No. 671,774. Patented Apr. 9, 1901.

H. B. PROSSER.

SAND BLASTING DEVICE.

(Application filed June 20, 1900.)

(No Model.)

Fig. 1.

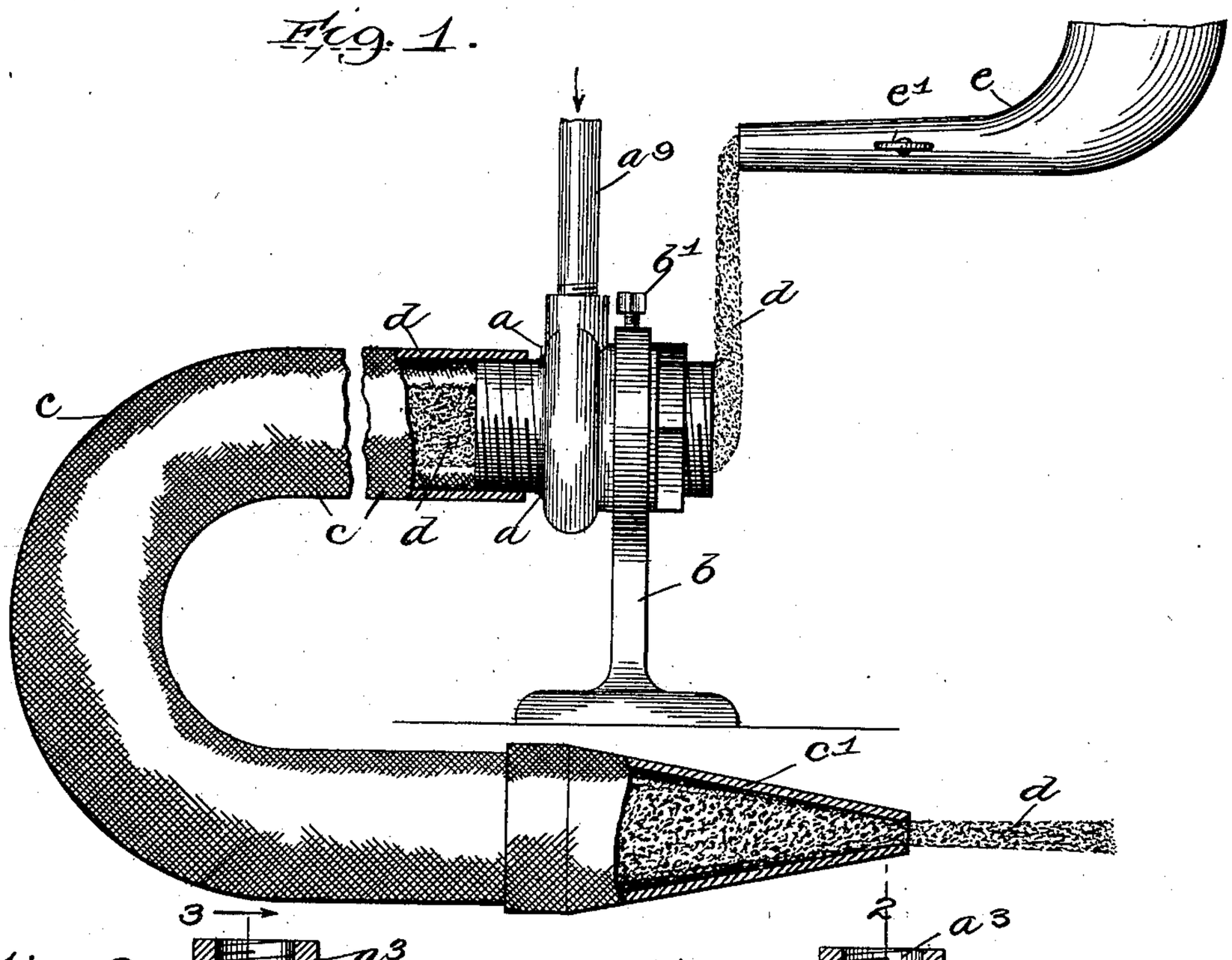


Fig. 2.

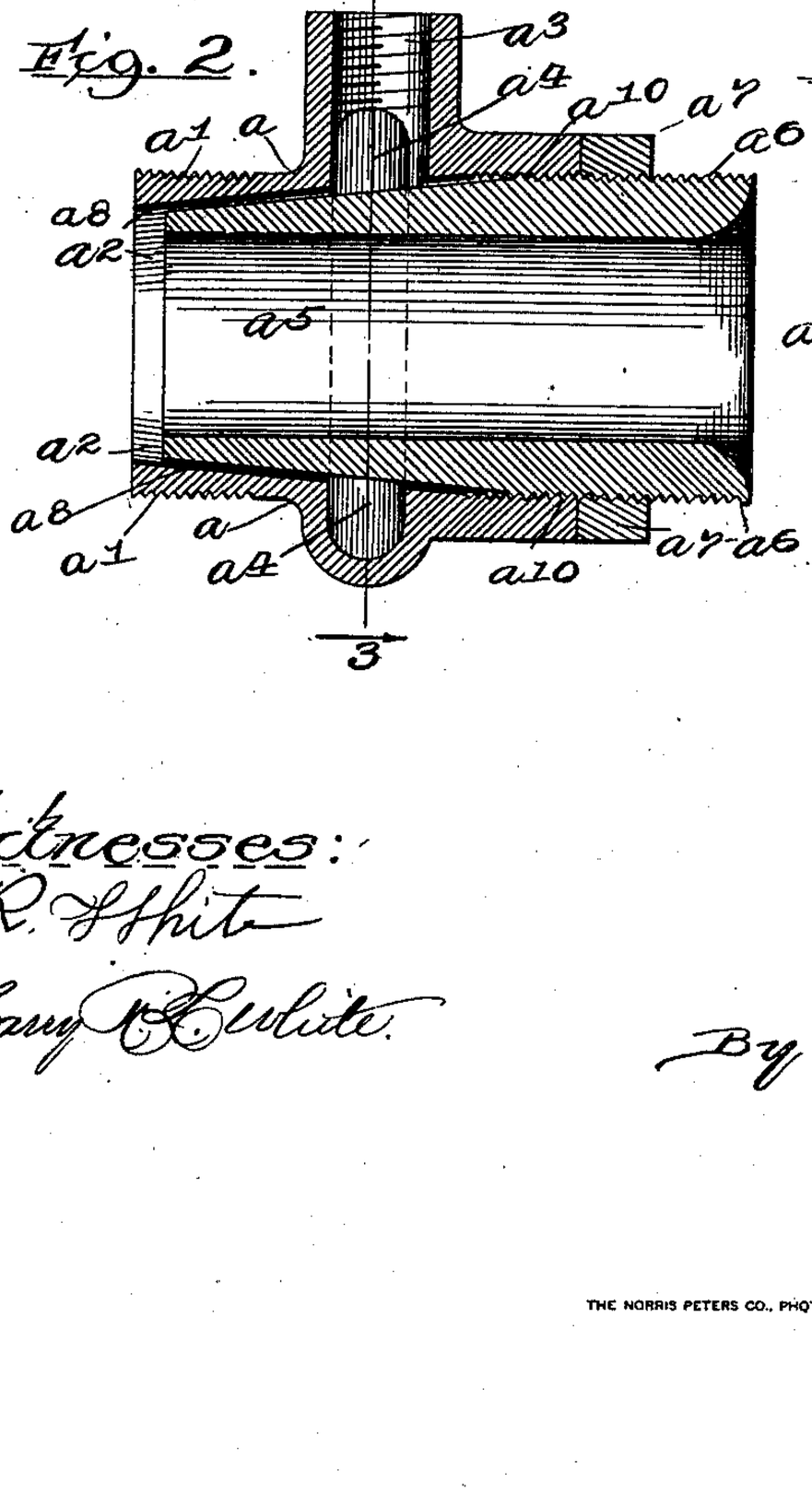
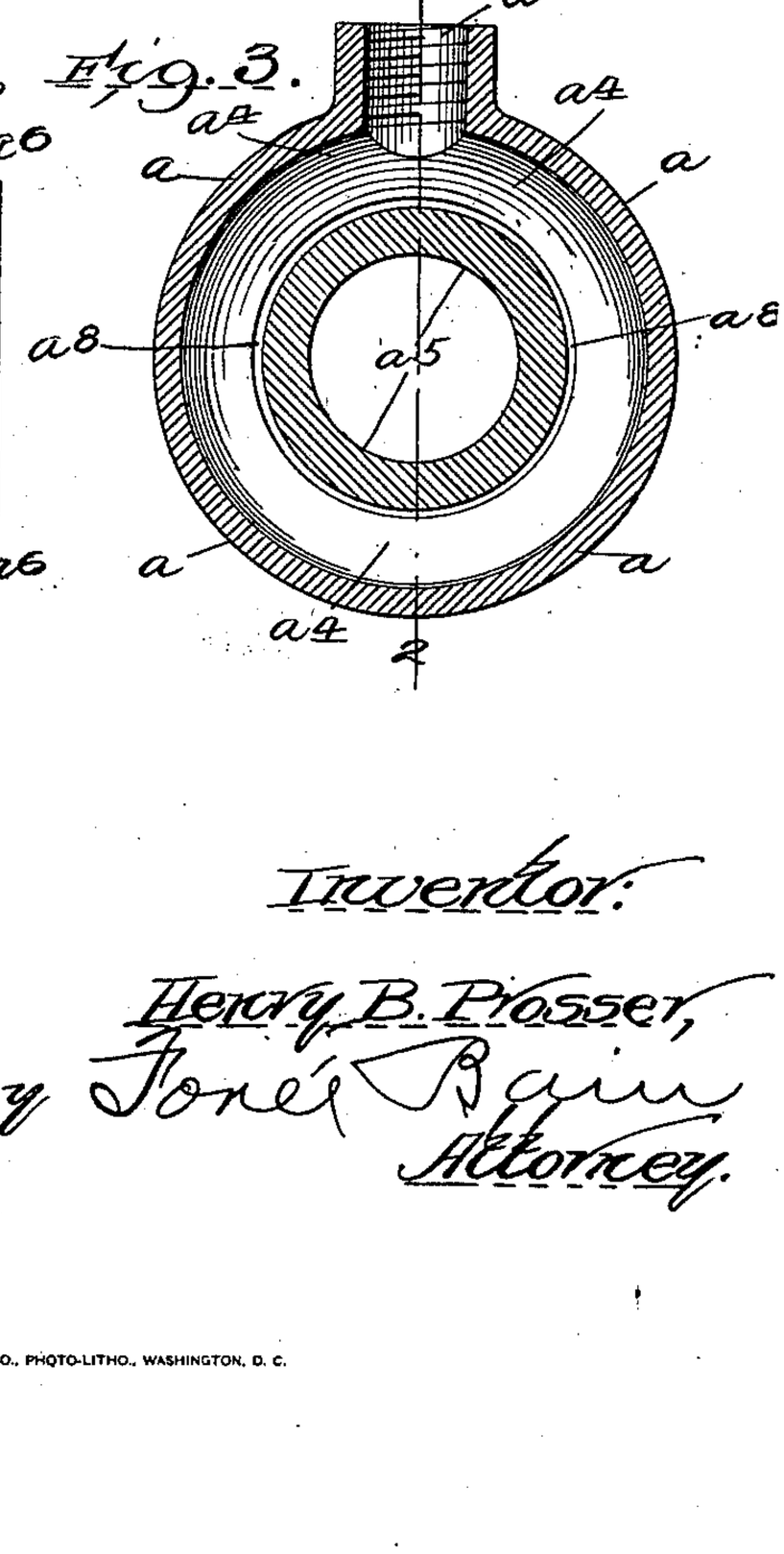


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY B. PROSSER, OF CHICAGO, ILLINOIS.

SAND-BLASTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 671,774, dated April 9, 1901.

Application filed June 20, 1900. Serial No. 20,971. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. PROSSER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Sand-Blasting Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable persons skilled in the art to which it appertains to make and use the same.

One object of my invention is to provide a simple, durable, and efficient device for projecting sand against a surface for the purpose of engraving or cutting such surface by means of the sand projected by a fluid under high pressure.

Another object of my device is to provide a means whereby sand in its dry state may be used and whereby it may be projected against a surface with great force while in this dry state.

A further object of my invention is to provide a flexible yielding hose provided with a nozzle, whereby the same may be directed to the various positions where its effect is desired, the nozzle and hose being of such a yielding soft nature as to be unaffected by the sand when passing through the said conduit and nozzle.

In the drawings, Figure 1 represents a side elevation, partly in section, of my device and as it appears when in operation. Fig. 2 is a section of the ejector proper. Fig. 3 is a transverse section of the same on lines 3 3 of Fig. 2.

The same letters of reference are used to indicate similar parts in all of the views.

Referring more particularly to Figs. 2 and 3, a is an outer shell provided with an exterior screw-thread a' on one end and with an interior screw-thread at the other end and an annular groove a^4 near the middle. This annular groove is intersected by a laterally-extended perforation a^3, provided with screw-threads, into which a pipe a^9 is secured. A mobile fluid for the purpose of projecting the sand is introduced through this pipe. The shell a is conically tapered at the front end, as shown at a^2. A thimble a^5, tapered exteriorly, is adapted to be introduced into the shell a by means of the engagement of screw-threads a^{10} on the shell and a^6 on the thimble. The two parts are held in the position desired by means of the annular nut a^7, which surrounds the thimble a^5 and abuts against one end of the shell a. The interior taper of the shell a and the exterior taper of the thimble a^5 are made upon the same angle. The annular space a^8 between the thimble and the shell intersects the annular groove a^4, which is made into the said shell a. The annular space a^8 may be made larger or smaller, as the case may be, by screwing the thimble a^6 farther into the shell a or withdrawing the same to the position required and then securing the same in a fixed position by means of the nut a^7. Steam, air, or other fluid under pressure will enter the pipe a^9, fill the annular space a^4, and will be projected through the space a^8, which exists between the shell a and the thimble a^5. The angle of travel will cause the mobile fluid to be concentrated at a point removed from the front end of the device corresponding with the angle that exists between the two parts and the common axis of both. The device a is supported upon a stand b and is secured in position by means of the set-screw b'. A hose c is secured to the shell a by means of the screw-threads a', and upon its terminal a soft-rubber or other pliable nozzle c' is secured. e is a spout which terminates the receptacle for containing the dry sand d, and e' is a valve for regulating the flow of the sand to the machine.

The use and operation of my device are as follows: A supply of sharp dry sand is placed in the receptacle e. The valve e' is adjusted until the quantity of sand desired flows from the end of the spout, preferably by gravity. It is designed that this sand should pass near the open end of the thimble a^5 as it falls. The parts a^5 and a should be adjusted until the annular space a^8 is of the desired size. To preserve this relation, the two parts should be secured together by the use of the nut a^7. Then a fluid, such as air or steam under pressure, may be admitted into the pipe a^9. It will immediately fill the annular space a^4, which is of much larger capacity than the annular space a^8. It will find an exit through the space a^8 in an annular jet and be directed

at an angle, where it will meet at a point on the axis of the apparatus somewhat removed from the end thereof. This will tend to form a vacuum in the tube or thimble a^5, and the sand d, which is falling at the time near the end of the said tube, will be sucked into the tube, and after passing the inner front end of the ejector it will be hurled by the action of the motive fluid with great force through the conduit or pliable tube c and will emerge from the end of the nozzle c', when it may be projected against any surface or object upon which it is desired that it shall be directed for the purpose of cutting or engraving or for such uses as devices of this character are usually used.

It is a known fact that sand under high pressure and moving with great velocity will cut hard surfaces very rapidly, but soft surfaces with which it comes in contact will remain uninjured. For this reason I employ a soft yielding hose c and a nozzle c' of a similar nature for conducting and controlling the direction of the jet.

My device is very simple in construction and highly efficient in its operation.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

A sand-blasting device comprising a shell provided with an interior, conical taper, at one end, and an interior screw-thread at the other end, a thimble having an exterior conical taper at one end, and an exterior screw-thread at the other end, said screw-thread adapted to engage with the screw-thread within said shell, a nut on said thimble for holding said parts in a fixed relation, and an opening into said annular, conical space for the motor fluid, substantially as set forth.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 6th day of June, A. D. 1900.

HENRY B. PROSSER.

Witnesses:
FORÉE BAIN,
M. F. ALLEN.