

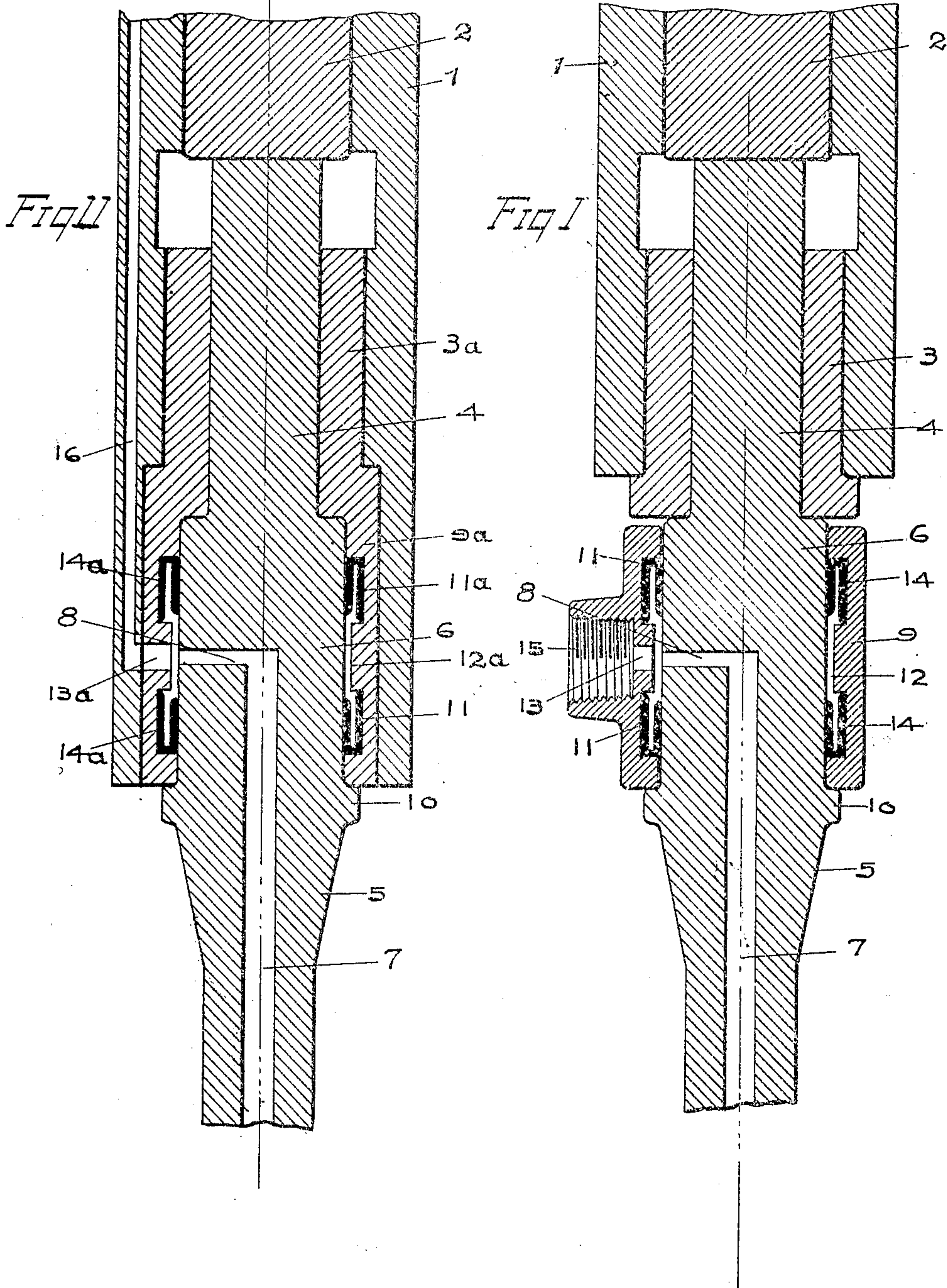
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STONEWORKING TOOL.

APPLICATION FILED DEC. 28, 1907.

904,692

Patented Nov. 24, 1908.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## STONE-WORKING TOOL.

No. 904,692.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed December 23, 1907. Serial No. 408,356

To whom it may concern:

Be it known that we, LOUIS W. GREVE and CHARLES B. RICHARDS, citizens of the United States, residents of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Stone-Working Tools, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail, one mechanical form embodying the invention; such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents an axial section of the lower end of a pneumatic impact tool and of a drill-bit in the lower end of the same and provided with our improvement, and Fig. II, an axial section of the lower end of a pneumatic impact tool and a drill-bit, showing another form of our improvement.

Our improvement is directed to the supply of water through an axial passage in the drill-bit of a rock-drilling tool or plug drill, for the purpose of washing out the debris at the bottom of the hole drilled by the tool.

The lower end of the working-cylinder of the impact tool is indicated by the reference numeral 1, and the lower portion of the piston reciprocating in the cylinder is indicated by 2. A tool-socket 3, is secured in the lowermost end of the working-cylinder and the shank, 4, of the drill-bit, 5, fits within said tool-socket and is preferably polygonal in cross-section to prevent it from turning in the socket. The drill-bit has an enlarged portion, 6, the upper shoulder of which abuts against the tool-socket, and the drill-bit is formed with an axial bore, 7, which extends to the cutting end of the bit. A lateral channel, 8, extends from the upper end of the axial channel out through the side of the enlarged portion 6 of the bit. A cylindrical casing, 9, surrounds the enlarged portion of the drill-bit and abuts with its lower end against an annular shoulder, 10, at the lower end of the enlarged portion.

This casing is formed with two annular grooves, 11, in its interior bore, which grooves are separated by a central annular rib, 12, which rib has a greater interior diameter than the exterior diameter of the enlarged portion of the drill-bit. An annular chamber is thus formed around the enlarged portion of the drill-bit and within the surrounding casing. An inlet-opening, 13, is formed in the side of the casing and through the annular rib. Gaskets, 14, which are folded double so as to be U-shaped in cross-section are placed within the annular grooves 11, so as to form packings for the annular chamber with the flanges pointing inward, so as to be tightened by internal pressure in the chamber.

In the form illustrated in Fig. I, the casing is separate from the tool-nose and is fitted around the enlarged portion of the drill-bit and is formed with an internally threaded nipple, 15, into which the threaded nipple upon the end of a water-hose may be screwed.

In the form illustrated in Fig. I, the inlet of the casing is connected to the water supply through the flexible hose screwed into the nipple and the entire tool and bit may be rotated without affecting the hose, inasmuch as the drill-bit is free to rotate within the casing, thus preventing obstruction to rotation by the hose.

In the form illustrated in Fig. II of the drawings, the casing 9<sup>a</sup> is integral with the tool-nose 3<sup>a</sup> and the hammer-cylinder is extended down around the casing. A water-channel, 16, extends from the upper end of the cylinder, down through the side of the same and into the extension, and opens into the annular rib 12<sup>a</sup> to communicate with the inlet-opening 13<sup>a</sup>, formed between the annular grooves 11<sup>a</sup> having the gaskets 14<sup>a</sup>. All of these parts are identical in construction and function with the corresponding parts of the tool illustrated in Fig. I, indicated by the same numerals without the qualifying letter "a."

In the form illustrated in Fig. II, the water-hose is connected to the water-channel 16 at the upper end of the hammer cylinder, and the casing which is integral with the hammer cylinder is rotated or oscillated in drilling with the entire tool.



Other modes of applying the principle of our invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus disclosed, provided the principles of construction set forth respectively in the following claims are employed.

We therefore particularly point out and distinctly claim as our invention:—

- 10 1. The combination with a pneumatic hammer and a drill-bit in the tool-nose of said hammer and formed with an axial water-passage and a passage radiating from the upper end of said axial passage out  
15 through the side of the drill-bit, of a casing surrounding the drill-bit and formed with two annular grooves and a central annular rib of greater internal diameter than the diameter of the drill-bit, and with a water-  
20 inlet through said rib and registering with the radial passage, and gaskets U-shaped in cross-section and located in the annular grooves with their flanges pointing inward.
- 25 2. The combination with a pneumatic hammer and a drill-bit inserted in the tool-nose of said hammer and formed with an enlargement immediately adjoining the shank and an annular shoulder at the lower portion of the enlargement and formed with  
30 an axial water-passage and with a radial water-passage extending from the upper end of the axial passage out through the middle of the enlargement, of a casing surrounding the enlargement and formed with two an-

nular grooves in its interior and an interior 35 annular rib separating said grooves and of greater internal diameter than the external diameter of the enlargement and with a water-inlet through said rib, and gaskets U-shaped in cross-section and located in the 40 annular grooves with their flanges pointing inward.

3. The combination with a pneumatic hammer and a drill-bit formed with an enlargement adjoining the shank and with an 45 annular rib at the lower end of the enlargement, of a casing surrounding the enlargement so as to allow the drill-bit to be rotated within it and formed with two interior annular grooves and with an annular rib 50 between said grooves and of greater internal diameter than the external diameter of the enlargement and with a lateral nipple having a water-passage to the interior of the casing through the annular rib to which 55 nipple a water-hose may be connected, and gaskets in the grooves of the casing U-shaped in cross-section and having their flanges pointing inward.

In testimony that we claim the foregoing 60 to be our invention we have hereunto set our hands this 2nd day of December A. D. 1907.

LOUIS W. GREVE.

CHARLES B. RICHARDS.

Witnesses:

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GEO. H. HALL.