No. 630,439. Patented Aug. 8, 1899.

# W. F. BARRETT.

## POWER DRIVEN TOOL.

(Application filed July 30, 1898.)

(No Model.)

Fig. I.

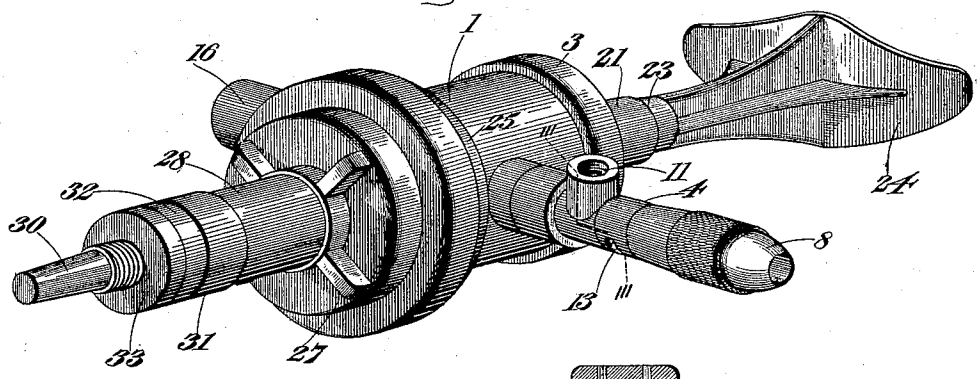



Fig. II.

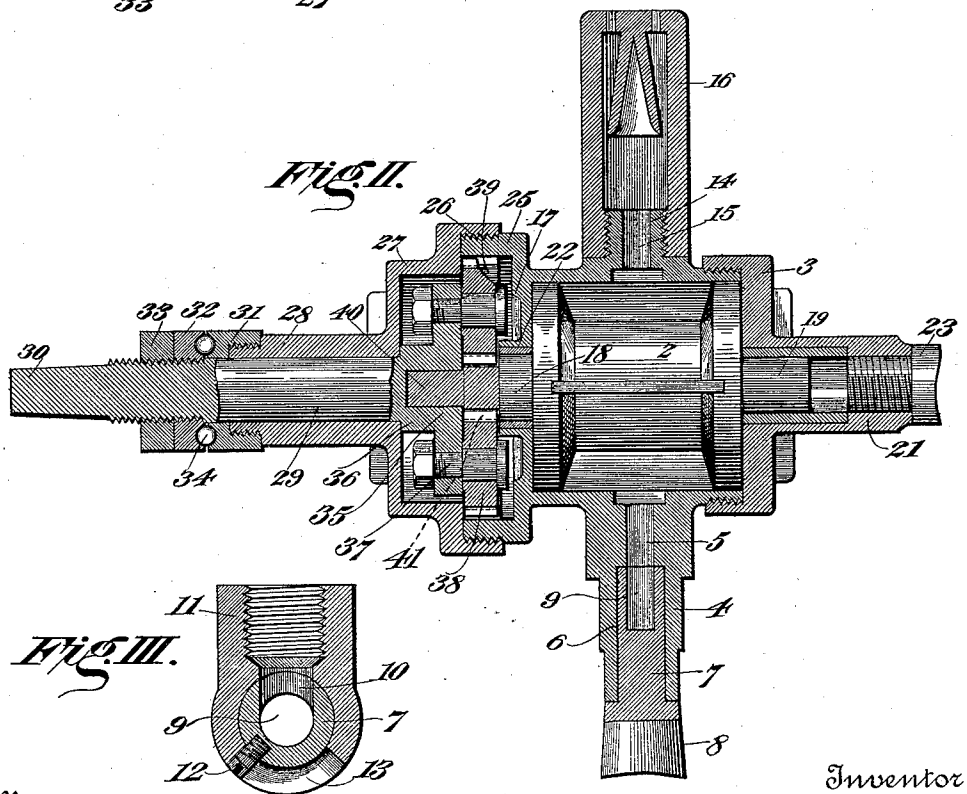



Fig. III.




Witnesses:

M. C. Fowler

Stephen J. Brooks.

Inventor:

William F. Barrett,

By Joseph L. Atkins,

Attorney,

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

WILLIAM F. BARRETT, OF ORANGEBURG, NEW YORK, ASSIGNOR TO THE EMPIRE ENGINE AND MOTOR COMPANY, OF SAME PLACE.

## POWER-DRIVEN TOOL.

SPECIFICATION forming part of Letters Patent No. 630,439, dated August 8, 1899.

Application filed July 30, 1898. Serial No. 687,350. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. BARRETT, of Orangeburg, in the county of Rockland, State of New York, have invented certain new and useful Improvements in Power-Driven Tools, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce an improved power-driven tool for drilling or other purposes which is provided with an oil-receptacle that is adapted to afford lubrication to all of the working parts of the machine and within which, preferably, the portion of the mechanism exposed to wear from friction rotates.

In the accompanying drawings, Figure I is a perspective view of a breast-drill embodying my invention. Fig. II is a central longitudinal section, partly in elevation and in part broken away. Fig. III is a section on the line III III of Fig. I.

Referring to the figures on the drawings, 1 indicates the cylinder, casing, or shell of the motor, which is incorporated with my tool. In the form illustrated this motor is a fluid-actuated motor, and the shell is adapted to contain a rotary piston 2, which fits and works within the shell. The shell is provided with a removable cylinder-head 3, screwed or otherwise secured to one end of the cylinder. The shell is provided upon one side with a tubular projection 4, that is preferably integral with the shell. Its bore 5, constituting an inlet-port for the admission of the fluid to the piston within the cylinder, communicates at one end with the interior of the cylinder and at the other end with an enlarged bore 6, within which is fitted the reduced end 7 of a valve-stem 8. The end 7 of the valve-stem is provided at its inner extremity with a valve-recess 9, that in effect constitutes a prolongation of the bore 5 and which on one side communicates through an aperture 10 with a threaded nipple 11, through which, as by means of a flexible hose or other means, (not illustrated,) the tool may communicate with a source of fluid-pressure supply.

Through the rotation of the valve-stem 8 pressure may be admitted to the bore 5 or shut off from it, as required. A set-screw 12, working in a transverse slot 13 in the wall of the projection 4, affords means of limiting the movement of the valve-stem to that necessary to the operation of the valve.

Upon the side of the shell 1 opposite the projection 4 I provide a threaded nipple 14, whose bore 15 constitutes an outlet-port for the shell. The nipple preferably carries a prolongation or hollow handle 16.

Opposite the cylinder-head 3 is provided a fixed cylinder-head or diaphragm 17, preferably integral with the shell 1.

The motor proper, consisting of the shell or cylinder, with its head and inclosed rotatory piston, is of a variety well known in the art and does not for that reason require further illustration and description. The piston at its opposite ends is provided with trunnions 18 and 19, the former working in a bushed tubular extension 21 and in the head 3 and the latter in a bushing 22, provided for it in a suitable aperture in the diaphragm 17. The end of the tubular projection 21 is perfectly closed by the threaded shank 23 of a breast-plate 24.

25 indicates an annular angular flange that preferably constitutes an integral part of the shell 1. To it, as by screw-threads 26, is united the cup-shaped head 27 of a sleeve 28. The interior of the sleeve is occupied by a close-fitting shank or tool-holder 29, whose conical extremity 30 projects outwardly beyond its sleeve or casing. I prefer to provide upon the extremity of the sleeve a hardened-metal bearing-cap 31 and opposite thereto upon the shank 29 a corresponding bearing-ring 32, which may be screwed upon the end of the shank and secured by a lock-nut 33. The opposite faces of the cap 31 and ring 32 are provided, respectively, with suitable grooves for the accommodation of bearing-balls 34. Within the cup 27 the shank 29 is provided with a head 35, having an annular shoulder 36, that works around the interior face of the bore of the sleeve 29 and which by aid of the threaded ring 32 may be drawn snugly and at suitable tension against said face.

The flange 25 and cup 27 constitute when

united an oil-tight chamber, which in practice is filled with oil adapted to afford until the supply is exhausted ample lubrication to all of the working parts of the machine.

The extensive bearing-surfaces between the sleeve 28 and the shank 29 afford at one end means for preventing escape from the oil-chamber of more oil than is necessary for the proper lubrication of those surfaces. The bushing 22 prevents any excessive escape upon the opposite end of oil.

The head 35 carries upon two suitable bolts 37, respectively, gears 38, which, meshing upon one side with an internal gear-face 39, secured to the flange 25, constitute therewith a sun-and-planet gearing.

The shank 29 is held in perfect axial alinement with the piston 2 by the reduced end 40 of the trunnion 18, working in a suitable bearing-recess provided for it in the head 35.

Carried by the trunnion 18 and between the trunnion proper and its reduced end 40 is a fixed pinion 41, which, meshing with the gears 38, communicates rotation from the piston 2 through the sun-and-planet gearing to the shank 29.

What I claim is—

1. The combination with a shell inclosing the rotatory piston of a fluid-motor, a sleeve and tool-holder shank fitting within the sleeve, of an oil-tight chamber between the sleeve and the shell and connected therewith to supply a lubricant to the bearing-surfaces within the sleeve and shell, substantially as set forth.

2. The combination with a shell inclosing the rotatory piston of a fluid-motor, a sleeve and tool-holder shank fitting within the sleeve, of an oil-tight chamber between the sleeve and the shell, and connected therewith to supply a lubricant within the shell and the sleeve, and gears operatively uniting the shank to the piston and working within the chamber, substantially as set forth.

3. The combination with a shell inclosing the rotatory piston of a fluid-motor, trunnions upon the piston working in suitable bearings in the shell, and an annular flange upon the shell, of a sleeve, a cup-head upon the sleeve secured to the annular flange of the shell and constituting therewith an oil-chamber connected with the interior of the shell and sleeve, respectively, a tool-holder shank working within the sleeve, a head upon the tool-holder, a pair of gears revolubly carried upon the head, an annular gear within the flange intermeshing with the gears upon the head, and a pinion upon one trunnion of the piston intermeshing with the head, the gears connecting the tool-holder shank and the trunnion being inclosed within the oil-chamber, substantially as set forth.

4. The combination with a shell inclosing the rotatory piston of a fluid-motor, and trunnions working within suitable bearings provided for them in the shell, a sleeve, and oil-chamber between the sleeve and the shell, of a tool-holder shank working within the sleeve, a projection upon one of the trunnions revolubly fitted coaxially within a recess provided for it in the inner end of the shank, and gearing operatively uniting the tool-holder shank with the piston, said gearing and the projection connecting the shank and trunnion being inclosed within the oil-chamber, substantially as set forth.

5. The combination with a shell inclosing the rotatory piston of a fluid-motor, a sleeve, and intermediate oil-chamber operatively communicating with the interior of the shell and sleeve to supply a lubricant to each, of a tool-holder shank working within the sleeve, gearing within the oil-chamber operatively uniting the piston and the shank, a shouldered head upon the shank within the oil-chamber securing the shank within the sleeve and limiting the flow of oil between the same, and a nut secured to the outer extremity of the shank and revolubly bearing against the end of the sleeve, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

WILLIAM F. BARRETT.

Witnesses:
W. H. BARRETT,
O. W. KEBBON.