March 11, 1924. 1,486,550

W. S. SHERMAN

STATIONARY KNIFE EDGE FOR END MATCHERS

Filed April 1, 1919

FIG. 1.

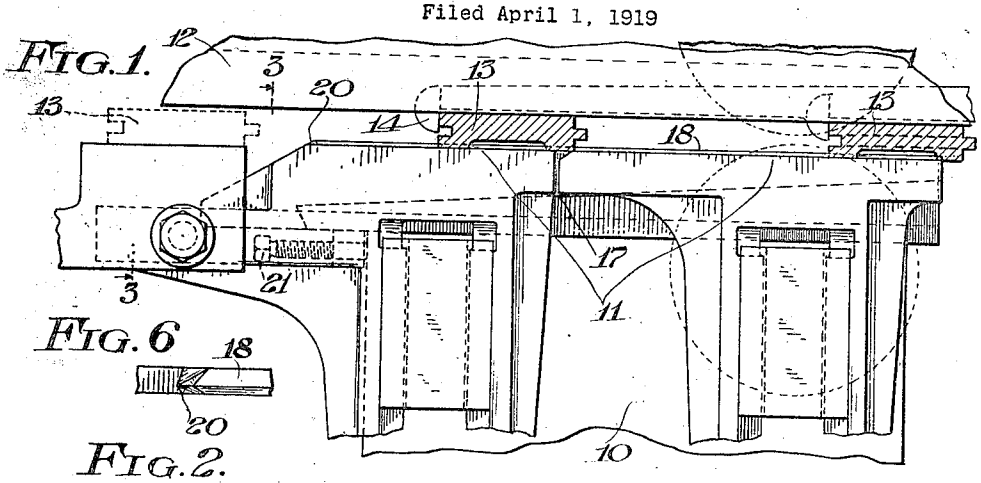


FIG. 6

FIG. 2.

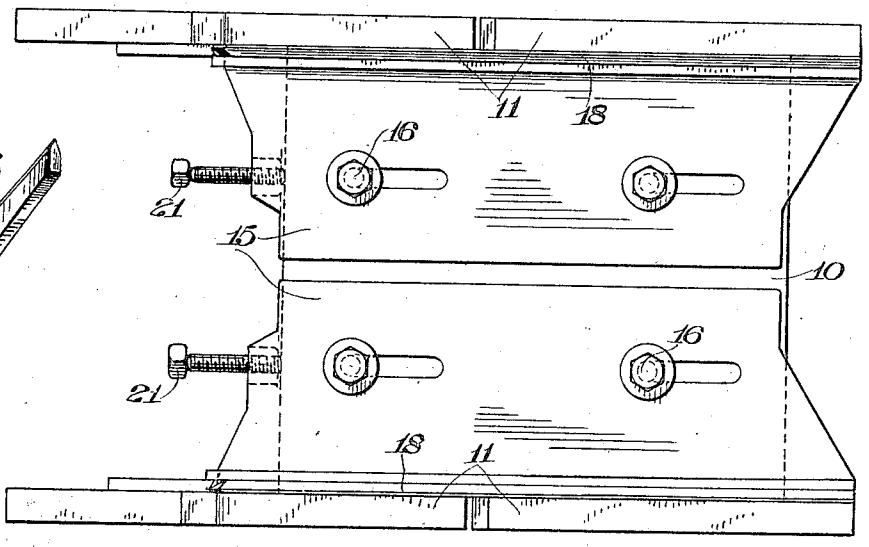


FIG. 5

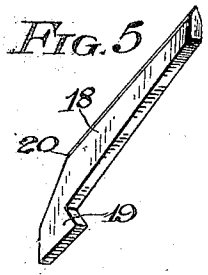


FIG. 3

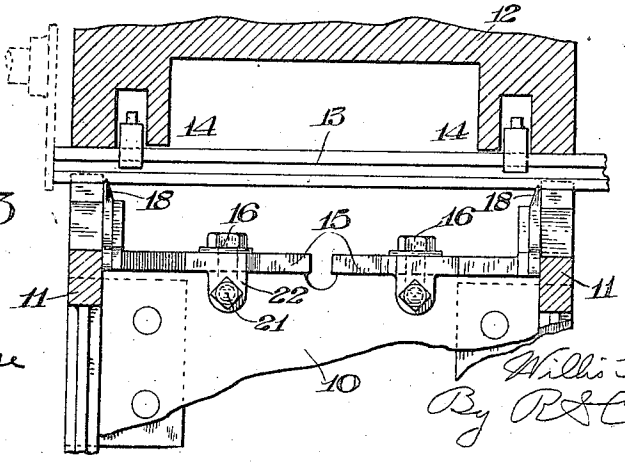
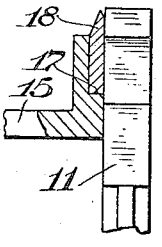


FIG. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

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STATIONARY KNIFE EDGE FOR END MATCHERS.

Application filed April 1, 1919. Serial No. 286,715.

To all whom it may concern:

Be it known that I, WILLIS S. SHERMAN, a citizen of the United States, and resident of Milwaukee, Milwaukee County, Wisconsin, have invented new and useful Improvements in Stationary Knife Edges for End Matchers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide an end matcher or the like with stationary knife edges for guiding the work in its travel past the cutters, such knife edges, by reason of their being stationary, serving to form a guide groove in the work parallel with the face which bears against the headblock.

Heretofore knife edges have been mounted on the pressure bars and consequently move with the pressure bars toward and away from the opposing headblock against which the face of the work bears in its travel through the workfeeding passageway. This arrangement, under certain conditions, causes the knife edge to score the work in a plane not parallel with the dressed face and therefore permits the cutting of a tongue or groove out of parallel with the dressed face and therefore incapable of proper matching.

To avoid this objection, the present invention makes use of a stationary knife edge co-operating with the stationary headblock to ensure the score line being formed in the bottom of the work parallel with the plane of the face of the work even though the work may have tapering faces.

With the above and other objects in view the invention consists in the stationary knife edge for end matchers as herein claimed and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views:

Fig. 1 is a side view of a portion of an end matcher showing the workfeeding passageway thereof, such end matcher being equipped with the stationary knife edge feature of the present invention;

Fig. 2 is a plan view thereof with the headblock removed;

Fig. 3 is an end view thereof with the headblock sectioned on the line 3—3 of Fig. 1;

Fig. 4 is a detail view showing one of the knife edges and its holder in section;

Fig. 5 is a perspective view of one of the knife edges removed; and,

Fig. 6 is a detail plan view of the sharpened front end of one of the knife edges.

In these drawings 10 indicates a work supporting table of an end matcher on which pressure bars 11 are mounted to have a limited vertical movement under the pressure of springs not shown. The pressure of the springs tends to force the pressure bars upwardly toward a stationary headblock 12 in order to clamp strips of flooring or other work 13 between them, though permitting said strips to be moved horizontally by work-feeding hookbars 14, or other work-feeding means, so as to be subjected to the action of end matching cutters. The faces of the pressure bars are preferably smooth instead of being provided with knife edges as heretofore, and their front ends are beveled as usual to permit them to be forced downwardly by the crowding of the work between them and the headblock.

Knife edge holders 15 are secured to the top of the work supporting table 10 by means of bolts or screws 16 with upstanding flanges along their outer edges set close to or bearing against the pressure bars 11, as shown in Fig. 4. These upstanding flanges of the knife edge holders 15 are cut away along the upper part of their outer faces to form a knife edge seat or shoulder 17, on which knife edges 18 are mounted confined between the upper portions of the flanges and the pressure bars. The upper edge of the knife bar is V-shaped in cross section and is parallel with the headblock 12, while the lower edge is preferably inclined in the direction of feed as shown by a dotted line in Fig. 1, and has a hook-like projection 19 at its lower or front end to engage a correspondingly shaped shoulder on the end of the knife edge holder 15 to resist longitudinal movement. The front ends of the V-shaped work guiding surfaces of the knife edges are beveled on opposite sides as shown in Fig. 6 to produce inclined chisel edges 20 for scoring the work as the work is drawn over them, thus producing the score marks in the bottom of the work which will serve by their continued engagement with the V-shaped guide edges to resist longitudinal displacement of the work by the action of the cutters.

In operation the work is entered in the workfeeding passageway between the head-

block and the first pressure bars, where it is engaged by the hook bars 14 and advanced therebetween. In its travel the front edge of the work rides up the inclined surface of the pressure bars until its finished face bears against the smooth surface of the headblock 12 and the work being of greater thickness than the distance between the headblock and the pressure bars, the latter are forced downwardly thereby exposing the stationary knife edges which cut the score lines in the bottom of the work by means of their inclined chisel points 20. As the knife edges and headblock are fixed or unyielding, the knife edges cut a score mark or groove in the bottom of the work of such a depth as to be parallel with the face of the work whether the work is thick or thin, and whether its top and bottom faces are parallel or tapering. This ensures the maintenance of the contact between the face of the work and the headblock for the full width of the work throughout its travel through the workfeeding passageway, and consequently the formation of the tongue or groove parallel with the face of the work.

When the knife edges become worn and require re-grinding they may be removed for the purpose, and to restore their front ends to their original positions so that their chisel points 20 lie in the same line transverse to the direction of feed, the knife edge holders 15 are adjustable. This adjustment is accomplished by means of set screws 21 threaded in downwardly projecting lugs 22 on the front ends of the knife edge holders 15 and bearing against the work table 10, the clamping bolts 16 being released during the adjustment. The position of the stationary knife edges may aid in the squaring of the work as it is drawn into clamping engagement between the pressure bars and the headblock, so that the adjustment is of considerable importance.

In order that the knife edges may be maintained at the desired elevation notwithstanding the grinding for re-sharpening them, they are given the inclined support on the shoulders 17 so that after grinding it is only necessary to slightly file the faces of the hooks 19 to permit the knife edges to ride higher up on the inclined shoulders and thereby compensate for the re-grinding and restore the V-shaped edges to their original level.

It will be understood that adjustment of either the headblock or the table may be provided for varying the spacing of the parts forming the workfeeding passageway in order to accommodate work of different sizes. With very thin or short work that does not require a great amount of pressure to hold it in position when it is being acted on by the cutters, the resistance to displacement produced by the stationary knife edges may alone be relied upon and the pressure bars dispensed with. But for heavy work, and particularly for warped or tapering work, the co-operation of the pressure bars with the knife edges is desirable.

What I claim as new and desire to secure by Letters Patent is:

1. In a woodworking machine, a workfeeding passageway forming a guide for work as it travels past a cutting tool, comprising a fixed guide surface, yielding means pressing the work against the fixed guide surface, and an opposing stationary scoring guide spaced from the guide surface a distance less than the thickness of the work to score the work.

2. In a woodworking machine, a cutter, a work clamping guide through which work may travel past the cutter so that the cut bears a definite relation to one face of the work, comprising an unyielding bearing surface on one side of the work against which said face bears, and an unyielding knife edge on the other side of the work, yielding means for pressing the said face of the work against the bearing surface, and means for forcing the work through the guide past the cutter.

3. In a woodworking machine, a workfeeding passageway for directing work in a predetermined line of travel past a cutter, so that the cut bears a definite relation to one face of the work, comprising a pair of parallel work clamping guides each consisting of an unyielding bearing surface against which said face of the work bears and opposed by a stationary knife edge, with means for pressing the work against the unyielding bearing surface.

4. In a woodworking machine, a clamping guide for directing work in a predetermined line of travel past a cutter whereby the cut will bear a definite relation to one face of the work, comprising a fixed guide surface to have said face of the work bear thereon and opposed by a stationary knife edge and a yielding pressure bar.

5. A woodworking machine, comprising a cutter, a workfeeding passageway through which work may be directed in a predetermined line of travel into the range of operation of the cutter whereby the cut will bear a definite relation to one face of the work, said workfeeding passageway consisting of a pair of parallel clamping guides each formed by a fixed guide surface against which said face of the work bears and opposed by a stationary knife edge and a yielding pressure bar, and means for forcing the work through the workfeeding passageway.

6. An end matcher, comprising a matching cutter, a stationary headblock, the plane of cut of the cutter being parallel to the

guiding surface of the stationary headblock, stationary knife edges opposed to the headblock and forming a workfeeding passageway between them, means for pressing the work against the stationary headblock, and means for forcing the work through the work feeding passageway into the range of operation of the cutter.

7. In an end matcher, a matching cutter, an unyielding headblock, said cutter having its plane of cut parallel to the guiding surface of the headblock, a knife edge having a fixed spaced relation to the headblock and forming an unvarying workfeeding passageway therebetween, a pressure bar associated with the knife edge and opposing the headblock, and means for forcing work through the workfeeding passageway and in the range of operation of the cutter.

8. In an end matching machine, a matching cutter, a fixed headblock, said cutter having its plane of cut parallel to the guiding surface of the headblock, a pair of parallel stationary knife edges opposed to and having a spaced relation therewith, pressure bars cooperating with the knife edges in opposing the headblock, and means for forcing work past the cutter between the headblock and the knife edges and pressure bars.

9. In an end matcher, a work-supporting table, a headblock fixed thereabove, yielding pressure bars mounted on the work-supporting table and cooperating with the headblock to form a workfeeding passageway therebetween, knife edge holders adjustably mounted on the work-supporting table, stationary knife edges removably mounted on the knife edge holders, means for forcing the work through the workfeeding passageway, and a cutter in the path of the work.

10. In an end matcher, a stationary headblock, a stationary knife edge opposed thereto forming a workfeeding passageway therebetween, said knife edge having a V-shaped edge parallel with the headblock and having an inclined edged point at its end for scoring a groove in the work to ride on the knife edge, means for forcing the work through the workfeeding passageway, and a matching cutter in the path of the work with its plane of cut parallel with the guiding surface of the stationary headblock.

11. In an end matcher, a stationary headblock having a guide face against which the dressed face of the work may bear, means for pressing the work against the guide face of the headblock, an unyielding score cutter spaced from the bearing face of the headblock for cutting a score mark in the bottom of the work of a depth to be parallel with the face of the work, and a knife edge parallel with the bearing face of the headblock fitting in the score mark, means for feeding the work, and a matching cutter in the path of the work with its plane of cut parallel to the guide face of the stationary headblock.

12. In an end matching machine, a matching cutter, a fixed headblock having a bearing face parallel to the plane of the cut produced by the cutter, a pair of parallel stationary knife edges opposed to and having a spaced relation therewith, means for adjusting the knife edges longitudinally, and means for forcing work past the cutter between the headblock and knife edges.

13. In an end matching machine, a matching cutter, a fixed headblock having a guide surface parallel with the plane of cut produced by the cutter, a pair of parallel stationary knife edges opposed to and having a spaced relation therewith, pressure bars cooperating with the knife edges and opposing the headblock, means for adjusting the knife edges with relation to the headblock, means for adjusting the knife edges longitudinally, and means for forcing work past the cutter between the headblock and the knife edges and the pressure bars.

14. In a wood-working machine, a workfeeding passageway, consisting of a stationary guide face and an opposite stationary knife edge, and a yielding bar for squaring the work, said knife edge serving to hold the work in its squared position.

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

WILLIS S. SHERMAN.

Witnesses:
R. S. C. CALDWELL,
H. D. CHASE.