A. STICKNEY.

Blasting Rocks.

No. 10,039. Patented Sept. 20, 1853.

Fig: 1.

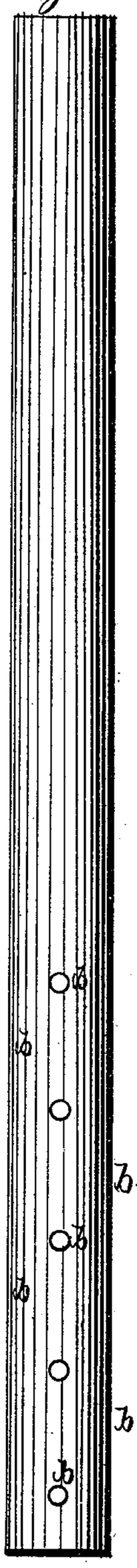
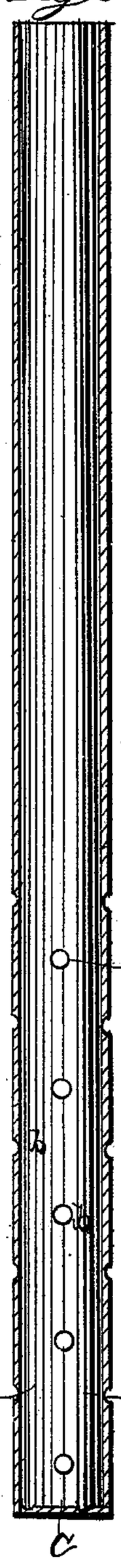


Fig 2



UNITED STATES PATENT OFFICE.

ANCIL STICKNEY, OF NORWICH, VERMONT.

IMPROVEMENT IN BLOW-PIPES FOR ENLARGING BLASTING-CAVITIES.

Specification forming part of Letters Patent No. **10,039**, dated September 20, 1853; antedated May 10, 1853.

To all whom it may concern:

Be it known that I, ANCIL STICKNEY, of Norwich, in the county of Windsor and State of Vermont, have invented a new and useful Improvement in Preparing or Making Blast Holes or Chambers in Rocks; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

The drill-holes of rocks are sometimes enlarged at or near their lower ends by means of the chemical action of acids, or by heat, such enlargement being for the purpose of producing a chamber for the reception of a blasting-charge larger than what could be otherwise employed in the hole. Charcoal or other fuel has been introduced into the drill-hole, and when set on fire a stream of air has been directed upon it through a tube connected with a bellows or air-blowing apparatus. In this case the tube used has been made open for the expulsion of the air at its lower end only.

I am not aware that there has ever been used in such process a tube with orifices of discharge made through its side or sides while its bottom was closed, or made with an orifice of discharge of less area than that of the cross-section of the bore of the tube.

Experiments made by me very extensively have demonstrated that when the greater portion or all of the air is forced laterally out of the tube and against the sides of the drill-hole, so as to shoot or blow the flame directly against it, the enlargement of the hole of the rock is effected in far less time than it is when the air is blown in the line of the bore and directly downward upon the fuel. When the blast of air is thrown directly upon the fuel, it has a tendency to increase the depth of the hole; but this is not what is desired, as we require the lateral enlargement of it.

By means of a blast-tube made with a closed end and perforated sides, I have been enabled to perform the required enlargement of a drill-hole in about one-sixth of the time that would be required to effect the same by means of a blast-tube made open only at its end.

Of the drawings herewith presented, Figure 1 denotes a side view, and Fig. 2 a longitudinal section, of such a tube as I employ, *a* denoting its closed bottom, and *b b*, &c., the perforations or air-outlets made through its sides.

The tube, in order to enable it to withstand the great heat produced, may be made of platina. It may have a small blow hole or orifice through its bottom; but this (in practice) I do not find to be of any material advantage, and I deem it rather injurious than otherwise.

In the process of enlarging the drill-hole by the tube shown in the figures, or one perforated on its sides and having its lower end nearly or entirely closed, such tube is inserted in the hole and passed down until its bottom nearly, if not quite, touches the charcoal or fuel in combustion.

The diameter of the tube may be about one-third that of the drill-hole, in order that pounded or pulverized charcoal may be introduced into the hole and made to pass downward between the sides thereof and the tube as fast as may be required in order to replenish the fire. If a powerful blast of air is blown into the tube, it is expelled through the lateral perforations in numerous jets, and blows the flame directly against the sides of the bore.

Now, I do not claim the enlarging a drill-hole by the use of heat or a blast of air thrown upon charcoal or other fuel in a state of combustion; but

What I do claim is--

My improved process of enlarging the drill-hole by means of an air-blast and charcoal or other combustible fuel placed in the hole, the same consisting in the employment of a blast-tube made with lateral perforations and a closed or nearly closed bottom, substantially as described, the same enabling me to attain the enlargement of the hole with a great saving of labor and time, essentially as set forth.

In testimony whereof I have hereto set my signature this 30th day of April, A. D. 1853.

ANCIL STICKNEY.

Witnesses:

R. H. EDDY,

FRANCIS GOULD.