

No. 685,738.

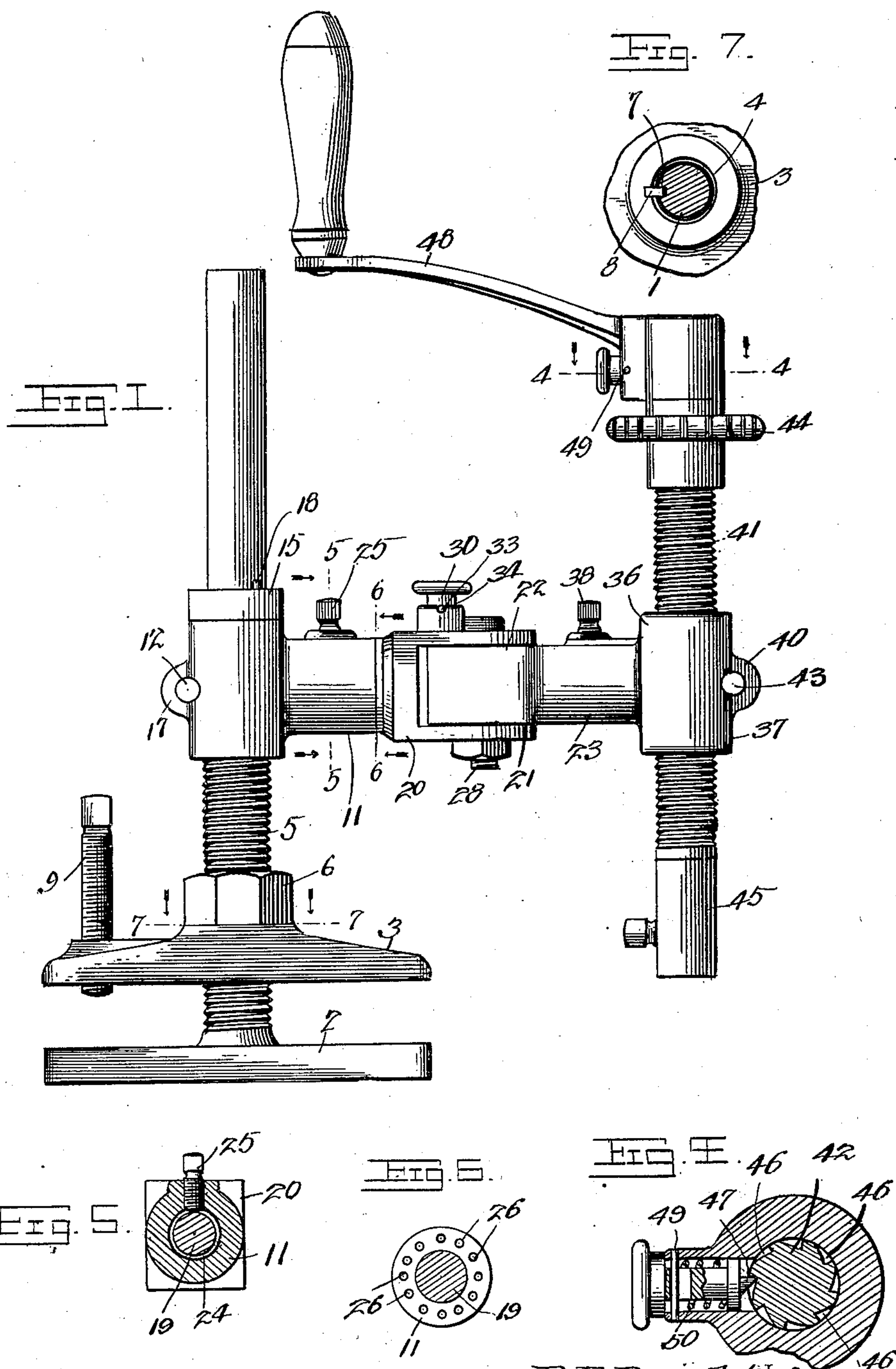
Patented Nov. 5, 1901.

B. E. BRIGHT.
DRILL.

(Application filed July 3, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 2.

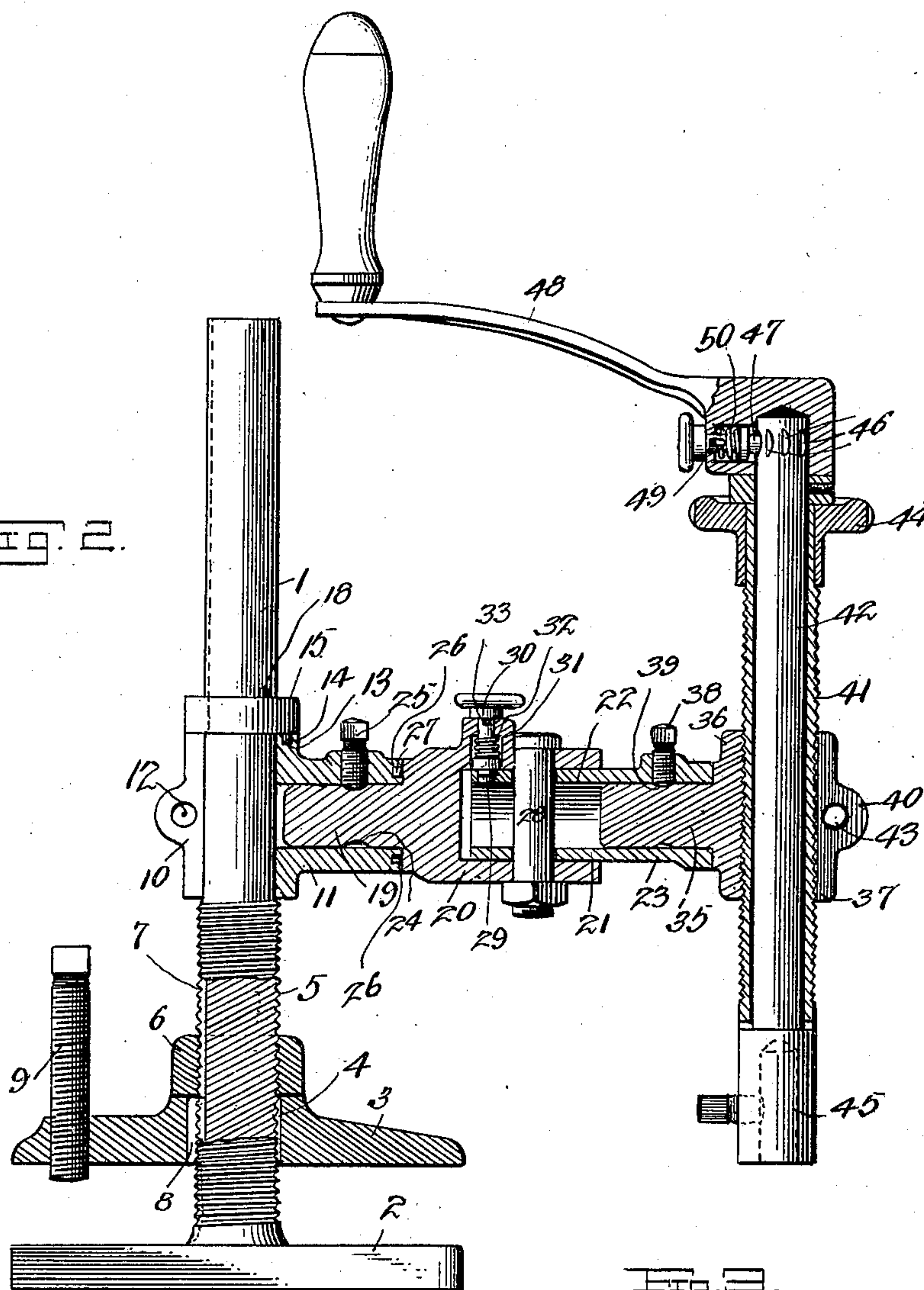
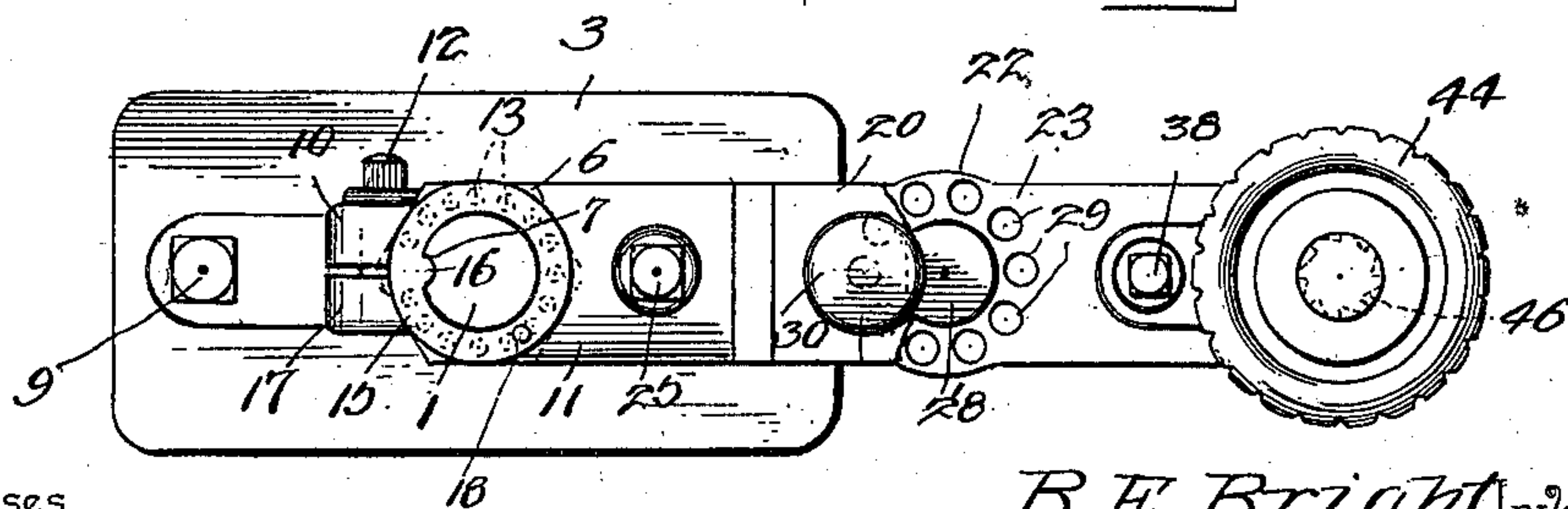


Fig. 3.



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UNITED STATES PATENT OFFICE.

BENJAMIN E. BRIGHT, OF TERRE HAUTE, INDIANA.

DRILL.

SPECIFICATION forming part of Letters Patent No. 685,738, dated November 5, 1901.

Application filed July 3, 1901. Serial No. 67,020. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN E. BRIGHT, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented a new and useful Drill, of which the following is a specification.

The invention relates to improvements in drills.

The object of the present invention is to improve the construction of hand-drills and to provide a simple and comparatively inexpensive one of great strength and durability, adapted to be readily arranged for drilling in any direction and capable of being securely locked in such position and of being readily operated.

A further object of the invention is to provide a simple, strong, and efficient clamp capable of securely fastening the drill to the work operated on or to any other suitable support.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a side elevation of a drill constructed in accordance with this invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a plan view. Fig. 4 is a sectional view on the line 4 4 of Fig. 1. Fig. 5 is a similar view on the line 5 5 of Fig. 1. Figs. 6 and 7 are detail sectional views on the lines 6 6 and 7 7 of Fig. 1.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a standard, provided at its lower end with a base 2, forming a rigid jaw and adapted to cooperate with a vertically-movable jaw 3, which is mounted on the standard and which is provided with a front engaging portion and which extends rearward from the standard, as clearly shown in Figs. 1 and 2. The movable jaw is provided between its ends with an opening 4, through which passes the standard, and the latter has a threaded lower portion 5, receiving a nut 6, which is arranged above and in contact with the movable jaw 3. The standard is provided with a vertical longitudinal groove 7, and the movable jaw is provided at its back with a key 8, fitting in the groove of the standard

and adapted to lock the movable jaw against rotary movement. The nut 6 is adapted to be rotated to permit the movable jaw to be engaged with a suitable support or with the object operated on, and after such adjustment has been effected the movable jaw is securely and firmly locked in engagement with such object by means of a clamping or set screw 9, mounted in a threaded perforation of the rear end of the movable jaw and adapted to be screwed against the base, which extends rearward from the standard. By screwing the clamping or set screw against the base the front or engaging portion of the movable jaw is forced tightly against the object, and the said movable jaw operates as a lever, the opening 4 being of sufficient size to permit a limited rocking movement of the movable jaw. The standard 1, which has a smooth upper portion, receives a split sleeve 10 of an inner section 11 of a sweep-arm, which carries the drilling mechanism and which is adapted to swing around the standard to any desired position, and the said arm is also composed of a series of sections and has an intermediate joint and inner and outer joints to permit the drilling mechanism to be set at the desired angle or inclination and to be arranged the desired distance from the standard. The section 11 of the arm is tubular, and the split sleeve, which is connected by an adjusting-screw 12, is provided at its upper face with a series of vertical sockets, arranged at regular intervals and adapted to receive a depending pin or projection 14 of a reversible locking-collar 15, mounted on the smooth upper portion of the standard and provided with a key 16, which engages the groove 7 of the standard, whereby the locking-collar is held against rotary movement thereon. The inner tubular section 11 may be held at any desired elevation by tightening the screw 12, which connects the sides of the split sleeve, and the latter is provided at opposite sides with perforated ears for the reception of the screw 12, one of the ears 17 being threaded. The collar 15 is capable of vertical movement to engage the pin 14 with one of the sockets 13 of the inner section 11 of the arm, which is adapted to be rotated to bring the desired socket beneath the pin, and when the pin or projection 14 is in engagement with

one of the sockets the arm is securely held against rotary movement. The pressure resulting from the operation of the drilling mechanism will cause the split sleeve to bind against the standard, and such frictional engagement will, with the action of the screw 12, effectually prevent the arm and the collar from slipping vertically on the standard. The collar 15 is provided at its upper face with a projection or pin 18, arranged midway between the adjacent sockets 13 when the lower pin is in engagement with one of the said sockets. By reversing the collar the pin or projection 18 is brought into position for use and is located in a different position with relation to the groove 7, which receives the key 16, and it, in effect, divides the interval between the sockets 13, and thereby increases the capacity of the drill. When the projection or pin 18 is in position for engaging the sockets and is engaged with one of them, the said sockets occupy positions at points between the positions occupied by them when they are engaged by the depending pin or projection 14.

The tubular section 11 receives a shank 19 of a section 20, which is provided with a bifurcation 21, and pivoted therein is a circular portion or head 22 of a section 23, that is adapted to swing on the section 20 and to be arranged at an angle to the same. The shank 19 is provided with an annular groove 24, which is engaged by a set-screw 25, mounted on the tubular section 11 at the top thereof, as clearly illustrated in Figs. 2 and 5 of the drawings. The tubular section is provided at its outer end with an annular series of horizontal sockets 26, arranged to be engaged by a horizontal pin or projection 27, extending from the shoulder formed by reducing the section 20 to provide the shank 19. The section 20 is adapted to rotate in the tubular inner section 11 to permit the drilling mechanism, hereinafter described, to be arranged at any desired inclination or in a vertical or horizontal position. The projection or pin 27, when in engagement with one of the horizontal sockets of the tubular section 11, rigidly holds the parts in their adjusted positions and effectually prevents them from slipping.

The circular head of the section 23 is provided with a central opening for the reception of a pivot-bolt 28, which also passes through perforations in the upper and lower sides of the bifurcated end of the section 20. The bolt 28, which is provided at its upper end with a head, has a nut at its lower end, and the circular head 22 is provided with an annular series of perforations 29, extending through the upper side of the circular head and adapted to be engaged by a spring-actuated bolt 30, mounted on the bifurcated section 20. The spring-actuated bolt 30 is mounted in a suitable housing 31, and the coiled spring 32, which is disposed on the bolt, engages the same and the upper wall of

the housing. The bolt is preferably provided with a pin 33, normally arranged in recesses 34 of the housing and adapted to be withdrawn therefrom and turned out of alignment with the recesses or notches to support the bolt out of engagement with the section 23 to permit such section to be adjusted.

The outer end of the section 23, which is hollow, forms a socket for a shank 35 of an outer section 36, provided with a split nut or threaded sleeve 37 and secured in the section 23 by a set-screw 38, which engages an annular groove 39 of the shank 35. The sections 36 and 23 are not interlocked, as the friction resulting from the operation of the drilling mechanism is sufficient to prevent the parts from accidentally slipping. The outer section 36 is adapted to be rotated on the adjacent intermediate section 23, and it may be arranged in any desired position to place the drill in proper position for operating on the work. The threaded sleeve or nut, which is provided at opposite sides with perforated ears 40, receives a feed-screw 41, in which is mounted a shaft or spindle 42. The perforated ears 40 are connected by an adjusting-screw 43, which is adapted to secure the proper frictional engagement with the sleeve or nut, and the feed-screw. The feed-screw is provided at its upper end with a wheel 44, and the arbor or spindle is suitably journaled in the feed-screw, which is tubular. The spindle 41 is provided at its lower end with a socket 45 for the reception of a suitable tool, and its upper end is provided with an annular series of recesses 46, forming a ratchet and adapted to be engaged by a spring-actuated bolt 47 of a crank 48. The recesses are shouldered at one side and the spring-actuated bolt 47 of the crank is adapted to engage the shoulders for enabling the crank to rotate the spindle in one direction. When the crank is moved in the opposite direction, the bolt rides over the spindle without rotating the same, and by this construction the spindle may be continuously rotated by oscillating the crank, thereby enabling the drill to be operated at points where it is impossible to rotate the crank and where only a limited movement of the same is possible. The bolt which detachably secures the crank to the upper end of the spindle is mounted in a suitable opening of the crank and is slotted for the reception of a pin 49 and is engaged by a coiled spring 50. The coiled spring 50, which is disposed on the bolt, is adapted to force the same inward into engagement with the spindle.

The drilling mechanism is adapted to be arranged at an inclination or in a vertical or horizontal position, and it is capable of being swung around the standard, and it is adapted also to be moved inward and outward to and from the standard, the intermediate joint formed by the sections 20 and 23 permitting this movement. The intermediate sections 20 and 23 are also detachable, and the shank 35 of the outermost section is adapted to be

arranged in the tubular inner section 11 to form a short stiff arm of great strength.

What is claimed is—

1. In a drill, the combination of a standard 5 provided with screw-threads and having a longitudinal groove, said standard being also provided with a base forming a rigid jaw, a movable jaw provided between its ends with an opening to receive the standard and capable of vertical movement thereon and having 10 a key for engaging the groove whereby the movable jaw is held against rotation, a rotary nut arranged on the threaded portion of the standard and located above the movable jaw, 15 and a clamping-screw mounted on the movable jaw, substantially as described.

2. In a drill, the combination of a standard having a groove, an arm mounted on and adapted to swing around the standard and 20 provided with sockets, and a reversible collar provided with pins or projections located at different points and extending from its upper and lower faces and adapted to engage the sockets, said collar being provided with a key 25 for engaging the groove, and drilling mechanism carried by the arm, substantially as described.

3. In a drill, the combination of a standard, an arm provided with drilling mechanism and 30 mounted on the standard, said arm when free being adapted to swing around the standard, and a collar interlocked with the standard and held against rotary movement thereon and provided with means for detachably en- 35 gaging the arm whereby the latter is held rigid with the standard, said collar being movable to and from the arm to engage and release the same, substantially as described.

4. In a drill, the combination of a standard, 40 an arm mounted on and arranged to swing around the standard and provided with sockets, drilling mechanism carried by the arm, and a vertically-movable collar interlocked with and held against rotation on the 45 standard and provided with means for detachably engaging the said sockets, whereby the collar is adjustably and detachably connected with the arm, substantially as described.

5. In a drill, the combination of a standard, 50 an arm mounted on the standard and arranged to swing around the same and provided with sockets, drilling mechanism carried by the

arm, and a reversible collar interlocked with the standard and provided with projections 55 located at different points and adapted to engage the sockets, substantially as described.

6. In a drill, the combination of a standard, an arm mounted on the standard and provided with intermediate sections pivotally connect- 60 ed, one of the sections being provided with an annular series of openings, and a spring-actuated locking device mounted on the other section and arranged to engage the said open- 65 ings, and provided with means for holding it out of such engagement, and drilling mechanism carried by the arm, substantially as described.

7. In a drill, the combination of a standard, an arm mounted on the standard and com- 70 prising the tubular section 11, the bifurcated section having a shank arranged in the tubular section, the horizontally-swinging section 23 pivoted in the bifurcation of the section 20 and provided with a tubular portion or socket, 75 and the outer section having a shank arranged in such tubular portion or socket, and drilling mechanism mounted on the outer section, substantially as described.

8. In a drill, the combination of a standard, 80 an arm mounted on the standard and provided with sections 11 and 20, the section 11 being tubular and provided with an annular series of sockets, and the section 20 being provided with a projection for engaging the sockets and 85 having a shank arranged within the tubular section, means for securing the shank in the tubular section, and drilling mechanism carried by the arm, substantially as described.

9. In a drill, the combination of a standard, 90 an arm comprising the pivotally-connected intermediate sections 20 and 23, the tubular section 11 secured to the standard and detachably receiving the section 20, and the outer section detachably arranged in the sec- 95 tion 23 and adapted to be arranged within the said tubular section 11, and drilling mechanism carried by the arm, substantially as described.

In testimony that I claim the foregoing as 100 my own I have hereto affixed my signature in the presence of two witnesses.

BENJAMIN E. BRIGHT.

Witnesses:

JOHN W. BROWN,

WILLIAM A. ELLIOTT.