July 8, 1941. A. MOESSINGER 2,248,641

LOOM FOR WEAVING

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Fig. 1.

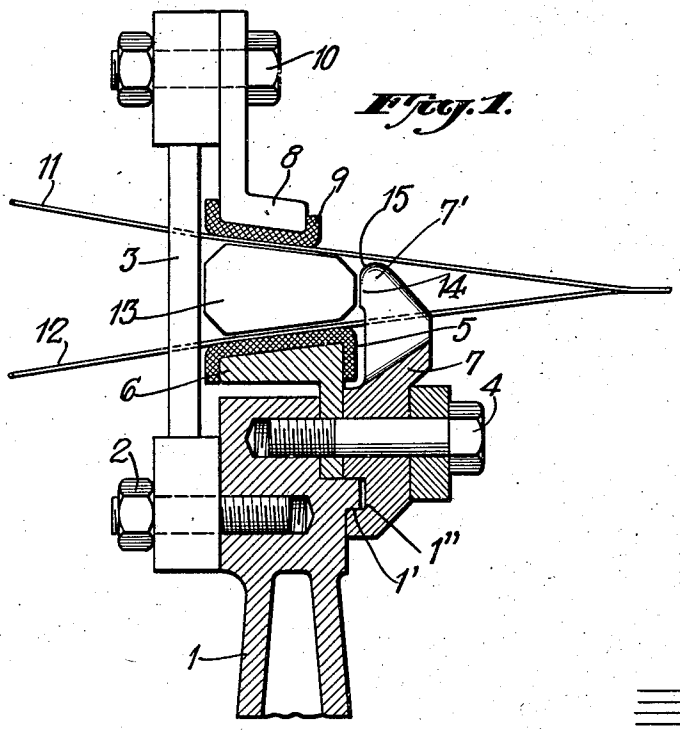


Fig. 2.

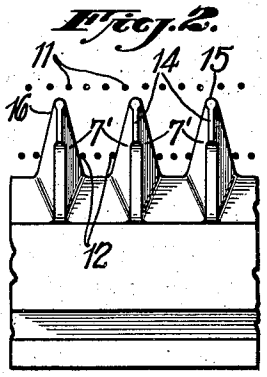


Fig. 3.

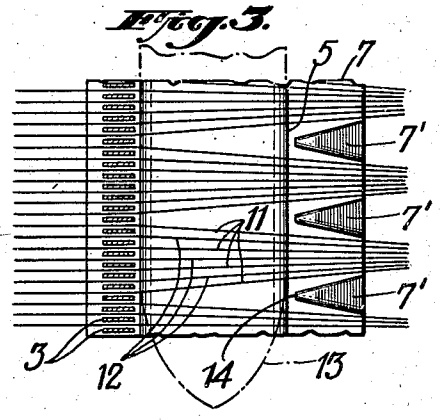
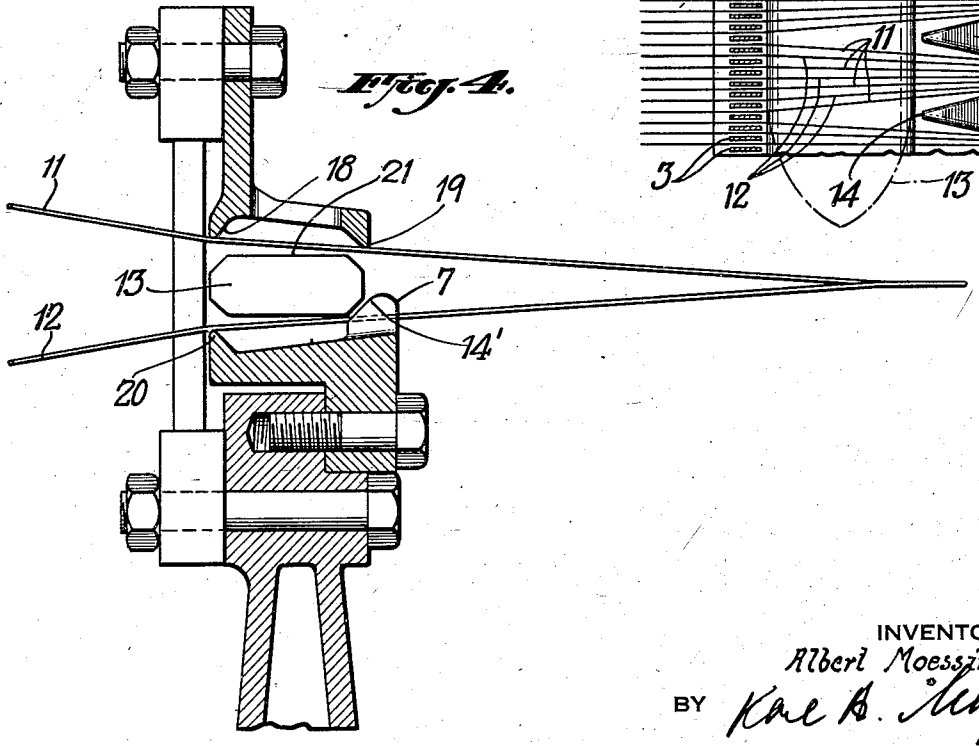


Fig. 4.



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Fig. 5.

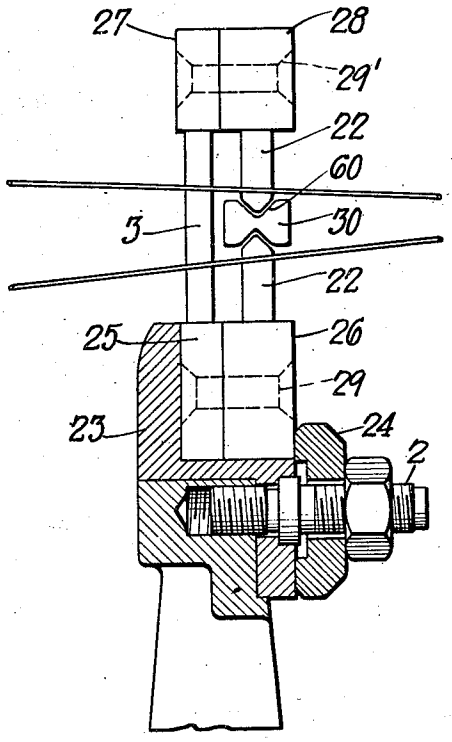


Fig. 6.

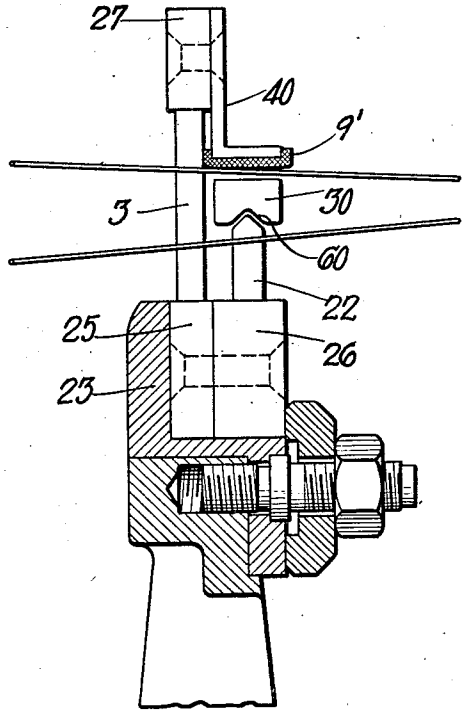


Fig. 7.

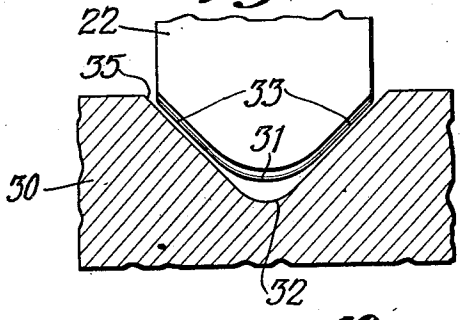


Fig. 8.

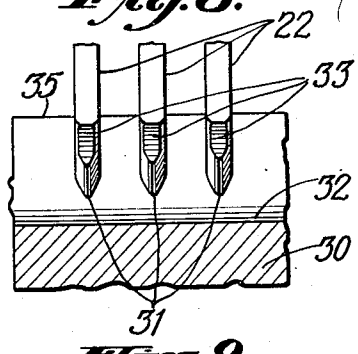


Fig. 10.

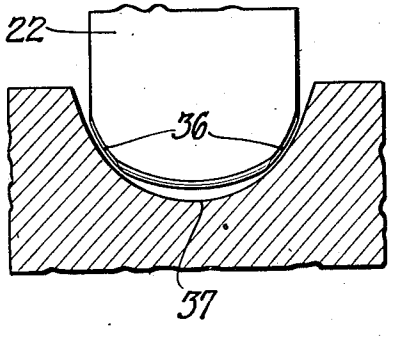
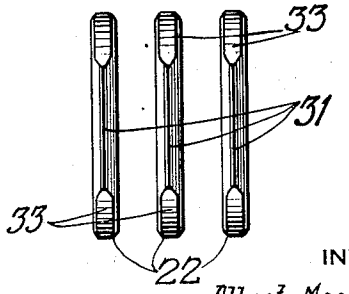


Fig. 9.



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LOOM FOR WEAVING

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Application July 20, 1938, Serial No. 220,212
In Switzerland July 31, 1937

11 Claims. (Cl. 139—188)

The present invention relates to improvements n the guides for the means for inserting the weft hreads into the shed of looms for weaving, paricularly to guides which hold the warp threads n such position that they are positively sepırated from the guide surfaces of the improved ;uides.

An object of the present invention resides in he provision in looms for weaving of shuttle ;uide elements which extend into the shed and ıave a part which is not contacted by the weft hread inserting means, i. e. the shuttle and vhich separates the warp threads so far that hey are always remote from the guide surfaces ›roper. The part of guide elements according o the present invention which first contacts the varp threads can be well rounded because of the ›articular design of the new guide elements and ıarmful friction between the elements and warp hreads is prevented.

The guide surfaces of the guide elements ac›ording to the present invention may be inclined vith respect to the direction of the reciprocatng movement of the warp threads. With guide ılements according to the present invention the ;uide surfaces of the guide elements which con›act with the shuttle can be made smaller or ıarrower than the part of the shuttle surface vhich slides along said guide surfaces so that the ;rinding of grooves by the shuttle into said guide ıurfaces which grooves have sharp edges which ıre harmful to the warp threads is not possible. The guide elements according to the present in›ention may be rigidly connected with the radile and the lay and be inserted into the shed at he return motion of the raddle. The guide elenents may be or form part of a member which s easily disconnectably mounted to the raddle. The guide elements according to the present in›ention may be directly connected with the lay ndependently of the raddle so that the raddle is ›asily removable. The guide elements accordng to this invention may be cut out of steel heets and provided with hardened points. The ;uide elements according to the present inven›ion may also be formed of elastic laminae which ıre combined in a similar manner as the dents ›orming the raddle. The guide elements accordng to the present invention may be made indiıidually and connected with the lay whereby a ›ongue and groove construction may be provided ›or assuring alignment.

Further and other objects of the present in›ention will be hereinafter set forth in the ac›ompanying specification and shown in the lrawings which, by way of illustration, show vhat I now consider to be a preferred embodinent of my invention.

In the drawings:

Figure 1 is a part sectional side view of a guide construction according to the present invention whereby the shuttle is guided in a horizontal plane between the raddle and the guide element or teeth according to the present invention.

Figure 2 is a rear view of the guide element used in the construction shown in Fig. 1.

Figure 3 is a top view of the guide element shown in Figs. 1 and 2 and horizontal sectional view of the raddle showing also the warp threads.

Figure 4 is a part sectional side view of a modified guide construction according to the present invention.

Figure 5 is a part sectional side view of another modification of guide construction according to the present invention.

Figure 6 is a part sectional side view of a modification of the guide construction shown in Fig. 5.

Figure 7 is an enlarged part sectional view of the guiding part of the guide element used in the modifications according to Figs. 5 and 6.

Figure 8 is a front view of the elements used in the modifications according to Figs. 5 and 6.

Figure 9 is a top view of the elements used in the modifications according to Figures 5 and 6.

Figure 10 is an enlarged part sectional view of a modified guiding part of the guide element used in the modifications according to Figures 5 and 6.

Like parts are designated by like numerals in all figures of the drawings.

1 designates the lay to which, in the modification of the present invention according to Figures 1 to 3, the raddle 3 is connected by means of the bolts 2. Bolts 4 hold the guide rails 6 the guide surface of which is covered by felt 5 and the guide element 7 having teeth 7' to the lay 1. A tongue 1' is provided on the lay which cooperates with groove 1'' in element or member 7. An upper guide rail 8 covered by means of felt 9 is held to the upper part of the raddle by means of bolts 10. When the shed formed by the warp threads is opened the warp threads 11 and 12 are moved upwards and downwards respectively and pressed to the felts 9 and 5 respectively. The shuttle 13 is picked between threads 11 and 12, the raddle 3 and the teeth 7'.

Figures 2 and 3 show the tooth part of element 7. The small rectangular surface 14 forms the guide surface of the teeth 7' along which surface the shuttle 13 slides when picked through the shed. According to the present invention the configuration of tooth members 7' is so that the warp threads 11, 12 are spread apart so far by that part of member 7' which is not contacted by the shuttle that they are always definitely separated from the guiding surface 14. The warp threads moving towards member 7 are spread apart by means of the upper spherical nose part 15 of the tooth members 7'. The con-

figuration of teeth 7' also assures that the actual guide surface 14 is always completely within the outer contour 16 of the teeth.

Fig. 3 particularly shows how far the warp threads 11, 12 are separated from the guide surfaces 14 so that contact of the threads with the guide surfaces which may be harmful to the threads is positively prevented. The point of the shuttle 13 moving through the shed is shown by means of a dash and dot line. Surface 14, furthermore, is thoroughly polished so that the thread cannot be caught by said surface. Even if surface 14 is worn and shows a groove which is ground in by the shuttles or has a sharp edge it can do no harm to the warp threads.

Fig. 4 shows a construction which is similar to the one shown in Figs. 1 to 3, the glide or guide surface 14' however being inclined. The felt covered rails 6 and 8 of the construction according to Fig. 1 are replaced by means of rails 18, 19 and 20 which are made of a hard material, for example, steel, wood, fibre. These rails are of such configuration that they form a sort of trough and jumping of the shuttle out of the shed is not possible. In order to prevent tearing of the warp threads 11, 12 the shuttle body has such configuration that its surface 21 which is in contact with the warp threads is smaller than the distance between rails 18 and 19. A knocking of the warp threads between two hard surfaces 21 and 18, 19 is thereby prevented.

In the embodiment of the present invention shown in Fig. 1 the slide surface 14 is substantially perpendicular with respect to the warp threads whereas in the construction shown in Fig. 4 the surface 14' is inclined. Outside of the part which is adjacent to the shuttle surface the slide or guide surfaces may have any configuration.

In the embodiment of the present invention according to Fig. 5 the guide elements 22 are made of steel laminae. The raddle 3 is connected with the lay 23 by means of a bridge 24. To the lower part 25 of the raddle a lower guide member 26 is connected by means of bolts 29 and to the upper part 27 an upper guide member 28 is connected by means of bolts 29'. The shuttle 30 has V shaped grooves 60 which cooperate with the ends of laminae 22.

In the embodiment of the present invention according to Fig. 6 the upper laminae 22 and guide member 28 shown in Fig. 5 are replaced by a rail 40 of angular cross section which is covered with felt 9'; instead of felt, leather, rubber or other comparatively soft material may be used.

When the shuttles are made to move on a soft surface such as the felt in Figures 1 and 6 or the tensioned warp threads as in Figure 4, vibrations of the shuttles are prevented and a smoother operation of the shuttles is obtained.

In Figs. 7 to 9 the guide ends of the guide elements and the corresponding shuttle surfaces are shown in larger scale. The ends 31 of element 22 used in the constructions are per Figures 5 and 6 are so formed with respect to the guided shuttle surfaces 32 that the parts 31 which first come in contact with the warp threads can never come in contact with the shuttle surface 32. Part 31 is particularly well rounded and polished and forms a spherical nose. The other parts 33 of the guide surface of element 22 conform with the guided surface 32 of the shuttle 30. Guided surface 32 of the shuttle extends somewhat beyond the guide surface 33 of the guide element 22 so that the formation of a groove in surface 33 by means of the edge 35 of guided surface 32 of the shuttle is prevented. Such grooves must be avoided because they may catch the warp threads 11, 12 which may then be cut when the shuttle is picked through the shed.

Fig. 8 is a front view of the elements 22 with a sectional longitudinal view of part of the shuttle 30 which clearly shows the round pointed configuration of the ends 31 of elements 22 which ends always remain separated from the bottom 32 of the groove in the shuttle.

Fig. 9 is a top view of three of the elements 22 showing the guide surfaces 33 which contact the shuttle and the parts 31 with which the elements 22 first contact the warp threads.

Fig. 10 shows a modified design of the guide end of members 22 whereby the guide surfaces 36 which correspond to the surfaces 33 in Fig. 7 have a rounded configuration which corresponds to rounded configuration of the groove 37 in shuttle 30.

While it is believed that the above described embodiments of this invention are preferred embodiments, it is to be understood that it is not desired to be limited to the exact details of design and construction shown and described, for obvious modifications will occur to a person skilled in the art.

What is claimed is:

1. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means comprising a plurality of tooth members forming together a comblike element attached to said lay and slidably guiding said thread insertion means when it moves through the shed, each of said members having a substantially flat guide surface which slidingly engages a corresponding surface of said weft insertion means, and warp thread spreading surfaces flaring out from said substantially flat surfaces and in a direction which is substantially parallel to the warp threads and spreading the warp threads apart and away from said guide surface.

2. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means comprising a plurality of tooth members forming together a comb-like element attached to said lay and slidably guiding said thread insertion means when it moves through the shed, each of said members having a substantially flat guide surface which slidingly engages a corresponding surface of said weft insertion means, and warp thread spreading surfaces flaring out from said flat surface and spreading the warp threads apart and away from said guide surface, the width of said substantially flat surface being smaller than that of said tooth members.

3. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means comprising a plurality of tooth members forming together a comb-like element attached to said lay and slidably guiding said thread insertion means when it moves through the shed, each of said members having a substantially flat guide surface which slidingly engages a corresponding surface of said weft insertion means, warp thread spreading surfaces flaring out from said flat surface and spreading the warp threads apart and away from said guide surface, and a spherical nose part projecting beyond and forming a continuation of said guide surface and

first contacting the warp threads before spreading them apart.

4. In a loom for weaving, weft thread insertion means having a guide surface, a lay, guide means attached to said lay and slidably guiding said insertion means when the latter moves across the loom, said guide means comprising a plurality of tooth members, each member having a substantially flat guide surface which slidingly engages said first mentioned guide surface and the extension of which in the direction transverse to the direction of movement of the weft insertion means is smaller than the extension of the guide surface of the insertion means in said direction and the guide surface of said insertion means exceeding the guide surface of said tooth members at both ends whereby formation of grooves and projections on said tooth members caused by the grinding action of the fast moving insertion means is prevented which grooves and projections may be harmful to the threads.

5. In a loom for weaving, weft thread insertion means having a guide surface, a lay, guide means connected with said lay and slidably engaging and guiding said insertion means when the latter move across the loom, said guide means comprising individual guide elements made of sheet metal and individually having a substantially flat guide surface slidingly cooperating with said first mentioned guide surface, the extension of which last mentioned surface, in the direction transverse to the direction of movement of the weft insertion means, is smaller than the extension of the guide surface of said insertion means in said direction whereby formation of grooves and projections on said tooth members caused by the grinding action of the fast moving insertion means is prevented which grooves and projections may be harmful to the threads.

6. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means being connected with said lay and comprising a plurality of tooth-like guide elements having a substantially wedge shaped part, part of the inner part of the edge of said wedge shaped part being flattened and forming a flat guide surface which slidably engages and guides said insertion means and the outer part of said edge which first contacts the warp threads being well rounded and of substantially spherical configuration.

7. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means being connected with said lay and comprising a plurality of tooth members which are resiliently movable in the direction of movement of said insertion means, each member having a substantially flat guide surface which slidingly engages a corresponding surface of said weft insertion means, and warp thread spreading surfaces flaring out from said flat guide surfaces and spreading the warp threads apart and away from said guide surface.

8. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means being connected with said lay and comprising a plurality of tooth members of substantially the configuration of a paraboloid of revolution having two sides sliced off by cuts made parallel to the longitudinal axis of the paraboloid and to one another and having parts of the remaining rounded surface flattened distantly from the point of the paraboloid whereby guide surfaces are formed which slidingly engage corresponding surfaces of said weft insertion means, and warp thread spreading surfaces are formed by means of which the warp threads are spread apart and away from said guide surfaces.

9. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means being connected with said lay and comprising a plurality of tooth members of substantially the configuration of a paraboloid of revolution having two sides sliced off by cuts made parallel to the longitudinal axis of the paraboloid and to one another and having parts of the remaining rounded surface flattened distantly from the point of the paraboloid whereby guide surfaces are formed which slidingly engage corresponding surfaces of said weft insertion means, and warp thread spreading surfaces are formed by means of which the warp threads are spread apart and away from said guide surfaces, said tooth members being spaced apart and disposed in two rows with the tops of the paraboloids formed by the members of one row pointing towards the tops of the members of the other row and said insertion means moving in between said members.

10. A guide means for guiding the weft thread insertion means when moving through the shed in looms for weaving having a lay, said guide means being connected with said lay and comprising, in combination, a plurality of tooth-like guide elements having a substantially wedge shaped part, part of the inner part of the edge of said wedge shaped part being flattened and forming a guide surface which slidably guides said insertion means, said surface being inclined in the direction of and away from the adjacent threads, and the outer part of said wedge shaped part which first contacts the warp threads being of substantially spherical configuration.

11. In a loom for weaving weft thread insertion means having a guide surface, a lay, guide means connected with said lay and slidably guiding said insertion means when the latter move across the loom, said guide means comprising a plurality of tooth-like guide elements having a substantially wedge shaped part, part of the inner part of the edge of said wedge shaped part being flattened and forming a guide surface which slidably engages and guides said guide surface of said insertion means and the outer part of said wedge shaped part which first contacts the warp threads being of substantially spherical configuration, said guide surface being inclined in the direction of and away from the adjacent threads, the extension of said guide surface, in the direction transverse to the direction of movement of said weft insertion means being smaller than the extension of the corresponding guide surface of said insertion means in said direction and the guide surface of said insertion means exceeding the guide surface of said tooth-like elements at both ends whereby formation of grooves and projections on said tooth members caused by the grinding action of the fast moving insertion means is prevented which grooves and projections may be harmful to the thread.

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