(No Model.) 3 Sheets—Sheet 1.

F. I. MATTHEWS & D. J. QUINLEAN.

ADJUSTABLE GROOVING HEAD.

No. 423,618. Patented Mar. 18, 1890.

Fig 1

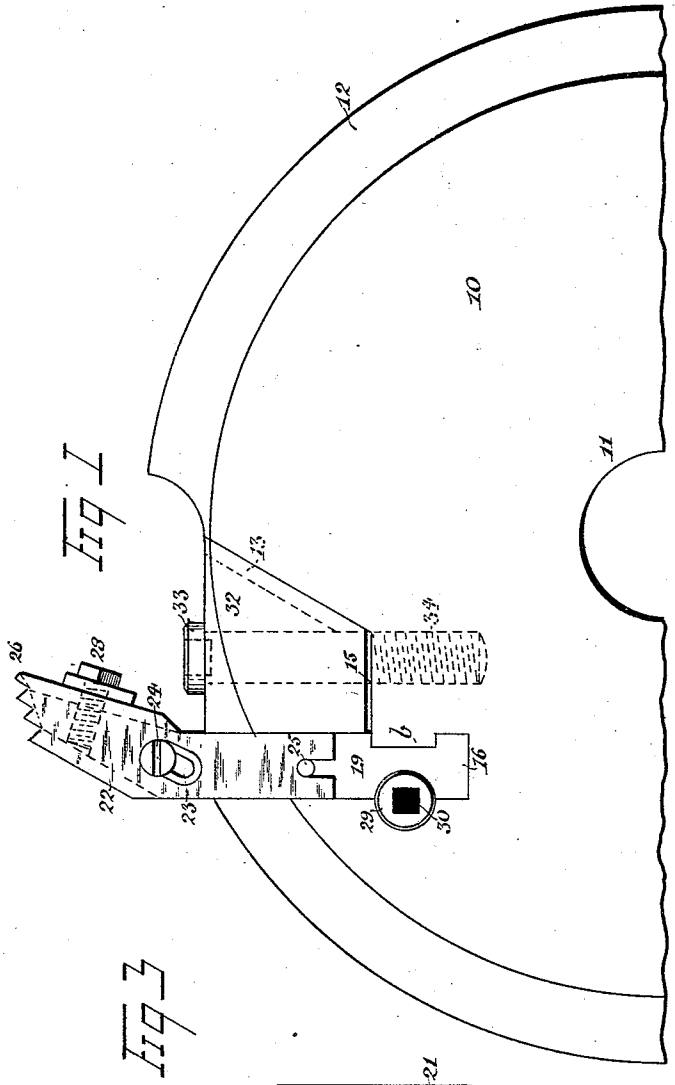


Fig 2

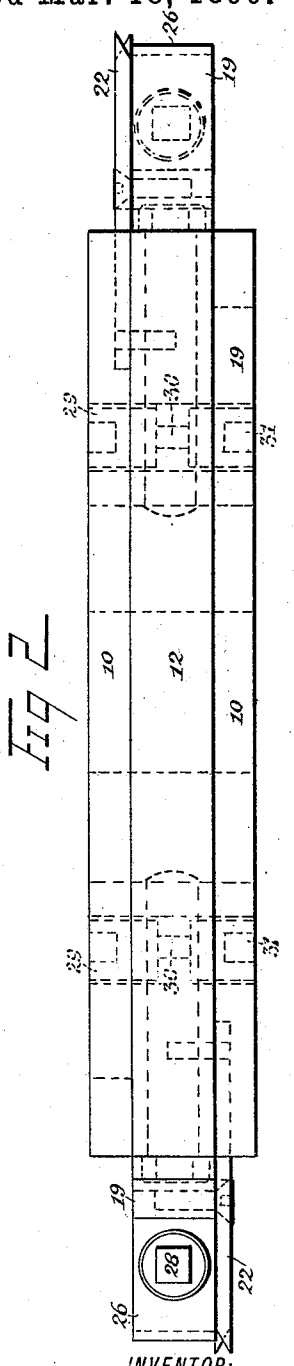
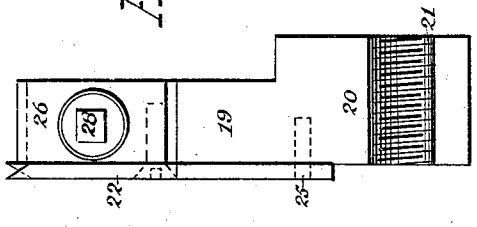


Fig 3



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Fig 4

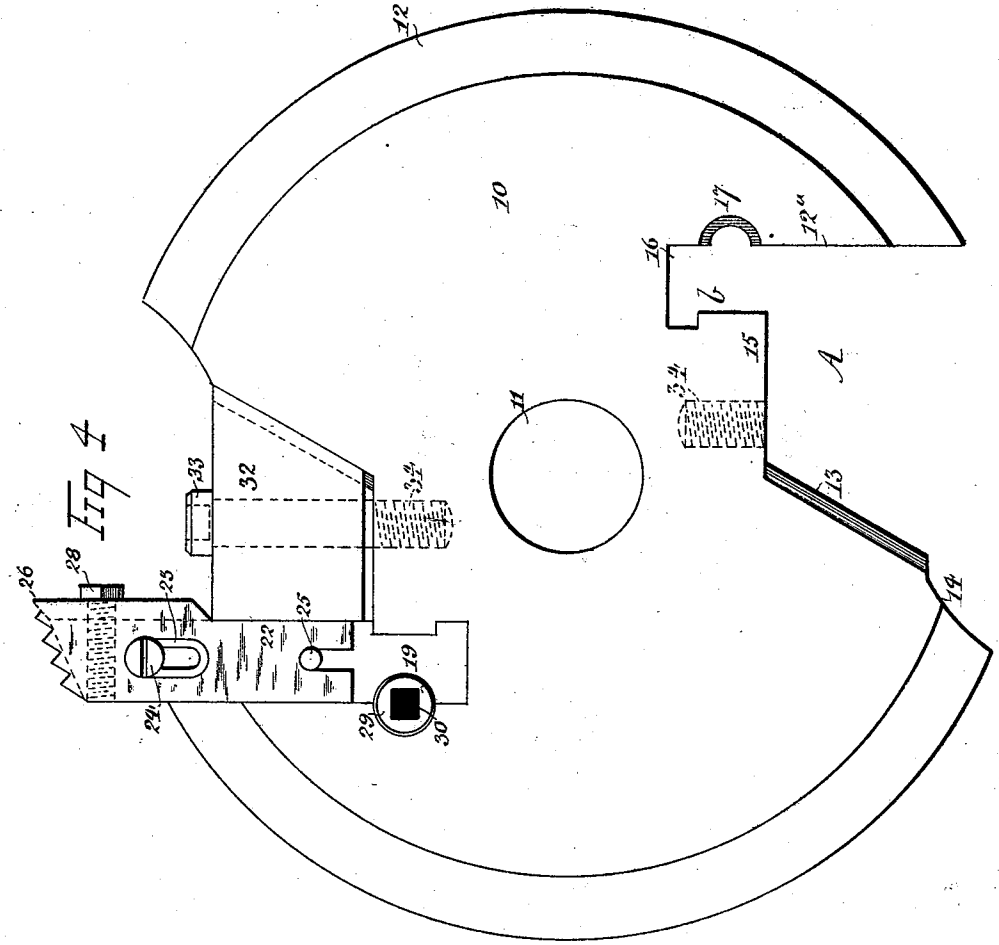


Fig 5

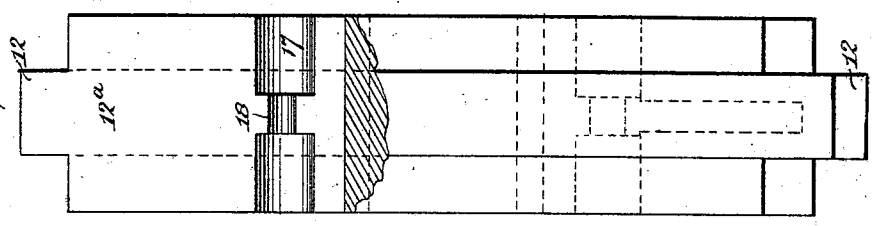


Fig 6

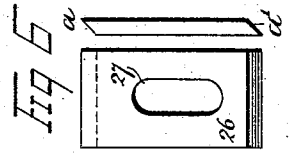


Fig 8

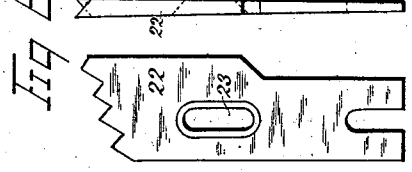
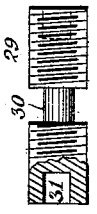


Fig 7



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Fig 10

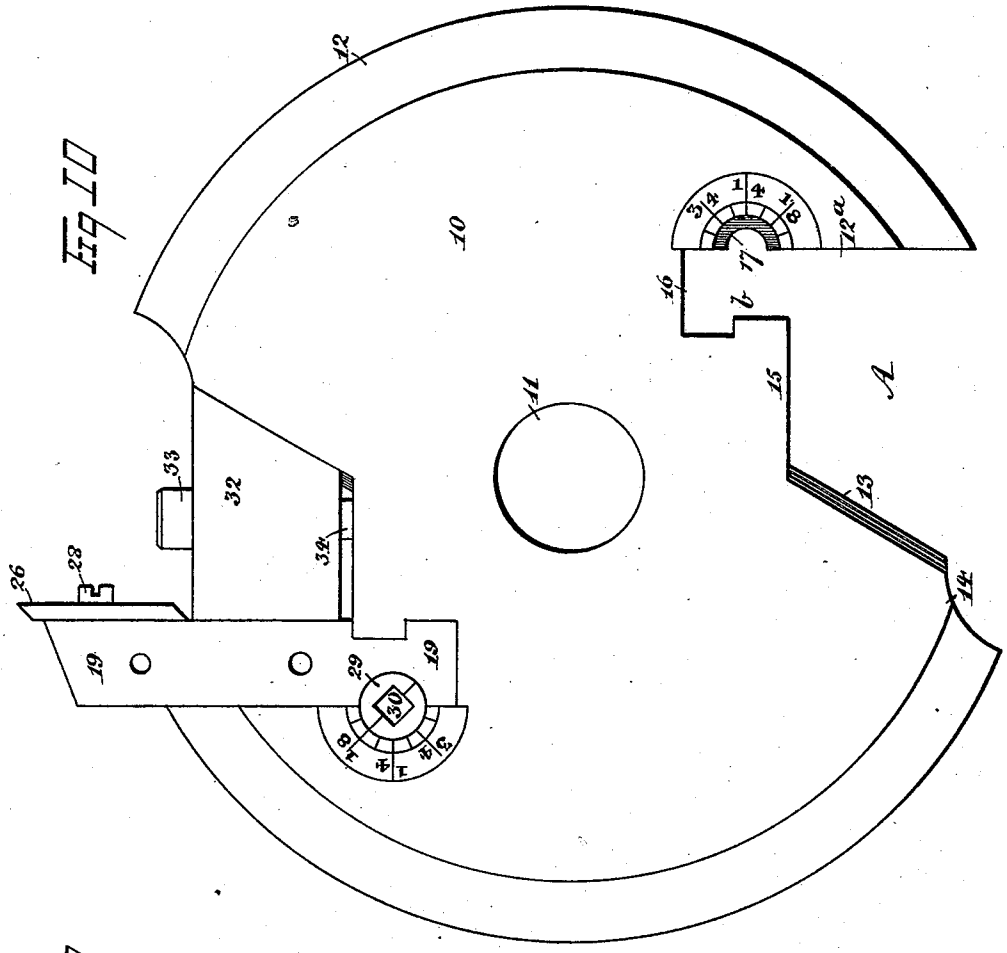
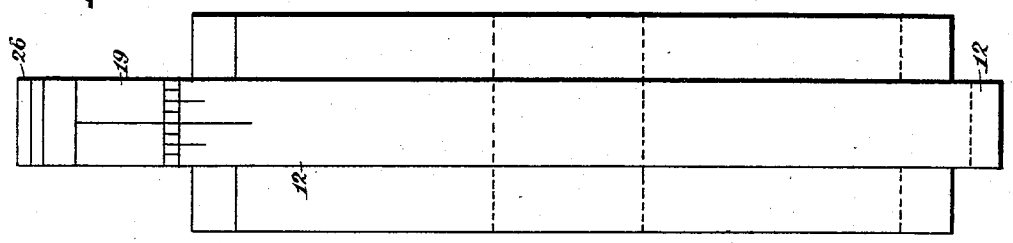


Fig 9



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UNITED STATES PATENT OFFICE.

FRANCIS I. MATTHEWS AND DANIEL J. QUINLEAN, OF OAKLAND, CALIFORNIA.

ADJUSTABLE GROOVING-HEAD.

SPECIFICATION forming part of Letters Patent No. 423,618, dated March 18, 1890.

Application filed July 10, 1889. Serial No. 317,084. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS I. MATTHEWS and DANIEL J. QUINLEAN, both of Oakland, in the county of Alameda and State of California, have invented a new and useful Improvement in Adjustable Dado and Grooving Heads, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in adjustable dado or grooving heads, and has for its object to provide a head capable of attachment to any saw mandrel or arbor, and whereby without removing the cutters the width of the groove to be cut may be varied.

A further object of the invention is to provide a simple and durable head having perfectly smooth side faces, whereby adjustment may be made upon either side, as may be found convenient, and the device be capable of occupying no more space upon the arbor when expanded to its greatest extent than when in position to cut the narrowest groove.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a partial side elevation of the head, illustrating the application thereto of the carrier-block, the spur, and cutter. Fig. 2 is an edge view of the head, illustrating two cutters in position. Fig. 3 is a front elevation of the carrier-block, having the spur and cutter attached. Fig. 4 is a side elevation of the head, illustrating a slightly modified form of carrier-block and spur attached at one point upon its periphery, and also illustrating the cavity formed in the head for the reception of the carrier-block and devices for retaining the same. Fig. 5 is a top view of Fig. 4, partially in section, illustrating the cavity in the head for the reception of the adjusting-screw and the bearing for the carrier-block. Fig. 6 represents, respectively, a front elevation and side view of the cutter. Fig. 7 is a side elevation, partially in section, of the adjusting-screw; and Fig. 8 illustrates, respectively, a side elevation and edge view of a spur. Figs. 9 and 10 are edge and end views, respectively, hereinafter referred to.

In carrying out the invention the head 10 is preferably made of metal, being cast or forged solid with smooth outer side faces and provided with a central bore 11 to receive a saw arbor or mandrel, and the said head is provided upon its periphery at or near its center with a rib 12. At opposite sides in the periphery of the head a recess A is produced, adapted for the reception of the cutting mechanism. The shape of the recess is best illustrated in Fig. 4, in which it will be observed that the recess is so produced that one side is straight or at a right angle to the horizontal axis of the head, as illustrated at 12^a, the opposite wall of the recess being inclined from the periphery downward and provided with a longitudinal rib 13. The peripheral rib 12 of the head is slightly concaved, as shown at 14, in forming the recess A, and the said concave wall 14 extends slightly within the body of the head to a connection with the ribbed wall.

The base or inner wall of the recess A is straight for the greater portion of its length, as shown at 15, and as the said straight portion of the said base-wall approaches the straight side wall 12^a an inwardly-extending essentially L-shaped depression or cavity 16 is formed, and in the side wall of the depression or cavity 16, in a plane with the straight side wall 12^a of the recess A, a semicircular bore 17 is produced, which bore has a reduced diameter at a central point between its ends, as best shown at 18 in Fig. 5.

The carrier-block 19 is illustrated in detail in Fig. 3, and comprises a suitable block of metal having an upper tapering head, the said block being preferably rectangular in cross-section and of greatest width at its lower end, as shown at 20 in the said figure. In the rear face of the lower or larger portion of the carrier-block a transverse semicircular bore 21 is formed, interiorly threaded, and in the opposite face a groove is produced. One outer side face of the carrier-block is perfectly straight, and to the said face the spur 22 is adjustably secured, the teeth of the

spur being made to project above the upper beveled surface of the head of the carrier-block. The spur is preferably made of greater width at its top than at its bottom, in order to provide for the proper clearance when the device is in operation. This is illustrated very clearly in Fig. 8. The spur is attached to the carrier-block by forming in the former an elongated slot 23 and passing through the said slot a set or cap screw 24 into the carrier and forming in the lower end of the spur a recess adapted to receive a pin 25, projected from the carrier, as illustrated in Figs. 1 and 4.

We desire it to be distinctly understood that we do not confine ourselves to any particular shape of carrier-block, as the said shape may be varied; and in the drawings we have illustrated two formations of the said block—one in Fig. 1, in which the upper portion of the block is carried forward at an angle to the body, and in Fig. 4, where the block is perfectly straight. The spur 22 is made to conform to the contour of the block.

Upon the front face of the carrier-block 19, at its upper end, a cutting blade or knife 26 is adjustably secured, which knife is reversible, being provided with a cutting-edge at both ends, as illustrated at *a* and *a'* in Fig. 6. The cutter is adjustably secured to the carrier-block by producing in the cutter an elongated opening 27 and passing a set or cap screw 28 through the said opening into the block, as illustrated in Figs. 1 and 4.

In connection with the carrier-block, to impart to the same a lateral adjustment, a screw 29 is employed, (illustrated in detail in Fig. 7,) adapted to fit snugly into the semicircular recess 17 in the straight wall of the recess A. To that end the screw is provided at its center with a reduced diameter, as illustrated at 30, which reduced section of the screw is unthreaded, and is adapted to fit into the reduced portion 18 of the said recess 17. In the ends of the screw 29 a cavity 31 is formed, preferably rectangular in general contour, adapted to receive one end of a key-wrench, whereby the adjusting-screw may be readily manipulated. The adjusting-screw is of sufficient length to extend through the head and terminate flush with each side face thereof. By means of the key-wrench above referred to it is evident that the screw may be manipulated in a convenient and expeditious manner without the said screw projecting in the slightest beyond the side faces of the head. Thus the head is left perfectly smooth at its sides, and in order to effectually prevent the screw from projecting I preferably slightly counter-sink the recess 17 in the head, and likewise the corresponding threaded recess 21 in the carrier-block, as illustrated.

In placing the parts together the adjusting-screw 29 is first dropped into the recess 17 in the head, and the carrier-block is inserted in the recess A and brought into place by turning the said screw, its lower end entering the L-shaped extension 16 of said recess and contacting with the base-wall thereof, the straight rear walls of the block contacting with the straight side wall of the recess, and when so contacting and properly seated the threaded recess 21 in the block will register with the plain recess 17 in the head, and the groove in the opposite face of the carrier-block will receive the shoulder *b*, produced by the angular shape of the base-recess 16, as illustrated in Figs. 1 and 4. When the carrier-block has been so located, the cutter will be upon its front face and the spur upon its side face, and in introducing the several carrier-blocks the spurs of the several blocks are made to appear upon opposite sides, the one above appearing upon the right-hand side of the upper carrier-block, for instance, and the other spur upon the left-hand side of the lower carrier-block, as illustrated in Fig. 2. The adjusting-screw 29 is then introduced into the circular partially-threaded opening formed by the registering of the recesses 17 and 21, and a clamping-block 32, having one beveled and grooved end, is inserted in the recess A to a bearing against the front face of the carrier-block below the cutter, the groove in the clamping-block being adapted to receive the rib 13 upon the inclined or beveled wall of the recess A, whereby the block is guided in its vertical movement. The block is held to place, thoroughly tying the several parts in position by a set or cap screw 33, passing through the same into the threaded cavity 34, formed in the base-wall 15 of the said recess A, as illustrated in Figs. 1 and 2. It will be observed by reason of this construction that by turning the adjusting-screws 29 in the proper direction the carrier-blocks, with their attachments, will be moved laterally in opposite directions, thus producing a narrow or a wide groove, as desired. It will be further observed, by reference to Fig. 2, that the carrier-blocks do not under any circumstances project beyond the side faces of the head and that the outer faces of the clamping-blocks are flush with the outer side faces of the head. Thus no projections are formed upon any portion of either of the side faces of the head.

The adjusting-screw is preferably given about sixteen threads to the inch, and one turn of the screw will move the knife or cutter about one-sixteenth of an inch, a one-half turn about one thirty-second, and one-fourth of a turn about one sixty-fourth of an inch, and so on down.

In practice we intend to produce a graduated circle around the adjusting-screws upon the head (see Fig. 10) and to produce a line across the center of each screw-head, thereby indicating the proper distance to turn the latter. Upon the cutters we also propose to produce a line drawn down the center, (see Fig. 9,) and the outer face of the head is to be graduated to show the width of the cut the knives are set to form.

The drawings illustrate but two cutters attached to the head; but in practice we use two, three, or four, as desired.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a dado or grooving head, the combination, with a head having smooth outer side faces and a recess A produced in its periphery, substantially as described, of a carrier-block held to have lateral movement in the said recess, provided with a vertical adjustable spur and a vertical adjustable cutter, a clamping-block contacting with one wall of the said recess A and the opposed face of the carrier-block, and an adjusting-screw passing through the head and through the carrier-block, terminating essentially flush with the side faces of the head, substantially as and for the purpose specified.

2. In a dado or grooving head, the combination, with a head having smooth outer side faces and provided with a recess A, substantially as described, having one inclined and one straight wall and provided with a transverse semicircular recess in its straight wall of reduced diameter at its center, of a carrier-block inserted in the said recess contiguous to the straight wall thereof and provided with a transverse recess interiorly threaded and registering with the transverse recess in the straight wall of the main recess A, a spur adjustably secured upon one side face of the carrier-block, an adjustable knife secured upon the front face of the said block, a clamping-block contacting with the inclined wall of the main recess and the approaching face of the carrier-block, and an adjusting-screw having a reduced diameter at or near its center capable of contact with the wall of the transverse recess in the main recess A, and the interiorly-threaded recess in the carrier-block, all combined for operation substantially as shown and described.

3. In a dado or grooving head, the combination, with a head having smooth outer side faces and provided with a recess A, substantially as described, having one inclined ribbed wall and one straight wall, and provided with a transverse semicircular recess in its straight wall of reduced diameter at its center, of a carrier-block inserted in the said recess contiguous to the straight wall thereof and provided with a transverse recess interiorly threaded and registering with the transverse recess in the straight wall of the main recess A, a spur wider at its top than at its bottom, adjustably secured upon one side face of the carrier-block, a reversible adjustable knife secured upon the front face of the said block, a clamping-block grooved to engage with the ribbed wall of the main recess A and the approaching face of the carrier-block, and an adjusting-screw having a reduced diameter at or near its center capable of contact with the wall of the transverse recess in the main recess A and the interiorly-threaded recess in the carrier-block, the said screw being adapted to terminate at its extremities essentially flush with the outer face of the head and provided in said extremities with a socket capable of receiving a key-wrench or equivalent tool, substantially as and for the purpose specified.

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DANIEL J. QUINLEAN.

Witnesses:
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A. J. LUND.