A. E. FOLSOM.

PLANER BRIDGE ADJUSTING MEANS.

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1,314,514. Patented Sept. 2, 1919.

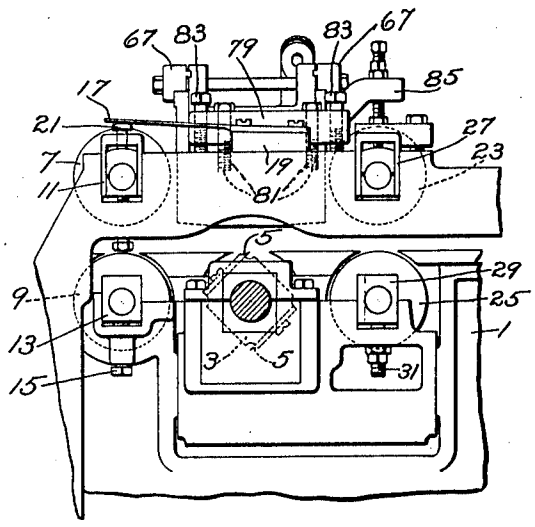



Fig 1

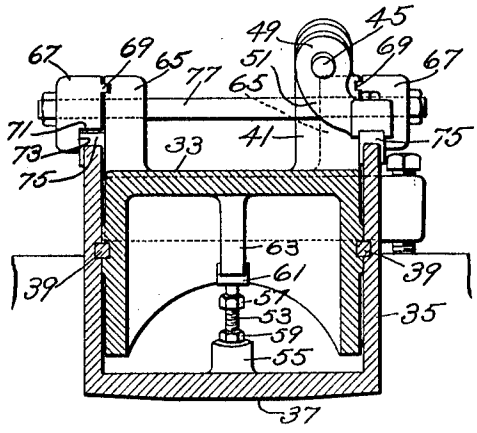



Fig 2

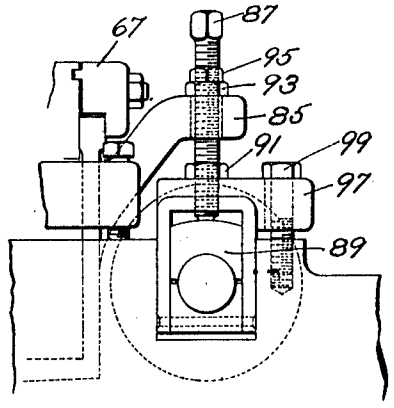



Fig 3

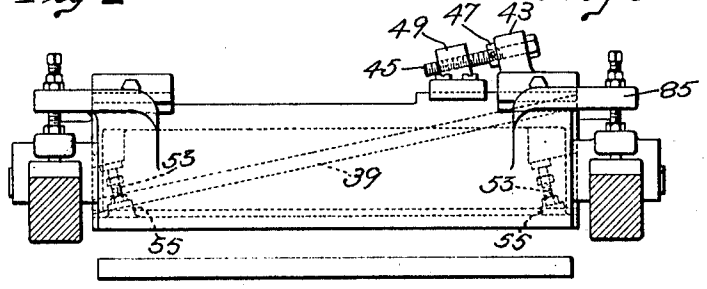



Fig 4

Inventor

Arthur E. Folsom,

by Robt. P. Wains

atty.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

ARTHUR E. FOLSOM, OF WINCHENDON, MASSACHUSETTS, ASSIGNOR TO WILLIAM M. WHITNEY, OF WINCHENDON, MASSACHUSETTS.

## PLANER-BRIDGE-ADJUSTING MEANS.

1,314,514. Specification of Letters Patent. Patented Sept. 2, 1919.

Application filed February 15, 1917. Serial No. 148,860.

*To all whom it may concern:*

Be it known that I, ARTHUR E. FOLSOM, a citizen of the United States, residing at Winchendon, in the county of Worcester and State of Massachusetts, have invented an Improvement in Planer-Bridge-Adjusting Means, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The invention to be hereinafter described relates to wood-working machines, and more particularly to planers.

In machines of this type it is usual to provide a member in opposition to the cutter to assist in holding the plank or other work to be planed to the cutter. This member must not only be adjustable relatively to the cutter to permit work of different thicknesses to be planed, but also it must be securely held in its different positions of adjustment if the work is to be planed properly.

The cutter in these machines is so rotated with respect to the work that it tends to cause an objectionable vibration or chatter of the work which prevents proper smooth planing thereof. Heretofore considerable difficulty has been experienced from this vibration. One of the objects of the invention is to provide an adjustable work positioning member which may be easily and readily adjusted to conform to work of varying thicknesses and which will prevent the objectionable vibration referred to.

In machines of this type it is usual to provide a pair of in-feed rolls and a pair of out-feed rolls at opposite sides of the rotary cutter. When the work positioning member is adjusted to conform to work of varying thicknesses the upper out-feed roll should also be adjusted to conform to the work. Another object of the invention is to provide simple and effective means for adjusting this roll with said member or independently thereof.

The above and other features of the invention will be hereinafter described in connection with the accompanying drawing showing one good practical form of the invention, and then be definitely set forth by the claims.

In the drawing:

Figure 1 is a side elevation of sufficient portions of a planer to make clear the application of the present invention thereto;

Fig. 2 on an enlarged scale, is a vertical section through the bridge and box forming parts of the work positioning member;

Fig. 3 is a side elevation, on an enlarged scale, of portions of the work positioning member and adjusting means for the upper out-feed roll; and

Fig. 4 is a vertical transverse section showing the positioning member in side elevation.

The machine shown herein as exemplifying the invention comprises a frame 1 of any desired form or character suitable for supporting the operating parts and the usual planer cutter 3 having knives 5 is journaled in bearings mounted on the machine frame. Since these parts may be as usual in this class of machines and are understood by those skilled in the art, they need no further description.

To feed the work to the cutter a pair of upper and lower in-feed rolls 7 and 9 may be provided having shafts journaled in boxes 11 and 13 carried in slots in the machine frame. The boxes 13 for the lower roll may be adjusted to different elevations by screws 15. The boxes 11 for the upper roll may be yieldingly pressed downward by spring arms 17 fast on blocks 19 mounted on opposite sides of the machine frame. The free ends of said spring arms may conveniently engage and press down upon the heads of the screws 21 which are threaded into the top of the boxes and adjustable for taking up wear in the journal receiving members of the boxes. These spring arms also serve to hold the screws in their different positions of adjustment.

To feed the work from the cutter, a pair of upper and lower out-feed rolls 23 and 25 may be provided having shafts journaled in boxes 27 and 29 movable in slots in the machine frame. The boxes for the lower feed roll may be adjustably held at different elevations by screws 31. The boxes for the upper feed roll may be adjustably held in different positions by means to be described.

Next will be described the means for positioning the work in order that stock of different thicknesses may be operated upon and cuts of different depth may be made therein without the objectionable vibration referred-to. In the present instance of the

invention, this means comprises a bridge 33 extending transversely across the machine preferably directly above the cutter and between the in-feed and out-feed rolls. Embracing the bridge is a box 35 preferably U-shape in section, presenting a bottom face 37 which may be rounded somewhat for active engagement with the work as it is fed over the cutter.

The box and bridge may be susceptible of relative adjustment to vary the distance of the box face 37 from the cutter. To accomplish this, the bridge and box may be provided with opposed grooves in which keys 39 are seated. These keys and grooves extend obliquely to the horizontal (Fig. 4), the construction being such that adjustment of the bridge and box relatively will cause the former to project nearer to or farther from the cutter according to the direction of relative adjustment.

One good form of means for producing the relative adjustment of the box and bridge comprises a bracket 41 mounted on the bridge having a boss 43 in which a screw 45 may rotate, but is confined against axial movement by engagement of the head of the screw and a collar 47 with opposite ends of said boss. The free end of the screw is threaded into a boss 49 of an arm 51 curved outward and secured to the upper edge of one of the sides of the bridge box. It will be noted that the screw extends parallel to the oblique keys, so that when the screw is rotated, the box will slide on said keys longitudinally of the bridge and vary the distance of the bottom face of the box from the cutter. The construction is such that equal adjustment of opposite ends of the bridge and box relatively is automatically assured.

To take up any lost motion between the box keys and their grooves, screws 53 (Figs. 2 and 4) may be threaded into bosses 55 rising obliquely from the bottom of the box preferably midway between the sides thereof. These screws may have nuts 57 fast thereon facilitating the turning thereof and lock nuts 59 for holding them in different positions of adjustment. The upper ends of these screws may be swiveled in heads or shoes 61 adapted to slide along a rib 63 depending from the top of the bridge and having its lower face extending parallel to the oblique keys and grooves referred-to, the construction being such that the shoes will slide along said rib as the box is adjusted longitudinally of said bridge. When the screws 53 are adjusted they react on the bridge rib and press the box downward to take up any lost motion between the keys and grooves.

Means in addition to the adjusting screw 45 may be provided for securing the box in its positions of adjustment comprising clamping members 65 (Fig. 2) rising from and fast on the bridge adjacent the opposite ends thereof. Coöperating with these members are mating members 67 having tongues 69 adapted to slide in grooves in the members 65. These members 67 have recesses 71 presenting faces 73 adapted to engage extensions 75 of the box sides. Bolts 77 project through said members and when tightened, will cause the members to clamp said extensions between them, thereby securely locking the box and bridge against relative longitudinal movement.

The box and bridge may not only be relatively adjusted, but also may be bodily adjusted as a unit to vary the elevation thereof. To accomplish this, the bridge may have wings 79 (Fig. 1) projecting from the opposite ends thereof out and overlying the sides of the machine frame. Screw-bolts 81 may be entered loosely through said wings and be threaded into the top of the machine frame, the construction being such that the wings may be elevated or lowered to vary the height of the bridge and the box carried thereby. To raise, lower and secure the wings in their positions of adjustment, holding screws 83 may be threaded therein and have lower ends abutting on and adapted to react against the tops of the ends of the machine frame so that the adjusting screws 81 for the wings will be locked against rotation.

Next will be described the means for adjusting and securing the upper out-feed roll. To accomplish this in the present instance of the invention, the opposite ends of the bridge may be provided with arms 85 (Figs. 1, 3 and 4) projecting laterally and outwardly from said bridge and carrying adjusting screws 87 projecting loosely through holes in said arms. Their lower ends are threaded in the tops of the boxes for the upper roll and bear upon the top bearing blocks 89 of the boxes and are held in different positions of adjustment by lock nuts 91.

The adjusting screws are free to move upward in their carrying arms, but downward movement therein is limited by adjusting nuts 93 on said screws secured by lock nuts 95 in different positions of adjustment. To secure the upper roll boxes against upward movement they may have side extensions 97 having holding screws 99 entered loosely therethrough and threaded in the tops of the sides of the machine frame.

By this mechanism the upper out-feed roll may be conveniently adjusted to project nearer the table than the work positioning member to compensate for the difference in thickness in the stock before and after being planed.

The adjusting screw bolts 87 are free to move upward the amount desired on release

of the holding screws 99. Then the nuts 93 and 95 may be turned down to engage the upper faces of the arms 85. Then the holding screws are tightened to secure the upper roll boxes against upward movement. This adjusting means facilitates equal adjustment of both boxes for the upper out-feed roll, since the roll may be thrust upward to the desired position and then the adjusting and holding screws may be set accordingly. This eliminates the necessity of making the adjustment through the screws and the likelihood of unequal adjustment of the screws at opposite sides of the machine.

Since the upper out-feed roll is carried by the bridge, obviously adjustment of the latter may cause similar adjustment of said roll. Also, on release of the nuts 93 and 95, the bridge may be adjusted independently of said roll. The screws 87 desirably serve the dual function of connecting the upper out-feed roll boxes with the bridge and of taking up wear in and holding the top blocks of the boxes in position.

Frequently a plank to be planed will be thicker at one edge than at the other. The construction described lends itself admirably to adjustment to meet this condition. For example, first, the plank to be planed is placed in the machine; then the bridge and box are bodily lowered until the latter rests upon the top of the plank. In this position the bridge and box are inclined transversely of the machine to conform to the difference in the thickness of the edges of the plank. The screws 81 and 83 are adjusted more at one side of the machine than at the other to allow this adjustment of the bridge, and then said screws are tightened to secure the bridge in this position. If now, it is desired to vary the pressure of the box on the top of the plank, it is necessary merely to turn the box adjusting screw 45. This will slide the box obliquely on the bridge and cause the box to move relatively to the plank with any desired nicety of adjustment as required, while maintaining parallel relation with the upper surface of the plank. Thus, the box will press equally on both edges of the plank and hold the same uniformly to the cutter, thereby preventing any possibility of the objectionable chattering and vibration referred to.

The upper out-feed roll, being carried by the bridge, will share its adjustment and consequently will conform to the varying thickness of the edges of the plank. Thus, no independent adjustment of the out-feed roll is necessary to meet this condition. It will be observed, of course, that the holding screws 99 for the out-feed roll must be released before the bridge and roll can be adjusted.

It will be understood that the invention is not limited to the specific embodiment thereof disclosed herein, but that extensive deviations therefrom may be made without departing from the spirit and scope of the appended claims.

What is claimed is:—

1. In a machine of the character described, the combination with a frame, of a cutter mounted thereon, a bridge member extending transversely of the frame, a work engaging member opposed to said cutter carried by said bridge member and adjustable transversely of said frame, and means for causing said work engaging member to be raised or lowered as it is so adjusted to vary its distance from said cutter.

2. In a machine of the character described, the combination with a frame, of a rotary cutter mounted thereon, a bridge member mounted on said frame, a box having a work engaging face opposed to said cutter and adjustable transversely of said frame in a direction substantially parallel to the axis of said cutter, and means coöperating with said bridge member and box for causing the latter to be raised or lowered as it is adjusted transversely of said frame.

3. In a machine of the character described, the combination with a frame, of a rotary cutter mounted thereon, and members opposed to said cutter for holding work thereto, one of said members being secured to the frame and the other of said members being movable transversely of the frame, oblique slot and key connections between the fixed and movable members, and means for moving the movable member transversely of the frame relative to the fixed member.

4. In a machine of the character described, the combination with a frame, of a rotary cutter mounted thereon, members opposed to said cutter for holding work thereto, said members extending transversely of said frame and having interengaging elements extending obliquely to the axis of said cutter for causing one of said members to move toward or from the cutter when adjusted relatively to the other transversely of said frame, and unyielding means acting positively between the two members to take up lost motion between said elements and press the same into intimate frictional engagement.

5. In a machine of the character described, the combination with a frame, of a rotary cutter mounted thereon, a supporting member mounted on said frame, a work engaging member carried by said supporting member for holding work to said cutter, means for relatively moving the supporting and engaging members in a direction transversely of the machine, and interengaging elements between the supporting and work engaging members acting to positively move the work engaging member toward or

from the work when the two members are relatively moved transversely of the machine.

6. In a machine of the character described, the combination with a frame, of a rotary cutter mounted thereon, a supporting member bridging said frame in opposition to said cutter, a box-like work engaging member having sides extending along sides of said bridging member, means to slide said boxlike work engaging member relatively to said bridging member transversely of said frame, and means for causing said member to move toward or from said cutter as it is so moved.

7. In a machine of the character described the combination with a frame and a cutter mounted thereon, of work positioning means comprising members extending transversely of the machine frame, means for effecting relative movement of said members in a direction transversely of said frame, means for causing one of said members to be positively raised or lowered as said members are so relatively moved, a feed roll, and means connecting said roll with one of said members for causing said roll to be raised or lowered therewith.

8. In a machine of the character described, the combination with a frame and a cutter mounted thereon, of work positioning means comprising members extending transversely of the machine frame, means for effecting relative movement of said members in a direction transversely of the frame, and means for causing one of said members to be positively raised or lowered as said members are so relatively moved; and means connecting said work positioning means with said frame for bodily raising or lowering said work positioning means.

9. In a machine of the character described, the combination with a frame and a cutter mounted thereon, of work positioning means comprising members extending transversely of the machine frame, means for effecting relative movement of said members in a direction transversely of the machine frame, and means for causing one of said members to be positively raised or lowered as said members are so relatively moved; means for bodily raising or lowering said work positioning means, a feed roll, and means connecting said roll with said work positioning means for causing said roll to share the raising or lowering movement of said work positioning means.

10. In a machine of the character described, the combination with a frame and a cutter mounted thereon, of work positioning means comprising members extending transversely of the machine frame, means for effecting relative movement of said members in a direction transversely of said frame, and means for causing one of said members to be positively raised or lowered as said members are so relatively moved; means for bodily raising or lowering said work positioning means, a feed roll, bearing boxes therefor mounted in said frame, and means connecting said boxes with said work positioning means for causing said roll to share the raising and lowering movement of said work positioning means.

11. In a machine of the character described, the combination with a frame and a cutter mounted thereon, of work positioning means comprising members extending transversely of the frame, means for effecting relative movement of said members transversely of said frame, and means for causing one of said members to be positively raised or lowered as said members are so relatively moved; means for adjusting said work positioning means relatively to said frame, a feed roll, means connecting said roll with said work positioning means to cause said roll to share the adjustment of said means, and means to secure said roll to said frame in its different positions of adjustment.

12. In a machine of the character described, the combination of the frame, a cutter mounted thereon, work positioning means comprising two members having obliquely arranged slot and key connections, means for securing one of said members to the frame, means for moving the other member transversely of the machine relative to the fixed member, and means for locking the two members in relatively adjusted position.

13. In a machine of the character described, the combination of the frame, a rotary cutter mounted thereon, a bridge mounted on the frame opposite the cutter, a box-like work engaging member embracing the bridge and having a work engaging surface, means for relatively moving the two members transversely of the machine, and means operating through relative movement of the two members transversely of the machine for raising or lowering the box-like work engaging member.

In testimony whereof, I have signed my name to this specification, in the presence of the subscribing witnesses,

ARTHUR E. FOLSOM.

Witnesses:
FREDERICK F. DAVIS,
HOWARD W. ELLIOTT,
KENNETH O. BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."