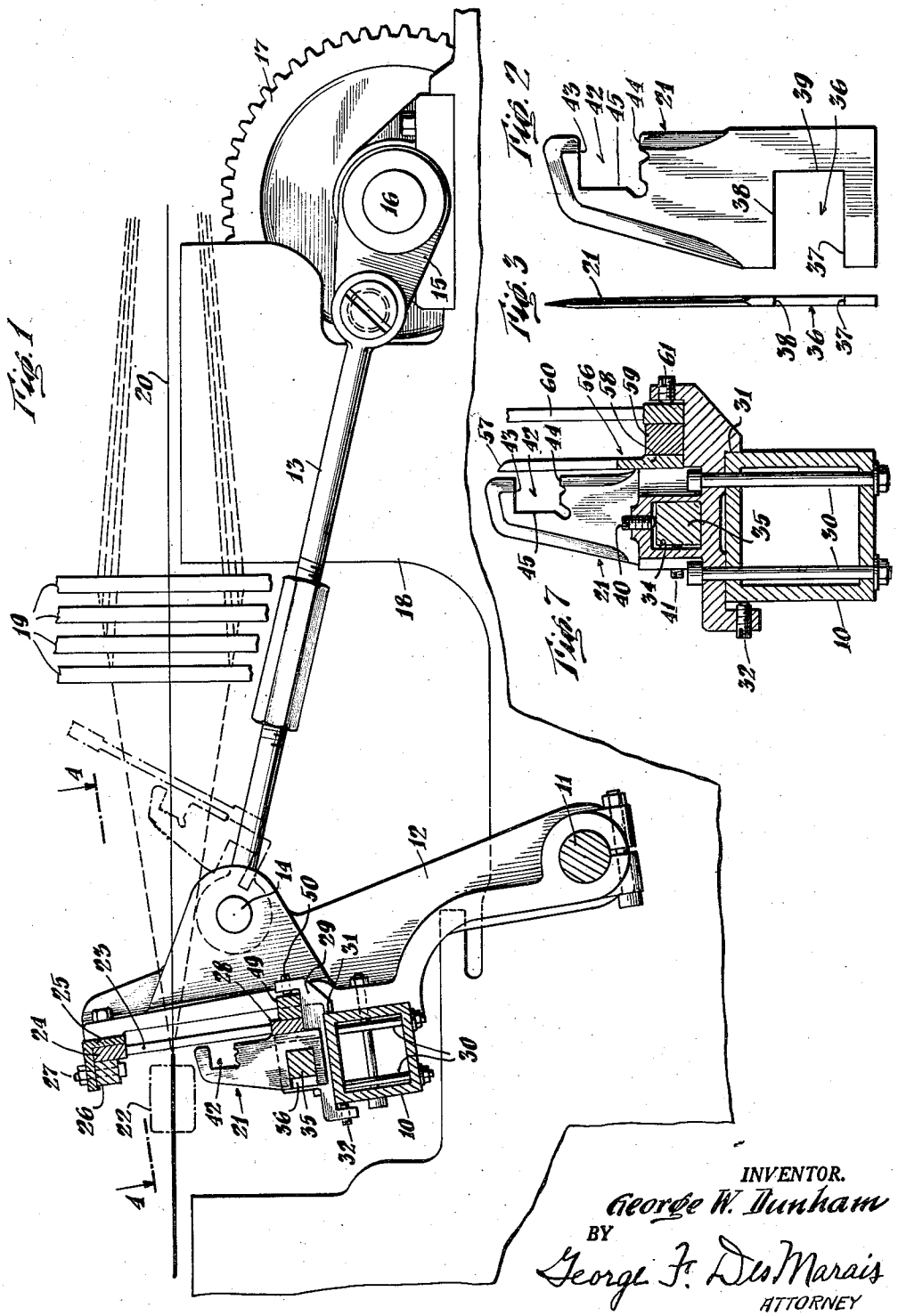
May 6, 1958 G. W. DUNHAM 2,833,315

LAY AND PILOT GUIDE MEANS

Filed Aug. 31, 1954 2 Sheets-Sheet 1



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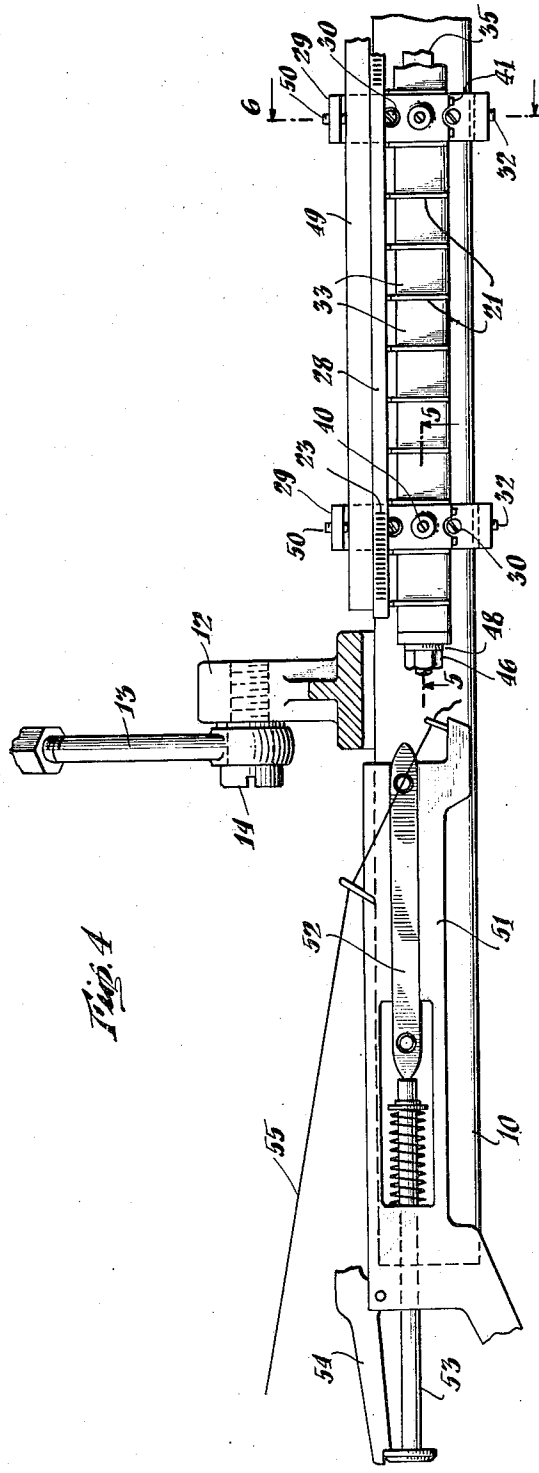


Fig. 4

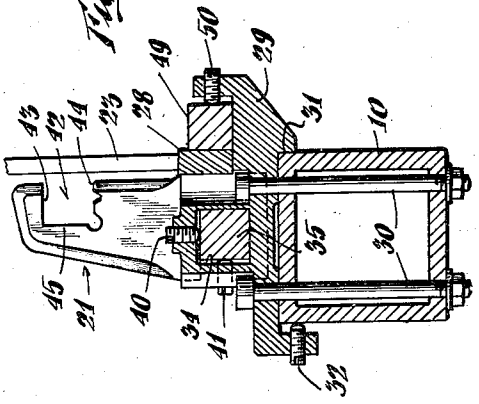


Fig. 6

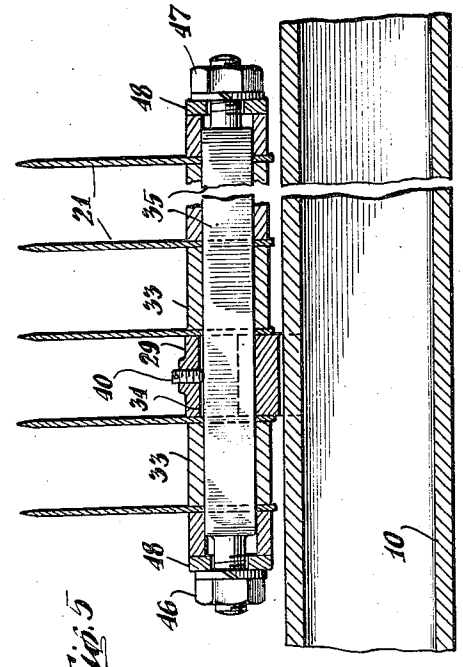


Fig. 5

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LAY AND PILOT GUIDE MEANS

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2 Claims. (Cl. 139—188)

This invention relates to looms and more particularly to a lay and means for guiding a pilot or shuttle along the lay.

Especially in high speed looms it is important that the pilot or other filling thread carrying device be guided along a confining channel or raceway which is true, and it is among the objects of the present invention to provide a loom structure wherein the raceway for a pilot or other device for carrying a filling thread is reciprocated between a back position and a position below the fell of a woven fabric and in which the raceway includes a plurality of plate-like guides having aligned polygonal notches closed towards the front of the loom and a reed opposite the openings of said notches whereby the edges of the notches and the reed together provide a tunnel-like structure for restraining a pilot from deviating laterally from its guided path of flight lengthwise of a lay.

Another object is to provide an assemblage of guides, each having aligned notches for guiding a pilot, mounted in a manner which enables the edges of the pilot guiding notches to be qualified in line to a high degree of accuracy.

Another object of the invention is to provide a structure which facilitates the removal or replacement of any one or another of individual plate-like guides without disturbing others.

The individual guides are stamped or otherwise cut from sheet material with notches in their back edges for providing a raceway for a pilot and slots in their front edges which are machined to fit and firmly engage upper, lower and back surfaces of a bar which is detachably mountable on a lay. The bar with the guides removably mounted thereon is fastened to the lay in such a position as to have the openings of the raceway notches facing a reed or a comb which provides a rear track for the pilot and together with the guides completes a tunnel-like raceway.

The guides are spaced from one another by tubular members whose ends are square to the axis of the bar and engage the parallel flat side surfaces of the guides. The slots in the guides are engaged with the bar in tight fitting relationship and the assembly of guides and spacers is squeezed tightly together to provide a rigid structure in the form that it is utilized in the loom. In this condition all of the pilot-guiding edges of the notches can be finished in absolute alignment. In the event any of the edges of a notch is not in alignment with the same edge of another it can be shaved or the faulty guide can be replaced simply by relieving the sidewise pressure on the guide and withdrawing the guide laterally from the bar. After all of the notches have been finished to size with their guiding edges in alignment the bar and the assembled guides are clamped to the lay.

The principle of the invention will be easily understood from a more detailed description of an embodiment thereof which is intended to serve as an illustration of its application.

In the drawing:

Fig. 1 is a cross-section of a lay as viewed from the right side of a loom;

Fig. 2 is an enlarged view of a plate-like pilot guide;

Fig. 3 is a front edge elevation of the pilot guide;

Fig. 4 is a top view of the lay shown in Fig. 1;

Fig. 5 is a longitudinal section on line 5—5 of Fig. 4;

Fig. 6 is a cross-section on line 6—6 of Fig. 4; and

Fig. 7 is a cross-section of a lay carrying a comb.

Referring to Fig. 1, the lay **10** is fastened to a pair of swords which are mounted on a pivot shaft **11**. Each sword **12** is actuated from a connecting rod **13**, pivotally connected at its front end to the sword by a pin **14** and pivotally connected at its rear end to a crank **15** on the crank shaft **16**. Power is derived through a gear **17** on the shaft **16**. The bearings for the shafts are carried by the usual side frames, one of which is designated **18** in Fig. 1.

As the lay is reciprocated backwardly and forwardly the warp harnesses **19** move upwardly and downwardly in timed relationship to the movement of the lay to manipulate the various warps **20** to open and close the sheds in the usual manner. The travel of the lay is between the position shown in Fig. 1 with the pilot guides **21** below the fell of the cloth and the temples **22** and the back position shown in broken lines. As the lay moves forwardly a threaded filling thread slips between the guides **21** and the reed **23** and is beat up by the reed.

The upper edge **24** of the reed **23** lies against a rail **25** extending between and bolted to the swords and is held in place by a clamping bar **26** which is removably fastened by bolts **27** to the rail **25**. The lower edge **28** of the reed rests on several brackets **29** which are mounted on the lay **10** and held in place by a number of bolts **30** which pass through the lay. The brackets are also positioned by the shoulders **31** and set screws **32**. Any suitable fastening means which will facilitate the dismounting of the brackets from the lay may be employed. The brackets are preferably of the same width as the individual spacers **33** so as to serve as spacers for the several guides **21**.

Each bracket has an opening **34** for accommodating a bar **35** on which the guides and spacers are mounted. The cross-section of the bar **35** preferably has sides so disposed as to permit the sliding of the guides laterally onto the bar in one direction and the engagement of the edges of the notches **36** of the guides. While bars of other shapes may be used it is preferred to use a rectangular cross-section as this form of bar provides three extensive surfaces for engaging the edges **37**, **38** and **39** of the guides. The bar is securely held in the brackets **29** by the set screws **40** and **41**.

Each guide is formed from a flat plate-like stock of a durable material, such as sheet steel, and from which it can be stamped by a master die. The parallel flat sides are tapered to rounded edges to avoid interference with the warps. The notches **36** and **42** are positioned and dimensioned, respectively, to engage the bar **35** and to provide guiding edges for a pilot **52**. For a pilot, rectangular in cross-section, the upper and lower edges **43** and **44** are parallel and normal to the plane of the reed **24** and the intermediate edge **45** is perpendicular to the upper and lower edges. All of the notches are cut to as close the required dimensions as is possible.

As illustrated, the spacers **33** are tubular members of equal length with ends square to their axis so as to assure that the flat and parallel-sided guides will stand erect and parallel to one another.

In assembling, the spacers **33** and the brackets **29** are slipped over the bar **35** and the guides **21** are slipped edgewise onto the bar **35** with the edge of the notches

36 snugly contacting the three surfaces of the bar. The nuts 46 and 47 at the ends of the bar are then tightened against their respective washers 48 which bear upon the assembled string of spacers and guides and so clamp them together longitudinally of the bar. As this is being done the set screws 41, 41 are gradually tightened. The slots or notches 42 are then in alignment and, as assembled, the edges of the notches can be ground or otherwise finished to assure that all of the similar edges of the several notches are disposed in a common plane. Since the notches are rectangular this can be easily accomplished with precision.

The bar 35 is then clamped in operative position on the lay by fastening the brackets 29 to the lay with the bolts 30. The lower edge 28 of the reed is then placed in contact with the back edges of the guides and is firmly pressed against the guides by a clamping bar 49 and the set screws 50. Any individual guide can easily be replaced simply by removing the clamping bar and reed and by letting up on the tension in the bar 35.

In the loom illustrated the pilot is caught and projected from a box 51 mounted on each end of the lay. The pilot 52 is projected by a spring-actuated plunger 53 upon the release of a sear or trigger 54 which is actuated in timed relation to the movement of the lay. The pilot picks up and carries a filling thread 55 through the tunnel-like raceway provided by the aligned guides and in part by the front edges of the reed, or by a comb if the loom is provided with such a construction.

As a guide at the side of the pilot facing the back of the loom, a comb 56, such as illustrated in Fig. 7, may be used. The comb is a flat straight member having teeth 57 extending from a lower edge 58. After the raceway provided by the guides 21 has been qualified the comb is set in place between the back edges of the guides and a spacing bar 59 which lies between the comb and the reed 60, and the assembled members are secured in place by tightening the set screws 61.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the specific description herein be deemed illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the particular showing herein to indicate the scope of this invention.

What is claimed is:

1. In a loom having a reciprocating laybeam, a reed and devices on said laybeam for projecting a pilot lengthwise of said laybeam, the combination with said laybeam of a tunnel-like raceway formed in part by said reed and in part by a plurality of similar plate-like guide members arranged in spaced relationship in a line parallel to and in front of said reed with each of said guide members

disposed at right angles to the front face of said reed and having a notch therein opening toward said reed, all of said notches in said guide members being aligned and the edges of said notches together with the front face of said reed constituting pilot-guiding surfaces defining said tunnel-like raceway, said edges of said notches being so disposed as to prevent a pilot projected through the raceway from deflecting away from the plane of the dents of said reed in any direction laterally to said raceway; means rigidly maintaining said guide members aligned and in spaced relationship, said means comprising a bar extending parallel to said line of guide members and engaging an opening in each of said members, spacing elements mounted on said bar between said guide members, and nuts engaging threaded ends of said bar and pressing said guide members and said spacing elements together; and means for detachably mounting said bar and assembled guide members and spacing elements on said laybeam whereby said assembled guide members, spacing elements and bar is removable from said laybeam as a unit.

2. A loom lay assembly comprising a laybeam, a reed frame, said reed frame having upper and lower rails connected by dents, a plurality of brackets removably mounted on said laybeam and engaging the lower rail of said reed frame, a bar extending through openings in said brackets and having angularly disposed side surfaces contacting corresponding surfaces on said brackets whereby the position of said bar is located on said brackets parallel to said laybeam, a series of individual plate-like members separated from one another and arranged in a line one after another along said bar with their back edges proximate the plane of the dents of said reed frame, said members having forwardly opening notches in their front edges engaging said bar, spacing elements separating individual ones of said members, means supported on said brackets and acting between said brackets and said lower rail of said reed to clamp said lower rail against the back edges of said plate-like members thereby holding said members in firm engagement with said bar, said back edges of said plate-like members having guide notches opening towards the dents of said reed frame, said guide notches and the dents of said reed frame together defining a tunnel-like raceway for containing the flight of a pilot over the front of said dents.

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