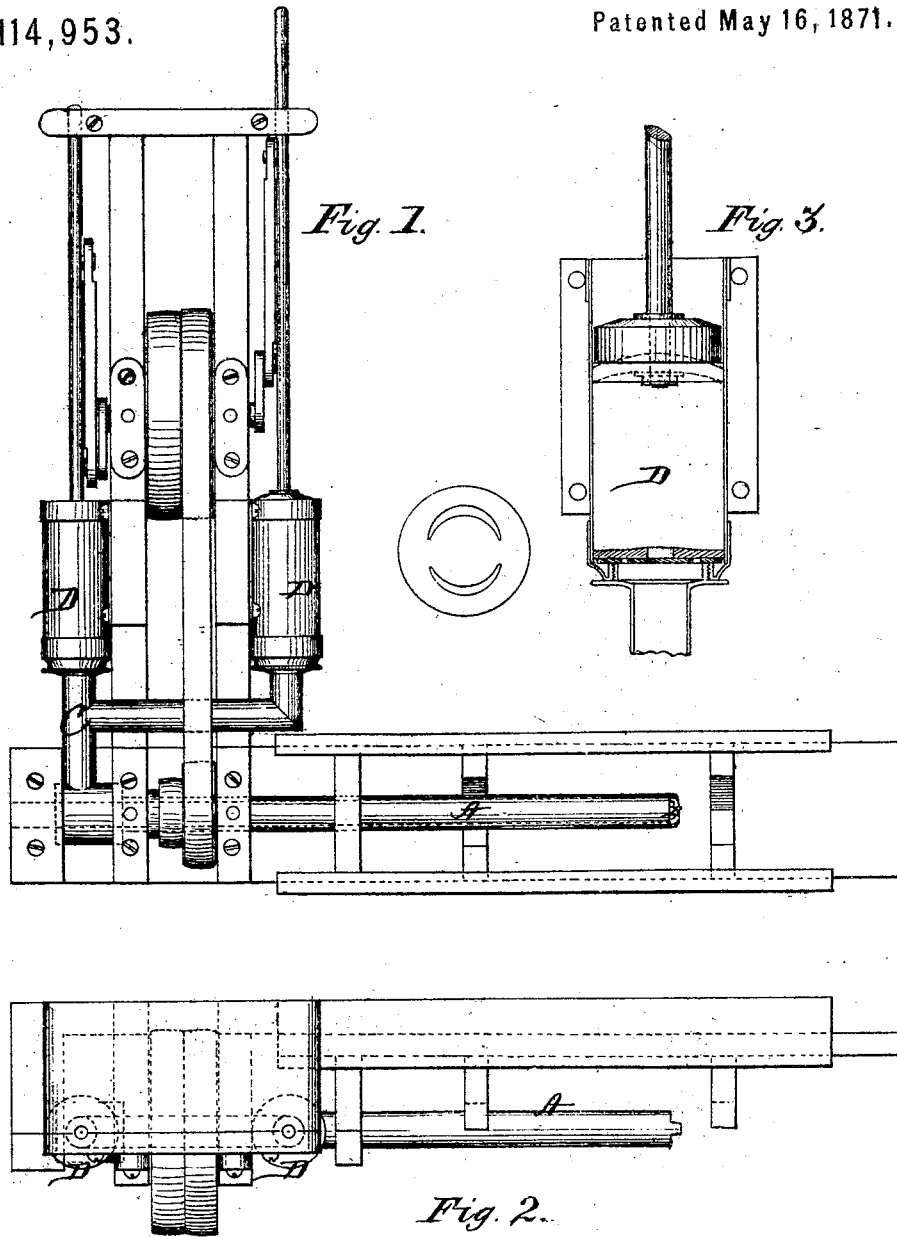


ROBERT LITTLE.

Improvement in Boring-Machines.

No. 114,953.

Patented May 16, 1871.



Witnesses  
C. L. Lynd  
H. H. Harr

Fig. 4.



Inventor,  
Robert Little  
per Alexander Mason  
Attys.

# United States Patent Office.

ROBERT LITTLE, OF FREEPORT, ILLINOIS.

Letters Patent No. 114,953, dated May 16, 1871; antedated May 12, 1871.

## IMPROVEMENT IN BORING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, ROBERT LITTLE, of Freeport, in the county of Stephenson and in the State of Illinois, have invented certain new and useful Improvements in Boring-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists—

First, in so constructing the mechanism of a "boring-machine" that a current of air can be used in the same for the purpose of expelling the borings or chips; and

Second, in two or more cylinders so constructed and used in a boring-machine that air may be forced through one for the purpose of expelling the borings or clippings through the other.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view, and

Figure 2 a side elevation of my machine.

Figure 3 is a section of the air-cylinder, and

Figure 4 is a cross-section of the two boring-cylinders.

A represents the outer tube, which is provided on one end with suitable cutting-rings or teeth.

This tube is placed in suitable bearings, and is provided, near its rear end, with a pulley or its equivalent, by means of which power is applied to it, and by means of which it is caused to turn or revolve.

B represents the inner tube, which is stationary, and the mouth of which extends almost to the mouth of the outer or cutting-tube.

The outer end of this stationary tube is provided

with breakers or cutters, of any suitable construction, to break or cut up the chips so that they can pass or be carried into said tube.

Connecting with the outer tube, near its rear end, is an air-pipe, C, which leads from the air-cylinders D D.

The cylinders D D are provided with suitable piston-heads, which, when operated by suitable machinery, force air through the pipe C and into the space between the pipes A and B.

The air thus forced in passes forward to the cutting-end of the outer tube, and then coming in contact with the cuttings from the bit it carries them out through the inner tube and away from the machine.

Air, used in this manner, serves the auxiliary purpose of keeping the cutters and outer tube from heating.

The mode of arranging the air-cylinders and pipe is not an essential feature of my invention, as it will readily be understood that many different modes might be used for accomplishing the same end.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the inner fixed tube B with the outer rotating tube A and the air-pumping mechanism herein described, all constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of March, 1870.

ROBT. LITTLE.

Witnesses:

J. E. WHEELER,  
GEO. N. TOWSLEE.