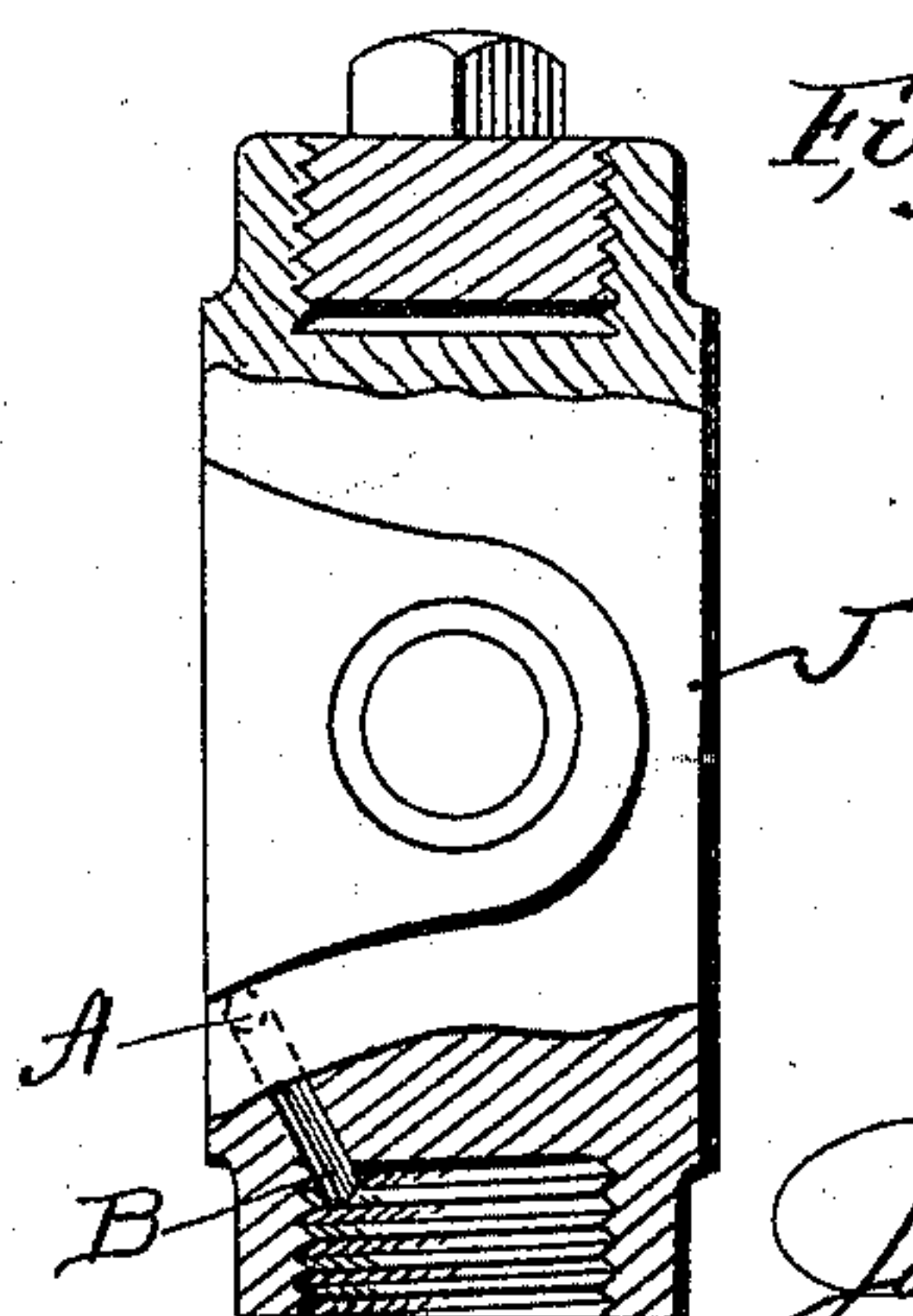
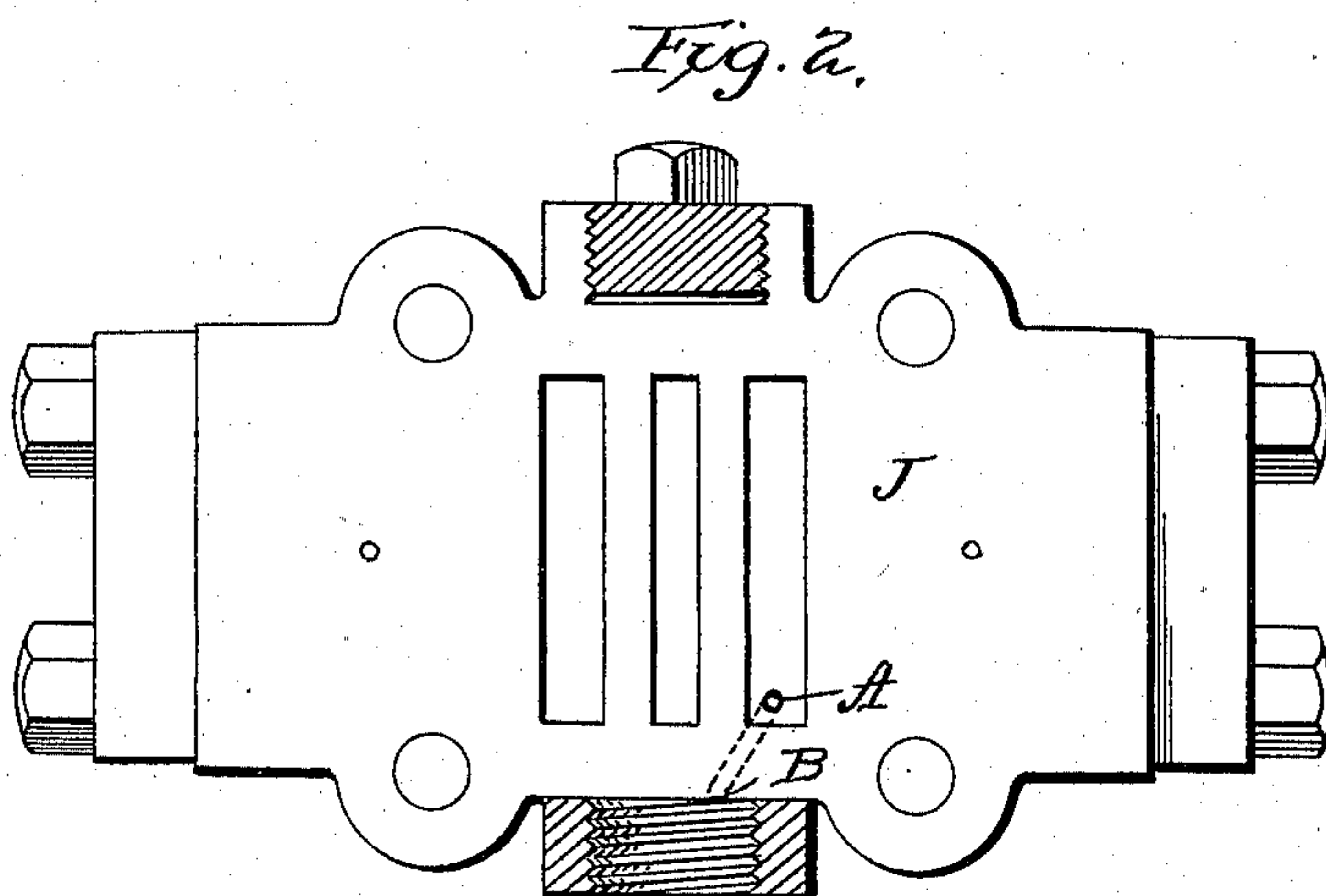
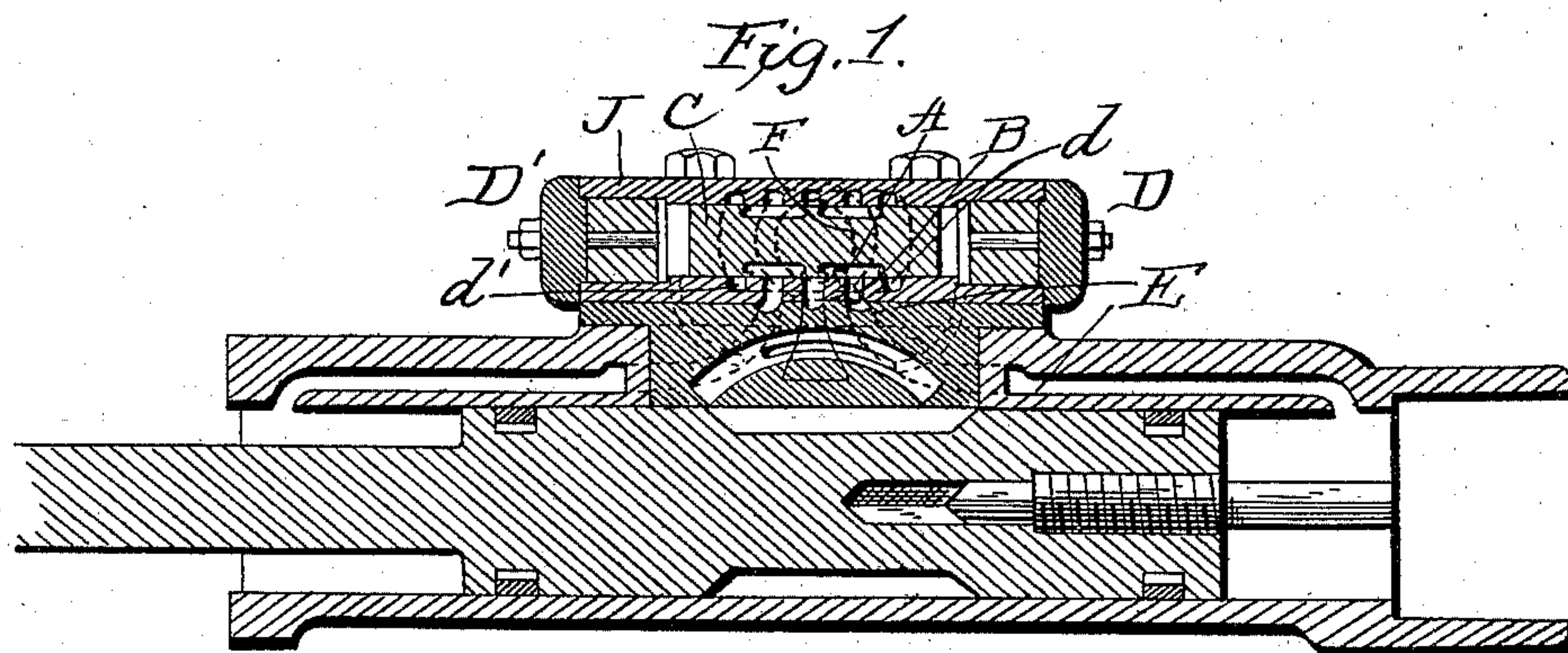


(No Model.)

J. H. SMITH.
ROCK DRILL.

No. 589,911.

Patented Sept. 14, 1897.



Attest
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Atty

UNITED STATES PATENT OFFICE.

JOHN HENRY SMITH, OF JOHANNESBURG, SOUTH AFRICAN REPUBLIC.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 589,911, dated September 14, 1897.

Application filed July 10, 1896. Serial No. 598,691. (No model.)

To all whom it may concern:

Be it known that I, JOHN HENRY SMITH, engineer, residing at Johannesburg, South African Republic, have invented an Improvement in Rock-Drills; and I do hereby declare the invention to be particularly described and ascertained in the following statement, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates primarily to percussion rock-drills driven by means of compressed air, specially adapted to that known as the "Ingersoll-Sergeant drill," but may also be applied to machine-drills operated by steam or other motive power. It is designed with the object of avoiding the concussion or blow on the back or return stroke between the piston and back cover of the cylinder after the parts have been subject to wear.

It consists, essentially, in forming in the air-chest a conduit or passage leading from the air-inlet to the back inlet-port to permit the admission of a quantity of air to form a cushion behind the piston on the return stroke and avoid the indirect contact between the piston and the back cover of the cylinder.

The invention will be fully described by aid of the accompanying drawings, in which the invention is shown applied as an example to the Ingersoll-Sergeant rock-drill, and in which—

Figure 1 is a longitudinal sectional elevation of the drill. Fig. 2 is a view of the air-chest from the under side, and Fig. 3 is a transverse part sectional elevation.

A conduit or passage A B is bored or otherwise formed in the air-chest J, leading from the air-inlet or main feed-passage F to the

back port E. In the position of the valve C, Fig. 1, which is moving in the direction of the return stroke or toward D, the exhaust to the back of the piston is just closed. At this instant the air is passing along the auxiliary conduit or passage A B to inlet-port E and to back of the piston to form the cushion prior to the admittance of the air for the forward stroke, which takes place on the further movement of the valve to open the feed-port *d* to the back port E. While the feed-port *d* is open to the back port E, the conduit A B is also open to port E. On the movement of the valve from the position shown in Fig. 1 in the reverse direction or toward D' the exhaust-port is opened to the back port E and to the conduit or passage A B and through it to the main feed-inlet F, the air being at the same time admitted through port *d* to the front of the piston for the back stroke.

I claim—

In combination with the drill-cylinder and piston, the air-chest having the valve therein, of an auxiliary or supplementary (air or steam) inlet A B formed directly through the air-chest and forming a passage between the back port E in the air-chest and the main feed-port F, said back port E being thereby placed in constant communication with the rear of the piston to form a cushion, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOHN HENRY SMITH.

Witnesses:

HENRY SMITH,
GEORGE HILLIAM.