

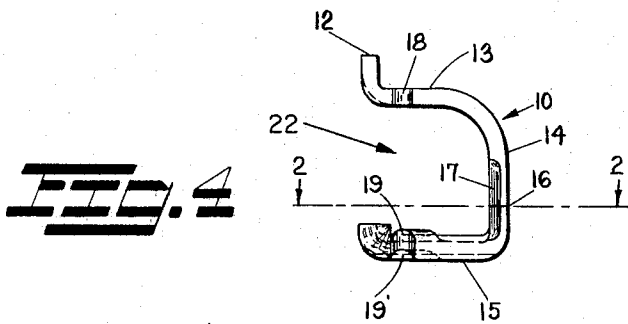
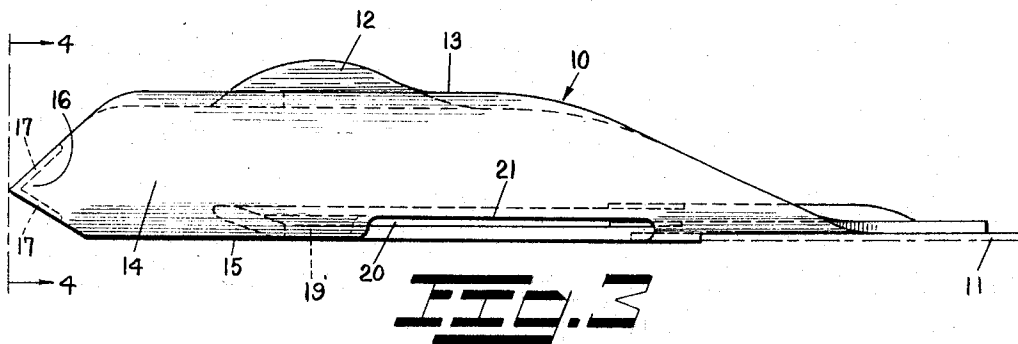
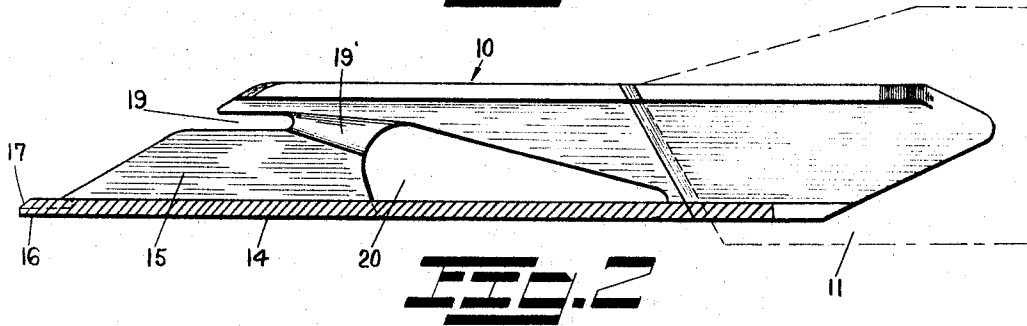
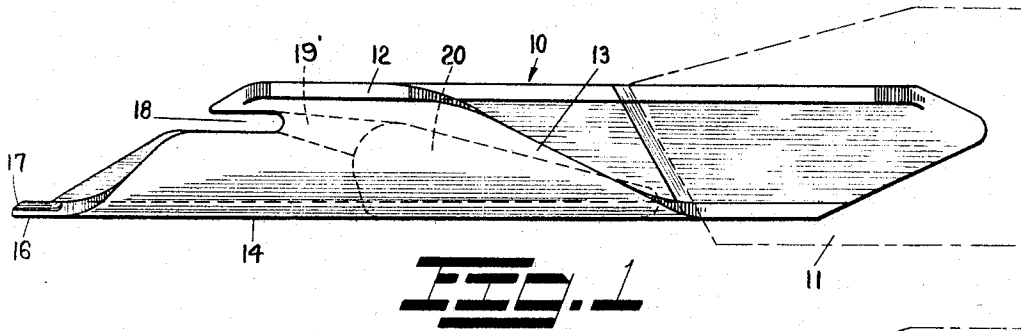
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3,299,910

FILLING INSERTING CARRIER

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3,299,910

## FILLING INSERTING CARRIER

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This invention pertains to improvements in a filling inserting carrier for looms of the shuttleless type wherein the filling yarn is supplied from a source outside of a shuttle or filling inserting means itself.

It is a general object of the invention to provide an inexpensive filling inserting carrier possessing qualities that simplify its manufacture.

A further object is that of providing a filling inserting carrier formed from continuous sheet material having improved operational characteristics.

A still further object is that of providing an inserting carrier that is formed in such a manner as to provide an increase in the range of filling pickup by its companion carrier.

A further object of the invention is to provide a filling inserting carrier the configuration of which reduces substantially the possibility of collisions or unintentional interferences with the extending carrier with which it is adapted to cooperate.

Further objects and advantages of the invention will become apparent from the following more detailed disclosure.

In shuttleless type looms where the filling yarn is furnished from an outside source and is not carried back and forth through the shed by the shuttle or carrier itself, it is common practice to insert each pick of filling by two reciprocating and cooperating elements that are introduced into the shed from opposite points on the loom. One of these elements is commonly referred to as the inserting carrier and the other which receives or has transferred to it the loop of filling projected into the shed by said inserting carrier is commonly referred to as the filling receiving or extending carrier.

Prior to the instant invention inserting carriers were usually of box-like configuration having front and rear side walls interconnected by upper and lower portions forming a structure which was more feasible to mold rather than to form or machine. One end of the carrier is attached in a known manner to the free end of a flexible tape which serves as a means for inserting and withdrawing the carrier from the sheds formed by warp threads. The opposite end of the carrier is open for the purpose of allowing its companion carrier to enter and pick up or have transferred to it that loop of filling inserted by the inserting carrier.

The close settings required by the limitations of this carrier's open end and the fact that it is formed from what is considered a costly molding process left a great deal to be desired with regards to providing a relatively inexpensive carrier and one which would require less critical timing and settings thereof with respect to the extending carrier adapted to function in cooperation therewith.

The improved filling inserting carrier according to the instant invention is formed from continuous sheet material of uniform cross section such as steel. This formed carrier includes a terminal upper vertically extending portion and in continuation thereof an upper horizontal surface, a front vertical surface, and a lower horizontal surface. The combination of the vertical and horizontal surfaces defines the complete extent thereof. This open side of the carrier provides a wider range of filling yarn pickup by the extending carrier as well as a less critical timing and setting thereof as is the case with inserting carriers of the prior art.

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The invention will be described in detail by reference to specific embodiments thereof one of which is illustrated in the accompanying figures of drawing, wherein:

FIG. 1 is a plan view of the filling inserting carrier;

FIG. 2 is a sectional view of the carrier as seen looking in the direction of the indicating arrows 2-2 in FIG. 4;

FIG. 3 is a side elevational view of the carrier shown in FIG. 1; and

FIG. 4 is an end view of the carrier as seen looking in the direction of the indicating arrows 4-4 in FIG. 3.

Now referring to the figures of drawing, the inserting carrier comprising the invention and generally indicated by numeral 10 is formed as a functionally integral member at the free end of a flexible reciprocating member or tape 11. This tape is utilized to reciprocate the thread carrying member itself which is caused to enter the shed formed by warp threads and to be withdrawn therefrom.

The inserting carrier according to the invention is actuated and caused to function in the same manner as inserting carriers of the prior art, and it is considered sufficient at this point merely to call attention to certain patents which are illustrative of the type of loom concerned. Accordingly, reference is hereby made to United States Patents Nos. 2,586,638; 2,604,123; 2,705,508; and 2,928,427.

The inserting carrier is formed of continuous sheet material and includes a terminal upper vertically extending portion 12 and in continuation thereof an upper horizontal surface 13, a front vertical surface 14, and a lower horizontal surface 15.

The leading end of the carrier is at left in FIGS. 1, 2, and 3 and its opposite end is shown as having the flexible tape 11 fixedly attached thereto.

The front side wall or front vertical surface 14 has a V-shaped leading edge 16 (FIG. 3) the upper portion of which extends angularly upward away from said leading edge to blend into the upper horizontal surface 13. The lower portion of this leading edge 16 extends angularly downwardly away from the leading edge and blends into the lower horizontal surface 15. This leading edge 16 is chamfered as at 17 and serves to provide clearance for the trapping and tensioning member of the extending carrier in the event of misalignment or unintentional interference between the two cooperating carriers.

The upper and lower horizontal surfaces 13 and 15 are provided adjacent their rearward edges with vertically aligned notches for guiding the loop of filling thread as the latter is inserted into the sheds. The notch in the upper horizontal surface is depicted by numeral 18 and that in the lower surface by numeral 19 (FIGS. 1, 2, and 4).

The terminal upper vertically extending portion 12 being integral with the upper horizontal surface 13 extends upwardly from and along a portion of the length of said surface. This terminal portion is in the form of an arcuated rib and serves to deflect the upper warp threads away from the thread notch 18 as well as a filling protecting means which prevents pinching thereof by a closing shed of that part of said filling which trails along the upper surface of the carrier.

That portion of the filling thread loop which trails along the under portion or lower surface 15 of the carrier is also provided with a filling thread protecting and guiding means and includes a recess 19' and a cooperating open area 20. Recess 19' extends obliquely from the throat portion of notch 19 and terminates at the forward end of the open area 20 which forms a part of the central lower horizontal surface 15 and extends in a manner to form a part of the front vertical surface 14 as at 21 in FIG. 3.

The combination of the terminal portion 12, the upper and lower horizontal surfaces 13 and 15, and the front

vertical surface 14 form a carrier which features an open back that is generally indicated in FIG. 4 by numeral 22 and which extends along the complete extent of said carrier.

In operation, the inserting carrier introduces a length of filling thread, which passes vertically between the upper and lower notches 18 and 19, to a point approximately midway within the warp shed where it meets and transfers said filling to the filling extending carrier. The carriers then reverse their direction of travel and the filling is drawn through the remainder of the shed by the extending carrier to complete a given pick.

It is at this filling transfer point within the shed that the improvements and novel features of the instant invention are considered to be particularly advantageous, for in comparison to carriers of the prior art the open back which extends the complete extent of the carrier provides a substantial increase in clearance for the cooperating or extending carrier. This additional clearance provides a wider range of filling thread pickup by the extending carrier as well as for less critical settings and timing of these two cooperating carriers. Additionally, the open back feature of the instant carriers lends itself to a relatively inexpensive manufacturing process of cold forming, whereby said carriers may be fabricated from sheet material. Also, the provision of the recess 19' in combination with the open area 20 assures that the portion of filling yarn which passes along the lower part of the carrier will not be broken due to a shed closing upon the carrier. The upper portion 12 performs a similar function with respect to the portion of filling yarn which passes along the upper face of the carrier.

Further, the particular configuration of the carrier being claimed as novel herein permits its manufacture from flat sheet material by punch and die means rather than from the more expensive molding processes.

While one embodiment of the invention has 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. A filling inserting carrier for shuttleless looms, said carrier being formed of continuous flat sheet material of uniform cross section and comprising a terminal upper vertically extending portion, in continuation thereof an upper horizontal surface, a horizontal lower surface disposed in spaced and vertical alignment with said upper surface with a front vertical surface formed integral with and interconnecting both said upper and lower horizontal surfaces whereby a carrier structure is defined having an open rear side that extends along the complete extent thereof.

2. The structure according to claim 1 wherein said upper and lower horizontal surfaces include vertically aligned and longitudinally extending notches for guiding a filling thread as it is inserted by said carrier.

3. The structure according to claim 2 wherein said notch in said lower horizontal surface includes in continuation thereof an obliquely extending recess terminating in a formed open area forming a part of the latter surface and said front vertical surface.

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