March 15, 1960 M. R. FLAMAND 2,928,427

FILLING CARRIER FOR SHUTTLELESS LOOMS

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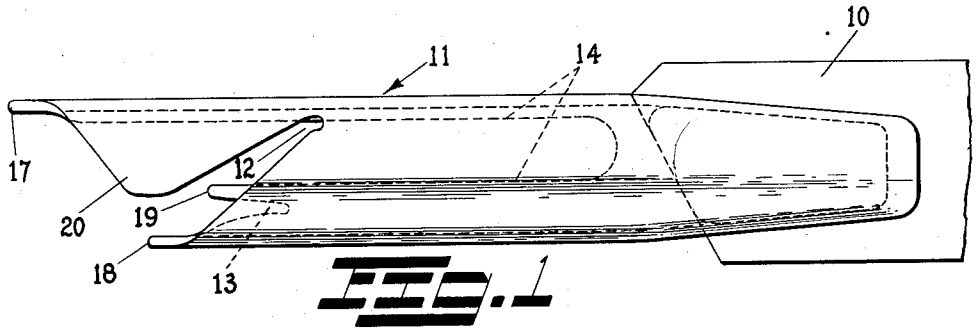


FIG. 1

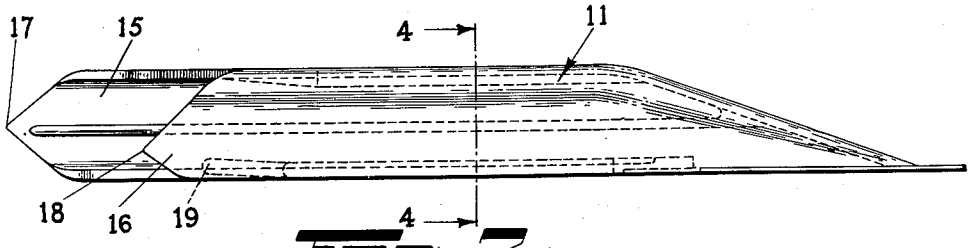


FIG. 2

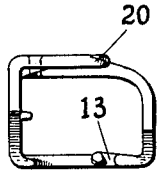


FIG. 3

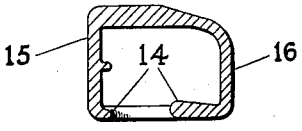


FIG. 4

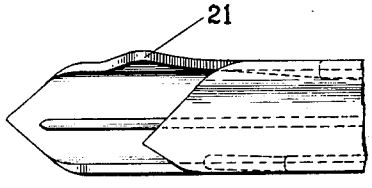


FIG. 5

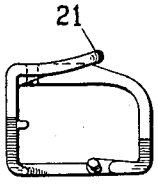


FIG. 6

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FILLING CARRIER FOR SHUTTLELESS LOOMS

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4 Claims. (Cl. 139—123)

This invention pertains to improvements in filling carriers for use in shuttleless looms, that is, looms of a type in which the filling is supplied from a source outside of the shuttle or filling inserting means itself.

It is a general object of the invention to improve the construction and operation of filling carriers of the type described such that when a filling carrier inadvertently penetrates the warp threads forming the upper shed, it can do so and return without breaking or tearing any of the warp threads.

It is a further object of the invention to devise a filling inserting carrier of such construction that upon penetration by the carrier of the threads forming the upper shed, such threads are caused to be deflected either completely above or completely below the carrier without being caught between the sides thereof so as not to tear or break any of said threads. The loom can be set on a two-try basis so that although it misses a pick, it will continue to run. Of course, if high quality fabric is desired then the loom should be set to stop whenever a pick is missed.

Other objects will be apparent from the disclosure which follows.

In so-called shuttleless looms, that is, those looms in which filling is supplied from an outside source and is not carried to and fro through the shed by the shuttle or carrier itself, it is customary to insert each pick of filling by two reciprocating elements, one of which may hereinafter be referred to as an inserter or inserting member and the other of which receives or has transferred to it that loop of filling projected into the shed by the first member and which may hereinafter be referred to as a filling receiving or filling extending carrier. This latter member is normally provided with a hooked element by which the filling is seized and trapped and through which or past which the filling may move endwise so that the action of the carrier to which the said inserted loop is transferred is one of merely drawing through or extending an end which will have been severed to the precise length to complete the pick. It is customary to provide some sort of tensioning means functioning in cooperation with the hooked member on such filling extending carriers and it is the inserting member with which the instant invention is concerned.

In such looms it sometimes happens that, due to a sudden increase in tension applied to the filling thread during its initial introduction into the shed by the inserting carrier or for other reasons, the latter is caused to deflect upwardly and to inadvertently penetrate the warp threads forming the upper portion of the shed at the same time breaking hundreds of these threads. The warp stop motion shuts off the loom and much time is lost in connecting the broken ends of the threads.

According to the invention inserting carriers of the prior art, such as those in United States Patents 2,586,638 and 2,705,508, have been modified so as to permit free passage of the carrier, should it be deflected upwardly, between the warp threads in the upper shed without breaking any of the threads. Consequently, the loom can continue running without stopping. Since this deflection of the carrier occurs fairly frequently where large numbers of looms are employed, the resultant savings in time can be substantial where the device of the present invention is employed.

The invention will hereinafter be described in greater detail by reference to the accompanying figures of drawing in which:

Fig. 1 is a plan view showing the operating end of the filling inserting carrier.

Fig. 2 is a side view of the same carrier.

Fig. 3 is an end view of the carrier as seen from the left side of Fig. 2.

Fig. 4 is a sectional view looking in the direction of the arrows on line 4—4 of Fig. 2.

Fig. 5 is a side view of the end portion of a modified form of inserting carrier.

Fig. 6 in an end view of the carrier of Fig. 5 looking from the left side thereof.

Reference to U.S. Patent No. 2,705,508 will give a more complete understanding of the transfer of filling thread from the inserting member to the filling receiving carrier and the means for driving these carriers, none of which forms a part of the present invention.

In Fig. 1 there is shown at **10** a tape or carrier which is preferably used to reciprocate the thread inserting carrier indicated as a somewhat box-like structure by the numeral **11**. The top planar portion has a notch **12** and the lower portion has a notch **13** which cooperates therewith. The lower portion is cut away to an extent defined by the parallel sides **14**, this recess or cut-out portion providing for entry of a cooperating part of the filling extending carrier (not shown). The offset of the notches **12** and **13** from the true vertical is advisable since the thread is held at an incline corresponding thereto as it is picked up incidental to being inserted. Of course, it is to be understood that the filling thread is supported outside or at any convenient point at the end of the loom structure and a stretch thereof is caused to assume a proper position to be engaged by the inserter by the filling handling means not necessary of description here.

The inserter has side portions **15** and **16** that present points **17** and **18** which facilitate the entry and passage of the carrier through the open shed. The point **19** which completes one of the bounding sides of the notch **13** is caused to assume a somewhat elevated position as illustrated in Fig. 2 by bending the metal upwardly so as to avoid any possibility of this part of the inserter catching on the warp threads over which the lower surface of the carrier passes during its inserting movement.

In Figs. 1 and 3 a forwardly extending lip portion **20** forms one of the sides of the notch **12** and extends across the major portion of the top surface in the direction of the side portion **16**.

In operation, as the inserting carrier is entering the shed and should it be deflected upwardly due to an increase in tension being applied to the filling thread or for any other reason, threads in the upper portion of the warp will be deflected either upwardly or downwardly by the point **17**. Those deflected upwardly will then be carried along the forward edge and at an angle laterally of the extended lip **20** a sufficient distance so as to pass outwardly of the openings of the notches **12** and **13** and over the top and to the right of the carrier beyond the notch **12**. It is therefore impossible for these threads to be trapped between the side portions **15** and **16** in either of the notches of the carrier. The threads deflected downwardly will pass completely beneath the carrier. The carrier will continue to be carried to its full extent without breaking any warp threads and will then be retracted. The loom

can continue to run on a two-try basis as pointed out above and no damage will have been done.

In Figs. 5 and 6 a modified form of carrier is shown wherein the lip portion is bent upwardly as indicated at 21. This makes possible the use of a shorter lip while still retaining the advantages of the modification shown in Figs. 1 to 4.

While one embodiment and a modification of the invention have been disclosed, it is to be understood that the inventive concept may be carried out in a number of ways. This invention is, therefore, not to be limited to the precise details described, but is intended to embrace all variations and modifications thereof falling within the spirit of the invention and the scope of the claims.

I claim:

1. For a loom having reciprocable carriers by which filling from an outside source of supply is inserted within sheds formed by warp threads, a filling inserting carrier adapted to insert a loop of filling part way through a warp shed which comprises front and rear side portions, notched upper and lower portions, and means on said upper portion effective to prevent warp threads from being trapped between said side portions when said carrier inadvertently penetrates the upper shed.

2. For a loom having reciprocable carriers by which filling from an outside source of supply is inserted within sheds formed by warp threads, a filling inserting carrier adapted to insert a loop of filling part way through a warp shed which comprises front and rear side portions, notched upper and lower portions, and means defining a forwardly extending lip on said upper portion effective to prevent warp threads from being trapped between said side portions when said carrier inadvertently penetrates the upper shed.

3. For a loom having reciprocable carriers by which filling from an outside source of supply is inserted within sheds formed by warp threads, a filling inserting carrier adapted to insert a loop of filling part way through a warp shed which comprises front and rear side portions, notched upper and lower portions, and a curved, forwardly extending lip on said upper portion effective to permit free penetration by said carrier of adjacent warp threads in the upper shed without breaking any of said threads.

4. For a loom having reciprocable carriers by which filling from an outside source of supply is inserted within sheds formed by warp threads, a filling inserting carrier adapted to insert a loop of filling part way through a warp shed which comprises front and rear side portions, notched upper and lower portions, and means defining a cured upwardly deflected lip on said upper portion effective to permit free penetration by said carrier of adjacent warp threads in the upper shed without breaking any of said threads.

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