May 8, 1945. A. H. STUART 2,375,447

SCARFING DEVICE

Filed Sept. 27, 1943 2 Sheets-Sheet 1

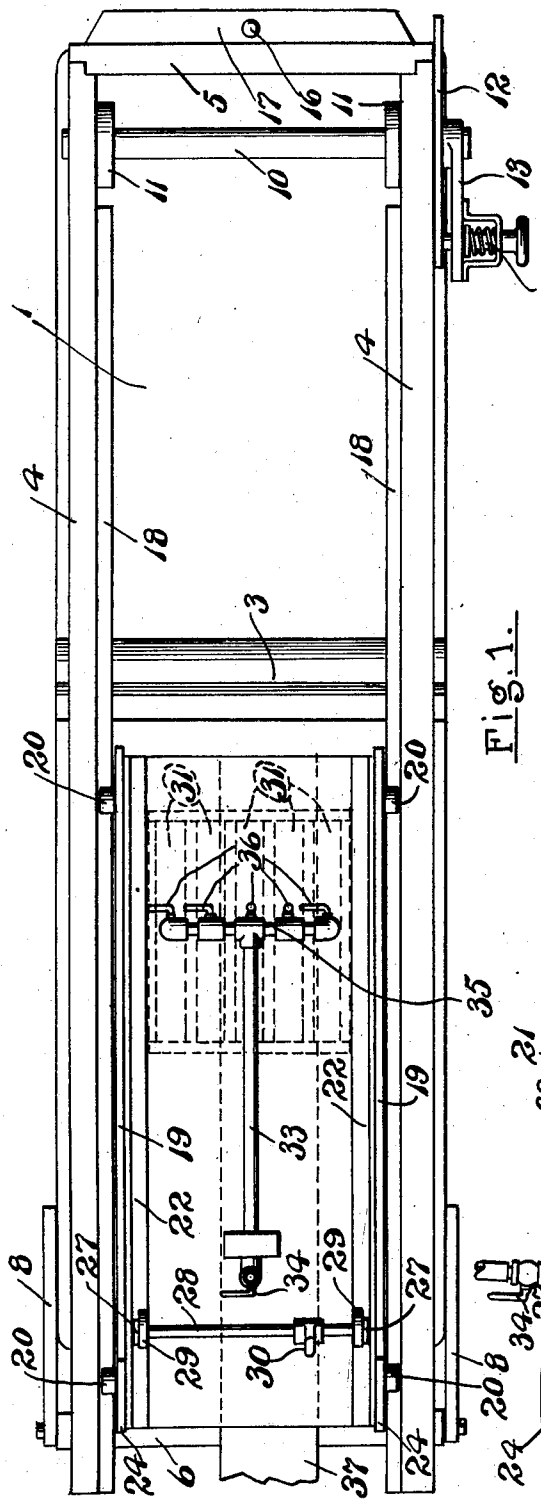


Fig. 1.

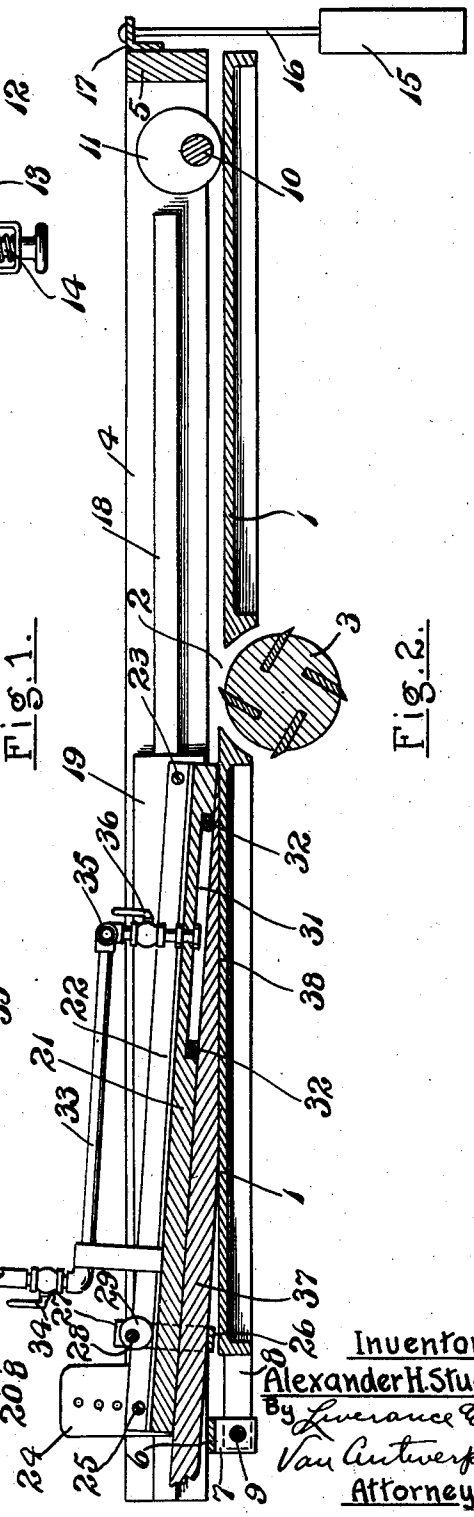


Fig. 2.

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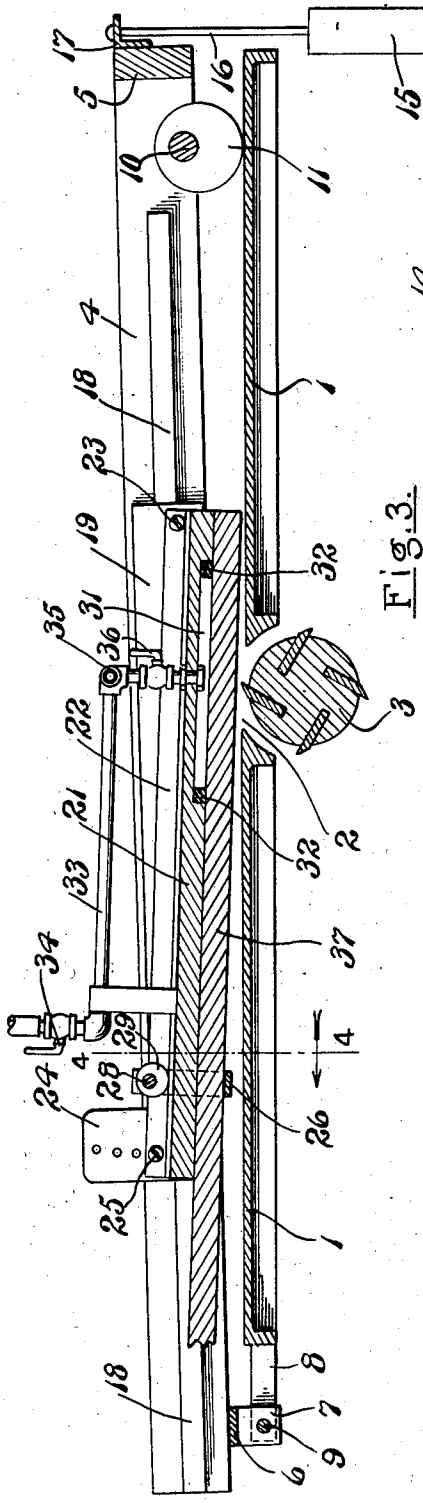


Fig. 3.

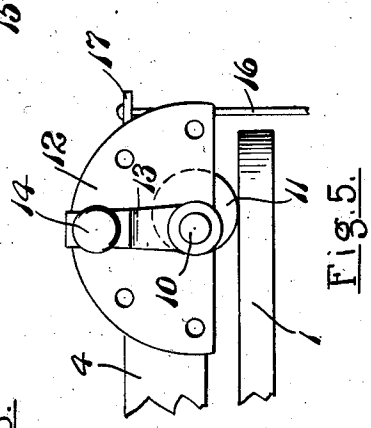


Fig. 5.

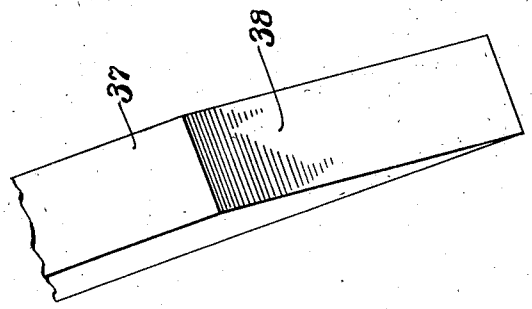


Fig. 6.

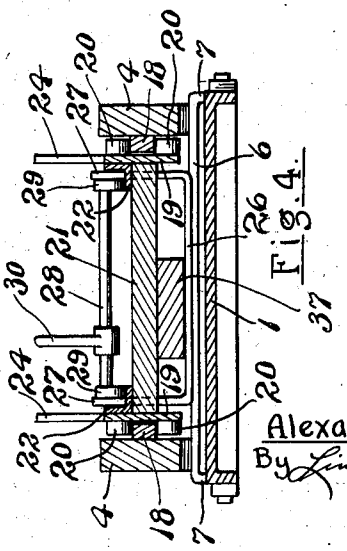


Fig. 4.

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UNITED STATES PATENT OFFICE

2,375,447

SCARFING DEVICE

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10 Claims. (Cl. 144—127)

This invention relates to a mechanism for scarfing, that is, the cutting and machining of a board or timber at one side and at one or both ends to provide a relatively long inclined jointing surface which when placed in contact with a similar surface on another board or timber permits glued joining of the two boards in alinement with each other and with their respective sides in the same planes.

Such form of joint for the glue connection of boards or the like in alinement is one which is very desirable for strength of the joint and is used many times where such strength and certainty of security of connection is desired.

The present invention is directed to a relatively simple but very practical and effective attachment which may be applied to a buzz planer and with which the scarfing is accomplished rapidly and the inclined scarfed surfaces are true and accurate as they must be for the attainment of the proper quality of joint when two of the surfaces are placed together and the alined boards glued at such surfaces. Heretofore scarfing machines for the purpose have been expensive and capable of use for the one purpose only, while with my invention a planer of the proper type may have the attachment applied thereto at relatively small expense, and a manufacturer will not be required to invest a relatively large amount in a scarfing machine which can be used for no other work. With my invention the attachment may be applied to a planer for the scarfing operations and may then be removed and the planer used for its regular work.

The invention which I have made may be understood from the following description taken in connection with the accompanying drawings, in which,

Fig. 1 is a plan view of the scarfing device of my invention.

Fig. 2 is a longitudinal vertical section therethrough showing the scarfing device located over the bed of a planer and illustrating the position of the parts at the completion of the scarfing cut on a board or the like.

Fig. 3 is a view similar to Fig. 2 showing the position of the parts before the board or the like has been operated upon.

Fig. 4 is a transverse vertical section substantially on the plane 4—4 of Fig. 3 looking in the direction indicated by the arrow.

Fig. 5 is an enlarged side elevation of the means used for adjusting the device between successive scarfing cuts on the work, and

Fig. 6 is a fragmentary perspective view illustrative of the scarf surface and its location with respect to sides of the member on which it is produced.

Like reference characters refer to like parts in the different figures of the drawings.

The horizontal table 1 with a space 2 between sections of the table at which the rotating planing cutter 3 is located are parts of a buzz planer which are shown to indicate the environment in which my invention is used. The scarfing device of my invention is mounted upon and lies over the upper side of said table and cutter.

In the construction of the scarfing device a frame having spaced parallel sides 4 connected at one end by a cross member is located over the table 1. At the opposite end of the frame a metal stirrup 6 with downwardly extending ears 7 at the ends thereof extends between and is connected to said side members 4 of the frame. Supporting bars 8 are bolted or otherwise secured one at each side of the planer table 1 extending therebeyond at one end and serving as supports for the pivotal mounting of the frame, a rod 9 passing through the free end portions of the supporting bars 8 and the ears 7 of the stirrup. It will be apparent from the construction described that the frame may be turned about the axis of the rod 9 so as to be tilted at its opposite end greater or less distances above the table 1 of the planer.

Adjacent the bar 5 a horizontal shaft 10 extends between and passes through the side bars 4 of the frame on which spaced disks 11 are eccentrically mounted, one preferably adjacent each of the bars 4. A rotation of the shaft 10 will change the position of the frame described with respect to the table from its extreme lower position shown in Fig. 2 to its extreme upper position shown in Fig. 3, passing through intermediate positions when adjusted from the position in Fig. 2 to that in Fig. 3, or vice versa.

The turning of the shaft 10 is manually accomplished. At one end of the shaft a plate 12 of substantially circular form is secured at the outer side of the adjacent bar 4 (Fig. 5). An operating handle 13 is secured to the adjacent end of the shaft 10 and carries a spring actuated pin and knob indicated at 14, the pin being normally forced inward by the spring to engage against the outer side of the plate 12 and to be received in any one of a plurality of openings in said plate, shown in Fig. 5, when in conjunction therewith. For example in Fig. 5 five of the openings are shown and indicated whereby by withdrawing the spring actuated pin from an opening the shaft may be turned and may be moved a

step to the next adjacent opening or to any of the openings which will receive the pin.

The eccentrically mounted disks 11 are held with pressure against the upper side of the table 1 by a weight 15 suspended by the rod 16 from an angle bar 17 fastened at the outer side of the bar 5 of the frame (Figs. 2 and 3). The weight stabilizes the frame and obviates undue vibration and chattering when the cutter is operating upon the work.

At the inner side of each of the frame bars 4 guides in the form of tracks 18, one for each bar 4, are permanently secured. A carriage is mounted on and extends between said guide tracks. The carriage includes two spaced side plates 19 lying in vertical planes one inside of each of the tracks 18 and having rollers 20 thereon to ride upon the upper and lower sides of said tracks. Between the side plates 19 a horizontal base 21 is located at the upper side and at each side edge of which an angle bar 22 is permanently secured. Said angle bars, at what may be termed their forward ends, are connected by suitable fastenings, shown at 23, to the plates 19. At the opposite ends the plates 19 are extended upwardly to provide vertical extensions 24 each having a plurality of spaced openings therethrough and removable fastenings 25 are used to connect the bars 22 by said fastenings passing through selected openings in the parts 24. It is evident that the angle of the base 21 to the horizontal may be varied and adjusted depending upon which of the openings in the parts 24 are selected to receive the removable fastening devices 25.

Adjacent the rear end of the carriage a stirrup having a lower horizontal bar section 26 with upturned ends 27 one at each end thereof is mounted, the parts 27 passing upwardly through suitable openings in the base 21 and the horizontal legs of the angle bars 22. A rock shaft 28 is mounted on and extends between the upper ends of the parts 27, on which shaft spaced disks or rollers 29 are eccentrically mounted and bear upon the upper sides of the horizontal legs of the angle bars 22. The shaft 28 may be rocked manually by a handle 30 connected therewith to thereby raise and lower the horizontal section 26 of the stirrup for clamping a board between it and the under side of the base 21 of the carriage.

The base 21 adjacent its front end at its under side is provided with a plurality of longitudinal pockets 31 at the sides of which are rubber strips or bars 32 each of the pockets 31 being surrounded by a frame of rubber. A pipe 33 to be connected with an air suction apparatus at its rear end is supplied with a control valve 34, and at its opposite end over the pockets 31 with a header 35 which has a plurality of branches one leading to each of the pockets 31 and each controlled by a manually operated valve 36.

The board 37 of wood to be processed is passed over the bar 26 of the stirrup and positioned with its forward end substantially flush with the forward end of the base 21. The board, which may be of varied widths within the range of width of the base 21 between the sides 19 of the carriage, is clamped in place by rocking the shaft 28 to elevate the stirrup as in Figs. 2 and 3, it being understood that the stirrup will have been lowered while the board is being inserted in place. The board at its front end portion will cover one or more of the pockets 31. Those pockets which it does cover, as indicated in dotted outline in Fig. 1, will have the valves at 36 opened to provide communication between the pockets and the pipe 33 but the other valves are kept closed. Then upon opening the valve 34 and operating the air suction means connected therewith air is drawn from the pockets covered by the board 37, and the board pressed tightly by air pressure from beneath against the rubber members 32 of the pockets covered.

Initially the board will be held in the position shown in Fig. 3 with the eccentrically mounted disks 11 operated so as to lift the free end of the frame to its uppermost position. The carriage which carries the board is moved back and forth upon the track guides 18 and because of the inclination of the board 37 to the horizontal, a part of the board will be cut away at its under side during such reciprocatory movements. Between reciprocations shaft 10 is turned or rocked moving the holding pin 14 from one of the holes in the plate 12 to the next adjacent and thereafter to the others in succession. At the final lowermost position of the carriage (as in Fig. 2) the scarfing cut will be completed and an inclined surface, as at 38, provided at the under side of the board and at the inner end portion thereof. A release of the suction pockets at 31 is provided by opening the valve at 34 and by rocking the shaft 28 to lower the holding stirrup and the board or other member upon which the scarfing operation has been performed is removed, a succeeding board put in place and the operations repeated. It is to be understood that with variation of the widths of boards operated upon varying numbers of the valves at 36 may be opened in accordance with the number of pockets which are covered at their under sides by the board which is to be processed.

This scarfing attachment adapted to be readily applied to a suitable planer is of a relatively simple and inexpensive construction. The only things which have to be added to the planer are the side supporting bars 8 which pivotally carry the main frame of the attachment at one end thereof. The scarfing attachment is a complete unit and may be applied to a planing machine or taken away therefrom as such. In practice with the machine as disclosed two men operate it, one handling the board and its clamping and feeding and the other turning the shaft at 10. Of course by a simple means connected with the shaft 10 and extending to the machine operator who handles the work he alone may effectively operate the machine, dispensing with one of the men used.

The invention has proved very practical and useful and with it true and accurate scarfing is rapidly and effectively accomplished and at a minimum of cost for processing machinery for such purpose.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a construction of the class described, a planer having a rotating cutter rotatable about a horizontal axis located between opposite sides of the table and adapted to process work passed thereover, an open frame located over the table, means for pivotally connecting the frame at one end to said table adjacent a side thereof, manually controlled means carried by said frame adjacent its opposite end for raising and lowering said opposite end of the frame to different distances with respect to the table and thereby

tilt the frame about its pivotal mounting, a carriage mounted on and extending between opposite sides of said frame for reciprocatory movements in the direction of the length of the frame and over said cutter, a base on said carriage, means for pivotally mounting said base adjacent one end on said carriage, means for connecting said base at its opposite end to said carriage at different vertical positions whereby the angle of the base with respect to the carriage may be changed, and means for releasably clamping a board or similar article to the under side of the base, for the purposes described.

2. In combination, a planer table having a horizontal upper side and having a cutter rotatable about a horizontal axis between opposite sides thereof for processing work passed over the cutter, a frame pivotally mounted at one end on said table adjacent a side thereof, said frame extending over the table, means for supporting said frame at its free end portion on said table and for adjusting said free end portion of the frame in a plurality of steps to different positions above the table, thereby tilting the frame about its pivotal mounting, guide bars, one at the inner side of each side of the frame, a carriage having sides mounted for longitudinal movement back and forth lengthwise of the frame on said guide bars and a base between said sides, means for pivotally connecting said base to said sides of the carriage at its inner end, means for adjustably tilting the outer end of the base to different positions, and releasable clamping means for clamping and holding a board or similar work to be processed against the under side of the base.

3. A scarfing attachment for application to a table of a planer comprising, an open frame having spaced parallel sides, a cross bar connecting said sides at one end and a bar connecting said sides at the opposite end, means associated with said last mentioned bar adapting the frame to be pivotally connected by said bar at one end to a planer table at a side thereof, a reciprocable carriage mounted on and located between the sides of the frame, said carriage including spaced side members and a generally horizontal base disposed and lying between said side members, means for pivotally connecting said base at its inner end to the side members of the carriage, means for adjusting the base at its outer end vertically to different positions to thereby change the angle of the lower side of the base with respect to a planer table over which it may be located, means for clamping a board or similar work to be processed at the under side of said base, and means mounted on said frame adjacent the end thereof opposite its end adapted to be pivotally connected to the planer table for supporting said frame on a planer table and to adjust it to different positions vertically with respect to said table.

4. In a construction of the class described, an open rectangular frame having spaced side bars, a cross bar connecting said sides of the frame at one end, a bar located underneath the side bars and connecting them at their opposite ends, said flat bar having downturned ears adapted to receive a pivot rod for pivotal mounting of the frame at said end thereof, horizontal guide bars at the inner sides of the side bars of the frame, a carriage having spaced side bars with rollers thereon to traverse said guide bars, said side bars at their outer ends having vertical extensions with vertically spaced openings therethrough, a base located between said carriage side bars, means for pivotally connecting the base at its inner end to said carriage side bars, removable means adapted to be associated with said vertical extensions at any selected openings therein for securing the base at its outer end, board clamping means for releasably holding a board against the under side of the base, a horizontal shaft mounted on and extending between said side bars of the frame adjacent said frame cross bar, disks eccentrically secured to said shaft and means for manually turning the shaft and releasably holding it in a plurality of different positions.

5. A construction containing the elements in combination defined in claim 4, combined with a weight suspended from said cross bar, and said means for turning the shaft and holding it in adjusted position comprising a plate with a plurality of openings therethrough secured at the outer side of one of the side bars of the frame, a handle secured at the adjacent end of the shaft and a spring actuated pin mounted on said handle adapted to be received in any selected opening in said plate.

6. Clamping means for holding a board to be processed against the under side of a carriage reciprocable over a rotating cutter comprising, a stirrup having a horizontal bar with a vertical leg at each end passing upwardly through said carriage with the bar located below the under side of the carriage, a shaft rotatably mounted on and extending through said vertical extensions above the carriage, disks eccentrically mounted on said shaft whereby on turning the shaft said stirrup may be raised or lowered to releasably clamp a board against the under side of the carriage, and suction means at a distance from said stirrup for additionally holding the board against the base by air pressure thereagainst.

7. In combination with a horizontal planer having a body and a rotating cutter, of a frame, means for pivotally connecting said frame at one end to said body, means for moving the opposite end of said frame in a direction away from said cutter, yieldable means for moving said opposite end of the frame in a direction towards said cutter, a carriage mounted for reciprocation on said frame and over said cutter, and means for releasably clamping work to be processed on said base.

8. The elements of claim 7 in combination in which said means for releasably clamping the work includes suction means for holding the work against said carriage whereby the suction is applied to the surface of the work remote from the cutter.

9. In combination with a planer having a rotating cutter and a fixed body, of a frame, means pivotally connecting said frame at one end to said body for tilting movement of the frame with respect to the cutter, means for raising and lowering said frame adjacent its opposite end to tilt it about said pivotal connection, a carriage mounted for reciprocation over the cutter on said frame, said carriage having a base lying over the cutter and means for releasably clamping work to be processed at the under side of said base including suction means for holding the work against the under side of the base to leave the under side of the work free of obstruction for processing by said cutter upon moving thereover.

10. A horizontal divided table having a rotat-

able cutter to turn on a horizontal axis between parts of the table, a frame pivotally mounted at one end at a side of the table and extending over the table, means for supporting the frame at its opposite end on said table with means for raising and lowering said opposite end of the frame to different positions, a work holding carriage mounted for reciprocation over the cutter carried by said frame, said carriage having a base adapted to be passed back and forth over the cutter, means for adjusting the base of said carriage to different angular positions, and suction means associated with said base for clamping the inner end portion of the work table processed against the under side of the base to thereby render the cutter free of obstruction when acting upon the work.

ALEXANDER H. STUART.