No. 704,440. Patented July 8, 1902.

S. H. CROKER.

LATHE AUXILIARY APPLIANCE.

(Application filed Oct. 25, 1901.)

(No Model.) 4 Sheets—Sheet 1.

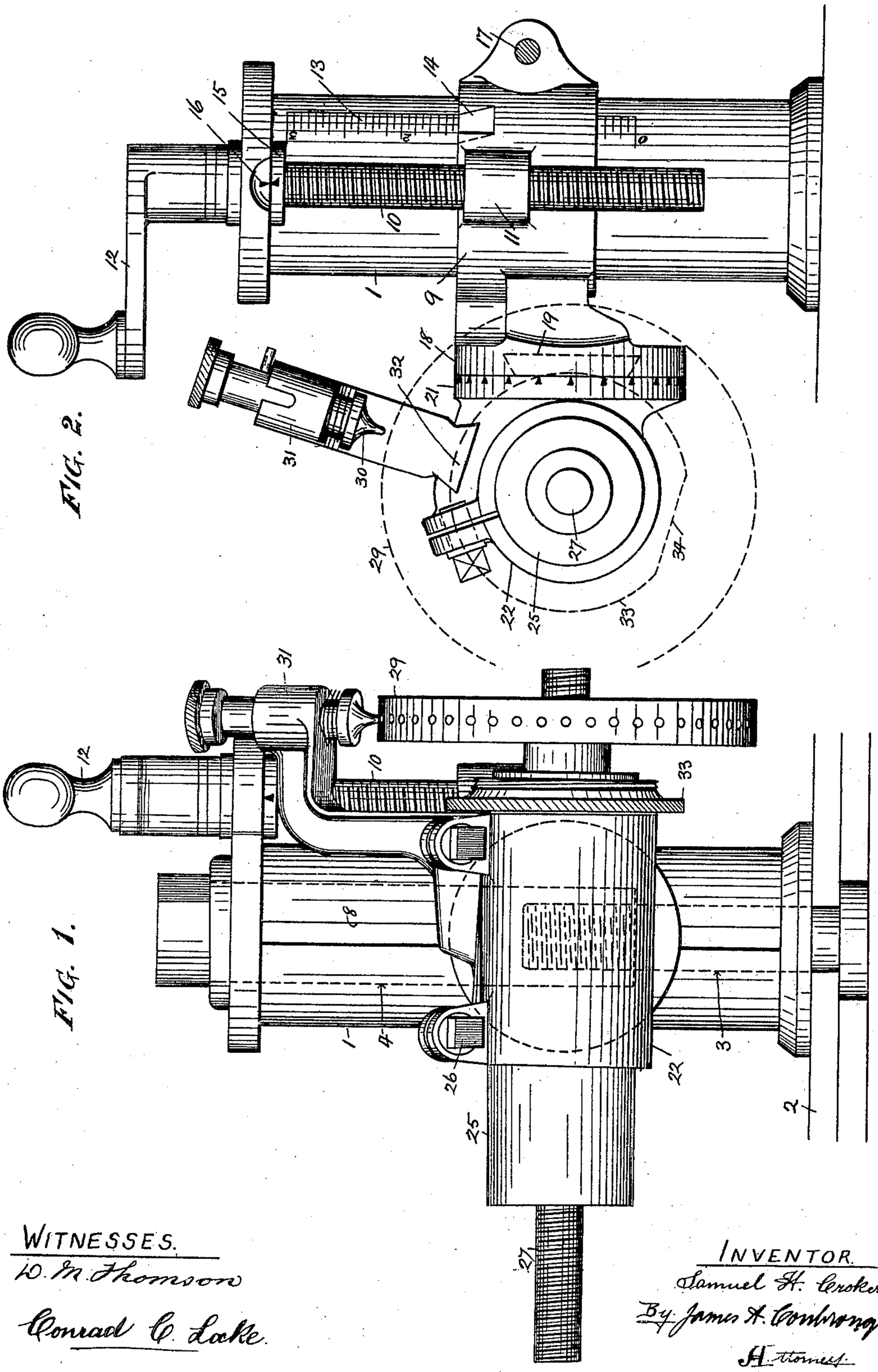

FIG. 2.

FIG. 1.

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FIG. 5.

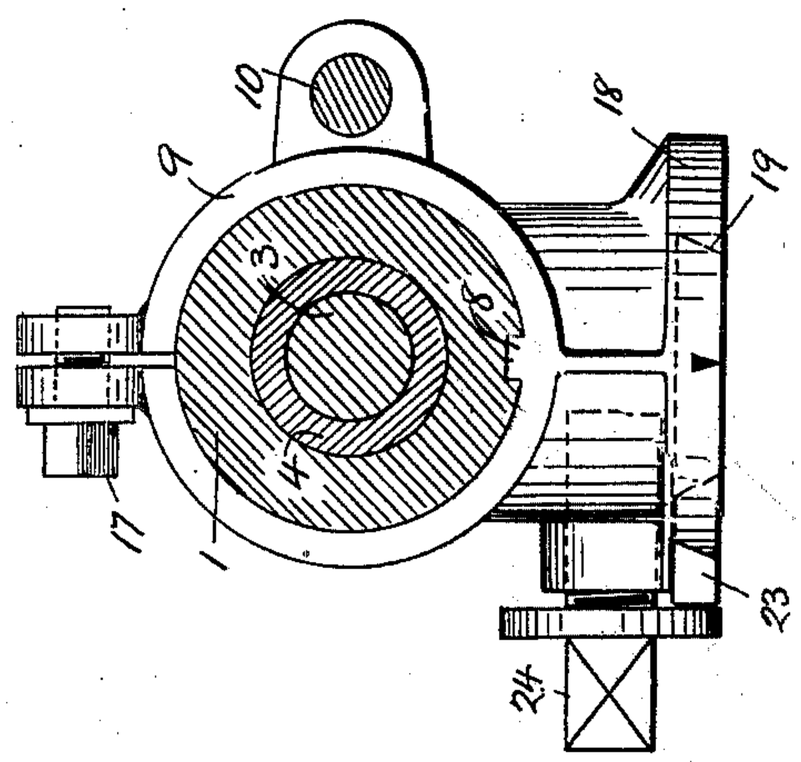

FIG. 4.

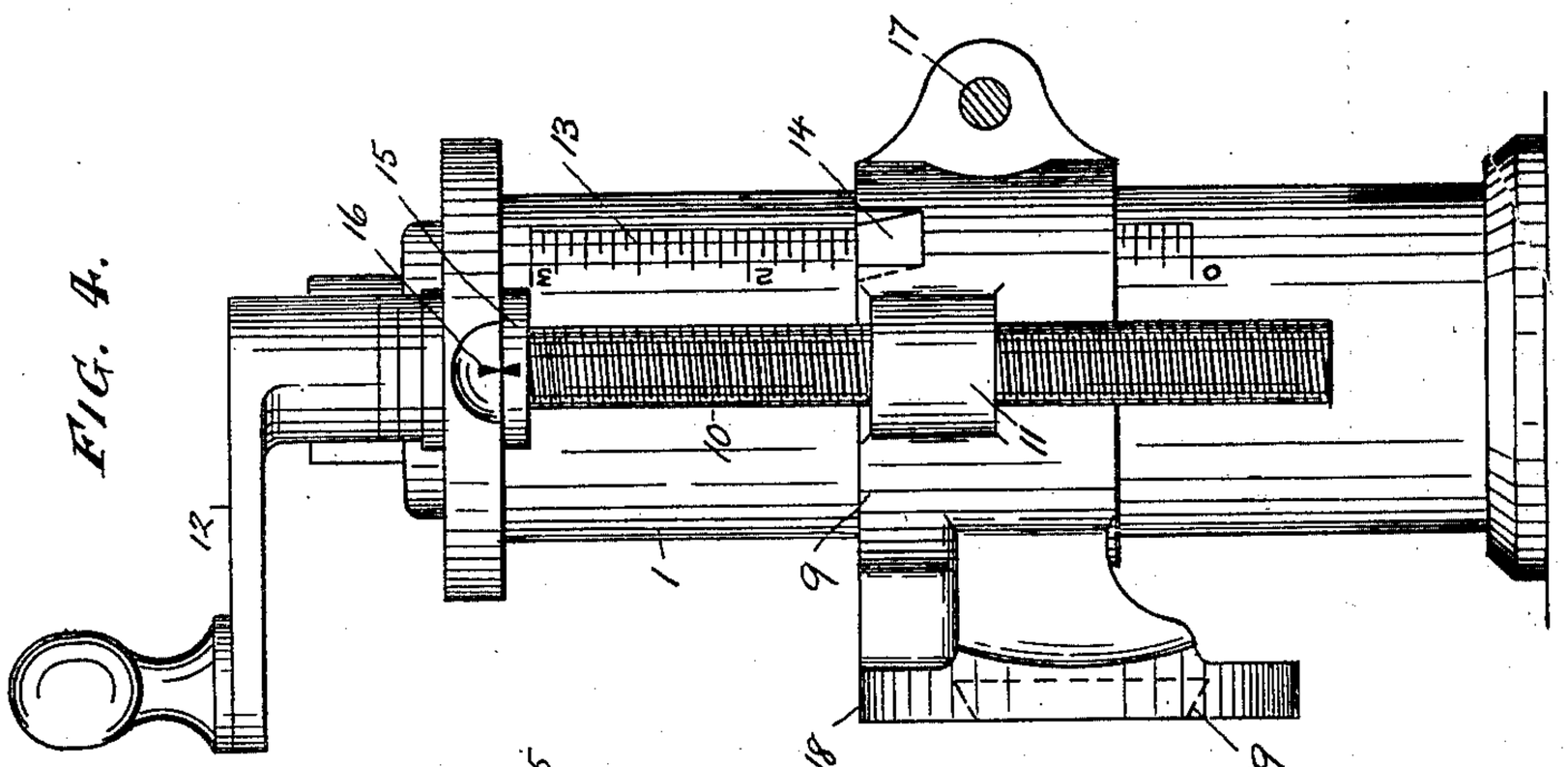

FIG. 3.

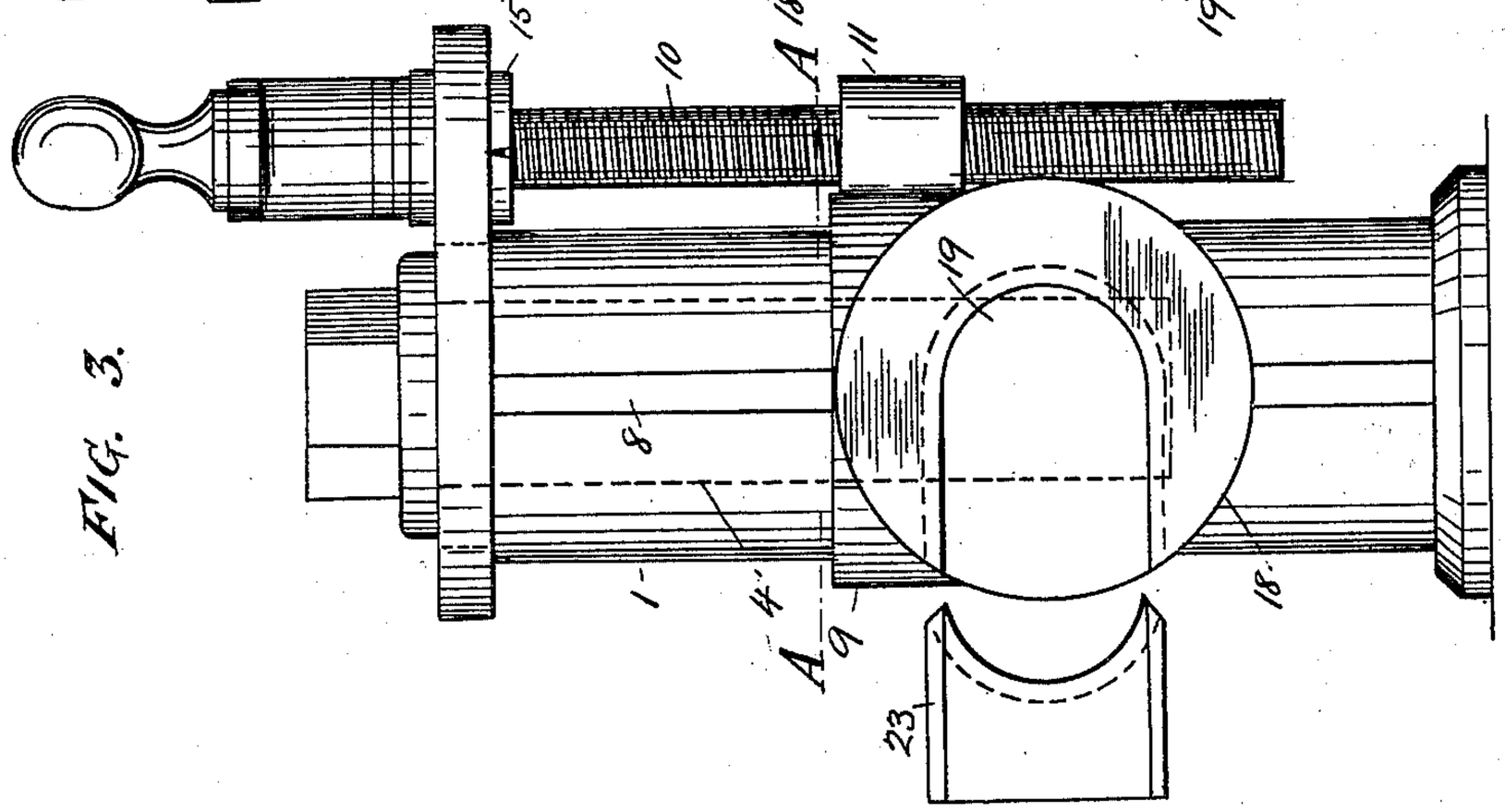

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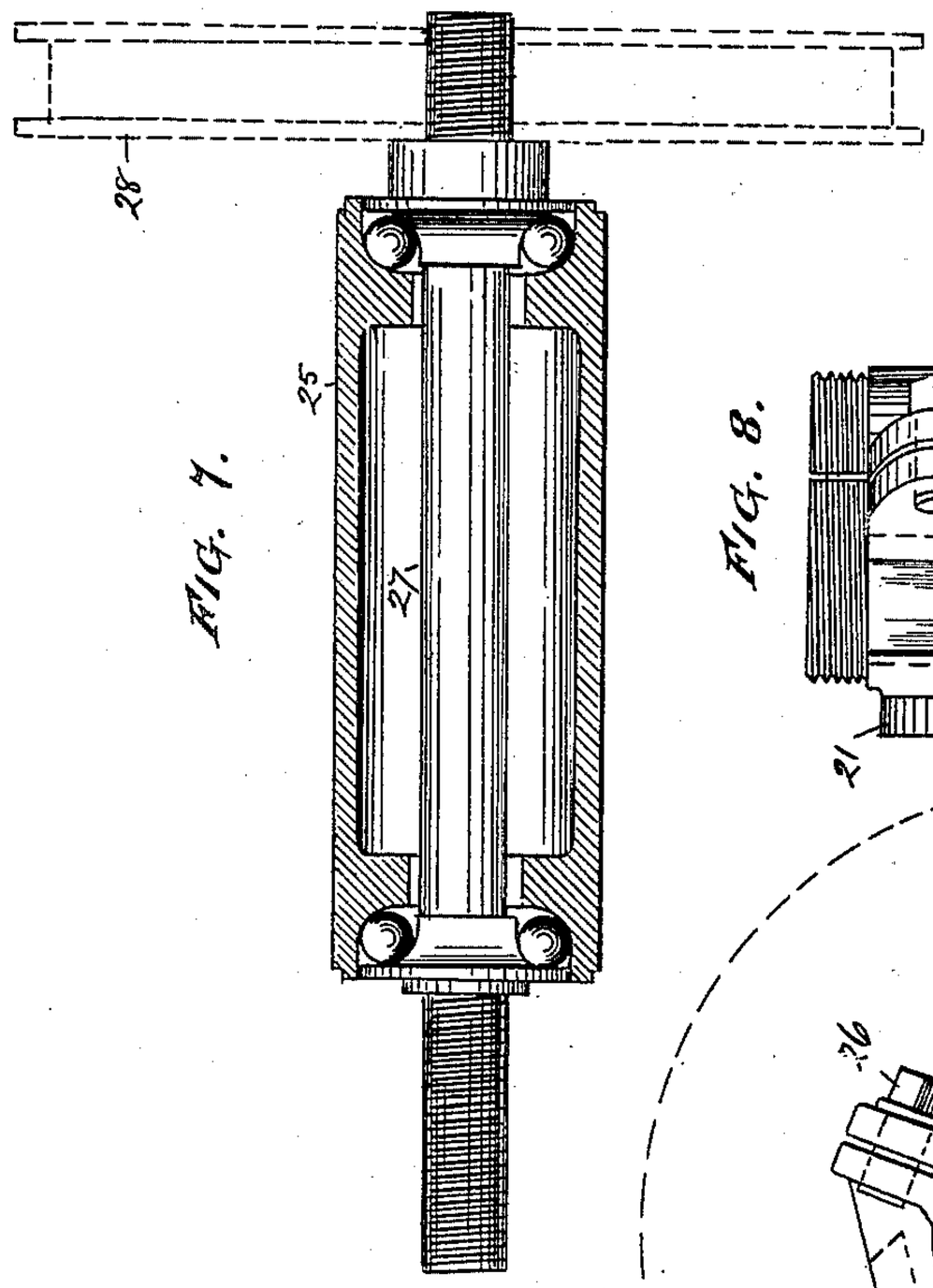
FIG. 1.



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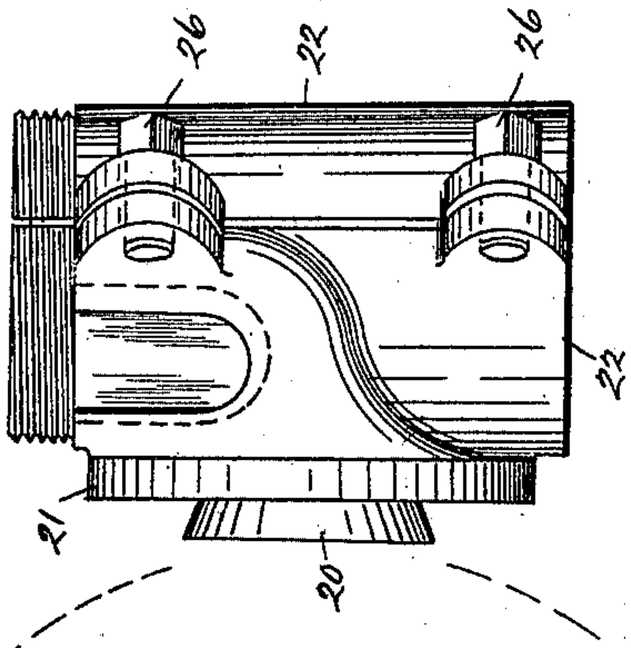
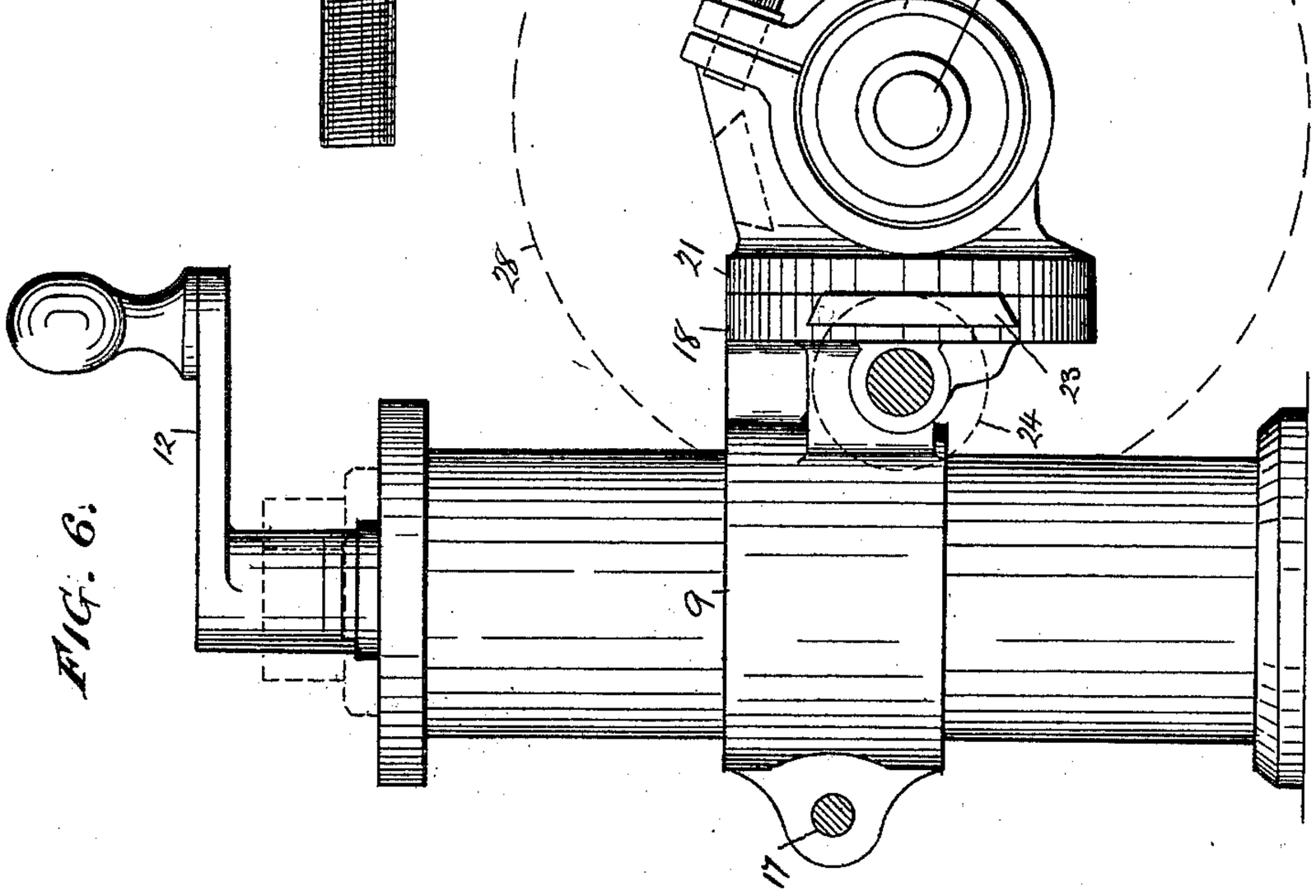


FIG. 6.



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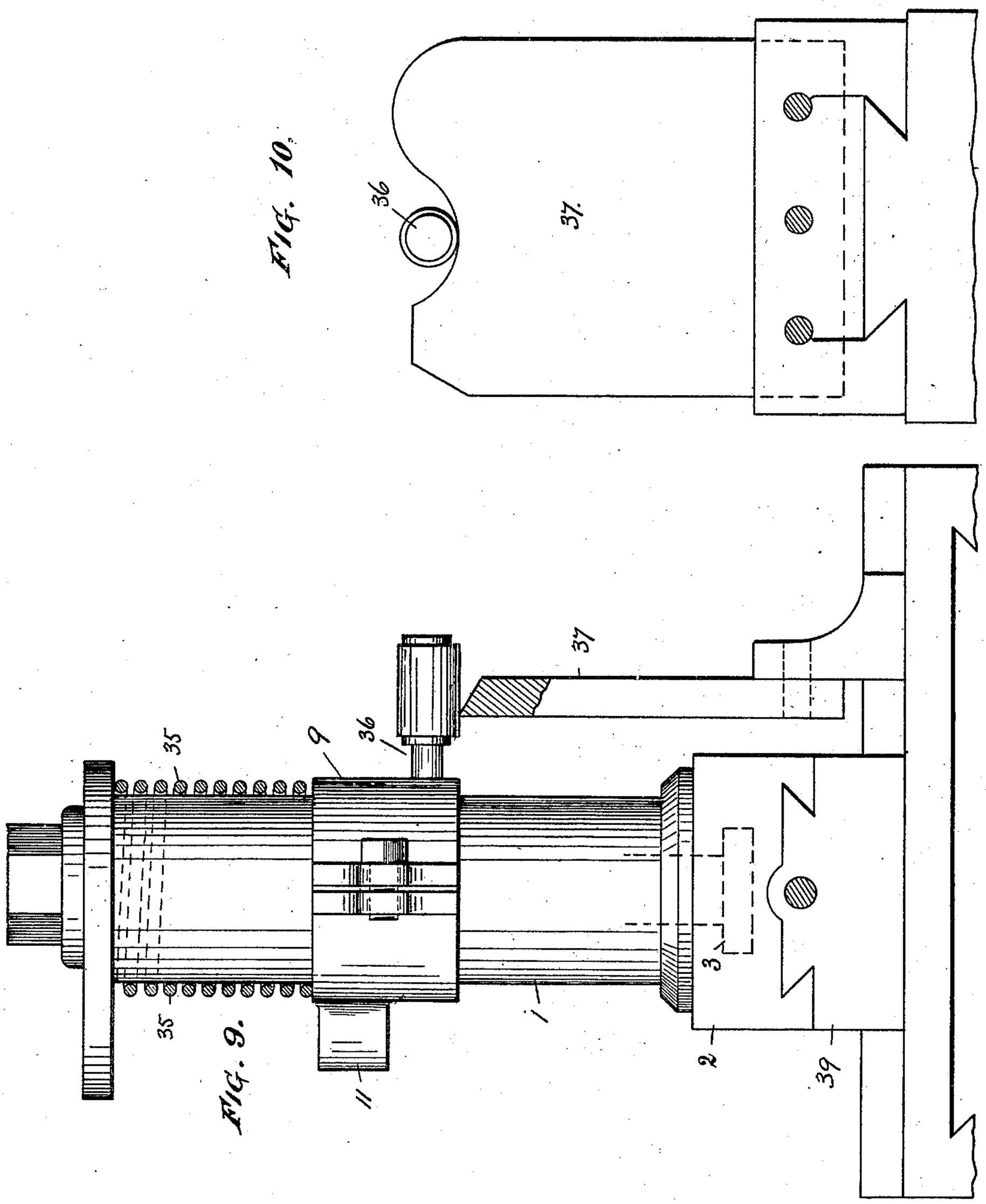

FIG. 9.

FIG. 10.

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UNITED STATES PATENT OFFICE.

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LATHE AUXILIARY APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 704,440, dated July 8, 1902.

Application filed October 25, 1901. Serial No. 79,972. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL HARBORD CROKER, a subject of the King of Great Britain and Ireland, residing at 12 Smithdown road, Liverpool, England, have invented a new and useful Improvement in Lathe Auxiliary Appliances, of which the following is a specification.

This invention has for its object to provide an appliance or auxiliary whereby certain machining operations—such as milling, drilling, tooth-cutting, and the like—which at present often require the employment of machine-tools specially adapted for such operations may be effected or carried on upon an ordinary turning-lathe of modern design.

The appliance according to this invention is particularly adapted to be carried or mounted upon the tool-box plate of a lathe slide-rest.

Figure 1 is a front elevation, and Fig. 2 is a side elevation, of an appliance according to this invention. Fig. 3 is a front elevation of the supporting pillar and bracket, Fig. 4 being a side elevation. Fig. 5 is a cross-section on line A A, Fig. 3. Fig. 6 is a side elevation showing the pillar, bracket, and quill-holder. Fig. 7 is a longitudinal sectional elevation of the quill and mandrel. Fig. 8 is a plan of the quill-holder. Fig. 9 is an elevation of the appliance adapted to cut and back-off rose-cutters and for like operations, Fig. 10 being an end view.

Referring to the drawings, it will be seen that the appliance comprises and is adjustable upon the pillar 1, which rises from the tool-box plate 2 of a slide-rest. Such pillar is adjustably mounted on the said plate—that is to say, it may be rotated upon the bolt 3, passing through the pillar, and be tightened by the sleeve-nut 4, the head of the bolt being held in a slot in the tool-box plate 2, as shown at Fig. 1. Capable of sliding upon such pillar on a feather and keyway 8 is a bracket 9, the movement of the bracket on the pillar being effected by the screwed spindle 10, which is journaled parallel with the pillar. This spindle threads in a nut 11 on the bracket 9 and is rotated by the handle 12. A scale 13 on the pillar coincides with the pitch of the thread on the spindle 10, which may be sixteen to the inch, and registers with the knife-edge 14 on the bracket 9. The periphery of the collar 15 on the spindle 10 is graduated to register quarter-turns of the spindle on the nick 16. The vertical movement of the bracket on the pillar is thus graduated to one sixty-fourth of an inch. It will, however, be apparent that this graduation may be more or less finely divided. The bracket 9 is split and may be tightened on the pillar by studs 17.

Cut in the flange 18 of the bracket 9 is a beveled slot 19, which forms a socket for a circular beveled button 20, formed on the flange 21 of a bracket or quill-holder 22. This socket is completed by the beveled follower 23 and the stud 24. By slackening the stud and follower the flange 21 is revoluble on the flange 18. The rim of one flange is graduated to indicate at a nick in the other flange the angle of the axis of the quill-holder relative to the axis of the column.

Passing axially through the quill-holder 22 is a quill or sleeve 25, the holder 22 being split and provided with studs 26, by which it may grip the quill 25. This quill may be withdrawn and turned end for end.

Journaled in ball-bearings in the quill 25 is a mandrel or spindle 27, each end of which possesses a male thread. Upon one end (which may be either end) of the mandrel may be mounted a hand-crank or a belt or cord pulley 28, by which the mandrel may be rotated. The said belt or cord pulley may be driven in any suitable manner. Upon the other end of the mandrel may be mounted a chuck or tool-holder or work-holder or other analogous appliance.

Assuming, then, that the work—namely, the metal or wood to be machined—is upon the lathe and the tool is carried on the end of the mandrel 27, the pulley 28 being driven by the cord or belt aforesaid, it will be understood that the construction of the appliance forming the subject of this invention permits of the work being operated upon at any point or at any angle or inclination—that is to say, in addition to the movements of the slide-rest the pillar is revoluble thereon. The bracket 9 is capable of vertical movement on the pillar, and the quill-holder 22, which carries the mandrel 27, is revoluble on the bracket 9. Used as a work-holder it

will be understood that the appliance will hold the work in any position, so that it can be drilled, milled, cut, or operated upon in any direction by a tool carried by the lathe. When the work is held by the mandrel, the pulley 28 may be removed and a graduated indented wheel 29 substituted therefor. A spring-actuated detent 30, carried by a bracket 31, is arranged to engage the indents of the wheel 29, so that the work may be revolved step by step. The bracket 31 possesses a beveled foot 32, which is socketed in the quill-holder 22 and locked there by the overhang of the nut 33. This nut is cut away at 34 to permit of the removal of the bracket 31. This arrangement can be used in cutting the teeth of a pinion-wheel, the wheel-blank being held on the mandrel 27 while the cutter is carried by the lathe.

The bracket 9 may be capable of free upward movement on the pillar 1 and be normally depressed by the spring 35, (the spindle 10 being removed,) as shown at Fig. 9. A projecting pin 36 on the bracket 9, riding over a former 37 as the tool-box plate 2 travels backward and forward on the slide-rest 39, causes the tool or work held on the mandrel 27 to move in a curved direction. This movement may be made use of in cutting and backing-off rose-cutters and like operations.

The capability of universal movement and inclination possessed by the appliance enables it to be used in various cutting and milling operations—such, for instance, as cutting and backing-off milling-cutters of all shapes, cutting bevel-wheels and miter-wheels, crown-wheels, cams, gear-wheels, worm-wheels, slots, either straight or curved, internal and external grinding, and the like.

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

1. In combination, a pillar revoluble upon its base, a screwed rod parallel with and journaled in the cap of said pillar, a bracket bored to receive the pillar and screwed rod and threading with the latter whereby it may be adjusted vertically on the pillar, a face on said bracket and a bevel-groove therein receiving a beveled button on a quill-holder, a quill within said holder, means for adjusting and for locking such parts, a mandrel journaled in the quill, and means for rotating the mandrel, forming a lathe-tool or work holder, as described.

2. In combination, a pillar and a keyway therein, a bracket capable of vertical movement on said pillar and keyway, a screwed spindle journaled on the pillar and threading a nut on the bracket, by which the latter is moved, a knife-edge, and a scale on the pillar proportionate to the thread on the spindle, means for indicating partial revolutions of the spindle, whereby the bracket movement is graduated, a quill-holder revoluble on said bracket and containing a quill, and a rotating mandrel journaled axially in said quill, forming a lathe-tool or work holder, as described.

3. In combination, a revoluble pillar supporting an axially-adjustable bracket, a face on said bracket parallel with the axis of the pillar, a bevel-groove in said face with a semicircular finish, receiving a beveled button on a quill-holder, a follower in said groove completing a socket for said button, a stud for tightening the follower on the button whereby the quill-holder is revoluble on and may be locked to said bracket, a quill in said holder and a rotating mandrel in the quill, forming a lathe-tool or work holder, as described.

4. In combination, a quill-holder revoluble on a bracket adjustably supported on a revoluble pillar, a quill held rigidly therein, and a mandrel journaled in the quill with projecting extremities carrying an implement and an index-wheel respectively, and a detent carried by a bracket on said quill-holder, said detent controlling the rotation of the mandrel and implement by engaging the index-wheel, forming a lathe-tool or work-holder, as described.

5. In combination, a quill-holder revoluble on a bracket adjustably supported on a revoluble pillar, a quill in said holder and a mandrel in said quill, an index-wheel on the mandrel engaged by a detent carried by a bracket, a beveled slot in said holder receiving the said detent-bracket and a lock-nut on said quill-holder for retaining said bracket in its socket, forming a lathe-tool or work holder, as described.

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