

No. 804,705.

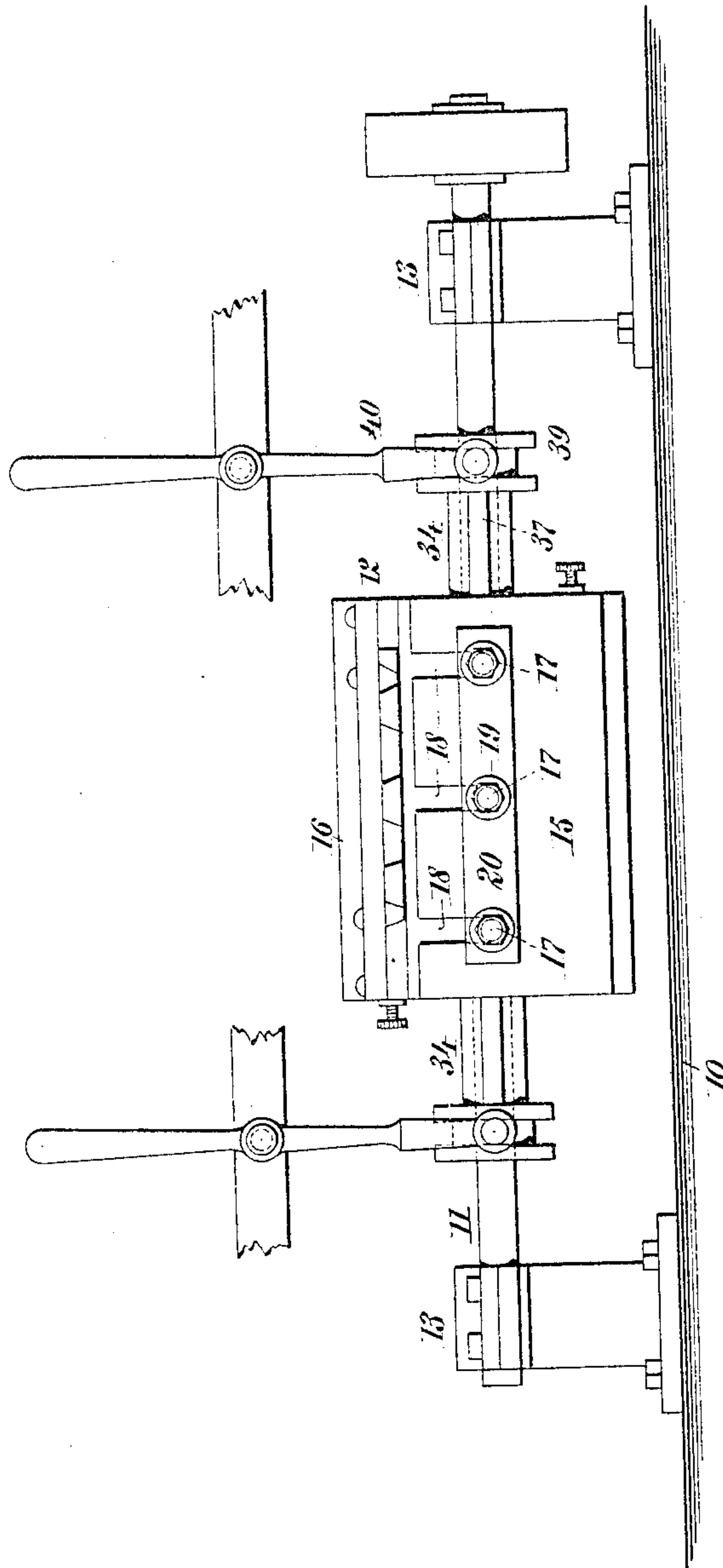
PATENTED NOV. 14, 1905.

G. W. & H. T. CLARK.
CUTTER HEAD FOR WOODWORKING MACHINES.

APPLICATION FILED MAY 9, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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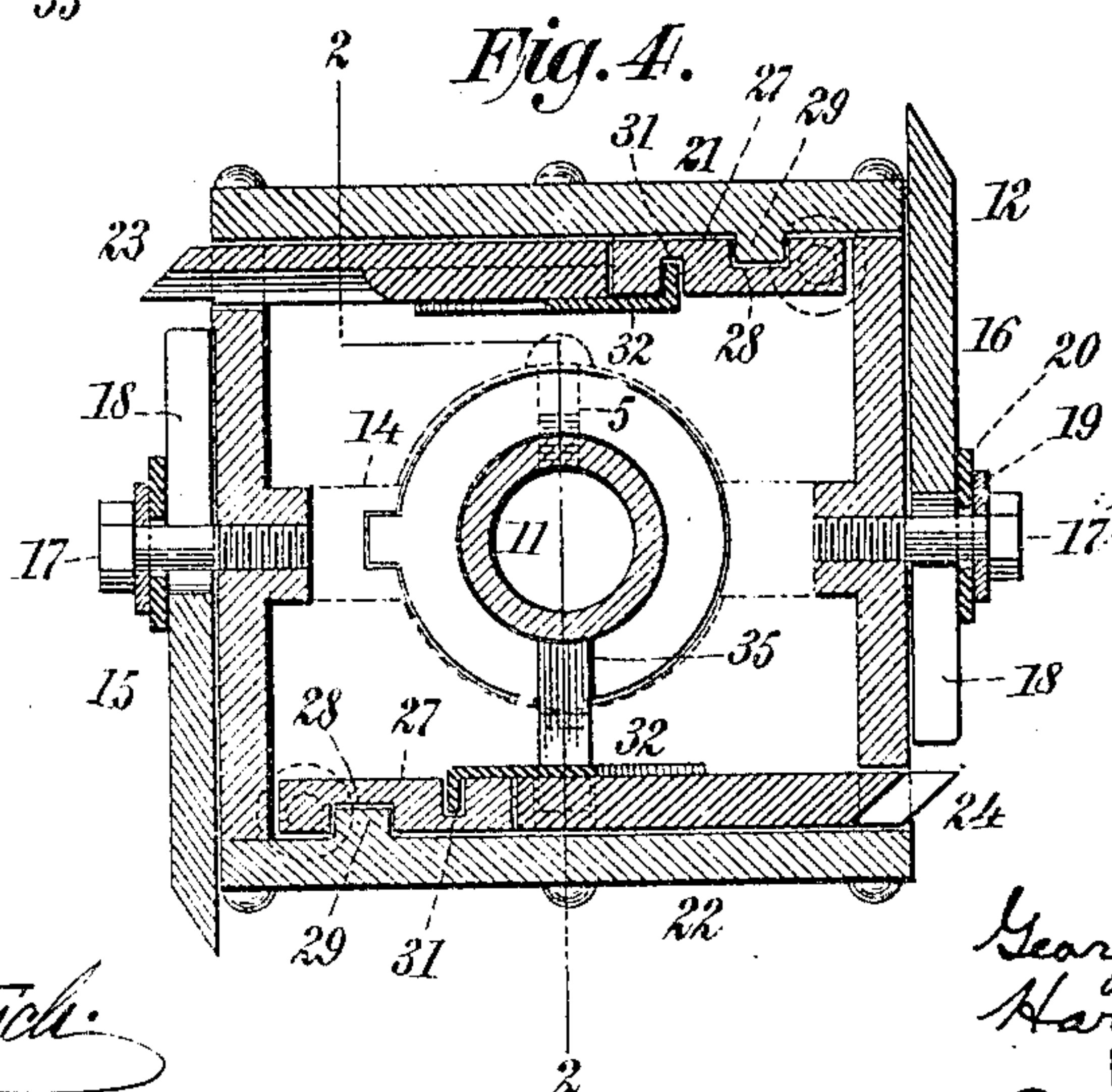
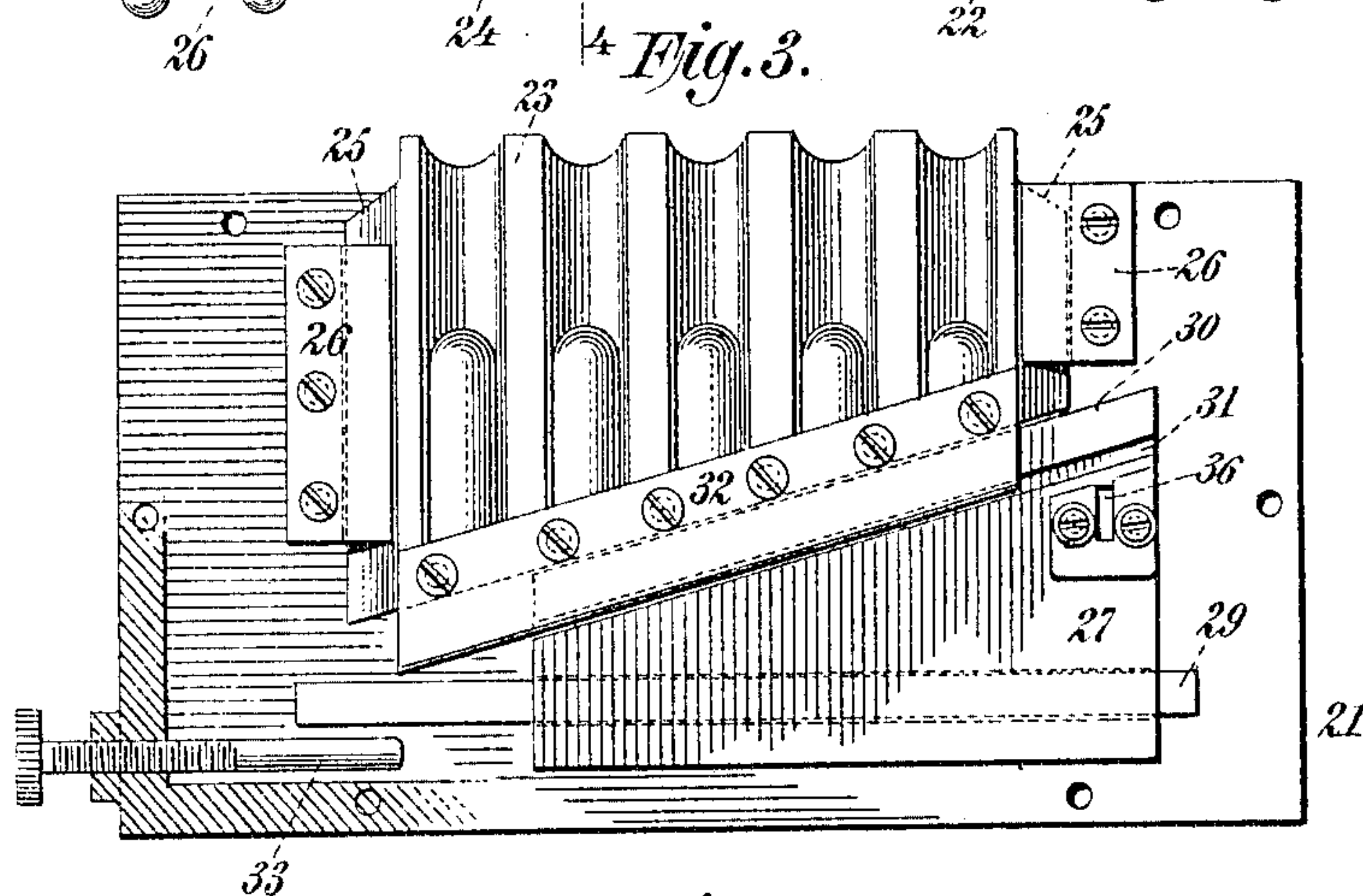
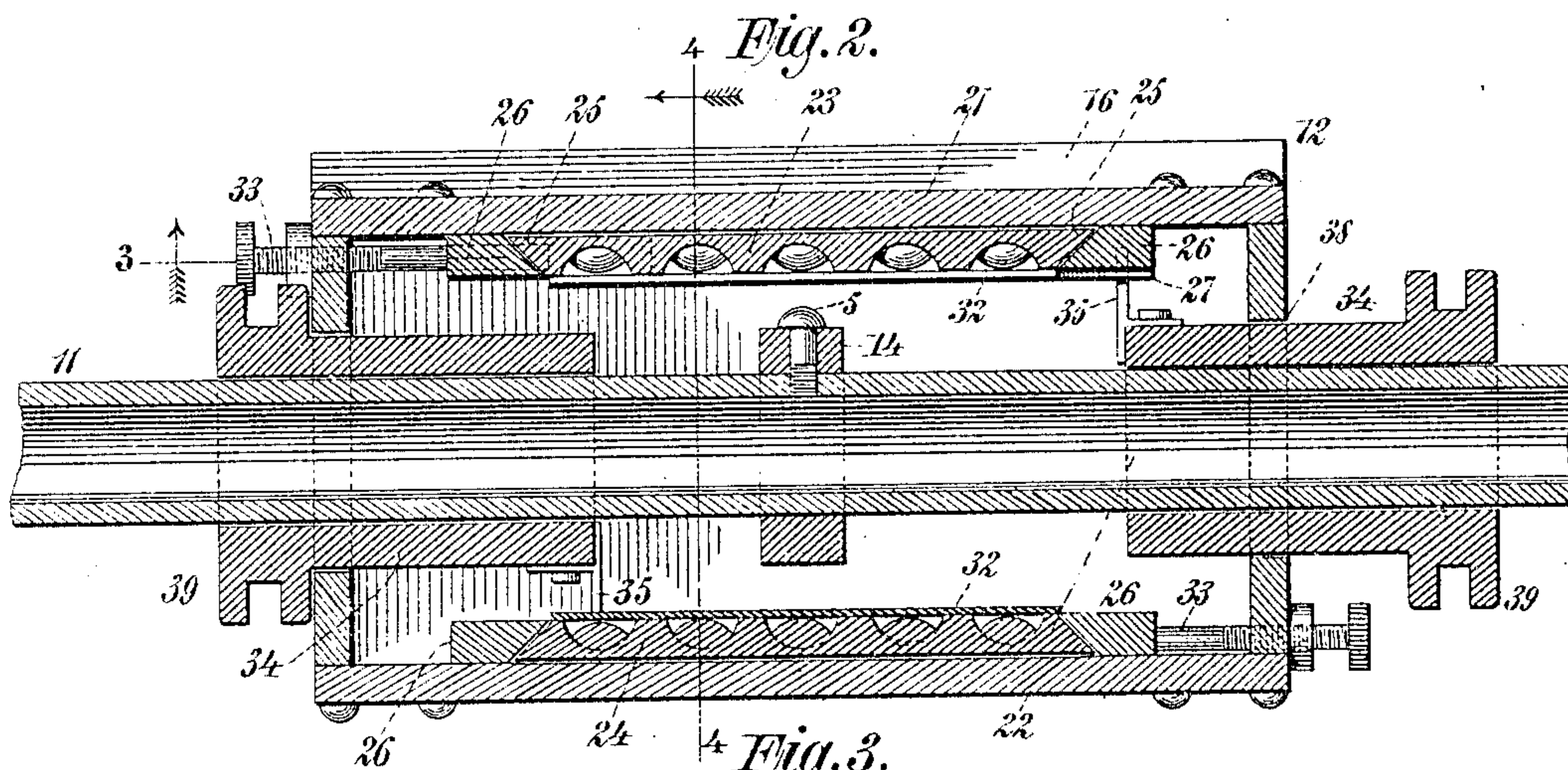
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UNITED STATES PATENT OFFICE.

GEORGE W. CLARK AND HARRY T. CLARK, OF NEW YORK, N. Y.

CUTTER-HEAD FOR WOODWORKING-MACHINES.

No. 804,705.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed May 9, 1905. Serial No. 259,585.

To all whom it may concern:

Be it known that we, GEORGE W. CLARK and HARRY T. CLARK, citizens of the United States, and residents of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Cutter-Heads for Woodworking-Machines, of which the following is a specification.

10 The invention relates to improvements in cutter-heads for woodworking-machines; and it consists in the novel features, arrangements, and combinations of parts hereinafter described, and particularly pointed out in 15 the claims.

Our invention pertains especially to rotary cutter-heads by which ornamental ribs, grooves, and other configurations may be cut into surfaces of pieces or strips of wood 20 fed below such head; and the purpose of our invention is to very greatly increase the efficiency and utility of cutting-heads, to provide the head with two or more different characters of cutting-tools, so as to vary the 25 configuration to be formed upon a piece of wood traveling below the same, and also to provide novel means for adjusting the cutting-tools, preferably during the rotation of the head, it being entirely convenient in the 30 use of the head of our invention to entirely withdraw one tool from its operative position and project a different tool into its operative position without stopping the machine and while the head carrying such tools 35 is in rapid rotation.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

40 Figure 1 is a front elevation of a portion of a woodworking-machine equipped with a cutter-head constructed in accordance with and embodying the invention. Fig. 2 is a vertical longitudinal section through a cutter-head embodying our invention, the section being on the dotted line 2 2 of Fig. 4. Fig. 3 is a detached inner face view of one side of the cutter-head and illustrates one of the cutting-tools in position thereon with 45 the means for effecting the adjustment of said tool and binding the same in its adjusted position, Fig. 3 also indicating a portion of one corner of the head in section at the line 3 of Fig. 2, so as to illustrate one of 50 the adjustable stops for controlling the inward throw of the cutting-tool; and Fig. 4 is

a vertical transverse section through the cutter-head on the dotted line 4 4 of Fig. 2.

In the drawings, 10 denotes the bed of a usual woodworking-machine, and 11 the 60 shaft upon which the cutter-head 12 is secured and which, as usual, is driven by power, the ends of said shaft 11 being suitably mounted in bearings 13. Our invention pertains to the construction of the head 65 12 and the means provided for holding and adjusting the tools carried thereby.

The head 12 is in the form of a hollow box, longitudinally through which the shaft 11 extends and within which by means of a 70 transverse frame or yoke 14 and screw or stud 5 the head is fastened to the shaft 11 so as to rotate therewith. Upon two opposite faces of the head 12 are secured the planing-tools 15 16, whose cutting edges project in 75 opposite directions, as shown in Fig. 4, and which tools are secured against the head by means of screws 17, which pass through slots 18 in said tools and enter the walls of the box, washers 19 and a plate 20 being interposed 80 between the outer face of such tools and the heads of said screw, as usual. The planing-tools 15 16 are not of unusual construction, and they may be independently adjusted by means of the screws 17, as usual. 85 We provide the head with the planing-tools 15 16, so as to increase the utility of the head, and the said tools are utilized for producing plain flat smooth surfaces upon the boards or strips of wood which may be fed below the 90 head. Upon the other two sides of the box-like head we provide removable plates 21 22, upon whose inner faces are adjustably mounted the cutting-tools 23 24, the tool 23 being clearly illustrated in Fig. 3 and, as 95 shown, formed at its cutting edge to cut ribs or flutes in the board or strip of wood which may be fed below the head. The tool 23 (shown in Fig. 3) with the means for adjusting the same is a counterpart of the tool 100 24 with the means for adjusting the same, and hence the construction and arrangement of the tools 23 24 may be fully understood from Fig. 3, the only essential difference between the tools 23 24 being that the cutting 105 edge of the tool 23 is intended to cut ribs or flutes, while the cutting edge of the tool 24 is intended to cut grooves. The tool 23 is of substantial breadth, so as to cut a number of flutes or ribs, and is at its side edges formed 110 with beveled portions 25, which are engaged by and adapted to slide in the guides 26, car-

ried by the plate 21. The inner longitudinal edge of the tool 23 is inclined and abuts against the adjacent inclined or wedge-shaped edge of a longitudinally-slidable adjusting-block 27, which contains a groove 28, receiving a guiding-rib 29, formed on the plate 21, the purpose of said groove 28 and rib 29 being to guide the block 27 in a true longitudinal direction. The block 27 is also adjacent to its inclined or wedge-shaped edge 30 formed with an inclined groove 31, which receives the inner flanged edge of a plate 32, Fig. 4, fastened upon the inner end of the tool 23, said plate 32 serving to maintain the due relation of the adjacent inclined edges of the tool 23 and block 27 to each other.

When the block 27 is moved longitudinally of the head, it will force the tool 23 transversely, the inclined edge 30 of said block when the latter is moved inwardly serving to force the tool 23 outwardly and the inclined groove 31 and plate 32 serving when the block 27 is moved outwardly to pull the tool 23 inwardly. The extent to which the tool 23 may be projected outwardly is controllable by the position of the block 27. When the block 27 is pushed inwardly to its greatest extent, the tool 23 will be driven outwardly to the maximum extent. It is desirable to provide means for limiting the inthrust of the block 27 and to regulate thereby the extent to which the tool 23 may be forced outwardly in the performance of any special work, and these means may be simply a threaded rod 33, serving as a stop and having its inner end in the path of the smaller end of the block 27, as clearly illustrated. The rod 33 constitutes an adjustable stop and passes through a threaded hole in the end wall of the head, and the said rod 33 may be set in such position as may be desired to limit the projection of the tool 23 in accordance with the work to be performed.

One important feature of our invention resides in the fact that the block 27 may be moved to adjust the tool 23 inwardly or outwardly while the cutter-head is in motion, and the means we provide for accomplishing this purpose comprise a sleeve 34, (at the right of Figs. 1 and 2,) which is loose upon the shaft 11 and carries at its inner end a finger 35, adapted to enter a recess 36, formed in the larger end of the block 27. The sleeve 34 is slidable upon the shaft 11 and is caused to rotate with the head by means of a rib or spline 37, Fig. 1, formed thereon and engaging the wall of the aperture 38 in the end of the head and through which aperture said sleeve 34 passes. Upon moving the sleeve 34 inwardly or outwardly with respect to the head its finger 35, engaging the recess 36, will compel a corresponding movement in the block 27, with the result that the tool 23 may be adjusted inwardly or outwardly, as may be desired, without arresting the movement

of the head. The sleeve 34 may be moved by any convenient mechanism; but preferably we will form on the outer end of said sleeve a grooved head 39 to be engaged by an ordinary pivoted shipper-lever 40.

Having specifically described the means for mounting and adjusting the tool 23, arranged against the inner face of the plate 21, it is unnecessary to specifically describe the details of the mounting and means for adjusting the tool 24, arranged against the inner face of the plate 22, because such mounting and adjusting means for the tool 24 are identical with the mounting and adjusting means for the tool 23, and the parts thereof are correspondingly indicated by reference-numerals, the numeral 26, Fig. 2, denoting the guides for the tool 24; 27, Fig. 4, the wedge-block for adjusting the same; 28, the guiding-groove in said block; 29, the longitudinal rib formed on the plate 22 to cooperate with said groove; 31, the groove in the block 27 to receive the inner flanged edge of the plate 32, secured to said tool 24, and 33, Fig. 2, the adjustable stop to limit the throw of the block 27 for the tool 24. As may be seen in Fig. 4, the cutting edge of the tool 23 projects in one direction and the cutting edge of the tool 24 projects in the opposite direction, and since the sleeve 34 for adjusting the block 27 for the tool 23 is located at the right-hand end of the head we prefer to locate the corresponding sleeve 34 for the block 27 of the tool 24 at the left-hand end of said head, as shown in Fig. 2, this sleeve 34 for the tool 24 being adapted to be moved inwardly or outwardly by means of a shipper-lever, as shown at the left-hand side of Fig. 1, and being free upon the shaft 11, but keyed in the left-hand end of the head. The mechanism for mounting and adjusting the tool 23 is a duplicate of the mechanism for mounting and adjusting the tool 24, and the cutting-head will employ either or both of these tools 23 24, as may be required. As clearly illustrated in Fig. 4, the head provides tangential surfaces for the tools, and in the employment of the head the adjustment of the tools is likewise tangential. The head in its preferred form will therefore be provided at opposite sides with the planing-tools 15 16 and at its other opposite sides with the adjustable tools 23 24 for cutting ornamental configurations, said tools 23 24 being adjustable from without the cutting-head and preferably during the rotation of said head.

When the planing-tools 15 16 are in use, the tools 23 24 will be withdrawn within the head, and when the tools 15 16 are not in use either tool 23 or 24 may be projected for performing its duty. There are special moldings and the like which may require the use at intervals along their length of the several tools carried by the cutting-head—as, for illustration, the planing-tools 15 16 may be util-

ized for forming smooth surfaces on the molding, the cutting-tool 23 for forming a length of ribs thereon, and the tool 24 for forming a length of grooves. We therefore prefer to equip the head with the tools 15, 16, 23, and 24, but do not desire to limit the invention to the employment of all of said tools on one head, since it is obvious that the invention is represented in Fig. 3 in the mounting and means for adjusting the one tool 23.

We do not limit our invention to all of the details of form and construction shown, since we are aware that these may be modified in many respects without departing from the scope of our invention as pointed out in the claims.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording a tangential surface for the tool, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of said head and adapted to be adjusted tangentially thereon, means carried by said head for engaging and moving said tool and thereby adjusting the same, and means at the end of said head and carried thereby for effecting the movement of said adjusting means during the rotation of said head; substantially as set forth.

2. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording a tangential surface for the tool, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of said head and adapted to be adjusted tangentially thereon, longitudinally-sliding means carried by said head and engaging the inner edge of said tool for moving said tool and thereby adjusting the same, and means at the end of said head and carried thereby for effecting the movement of said sliding means; substantially as set forth.

3. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording a tangential surface for the tool, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of said head and adapted to be adjusted tangentially thereon, a slide carried by said head and engaging said tool and adapted when slid to move said tool outwardly or draw it inwardly, and a slidable sleeve on the shaft of said head and adapted to rotate with said head and having a connection with said slide, whereby the latter may be moved to adjust said tool; substantially as set forth.

4. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording a tangential surface for the tool, a transverse shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of said head and adapted to be adjusted tangentially thereon, a slide carried by said head and engaging said tool and adapted when slid to move said tool outwardly or draw it inwardly, a slidable sleeve on the shaft of said head and adapted to rotate with said head and having a connection with said slide, whereby the latter may be moved to adjust said tool, and a pivoted shipper-lever in engagement with said sleeve for sliding the same; substantially as set forth.

5. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording tangential surfaces for the tools, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, cutting-tools applied to and extending lengthwise of said head and adapted to be independently adjusted tangentially thereon, independent adjusting means carried by said head for independently adjusting said tools, and means at the opposite ends of said head and carried thereby and independently connected with said adjusting means, for effecting the independent adjustment of said tools; substantially as set forth.

6. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording tangential surfaces for the tools, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, cutting-tools applied to and extending lengthwise of said head and adapted to be independently adjusted tangentially thereon, independent slides carried by said head for engaging and moving said tools respectively and thereby adjusting the same, and slidable sleeves on the shaft of said head and connected with the ends of the latter and independently connected with said slides for independently effecting the movement of the latter and the adjustment of said tools; substantially as set forth.

7. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording a tangential surface for the tool, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of said head and adapted to be adjusted tangentially thereon, said tool having an inclined inner edge, guides for the ends of said tool, a sliding block carried by said head and having an inclined edge in engagement with the inclined edge of said tool, and

means connecting said tool and block so that the latter may positively control the outward and inward movement of said tool, combined with means for effecting the movement of
5 said block; substantially as set forth.

8. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording a tangential surface for the tool, a transverse
10 driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of said head and adapted to be adjusted tangentially thereon, said tool having
15 an inclined inner edge, guides for the ends of said tool, a sliding block carried by said head and having an inclined edge in engagement with the inclined edge of said tool, and means connecting said tool and block so that the
20 latter may positively control the outward and inward movement of said tool, combined with the slidable sleeve on said shaft and connected to rotate with said head and having a connection with said block for moving the
25 latter; substantially as set forth.

9. In a machine of the character described, a rotary cutter-head extending transversely over the bed of the machine and affording a tangential surface for the tool, a transverse
30 driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of said head and adapted to be adjusted tangentially thereon, said tool having
35 an inclined inner edge, guides for the ends of said tool, a sliding block carried by said head and having an inclined edge in engagement with the inclined edge of said tool, and means connecting said tool and block so that the
40 latter may positively control the outward and inward movement of said tool, combined with the slidable sleeve on said shaft and connected to rotate with said head and having a

connection with said block for moving the latter, and an adjustable stop for controlling
45 the throw in one direction of said block; substantially as set forth.

10. In a machine of the character described, a rotary cutter-head of hollow-box form extending transversely over the bed of
50 the machine and affording a tangential surface for the tool, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, a cutting-tool applied to and extending lengthwise of
55 the inner face of one side of said head and adapted to be adjusted tangentially thereon, sliding means carried by said head for engaging and moving said tool and thereby adjusting the same, and means at the end of
60 said head and adapted to rotate therewith for effecting the movement of said sliding means; substantially as set forth.

11. In a machine of the character described, a rotary cutter-head of hollow-box
65 form extending transversely over the bed of the machine, a transverse driving-shaft carrying said head, means supporting said shaft at opposite sides of said bed, cutting-tools applied to and extending lengthwise of the in-
70 ner faces of two different sides of said head and adapted to be adjusted transversely thereon, independent slides carried by said head for engaging and moving said tools and thereby adjusting the same, and means at the
75 opposite ends of said head and adapted to rotate therewith for effecting the movement of said slides; substantially as set forth.

Signed at New York city, in the county of New York and State of New York, this 8th
80 day of May, A. D. 1905.

GEORGE W. CLARK.
HARRY T. CLARK.

Witnesses:

CHAS. C. GILL,
ARTHUR MARION.