No. 633,154. Patented Sept. 19, 1899.

W. W. PHILBRICK.

MATCHER HEAD.

(Application filed Apr. 8, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

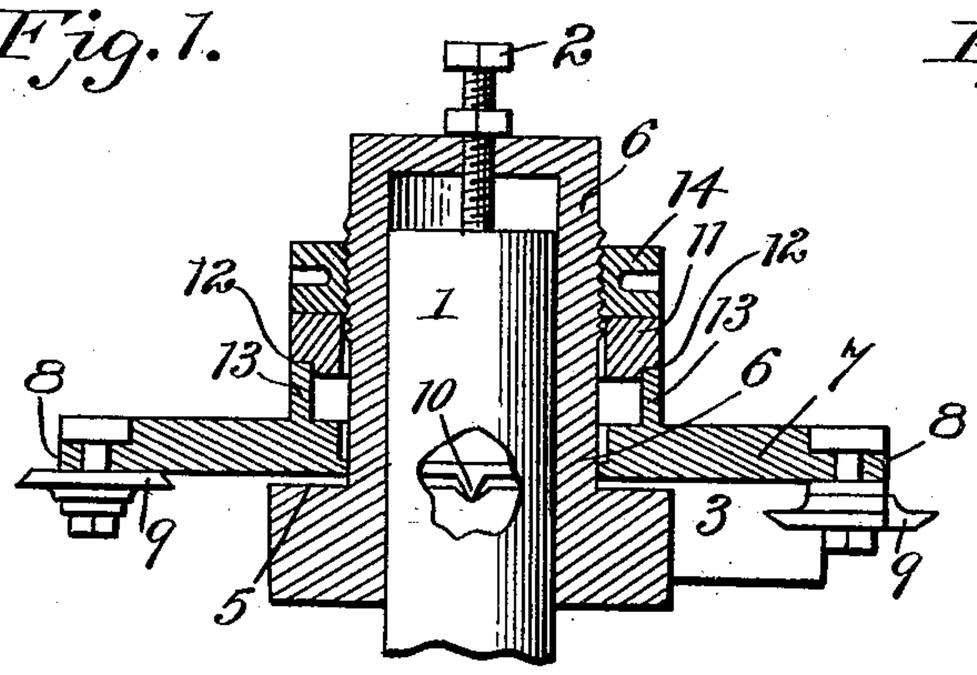


Fig. 2.

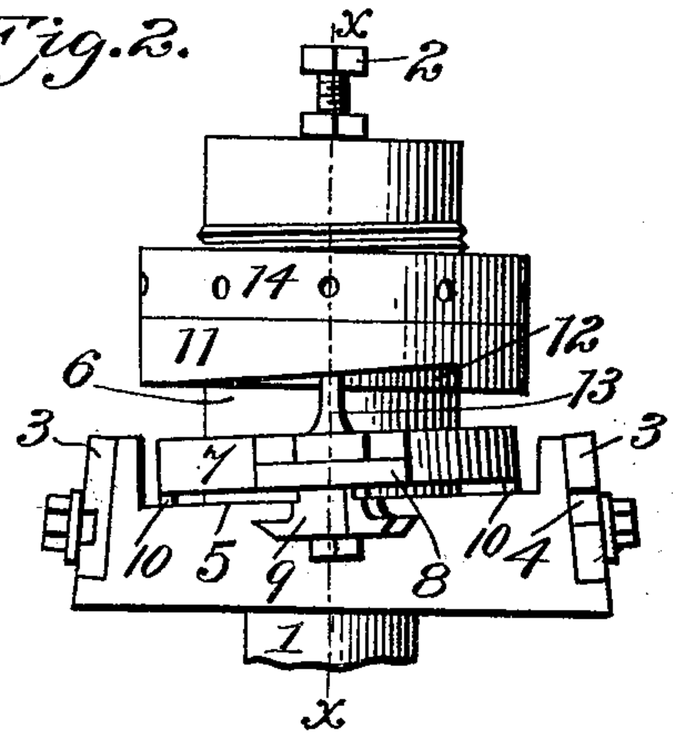


Fig. 3.

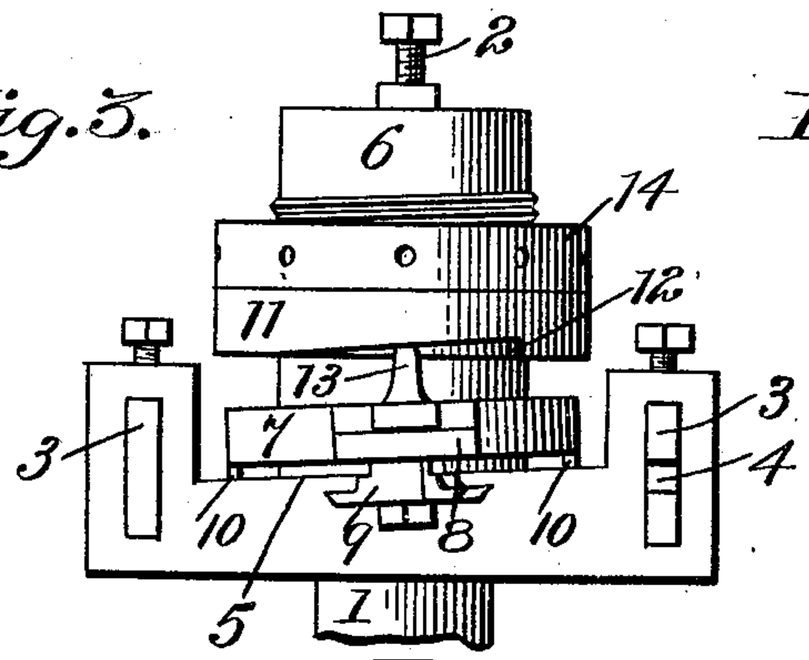


Fig. 4.

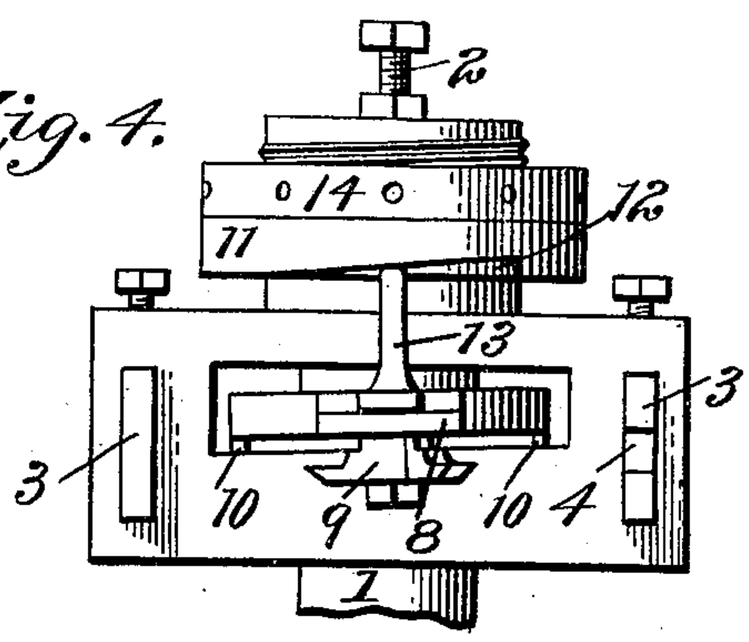


Fig. 5.

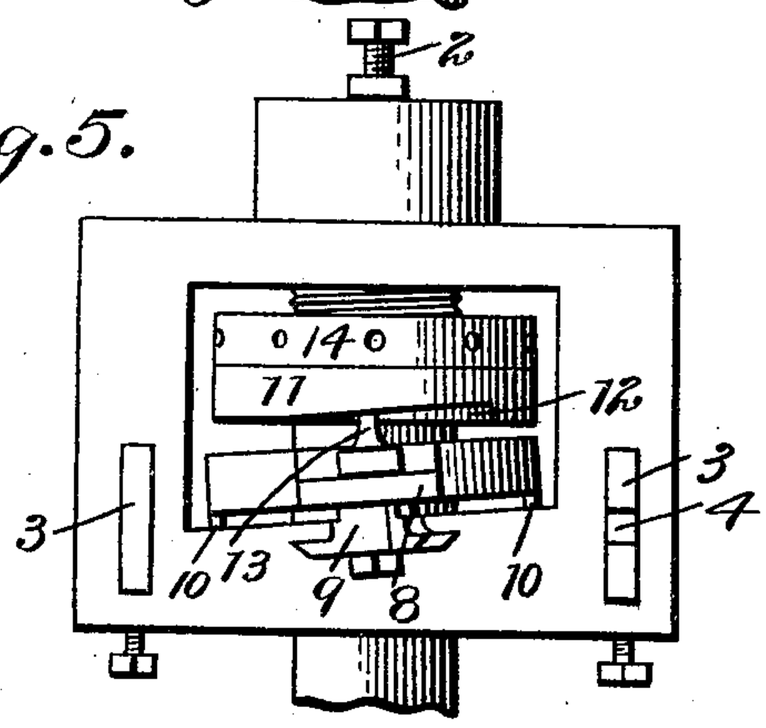
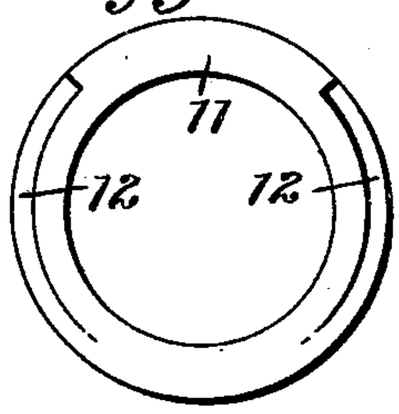


Fig. 6.



WITNESSES:

Edwin G. McKee

Nellie G. McCarthy

INVENTOR

W. W. Philbrick

BY Geo. H. Parmelee

his ATTORNEY.

No. 633,154. Patented Sept. 19, 1899.

W. W. PHILBRICK.

MATCHER HEAD.

(Application filed Apr. 8, 1899.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 7.

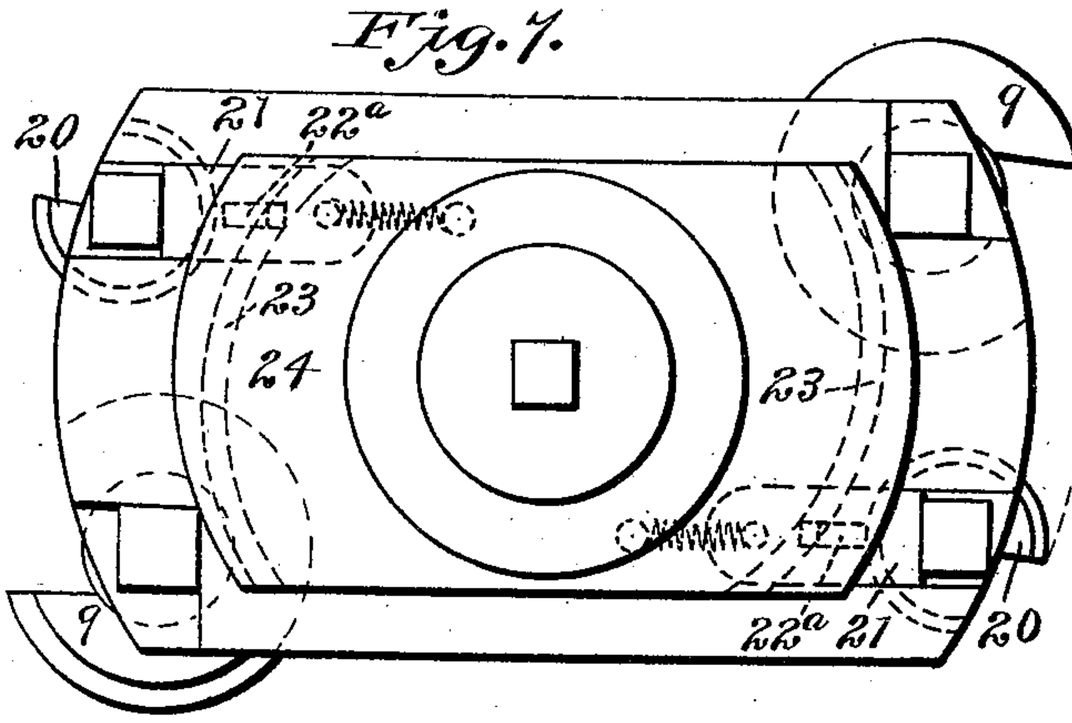


Fig. 9.

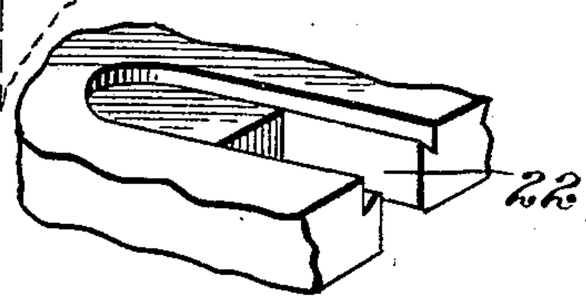


Fig. 8.

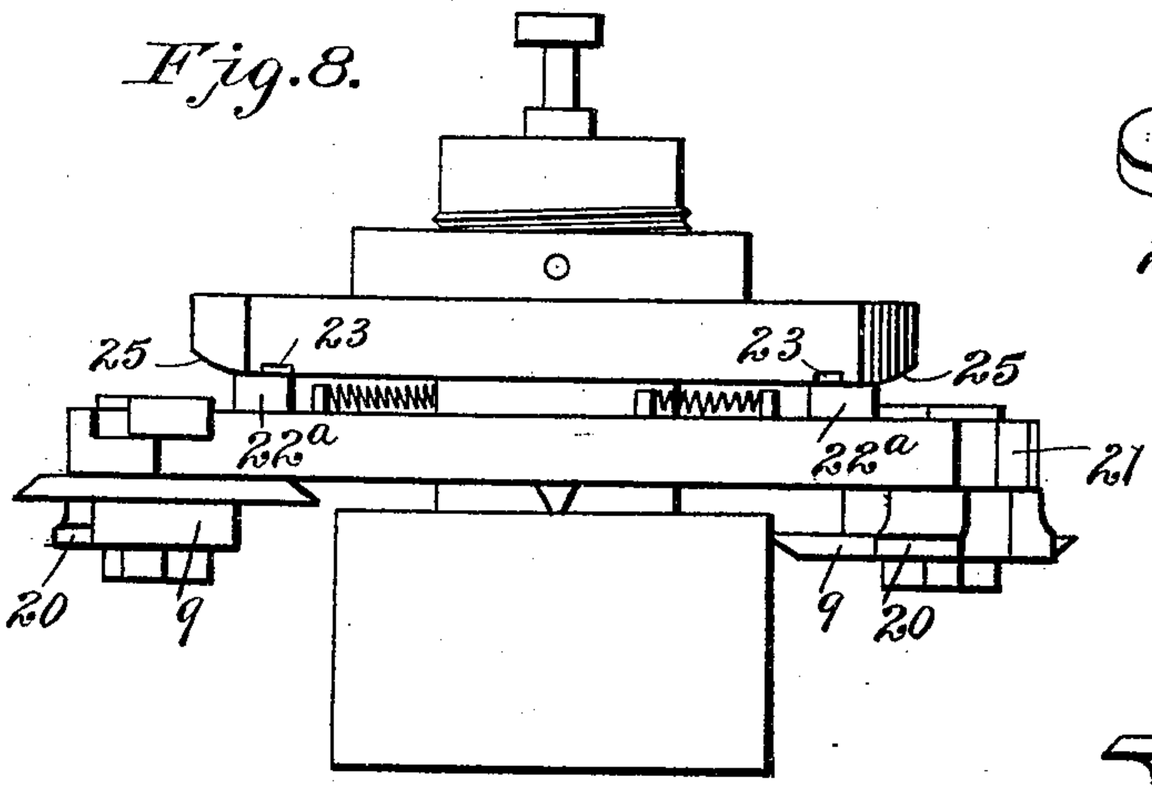


Fig. 10.

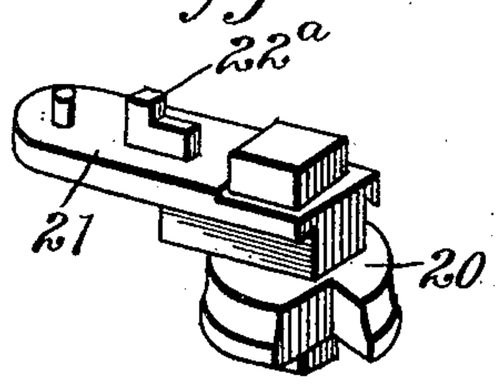


Fig. 13.

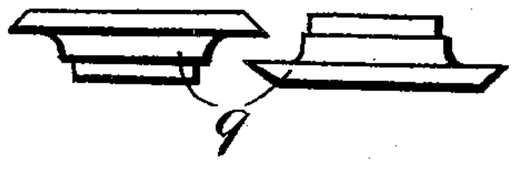


Fig. 11.

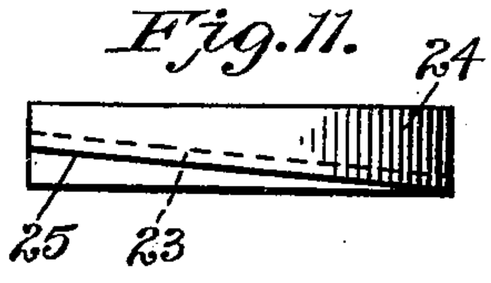
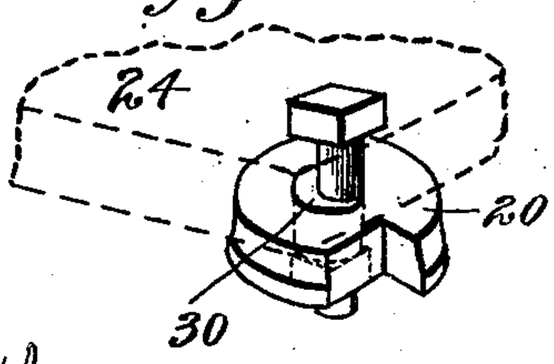


Fig. 12.



WITNESSES:

Edwin G. McKee.

Nellie G. McCarthy.

INVENTOR

W. W. Philbrick.

BY Geo. H. Parmelee

his ATTORNEY.

UNITED STATES PATENT OFFICE.

WARREN W. PHILBRICK, OF SEATTLE, WASHINGTON.

MATCHER-HEAD.

SPECIFICATION forming part of Letters Patent No. 633,154, dated September 19, 1899.

Application filed April 8, 1899. Serial No. 712,292. (No model.)

To all whom it may concern:

Be it known that I, WARREN W. PHILBRICK, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Matcher-Heads; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention has relation to certain new and useful improvements in matcher-heads of the character described and claimed by me in former applications, Serial Nos. 671,549, 706,206, and 712,291, and wherein the work of jointing the vertical portions of the edges of the lumber is performed by means of jointing blades or cutters, while the work of forming the tongue, groove, rabbet, or other special configuration of the edges is performed by bits positioned upon intermediate portions of the head. The present invention is designed to provide certain new and useful improvements in a matcher-head of this character, and more particularly to provide novel and effective means for adjusting the bit-carrier upon which the intermediately-positioned bits are mounted for the purpose of varying the width or depth of the groove or rabbet which they form; also, to provide means of improved character for adjusting said bits, and also to provide a novel arrangement of said bits.

With these objects in view the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a vertical section of my improved matcher-head, taken on the line *x x* of Fig. 2. Fig. 2 is an elevation of the same. Fig. 3 is a similar view showing the jointing blades or cutters differently seated. Fig. 4 is an elevation showing the bit-carrier seated in a different manner. Fig. 5 is a similar view showing the bit-carrier seated as in Fig. 4, but with its adjusting devices differently arranged. Fig. 6 is a bottom plan view of the cam-adjusting collar. Fig. 7 is a plan view showing a modified construction of the bit-carrier and a different arrangement of the bits, the right-hand portion of the figure also showing the manner in which the bits operate upon the lumber. Fig. 8 is an elevation of a matcher-head having a bit-carrier and bits of the form and arrangement shown in Fig. 7. Fig. 9 is a fragmentary perspective view of a portion of the bit-carrier shown in Fig. 7 and showing the seat for the sliding block upon which the smaller bits are mounted. Fig. 10 is a detail perspective view of one of the said sliding blocks. Fig. 11 is a detail view of the double cam-collar in end elevation. Fig. 12 is a detail perspective view showing another mode of adjusting the smaller bits. Fig. 13 is a view showing in a conventional manner the relative position of the two bits in a tonguing-head which joint the upper and lower faces of the tongue.

In the drawings the numeral 1 designates the usual rotary spindle, upon which the matcher-head is secured and upon which it is vertically adjustable by means of a screw 2.

3 designates the jointing blades or cutters, which are secured in or to opposite side portions of the head, the seats for said cutters being formed through or on the sides of the head, according to the particular character of the head. In tonguing-heads said cutters have a slot 4 to pass the tongue on the edge of the lumber.

5 designates a diametrically-extending seat formed in the top face of the body portion of the head around its hub or boss 6 for a bit-carrier 7. This bit-carrier consists of a bar extending at right angles to the axial line of the wings of the head in which the cutters 3 are seated and having projecting end portions provided with apertured seats 8 for the bits 9, which impart the special configuration to the edge of the lumber. This bar has a central aperture which loosely surrounds the hub or boss 6 and is centered on fulcrums 10 to rock in a vertical plane. It is adjusted to change its inclination or position in such plane by means of a rotary collar 11, fitted on the hub or boss 6 above the collar, and which is formed on its under side with cams 12, which

bear on lugs 13 at opposite end portions of the bit-carrier. Said collar is held on the head by means of a nut 14.

The bits 9 are seated on the under side of the end portions of the bit-carrier in reversed positions, as shown in Fig. 1, whereby the cutting edges of opposite bits are separated or lie in different vertical planes. When the bit-carrier is so adjusted as to lie in a horizontal plane, the separation of such cutting edges is equal to a medium thick tongue or a medium wide groove. When the bit-carrying bar is in horizontal position, the cutting edges of the two cutters are separated by a distance equal to the thickest tongue which it is practicable to form, as shown in Fig. 13. A slight turn of the collar 11 in the direction to depress that end of the bar which carries the upper cutting-bit and to raise the other end which carries the lower cutting-bit will bring the edges of the two bits nearer to a common horizontal plane and a thinner tongue will be formed, the bits taking positions (due to the inclination of said bar) to give them proper point clearance. With grooving-bits, however, which are of the usual flat disk form when the bar is in horizontal position the two bits are in the same plane, and a depression of one end of the bar effects a separation of their cutting edges and results in a wide groove.

Fig. 4 shows a modification wherein the seat for the bit-carrier is formed through the head instead of upon its upper face, the lugs 13 being extended up to bear on the under side of the adjusting-collar.

Fig. 5 shows another modification similar to that last described, except that the adjusting-collar and nut are also seated in the opening through the head instead of at the top of the head.

In Figs. 7 and 8 I have shown a bit-carrier which in addition to the bits 9, which are mounted at diametrically opposite corner portions thereof, is provided with two smaller bits 20, mounted at the remaining corner portions of the carrier and positioned to dress or joint the vertical face of the tongue formed by the bits 9. This form of carrier and arrangement of cutters is adapted for use on tonguing-heads. The bits 20 are shown in these figures as being mounted upon blocks 21, which slide in slotted seats 22, formed therefor in the bit-carrier. Each block 21 is formed at its upper side with a lug projection 22^a, which engages a cam-groove 23, formed on the under side of the end portion of a cam-collar 24, which corresponds to the cam-collar 11, before described, and which is also formed with cam-inclines 25. These cam-inclines by their action on the lugs 22^a as the collar is turned on the spindle cause one end of said bit-carrier to be raised and the opposite end to be depressed in the same manner as by the action caused by the cams 12 on the lugs 13 in the construction first described. At the same time the cam-grooves 23 by their engagement with the lugs 22^a act to retract or advance the sliding blocks 21, and thereby change the distance of the cutting edges of the bits 20 from the center of the head. The cams at the two ends of the collar are arranged reversely to each other in order to effect a proper simultaneous adjustment of the two end portions of the bit-carrier and of the bits 20. It will be seen, therefore, that this construction provides for a double expansion—in other words, that the same movement of the collar 24 which adjusts the bit-carrier to form a thicker tongue (or a thinner one) also adjusts the bits 20 to effect a corresponding change in the length or projection of the tongue—thus enabling the head to be adapted for use with lumber of varying thickness without the necessity for adjusting it on the spindle or of using different bits and cutters.

While the above-described arrangement for adjusting the bits is preferable, they may of course be adjusted in various ways independently of the adjustment of the bit-carrier. For instance, eccentric bolts 30, (see Fig. 12,) such as are more fully described in another pending application, Serial No. 712,291, may be used. It will also be understood that the particular shape of the cutters forms no part of this invention and that various forms of cutters may be used interchangeably upon the head according to the nature of the work to be performed.

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

1. The combination with a rotary head having a diametrically-extending seat for a bit-carrier, of a bit-carrier fulcrumed upon said seat to rock or tilt in a vertical plane, and provided with lugs or projections at opposite sides of its fulcrum-line, and a rotary collar having cam-surfaces engaging said lugs or projections, substantially as specified.

2. The combination with a rotary head having a diametrically-extending seat for a bit-carrier, of a bit-carrier fulcrumed upon said seat to rock or tilt in a vertical plane, and provided with lugs or projections at opposite sides of its fulcrum-line, and a rotary collar having cam-surfaces engaging said lugs or projections together with means for securing said collar in the desired adjustment, substantially as specified.

3. The combination with a rotary head having jointing-cutters arranged to joint the vertical portions of the jointed edges of the lumber, and formed with a diametrically-extending seat, of a bit-carrying bar mounted on said seat to rock in a vertical plane, bits secured to the end portions of said bar intermediately of the jointing blades or cutters, and arranged to give a special conformation to the edges of the lumber, a collar seated on said head and having cam-bearings on opposite end portions of said bar, and means for securing said collar, substantially as specified.

4. The combination with a matcher-head

having jointing-cutters, of a bit-carrier adjustably seated on said head, and provided with two cutting-bits at each end portion, the two bits at each end portion arranged in different vertical planes and at different distances from the axis of the head to operate upon different portions of the work.

5. The combination with a matcher-head having jointing-cutters arranged to operate to form the vertical portions of the jointed edges of the lumber, a bit-carrier adjustably seated in said head with its end portions projecting at opposite sides thereof, and two cutting-bits mounted upon each of said projecting end portions with their cutting edges in different vertical planes and at different distances from the axis of the head, one of the two bits being arranged to joint one of the horizontal faces of the tongue and the other the vertical face thereof, substantially as specified.

6. The combination with a matcher-head having jointing-cutters arranged to operate to form the vertical portions of the lumber, of a bit-carrying bar seated diametrically of the said head, means for adjusting said bar to effect an elevation of one end portion thereof and a corresponding depression of the opposite end portion and two bits mounted upon each end portion of said bar, one bit of each pair being positioned to joint the upper or lower face of the tongue, and the other its vertical face, substantially as specified.

7. The combination with a matcher-head having jointing-cutters arranged to operate to form the vertical portions of the lumber, of a bit-carrying bar-seat diametrically of the said head means for adjusting said bar to effect an elevation of one end portion thereof and a corresponding depression of the opposite end portion, and two bits mounted upon each end portion of said bar, one bit of each pair being positioned to joint the upper or lower face of the tongue, and the other its vertical face and means for adjusting the last-named bit to change the distance of the cutting edge from the axis of the head, substantially as specified.

8. In a matcher-head, a bit-carrying bar seated diametrically on said head, and having two cutting-bits mounted upon each end portion thereof, one bit at each end portion being arranged to joint the upper or lower face of the tongue, and the other its vertical face, means for adjusting said bar to elevate one end portion thereof and correspondingly depress the other end portion, and means for simultaneously advancing or retracting the cutting edges of those bits which joint the vertical face of the tongue, substantially as specified.

9. In a matcher-head, the combination with the head proper, of the bit-carrier seated diametrically upon said head to rock in a vertical plane, two bits seated upon each end portion of said carrier to operate upon different portions of the edges of the lumber, a collar mounted on said head and having opposite cams bearing on the end portions of the bit-carrier and cam connections between said collar and one bit upon each end portion of said bar, substantially as specified.

10. In a matcher-head the combination with the head proper, of the rocking bit-carrier, a sliding block mounted in guides at each end portion of said carrier a bit mounted on each of said blocks, and a collar having cams bearing on opposite end portions of the rocking bit-carrier to effect a vertical opposite adjustment of its end portions, said collar also having cams which engage said sliding blocks, substantially as specified.

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

WARREN W. PHILBRICK.

Witnesses:

CHAS. W. PEAT,

N. H. LATIMER.