F. J. VLCHEK.

COMPOUND TOOL.

APPLICATION FILED FEB. 11, 1911.

998,660.

Patented July 25, 1911.

3 SHEETS—SHEET 1.

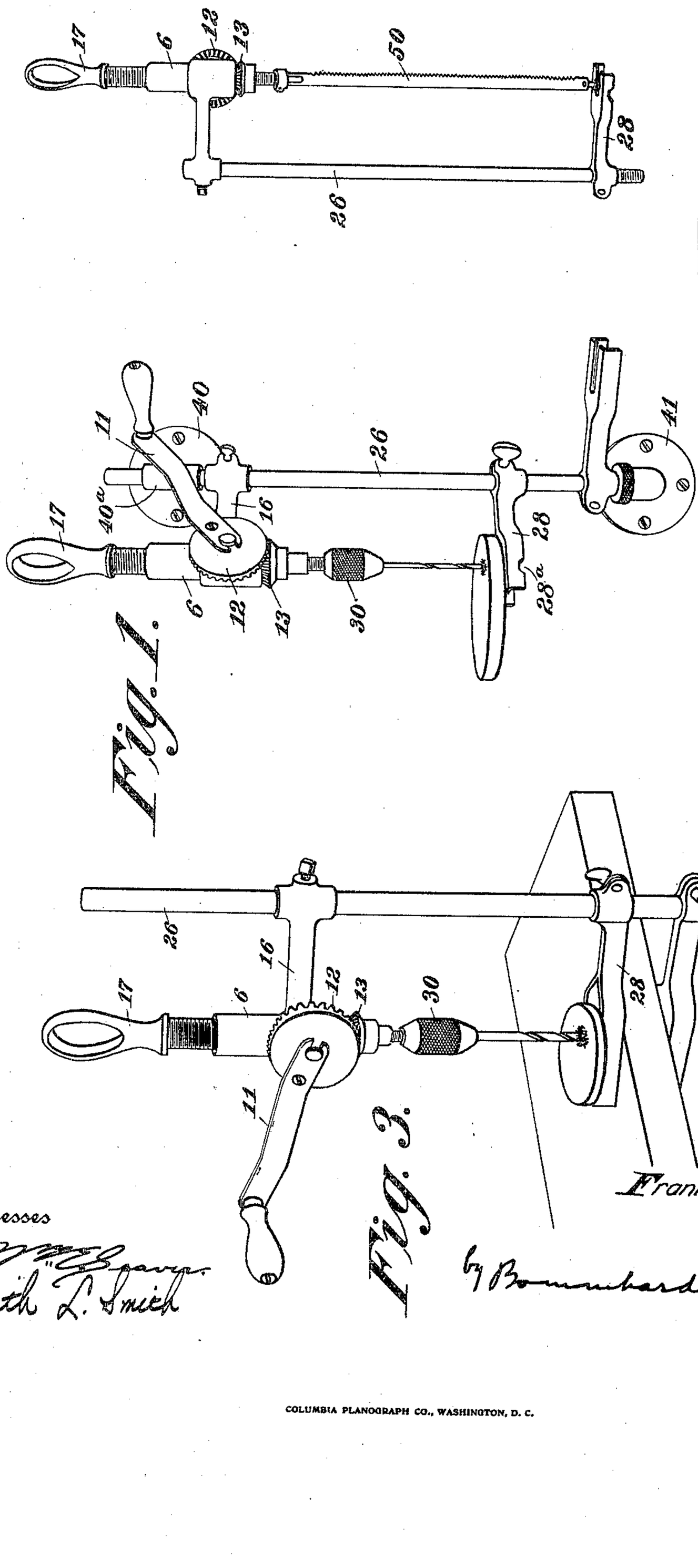

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 8.

Witnesses

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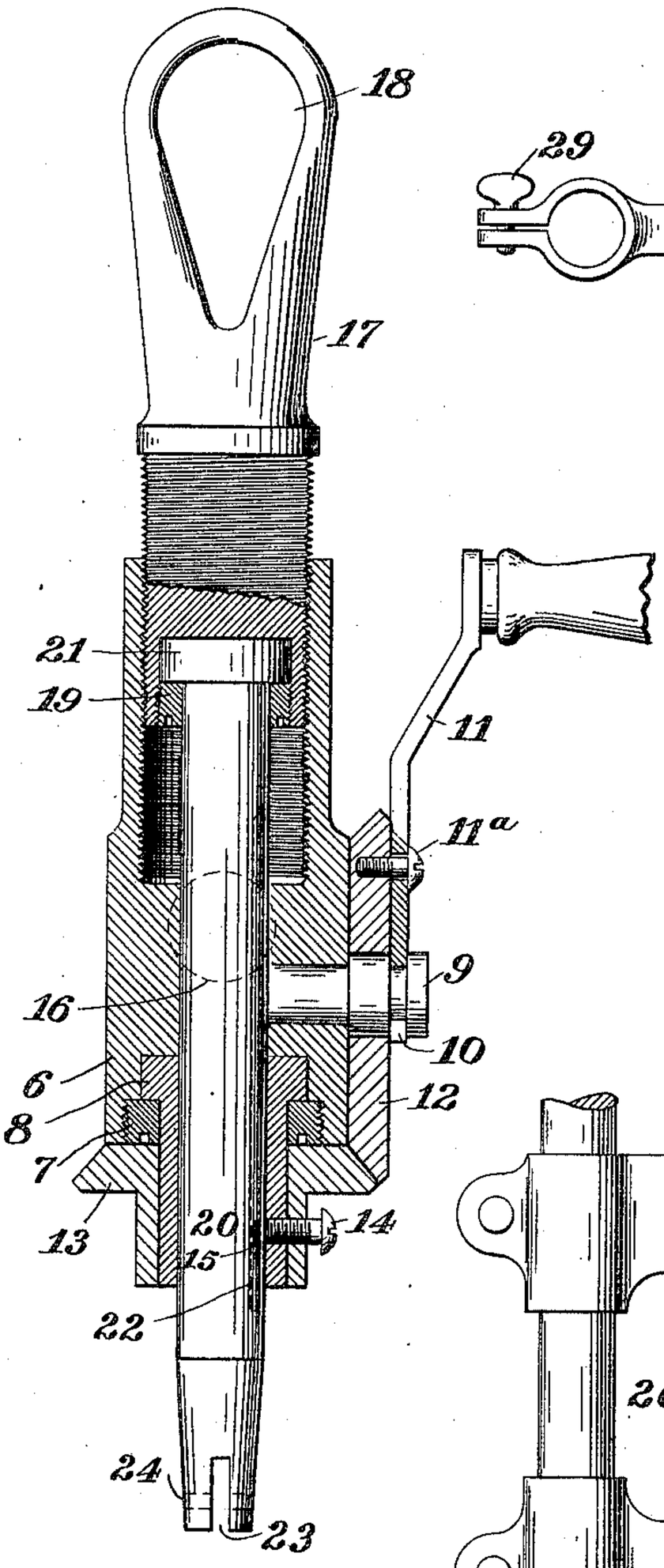

Fig. 2.

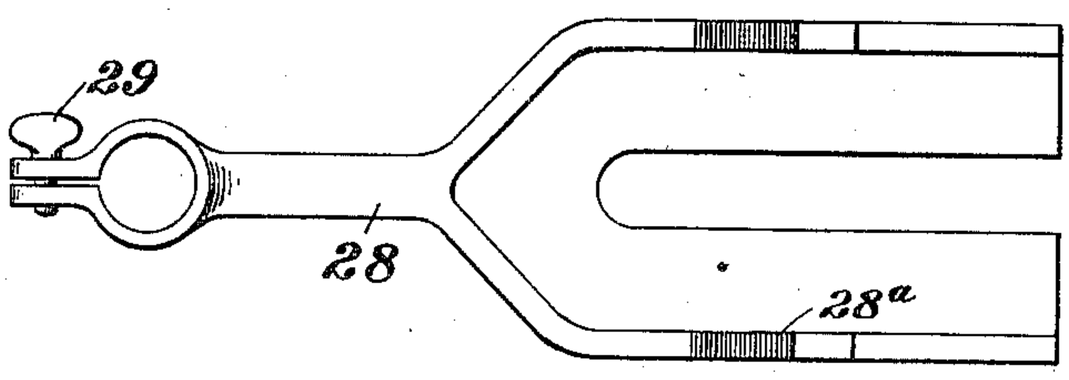

Fig. 7.

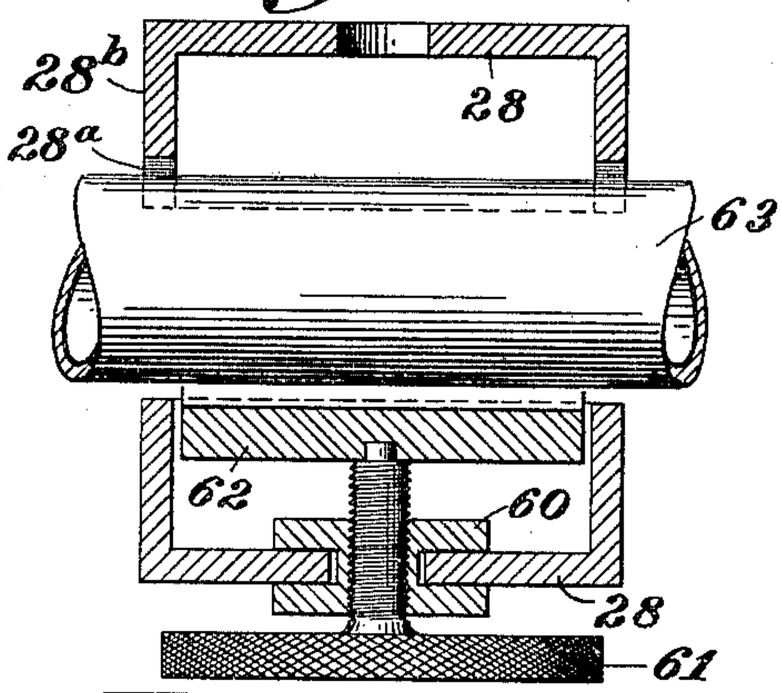

Fig. 6.

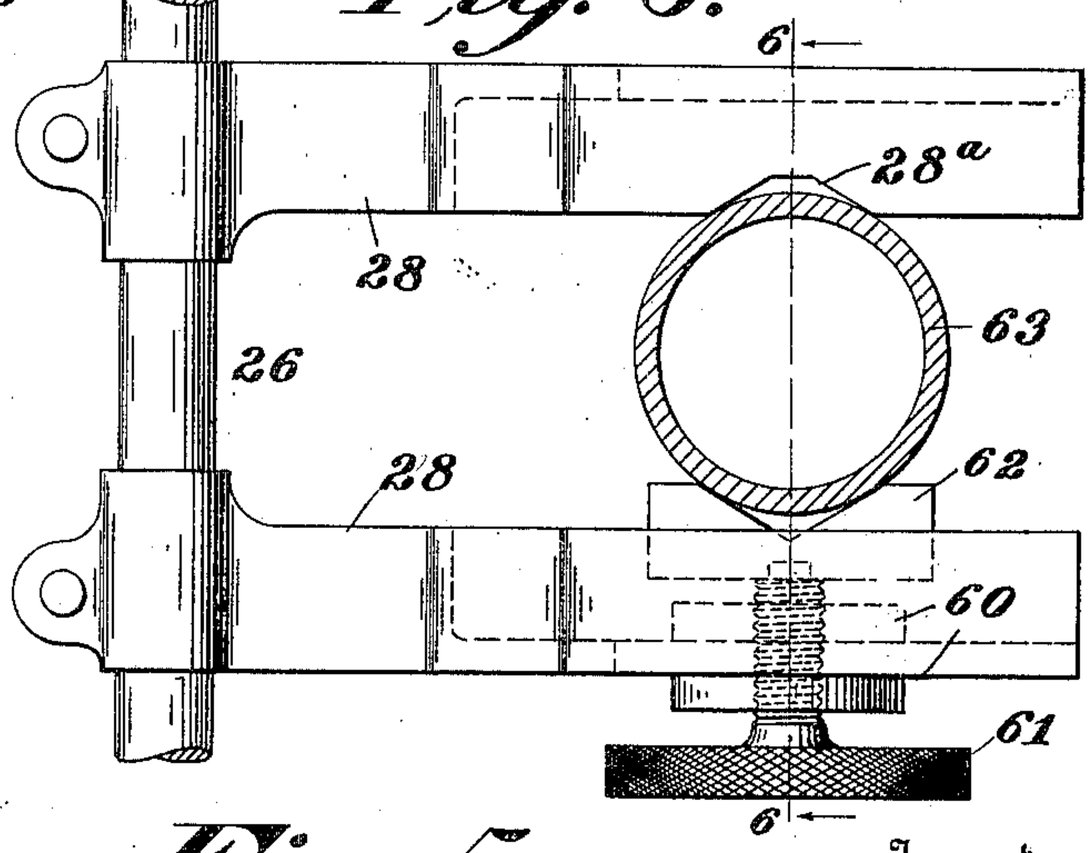

Fig. 5.

Witnesses

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3 SHEETS—SHEET 3.

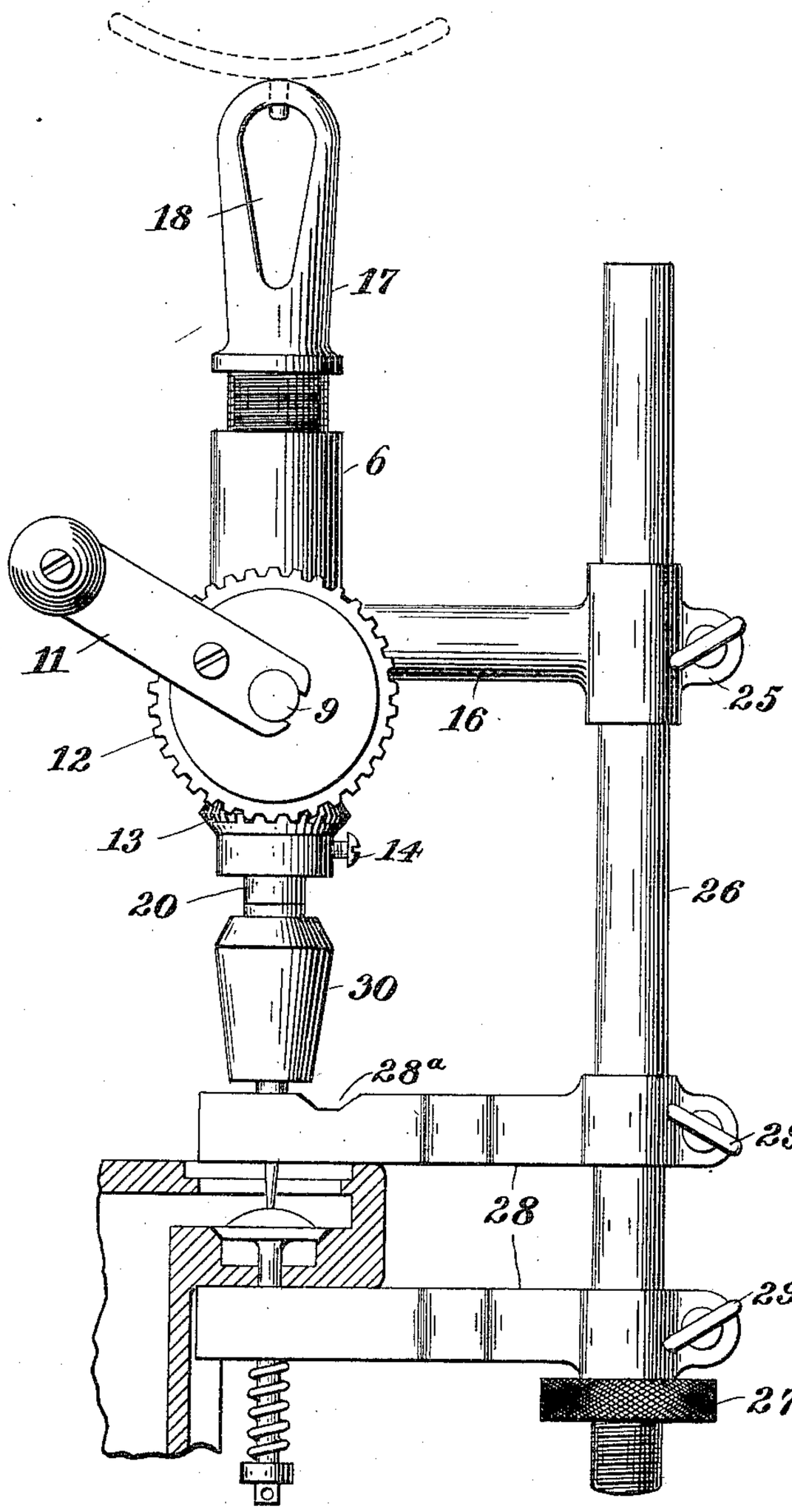

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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COMPOUND TOOL.

998,660. Specification of Letters Patent. Patented July 25, 1911.

Application filed February 11, 1911. Serial No. 608,049.

To all whom it may concern:

Be it known that I, FRANK J. VLCHEK, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Compound Tools, of which the following is a specification.

This invention relates to compound tools or machines, and embodies a structure mainly of the drill type, but capable of various other uses as will more fully appear hereinafter.

The tool may be used as a stationary drill press, or as a portable drill; also as a clamp; also as a holder for a hack-saw; also for removing and grinding valves. It may be supported by a bracket for use as a post or wall drill; or clamped on a bench for use as a bench drill; or on a pipe for drilling pipe; and various other uses are possible. It will be serviceable to carry on an automobile, to effect repairs or other operations incident to the use of the machine, as the tool can be set up on any convenient support, or if necessary used as a hand brace for drilling or other operation.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of the device set up as a wall or post drill. Fig. 2 is a vertical section of the drill head. Fig. 3 is a perspective view showing the device used as a bench drill. Fig. 4 is a side elevation showing the use of the device for grinding a valve. Fig. 5 is a side elevation, in detail, showing an arrangement for drilling pipe. Fig. 6 is a section on the line 6—6 of Fig. 5. Fig. 7 is a detail in plan of one of the clamping jaws. Fig. 8 is a plan view showing the device used as a holder for a hack saw.

Referring specifically to the drawings, the drill head comprises a body or stock 6 the upper end of which has a threaded bore which receives the feed screw 17, the lower end of said screw being recessed to take the head 21 of the main spindle 20, which is held in place by a ring plug 19 screwed into the lower end of the feed screw. The body has at one side a stud 9 forming the bearing for a large bevel gear 12 which meshes with a pinion 13. A crank handle 11 is fastened to the gear 12 by a screw 11ª the inner end of the handle being forked to fit in a groove 10 in the stud 9. The pinion 13 is connected to the spindle 20 by means of a screw 14 the point 15 of which projects into a longitudinal groove 22 in the spindle. A bushing 8 is fastened to the spindle by the same screw, and rotates therewith, being held in position by a screw plug 7 in the lower end of the body 6. The lower end of the body is adapted to receive a chuck 30 to hold a tool. The end of the spindle is also slotted as at 23, and has a hole 24 for a cross pin which is useful under certain conditions, as for example when a hack saw 50 is attached to the spindle, as shown in Fig. 8.

An arm 16 projects from the drill body 6 and is provided at its free end with a clamp 25, by means of which it may be adjustably fastened on a distance rod 26. This rod also supports clamping or supporting arms 28 which may be held in any desired position on the rod by means of clamps 29, and used to grip a bench or other support, as shown in Fig. 3. The special construction of these clamping arms is clearly shown in Figs. 5 and 6 and will be referred to hereafter. The lower end of the distance rod 26 is threaded to receive a nut 27.

When used as a post or wall drill upper and lower brackets 40 and 41 are fastened to the wall or post. The former is a T bracket, having a T 40ª screwed into the bracket socket, and the head of this T receives the upper end of the rod 26 at a sliding fit, so that the rod may be turned or raised and lowered therein. The lower bracket 41 is an elbow bracket and is threaded to receive the lower threaded end of the rod 26, and when the device is set up said rod is screwed into the lower bracket and is then fastened by screwing down the nut 27 which holds the device in position for work, and the arms 28 can then be used to clamp the piece of work, or one arm may be swung out of the way and the other used as a table to support the work. To remove the device from the brackets the nut 27 is loosened and the rod 26 unscrewed from the lower bracket. Then by swinging it slightly to one side the T 40ª is turned and the rod can be slid out of the upper bracket.

The manner of use as a bench drill is obvious from Fig. 3. In this case the lower arm 28 is allowed to rest against the nut 27, and by screwing up on said nut an effective pressure is applied to clamp the edge of the bench between the arms 28, the nut 27 being screwed up as far as possible before the

thumb screw 29 is tightened. This nut 27 thus serves to fasten the rod to the lower bracket 41 when the device is used as a wall drill, and to clamp the bench when it is used as a bench drill.

For use as a valve grinding device, as illustrated in Fig. 4, the valve casing is clamped between the arms 28, and the tool carried by the spindle may then be operated to engage the valve and grind the same down on its seat. For removing valves, the lower arm can be placed under the valve spring and the screw driver in the chuck engaged in the kerf in the valve. The feed screw 17 can then be screwed in to compress the spring, permitting the removal of the key in the valve stem and the subsequent removal of the valve. By manipulation of the feed screw when the device is applied to an engine valve the tension of the valve spring may be adjusted, or any other operation performed which necessitates or is permitted by action of a screw clamp. A bar may be applied to the opening in the handle of the screw 17 to give necessary leverage.

For drilling pipe, as illustrated in Figs. 5 and 6, the upper arm 28 has a notch 28^a formed in its flanges 28^b. The lower arm 28, which is forked as shown in Fig. 7, receives a grooved block 60 which is tapped to take a screw 61 carrying a jaw 62 at its upper end, the pipe 63 to be drilled being inserted between the arms 28 where it is held by engagement in the notches 28^a and the pressure of the screw 61, this pipe resting on the jaw 62 so that the drill may operate thereon through the slot in the upper arm 28. The screw 61 and the jaw 62 carried thereby form, in effect, a supplemental clamp to hold the pipe in position between the arms. The flanges 28^b serve to strengthen and stiffen the arms, and also serve to hold longitudinally curved work.

To hold a hack-saw, as shown in Fig. 8, one arm 28 is located at one end of the rod 26 and the arm 16 is clamped at the other end. One end of the saw 50 is connected to the arm 28 by any suitable pin or device, and the other end of the saw is inserted in the slot 23 and fastened by a pin in the holes 24. Then by unscrewing the screw 17 the saw is strained, and the device forms a frame for convenient operation of the saw.

In drilling, the feed screw 17 is screwed in while the spindle is being rotated.

The device may be used as a hand brace by removing the arm 16 from the rod 26, and said arm 16 can then be grasped and used to hold the drill body in desired position for use.

The tool is thus capable of a variety of uses, such as a drill press, a brace, a screw clamp, a saw holder, and others which will suggest themselves.

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

1. The combination of a stock having a threaded bore in one end, a spindle rotatable in the stock and having an enlarged head, means to rotate the spindle, a feed screw extending into said bore and having a recess at its front end into which the head of the spindle fits, and a plug screwed into said recess and engaging in front of the head, to connect the spindle and screw.

2. In a support for a drill or the like, the combination of upper and lower brackets, the latter having a threaded socket, a rod slidable in the upper bracket and screwed into said socket, and a nut on the rod, arranged to be tightened against the lower bracket, to hold the rod in position.

3. The combination with a drill, of a distance rod connected to the drill stock, clamping arms projecting from said rod, one of said arms having notched flanges at its side edges and the other arm being forked, a slide fitting between the forks, a clamping screw carried by said slide, and a jaw at the end of the screw, adapted to clamp a piece of work in the notches and against the flanges of the other arm, the jaw pressing on the work between said flanges.

4. The combination with a drill, of a distance rod connected to the drill stock, clamping arms projecting from said rod, said arms being forked, and having angular flanges at the opposite edges thereof.

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

FRANK J. VLCHEK.

Witnesses:
JOHN A. BOMMHARDT,
STEDMAN J. ROCKWELL.