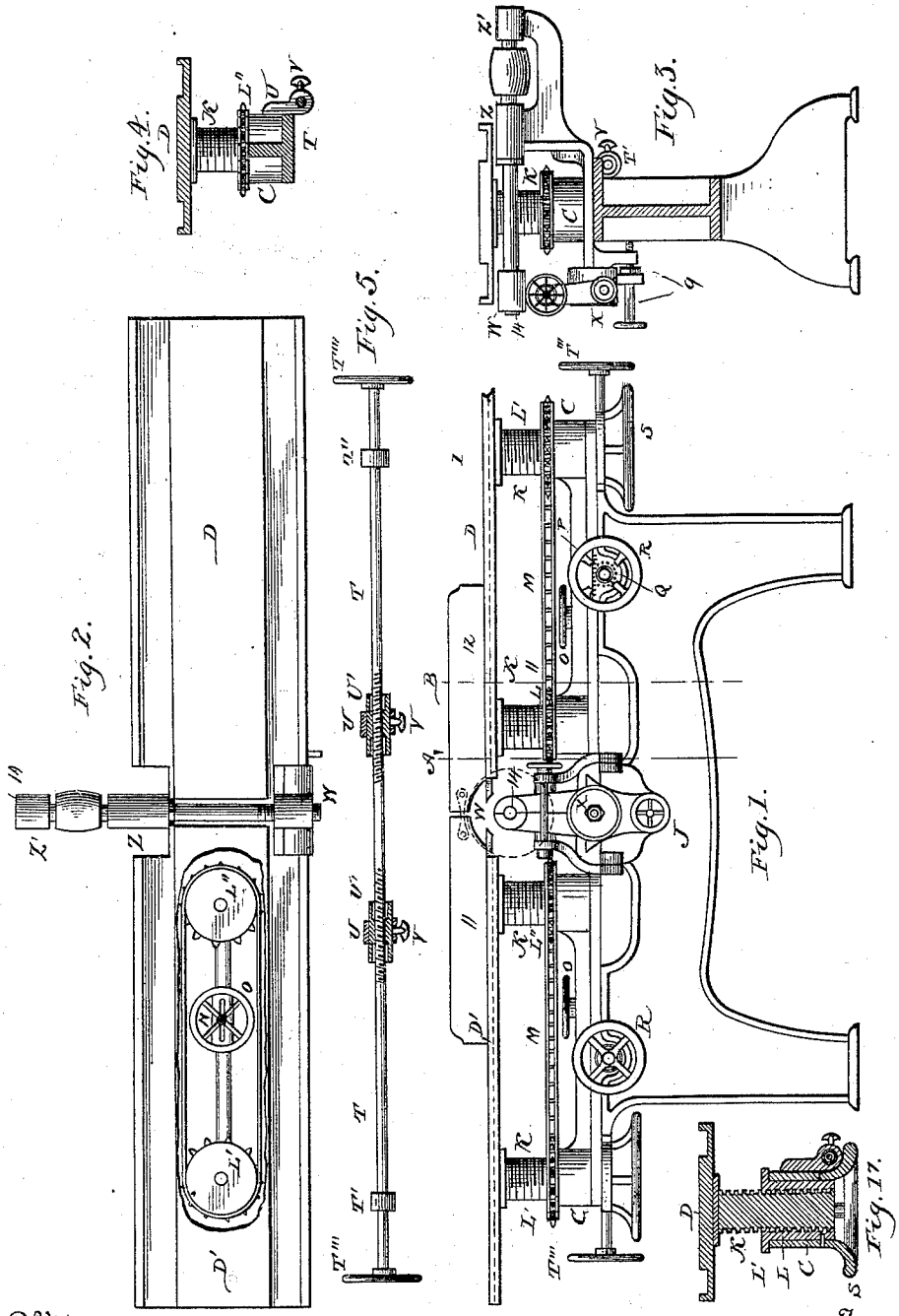
(No Model.) 2 Sheets—Sheet 1.

H. J. COLBURN.

VARIETY WOOD WORKER.

No. 448,320. Patented Mar. 17, 1891.



Witnesses
John Purcell
C. F. Hoyer

Inventor
Henry J. Colburn,
By his Attorney
N. L. Collamer.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

H. J. COLBURN.

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Fig. 16.

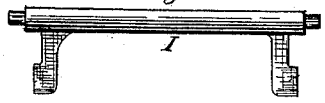
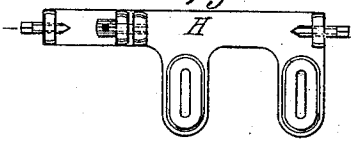


Fig. 15



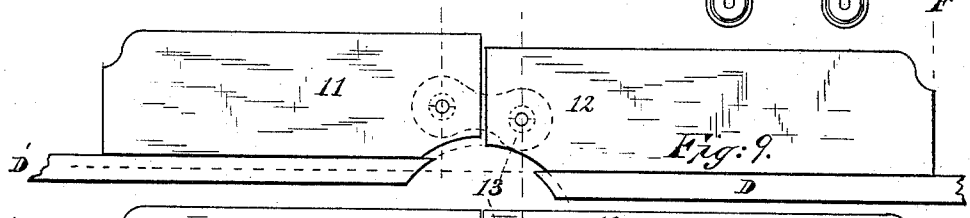


Fig. 9.

Fig. 10.

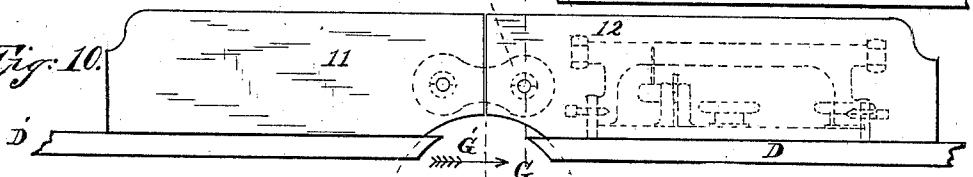


Fig. 7.

Fig. 11.

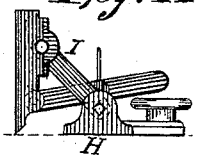


Fig. 13.

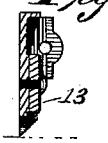


Fig. 12.

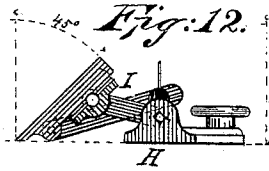
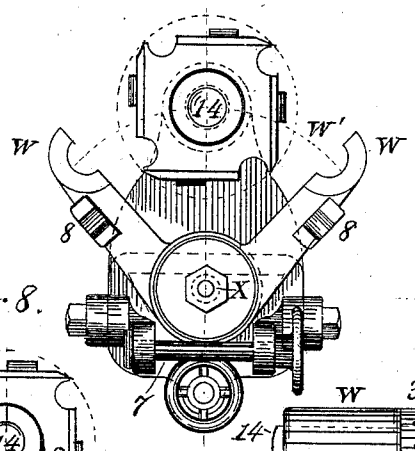


Fig. 14.



Fig. 8.



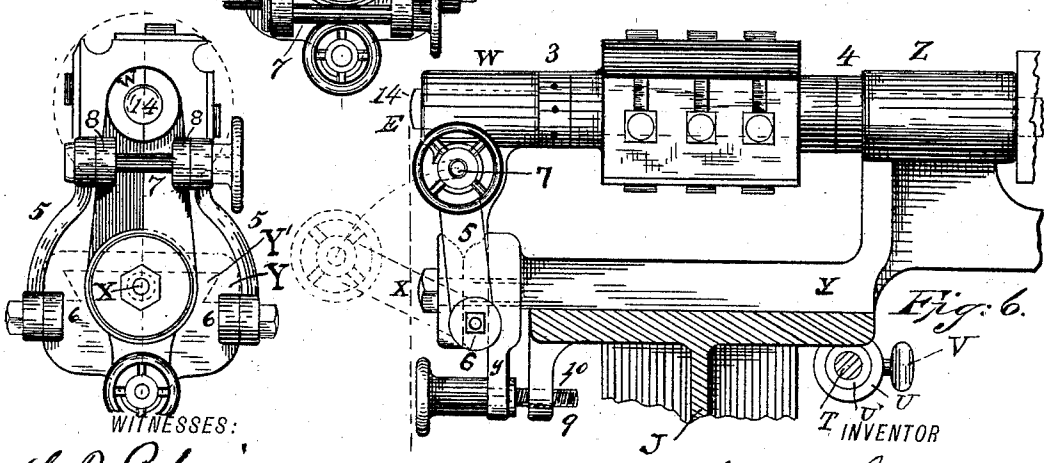


Fig. 6.

WITNESSES:

L. B. Robinson

Thos. D. Cone.

INVENTOR

Henry J. Colburn.

BY

N. L. Collamer,

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY J. COLBURN, OF TOLEDO, OHIO.

VARIETY WOOD-WORKER.

SPECIFICATION forming part of Letters Patent No. 448,320, dated March 17, 1891.

Application filed February 15, 1889. Serial No. 300,073. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. COLBURN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Variety Wood-Workers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of machines for wood-forming which are termed "variety wood-workers," in which a rotary arbor journaled in proper bearing-boxes (one of which boxes is removable from the said arbor in a direction at right angles from the axial line of said arbor for the purpose of effecting and expediting an exchange of cutter-heads) and properly combined with a pair of horizontally and vertically adjustable tables and with other parts and mechanism hereinafter explained is adapted to execute different forms and varieties of cuts.

Referring to the drawings, Figure 1 is a vertical side elevation of the entire machine; Fig. 2, a plan with a portion of the top of the table broken through. Fig. 3 is a vertical section on line A, Fig. 1. Fig. 4 is a vertical section on line B of the slide C and table D. Fig. 5 is a top view of the slide-connecting screw-shaft, showing the screw-nuts in section. Fig. 6 is an enlarged longitudinal sectional view of the cutter-head arbor and its supports, showing a cutter-head in position in full lines and in side elevation. Figs. 7 and 8 are enlarged views of the mechanism shown in Fig. 6, taken on line E of said figure and showing the removable box in its open and closed positions, respectively. Figs. 9 and 10 are enlarged front elevations of the guide-fence, showing said fence in different vertical positions. Figs. 11 and 12 are vertical end elevations of the guide-fence on line F, Fig. 9, Fig. 11 showing the said fence in a vertical, and Fig. 12 showing the said fence in an oblique, position. Figs. 13 and 14 are vertical sections of said fence on line G, Fig. 10, looking in the direction of the arrow G'. Fig 15 is a plan of the base-plate of the guide-fence, also shown at H in Figs. 11 and 12. Fig. 16 is a side view of the connecting-link, also shown at I in Figs. 11 and 12. Fig. 17 is a vertical section on line 1, Fig. 1, showing the screw K, nut L, and wheel S.

Similar letters refer to similar parts throughout the several views.

On either side of the cutter-head and resting on the main frame J is located a two-part composite mechanism, which I have termed a "slide" and a "table." In each case the parts of this composite mechanism are unadjustably connected horizontally and adjustably connected vertically by self-contained means described below. The object of this construction is to render the superimposed table more rigid and better adapted to be adjusted to the varying sizes of cutter-heads than was accomplished in the old forms of machines of this character. Attached to and sliding longitudinally upon this frame and adjustable horizontally in suitable guides are the slides C, their ends being cylindrical in form and bored vertically to fit the exterior surface of the screws K, in which the said screws K, by means of the nuts L being turned thereon, are adapted to be vertically adjusted in pairs by means of the connecting-chain M.

In Fig. 17 is shown in vertical section the screw K, its nut L, and wheel-connection S. Through a slot N, by means of a screw attached to the wheel O, the said slide C is secured to the frame J. At P in either of the slides C is a horizontal toothed rack having a corresponding toothed pinion-wheel Q engaging it and adapted to be operated by means of the wheel R. To show this rack P a portion of one of the slides C is broken away in Fig. 1. At T is a shaft which is journaled in boxes at T', attached to the side of the frame J in any convenient position along its length, as shown in Figs. 1 and 5.

U U are holders attached to the tables D D', and each is of suitable size to receive the nut U', on which it loosely slides and to which it is adapted to be fastened by means of a thumb-screw V. The said nut U' is threaded to correspond with the thread adjacent to it upon the screw-shaft T. At either end of the shaft T is a hand-wheel T''' adapted to rotate in either direction the shaft T.

At W is an axially-divided box pivoted at X and adapted to be opened and closed in the direction of the dotted line W'. This pivot is

preferably attached to one end of the transverse slide Y, which slide is adjustably secured to the main frame J and moves transversely thereon in guides Y′. At Z is a second box, and at Z′ a third box, also attached to the slide Y, and both of which are preferably ordinary journal-boxes. In these several boxes is journaled the cutter-head arbor 14. To the arbor the cutter-heads are secured, as shown in Fig. 6, by means of a screw-nut 3, which presses the said head longitudinally against the collar 4 in a well-known manner. Locking-arms 5 are pivoted at 6 at a right angle to the pivotal point X of the divided box W, and a screw-bolt 7, attached to the upper extremity of the said locking-arms 5, is adapted to close into the slot in the open lugs 8 upon the arms of the divided box W and to secure together and in position the said divided box W, as shown in Fig. 8.

At 9 a thumb-screw journaled in a lug *y*, attached to the slide Y and working in a threaded nut 10, attached to the main frame J, is adapted to adjust the slide Y and its attachments transversely to the length of said frame J.

At 11 and 12 are shown the two parts of a divided guide-fence, which are adjustably pivoted together by means of a connecting-link shown in dotted lines at 13 in Figs. 9 and 10 and in section at 13 in Figs. 13 and 14. This fence is secured to one or both of the tables D and D′, but preferably to the rear table D, in such a manner well known that its angle of inclination to the surface of said tables may be varied, as shown in Figs. 11 and 12. I make no claim in this connection to any specific device for so varying the inclination of said table or for securing the said rest to said tables. I use for this purpose a device shown in Figs. 11, 12, 15, and 16, which was in substance patented to me December 6, 1881, in Letters Patent of the United States No. 250,425.

The variety wood-worker being a machine which is in common use and its adaptability and management well understood, it will only be necessary to explain the operation of my improvements thereon. When it is desired to adjust the tables D and D′ horizontally and independently, the screw attached to the wheel O is turned to loosen the slide C upon the frame J, when by means of the wheel R the pinion Q is turned in the rack P and results in the horizontal longitudinal movement of the said table. When it is desired to adjust both of the said tables D and D′ simultaneously horizontally toward or from each other, it is only necessary to tighten the thumb-screws V upon the nuts U′, thus securing them in a fixed position in their holders U, when by means of the wheel T‴ the screw-shaft T is turned and results in the said adjustment of the said tables, it being understood, of course, that the threads upon the different halves of the shaft T are set in opposite directions of pitch, as shown in Fig. 5.

To adjust either of the tables D or D′ vertically it is only necessary to rotate the wheel S in the proper direction, which rotation will actuate the nut L upon the screw K and in turn actuate the sprocket-wheel L′, upon which is the chain M, by which the nuts L upon opposite ends of the slide C are connected, and a corresponding movement will thus be imparted to the sprocket-wheel L″ and both ends of the said table consequently adjusted simultaneously. By means of the thumb-screw 9 the transverse adjustment of the slide Y is effected and the consequent corresponding movement of arbor 14 in an obvious manner.

As before stated and explained, the tables D and D′ are adapted to be vertically adjusted, and they carry the divided guide-fence, consisting of the parts 11 and 12, and since the said parts 11 and 12 are loosely and adjustably pivoted together it is obvious that when either of the said tables is vertically moved the part of said guide-fence resting thereon will partake of its movement.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a fixed journal-box, and an axially-divided pivotally-removable journal-box, and with means for securing the parts of said box together in working position, substantially as shown and described.

2. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a fixed journal-box, an axially-divided pivotally-removable journal-box, and position-locking means, substantially as shown and described.

3. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a journal-box Z, a fixed journal-box Z′, and a divided removable journal-box W, with means for securing the parts of said removable box together in working position, substantially as shown and described.

4. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a fixed journal-box Z, an axially-divided removable journal-box W, and pivoted position-locking arms, substantially as shown and described.

5. In a variety wood-worker, the combination, with an arbor adapted to carry an exchangeable variety of cutters, of the slide Y, adjustable transversely of the table and carrying the fixed journal-box Z, the journal-box Z′, and an axially-divided pivotally-remov-

able journal-box, substantially as shown and described.

6. In a variety wood-worker, the combination, with an arbor adapted to carry an exchangeable variety of cutters, of a stationary main frame, a composite mechanism consisting of a slide and a superimposed table, said slide and table being horizontally inseparably combined and horizontally adjustable together longitudinally of said main frame, and the said table being vertically adjustable parallel with and upon the said slide and frame, substantially as shown and described.

7. In a variety wood-worker, the combination, with an arbor adapted to carry an exchangeable variety of cutters, of a main frame carrying a pair of independently horizontally-adjustable slides, one in front and one in rear of said arbor, and means, substantially as shown, for connectedly and simultaneously adjusting the same toward and from each other in a horizontal plane, each of said slides carrying a superimposed table horizontally adjustable therewith and vertically adjustable thereon independently of its horizontal adjustment, substantially as described.

8. In a variety wood-worker, the combination, with a horizontal arbor adapted to carry a cutter-head, of two independently vertically-adjustable tables and a duplex guide-fence, the parts of which fence are pivotally connected and are each respectively carried by the table upon which it is imposed, substantially as described.

9. In a variety wood-worker, the combination, with a horizontal arbor adapted to carry a cutter-head, of two independently vertically-adjustable tables, a duplex guide-fence, the parts of which fence are each respectively carried by the table upon which it is imposed, and a link pivoted at its ends to the adjacent ends of said parts, substantially as described.

10. The fixed journals Z Z′, the arbor 14, journaled therein, a pulley on said arbor, and a cutter-head adapted to be exchangeably connected to said arbor, in combination with a divided journal-box comprising the two arms W, pivoted at X to the supporting-frame of said arbor, and means, substantially as described, for locking said arms around the free ends of said arbor, as set forth.

11. The slide Y, having the fixed journal-boxes Z Z′ and the arbor 14, journaled in said boxes, in combination with a divided journal-box comprising the two arms W, turning on a pivot X, parallel with said arbor, and each having an open lug 8, and with the two locking-arms 5, turning on pivots 6 in said slide at right angles to said arbor, and the screw-bolt 7, carried in the free ends of said locking-arms and adapted to enter said open lugs, as and for the purpose set forth.

12. In a wood-working machine, the main frame J, a wood-working tool at its center, a pair of tables D D, and a pair of slides C, supporting said tables, moving longitudinally on said frame, and disposed one on either side of said tool, in combination with a shaft T, journaled in bearings T′ along said frame, said shaft being oppositely screw-threaded from its center and having hand-wheels T‴ at its ends, nuts U′ on each of said screws, holders U, loosely embracing said nuts and rigidly connected to said slides, respectively, and thumb-screws V in said holders for impinging against said nuts when desired, as and for the purpose set forth.

13. The slide C, having vertically-bored sockets at each end, in combination with the nuts L in each of said sockets, said nuts carrying sprocket-wheels L′ L″, the chain M, connecting said sprocket-wheels, and the hand-wheel S, connected to one of said nuts, with the screws K, engaging said nuts, and the table D, carried by said screws, and with independent means, substantially as described, for adjusting said slide C longitudinally on the main frame J of a wood-working machine, as set forth.

14. In a wood-working machine, the main frame J, slides C at each end thereof, means for independently adjusting said slides longitudinally thereon, means for connectedly adjusting said slides simultaneously and in opposite directions longitudinally thereon, tables D, supported one on each of said slides, means for adjusting said tables independently of each other and vertically in said slides, fences 11 and 12, supported one on each table, and means for adjusting the angles of said fences to said tables, in combination with the arbor-carrying slide Y, carried upon said main frame J, and means for independently adjusting it horizontally and transversely thereon, the whole operating as described.

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

HENRY J. COLBURN.

Witnesses:

THOMAS D. CONE,

LILLIAN B. ROBINSON.