adapted to move laterally and so supported as to be at a point between the position of the filling after it is beaten up by the reed and its position while being carried by the shuttle across the loom said member being adapted to catch a loop of the filling without moving itself, and mechanism in operative relation with the stopping mechanism and operative by said laterally movable member.

8. In a loom having a lay beam which carries a reed, a breast beam, and stopping mechanism, the combination of a swinging member adapted to swing laterally and so supported from the breast beam as to be outside the end of the reed at a point between the position of the filling after it is beaten up by the reed and its position while being carried by the shuttle across the loom and so arranged that the filling as it is being beaten up by the reed will be carried downward along the outside around or under the end thereof, and so that on the return of the shuttle the looped filling will swing the swinging member laterally and release itself allowing the filling to continue to the edge of the cloth, and release mechanism so connected with the stopping mechanism and with the swinging member that the stopping mechanism will be inoperative whenever the swinging member is swung laterally by the filling.

9. In a loom having a lay beam which carries a reed, a breast beam, and a frame slidable transversely on the breast beam, the combination of a swinging member having a swinging arm adapted to swing laterally out of and into a point between the position of the filling after it is beaten up by the reed and its position while being carried by the shuttle along the lay beam and having a catch member in operative relation with the stop motion lever and operative with the swinging arm, with a stop motion lever so adjustable that the catch member may normally rest on top thereof.

In testimony whereof I hereto affix my signature in presence of two witnesses.

ISAAC SNOW.

Witnesses:
GARDNER W. PEARSON,
HELEN F. LOESCHNER.