

No. 736,573.

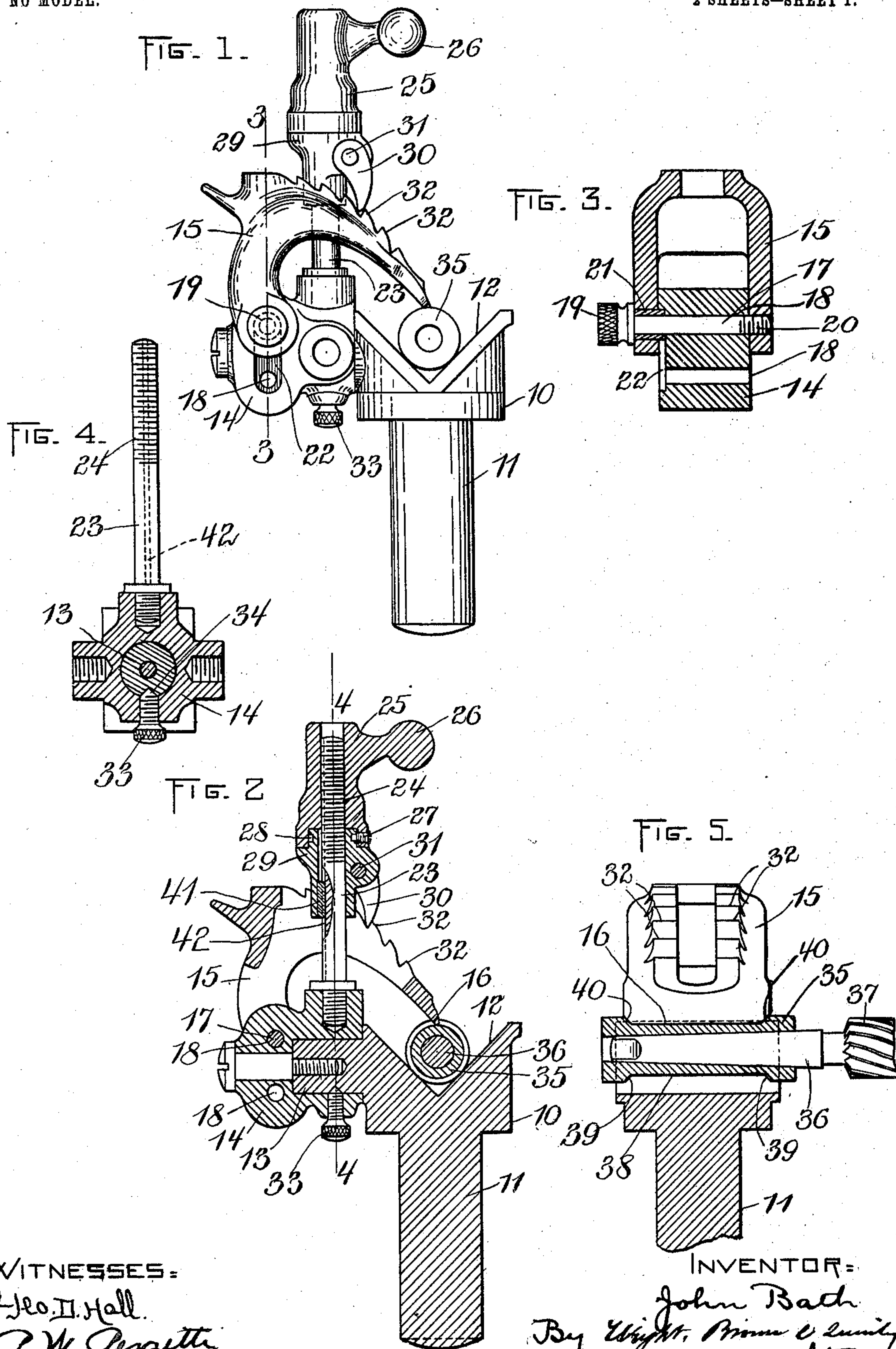
PATENTED AUG. 18, 1903.

J. BATH.  
TOOL HOLDER FOR GRINDING MACHINES.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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O. W. Pezzetta

INVENTOR:

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Attys

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2 SHEETS—SHEET 2.

FIG. 6.

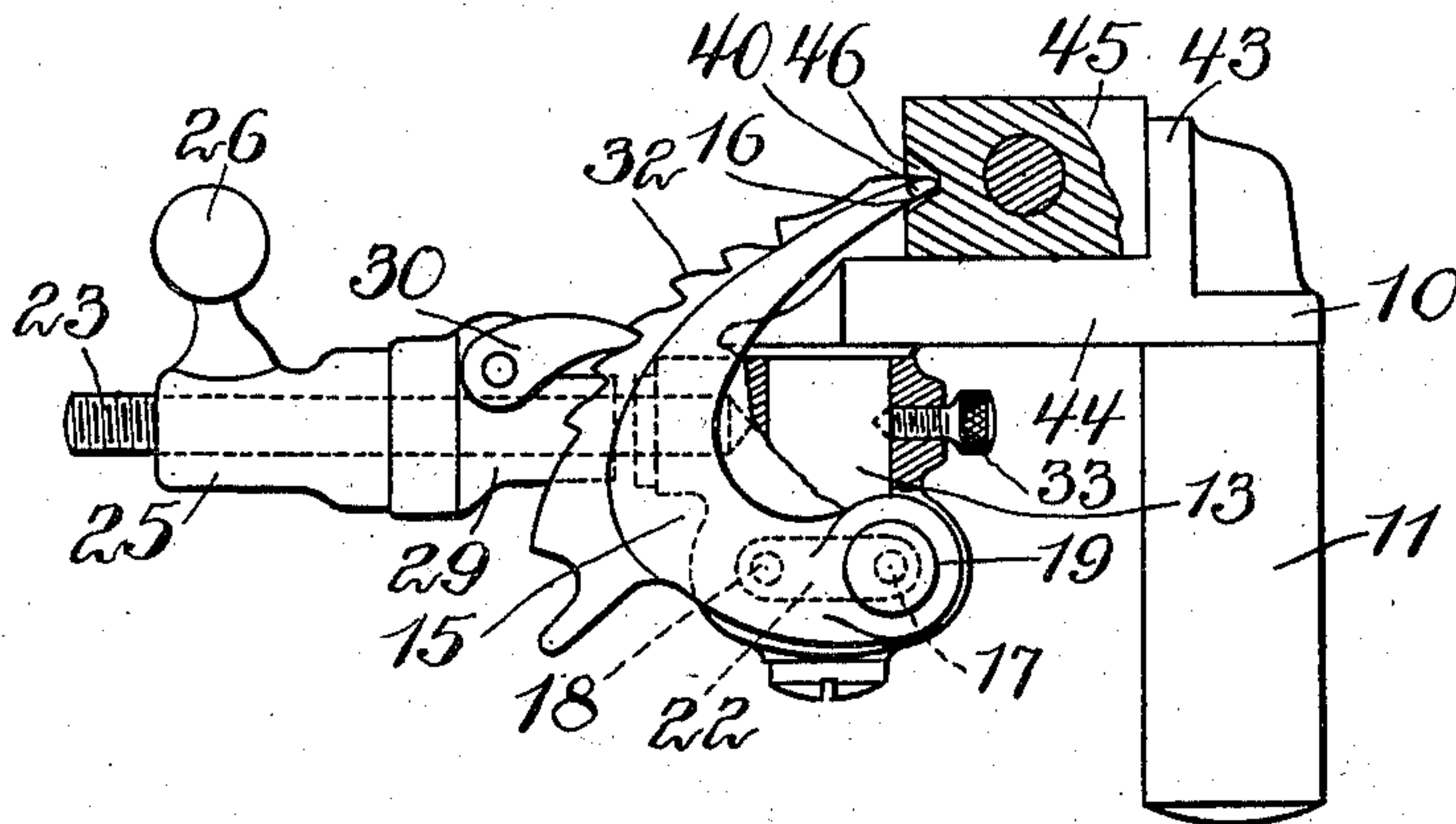
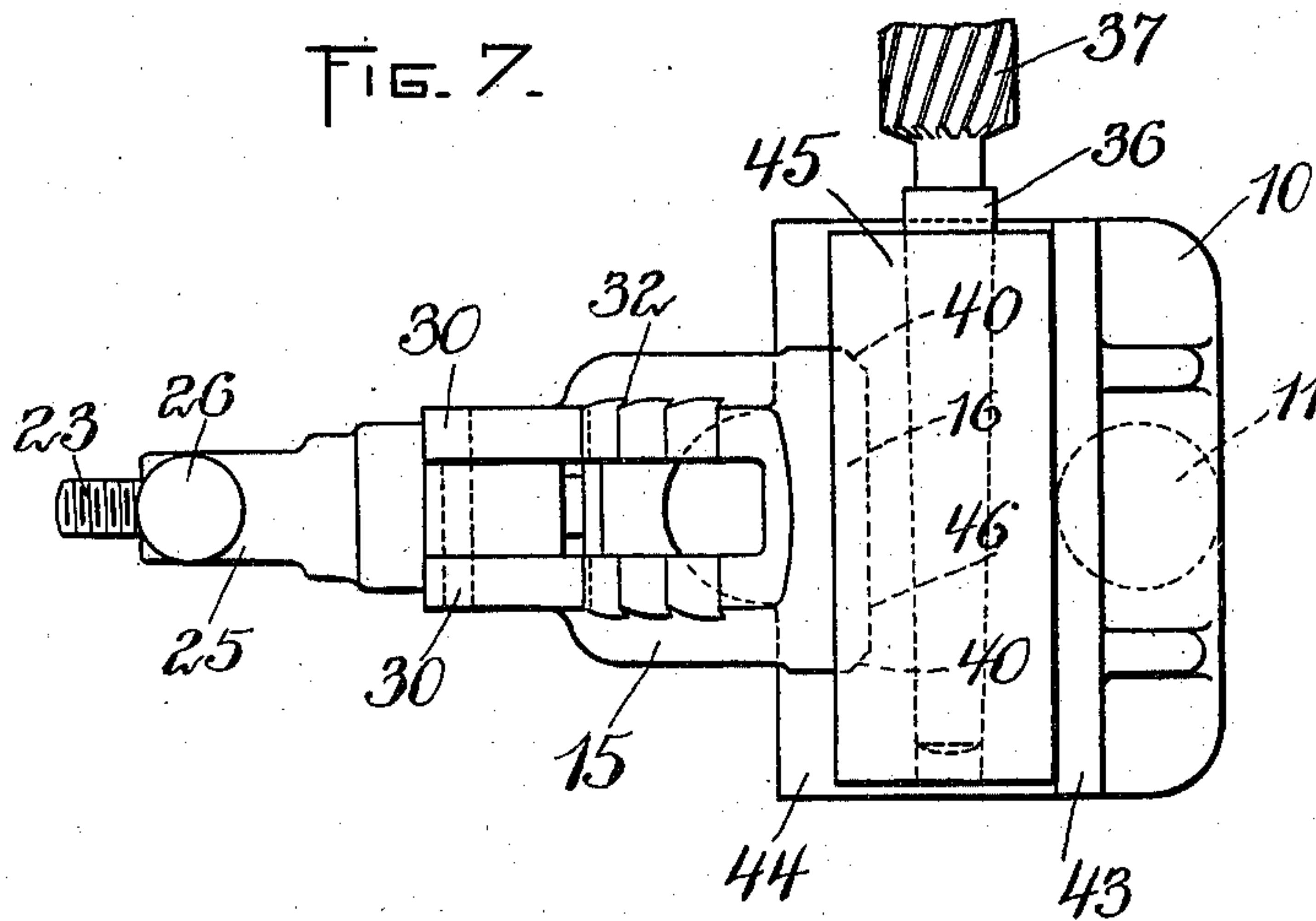


FIG. 7.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN BATH, OF WALTHAM, MASSACHUSETTS.

## TOOL-HOLDER FOR GRINDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 736,573, dated August 18, 1903.

Application filed December 8, 1902. Serial No. 134,278. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BATH, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Tool-Holders for Grinding-Machines, of which the following is a specification.

This invention relates to tool-holders for grinding-machines of the character disclosed in Letters Patent No. 665,303, granted to me January 1, 1901.

The objects of the present invention are to facilitate the sliding adjustment of the work-holding jaw from one of its pivoted positions to another, to prevent cramping of the work-holding jaw and its adjusting member in adjusting the jaw pivotally, to facilitate the positioning of tool-holding devices of a certain character, to position the edge of the adjustable jaw in fixed angular relation to the fixed work-holding abutment, to afford positive retraction to the jaw-adjusting pawls, and to provide a novel construction and relation of the fixed work-holding parts with respect to the adjustable parts.

Of the accompanying drawings, Figure 1 represents a side elevation showing one embodiment of a tool-holder constructed in accordance with my invention. Fig. 2 represents a vertical section thereof. Fig. 3 represents a section on line 3 3 of Fig. 2. Fig. 4 represents a section on line 4 4 of Fig. 2. Fig. 5 represents a longitudinal section through the trough, showing a tool-holding device engaged by the pivotal jaw. Fig. 6 represents a side elevation, partly in section, showing a different embodiment of the invention. Fig. 7 represents a plan view of the latter.

The same reference characters indicate the same parts in all the figures.

Referring at first to the embodiment shown in Figs. 1 to 5, inclusive, 10 is a block formed with a cylindrical stem 11, adapted to be held in the clamp of a suitable vise or holder and provided with fixed work-holding means consisting of a V-shaped trough 12. On the block 10 is formed a horizontal stud 13, on which is pivotally mounted a jaw-supporting base 14, to which is pivoted the work-holding jaw 15, which coöperates with the trough 12. On the stud 13 the base 14 swings in a vertical plane parallel to the groove of the trough 12,

so as to bring the working edge 16 of the jaw 15 into and out of parallelism with the bottom of the trough and hold either cylindrical or tapered work, and on a hinge-pin 17 the jaw 15 swings, so as to vary the distance of its lower edge from the bottom of the trough 12.

The pin 17 fits into either one of two hinge-pin holes 18 18, formed horizontally in the base 14, and is provided on one end with a head 19 and on the opposite end with a thread 20, screwing into one limb of the hub of jaw 15. Upon withdrawal of the pin 17 from one of the holes 18 for the purpose of inserting it in the other the jaw 15 would be capable of sliding to any indefinite position if not suitably guided; but for the purpose of guiding the jaw properly into alinement with either of the holes 18 I fix in one limb of the hub of the jaw a bushing 21, Fig. 3, the inner end of which fits a parallel-sided groove 22, formed in the holder 14 and including one end of each of the holes 18. When the bushing 21 is in contact with either end of the groove 22, the hinge-pin holes in the hub of the jaw 15 are accurately positioned in alinement with either the one or the other of the holes 18.

23 is a stem having its inner end fixed in the holder 14 and formed with a screw-thread 24 at its outer end, on which is mounted a nut 25, provided with a handle 26. By a screw 27, engaged with a groove 28 on a block 29, mounted to slide vertically on the stem 23, the nut 25 during axial movement is maintained in engagement with said block, and by means of a feather or spline 41 on the block 29, working in a groove 42 on the stem 23, the block is held from rotating. The rotation of the nut therefore produces a positive axial movement of the block 29 in both directions, the principal advantage of the connection 27 28 being that it enables the block 29 and its connected pawls hereinafter described to be positively retracted, thereby increasing the ease and quickness with which the device can be manipulated. The block 29 and nut 25 constitute an adjuster for the jaw 15, and connection is made between the block and jaw by means of a pair of pawls 30 30, secured to a rock-shaft 31 on the block 29 and engaging teeth 32 32, formed on the back of the jaw 15. As the block 29 is screwed down the pawls 30



rotate the jaws 15, so as to depress its lower end against the work, and during such adjustment the pivotal movement of the pawls compensates for the different paths of movement of the jaw and block and avoids any cramping of the jaw or block.

As a means for holding the base 14 in any fixed angular position, and thus determining a fixed angular relation between the edge 16 of jaw 15 and the bottom of the trough 12, whereby the parts are properly related to act successively on a number of pieces of work having the same taper or inclination, or, in some instances, to gage the proper inclination for such work, I provide a set-screw 33, mounted in the base 14 and adapted to engage the periphery of stud 13, thereby acting as a clamping device. The position of parallelism between the jaw and trough being the most important one, I form a conical recess 34 in the stud 13 for receiving the complementary conical end of screw 33 to hold the jaw and trough strictly parallel. Any other suitable clamping device may be substituted for the above.

35 is a sleeve or tool-holder provided for holding the tapered shanks 36 of certain kinds of machine-tools, such as the cutter 37 shown in the drawings, said sleeve being mounted in the trough 12 and held therein by the jaw 15 while the teeth of the cutter are being ground. To accurately position this holder in an axial direction, and thus hold the cutter at an accurate adjustment with respect to a grinding-wheel or other instrument acting upon it, I form in the sleeve 35 a circumferential groove 38, the sides 39 39 of which are similarly beveled. The corners 40 40 of the working edge 16 of jaw 15 are complementally beveled, so that they accurately fit the sides of the groove 38, the width of said groove being equal to the length of the working edge 16. As the jaw 15 is brought into connection with the sleeve 15 it will accordingly centralize or fix said sleeve at the adjustment predetermined for it by the position of its groove.

In Figs. 6 and 7 I have represented the fixed work-holding means as embodying a head 10, mounted at the upper end of stem 11 and provided with an abutment 43, located in a plane parallel to the stem 41, and a rest 44 at right angles to said abutment, the stud 13, on which base 14 is pivoted, extending downwardly from the lower side of said rest and parallel to the plane of abutment. The remainder of the device mounted on stud 13 is of the same construction as in Figs. 1 to 5. In this case, however, when employing a cutter-holding sleeve 45 I prefer to make two of its sides rectangular to conform to the parts 43 44, there being formed in said sleeve a groove 46, having bevels to fit those of the jaw 16 and performing the same function as hereinbefore described. Other work, either tapered or straight-sided, may be held between the jaw 15 and abutment 43, and when so held the whole of its upper face is free to

be operated on by tools. This arrangement makes of the device a compact and effective substitute for a work-holding vise. So long as the edge 16 of jaw 15 is to the right (as viewed in Fig. 6) of the vertical plane through the pivot of said jaw the pressure of the jaw 15 on the work will tend to force the latter both laterally against abutment 43 and downwardly against rest 44, thereby firmly securing the work.

An additional advantage secured by positively retracting the pawls 30 by means of the parts 27 28 hereinbefore mentioned is, in this last-described arrangement, that the jaw 15 will recede by gravity when said pawls 30 are retracted, thus releasing the work without manipulation of the jaw. The advantage of employing the guiding means 21 22 hereinbefore described also increases in this arrangement, as the jaw 15 if unguided would be difficult to control in shifting the pin 17, owing to its tendency to drop out of proper alinement.

I claim—

1. In a tool-holder for grinding-machines, the combination of a work-engaging pivotal jaw formed with teeth, a jaw-adjusting pawl-support, and a pawl pivoted to said support and coacting with said teeth.
2. In a tool-holder for grinding-machines, the combination of a jaw-supporting base formed with a plurality of hinge-pin holes, a work-engaging pivotal jaw mounted for sliding adjustment between said holes, a hinge-pin adapted to occupy either of said holes and pivoting the jaw, and means to guide said jaw into positions of alinement with said holes in its sliding movement from one to the other.
3. In a tool-holder for grinding-machines, the combination of a jaw-supporting base formed with a plurality of hinge-pin holes, and a guiding-groove connecting said holes, a work-engaging jaw slidably mounted on said base and having a bushing guided in said groove, and a hinge-pin adapted to occupy either of said holes and pivoting the jaw.
4. In a tool-holder for grinding-machines, the combination of work-holding means, and a cooperating device formed with bevels for positioning the work.
5. In a tool-holder for grinding-machines, the combination of fixed work-holding means, a cooperating movable work-engaging jaw formed with bevels, and a tool-holder adapted to be held between said fixed means and jaw and formed with complementary bevels.
6. In a tool-holder for grinding-machines, the combination of a head provided with work-holding means and a pivot-stud, a jaw-supporting base pivoted to said stud, a work-engaging jaw pivoted to said base and located in different angular relations with said work-holding means by movement of said base on said stud, and a clamping device adapted to hold the base in a variety of angular positions on said stud.
7. In a tool-holder for grinding-machines,



the combination of a pivotal work-engaging jaw, a screw-threaded stem, a jaw-adjusting block mounted to slide axially but not rotate on said stem, a nut mounted on said stem, 5 and means for permitting relative rotary and preventing relative axial movements of said nut and block.

8. In a tool-holder for grinding-machines, the combination of a head having a work- 10 holding abutment, a work-rest extending at right angles thereto, a jaw-supporting base

pivoted to said head on an axis parallel to the plane of said abutment, and a work-engaging jaw pivoted to said base and coöperating with said rest and abutment to hold the work. 15

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

JOHN BATH.

Witnesses:

R. M. PIERSON,  
ADELINE C. RATIGAN.