A. L. SMITH.

WELL CLEANING DEVICE.

APPLICATION FILED OCT. 12, 1915.

1,167,225. Patented Jan. 4, 1916.

Fig. 1.

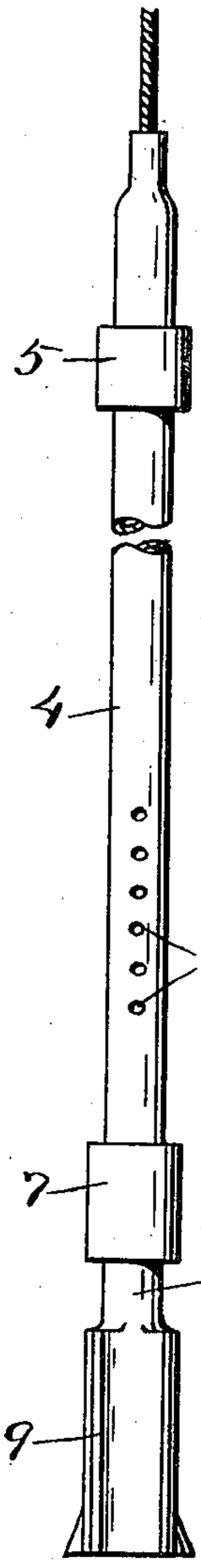
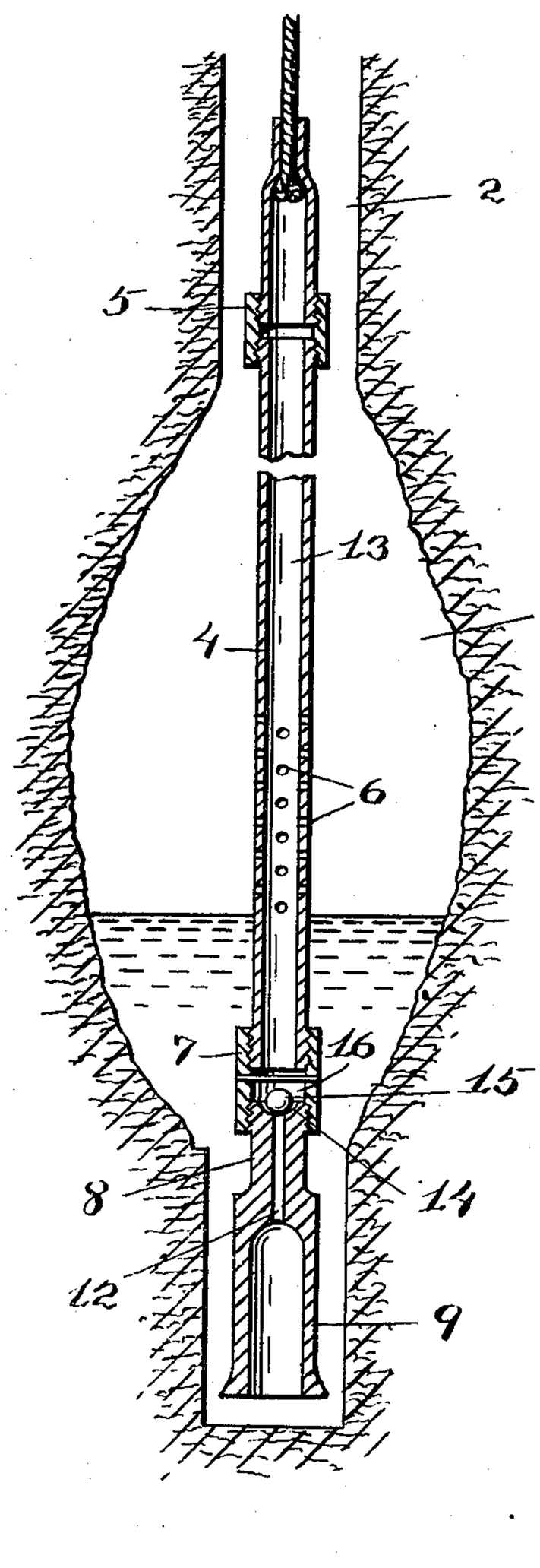


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

ARTHUR L. SMITH, OF McCONNELSVILLE, OHIO.

WELL-CLEANING DEVICE.

1,167,225. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed October 12, 1915. Serial No. 55,457.

To all whom it may concern:

Be it known that I, ARTHUR L. SMITH, a citizen of the United States, resident of McConnelsville, in the county of Morgan and State of Ohio, have made a certain new and useful Invention in Well-Cleaning Devices; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side view of the invention, partly broken away. Fig. 2 is a central longitudinal section of the same, as in use.

The object of the invention is to provide an improved device for cleaning the walls of wells, and it consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings the numeral 2 indicates the wall of a well, wherein an enlargement 3 has been formed by explosion or shooting.

In the cleaning device is provided a pipe or tube 4, of sufficiently small diameter to be easily lowered into the well by means of the ordinary drilling connection, with which it is connected by a coupling 5. This tube or pipe is provided with a series of perforations 6 along the lower portion of its length, to serve as jet holes, and is connected at its lower end by a coupling 7 to the neck portion 8 of a bit 9 having an open lower end. The neck is provided with an axial perforation 12, at the upper end of which is a valve seat 14 for a valve 15, which plays in the coupling chamber 16. The upper portion 13 of the tube is not perforated, and is designed to form an air chamber.

The device is lowered into the well by means of the ordinary drill gear rope and, sufficient fluid having been introduced into the well to fill the lower or pocket portion of the well at the lower end of the shot enlargement, the cleaner is given reciprocating motion by the drilling gear with which it is connected.

The bit, being submerged in the fluid of the pocket, is worked up and down with sufficient rapidity to cause the valve to rise and the fluid to ascend through the bit into the perforated tube. The rapid forcible motion also causes the fluid in the tube to pass forcibly, in jets, through the perforations of the tube against the wall of the well, in such wise as to spray the wall and dislodge the loose particles of rock and earth, causing the same to fall into the pocket below the bit, where they can be bailed out in the usual way. The motion of the tube and bit upward and downward, as well as rotary, is designed to render it effective in every direction against the wall. The result is aided materially by the elastic action of the air in the portion or chamber 13 of the tube above its jet perforations, it being designed thereby to produce a substantially continuous spraying effect upon the wall.

I claim:

In a well cleaning device, a reciprocatory tube having jet perforations in its lower portion and an air chamber in its upper portion above the perforations, an upper coupling, a lower coupling and valve chamber wall, a bit having an open lower end and an upper axially perforated neck portion connected to the lower coupling, and a valve operating in the coupling chamber.

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

ARTHUR L. SMITH.

Witnesses:
H. M. FINLEY,
TERESA M. TORBERT.