(No Model.)

J. P. GRISCOM.

DIAMOND DRILL.

No. 272,681. Patented Feb. 20, 1883.

FIG. 1.

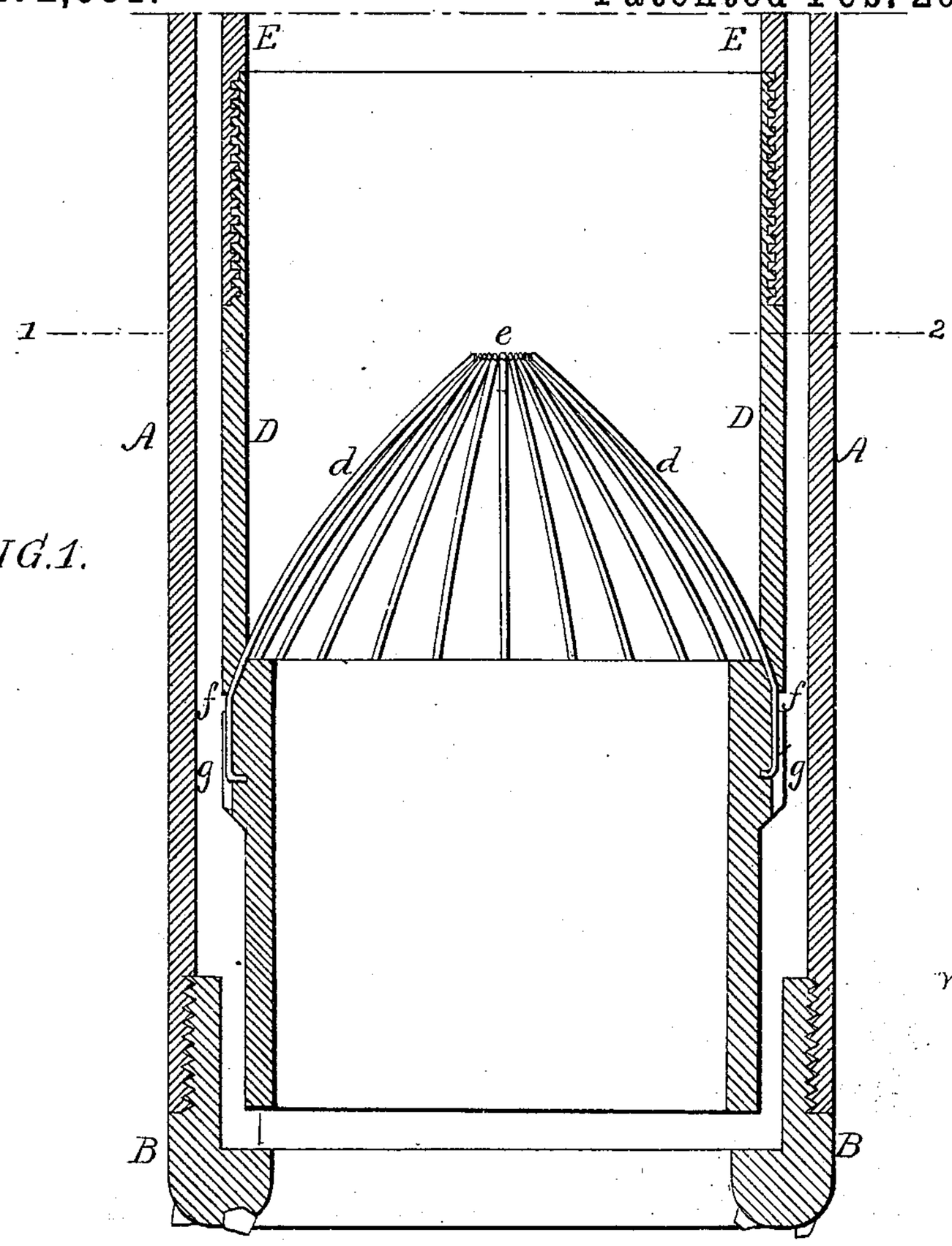


FIG. 2.

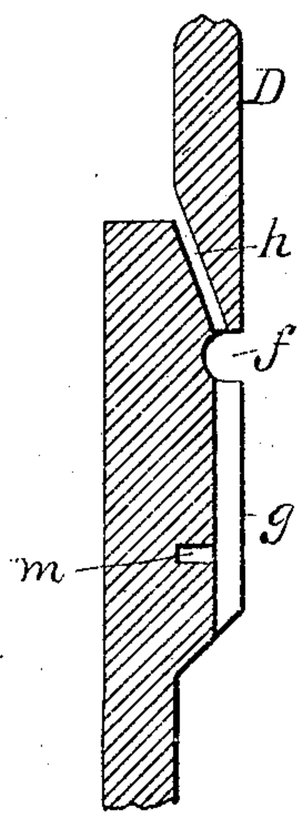
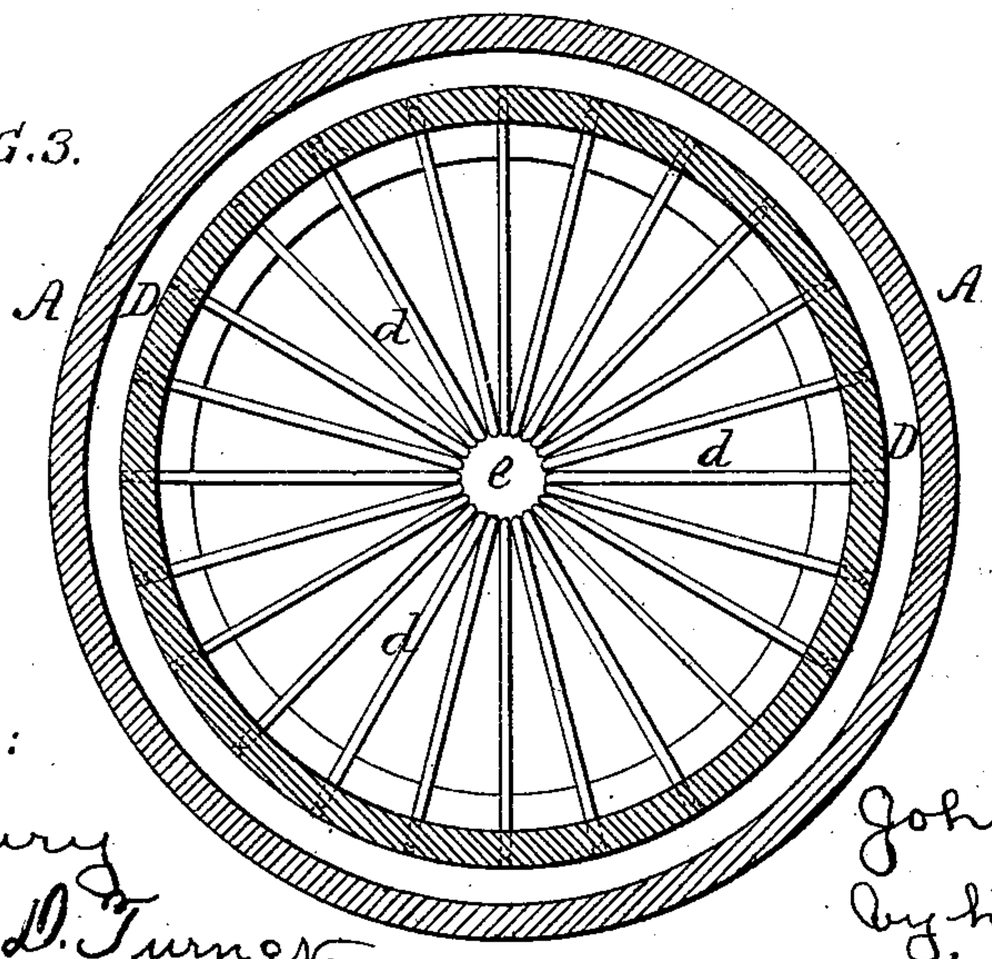


FIG. 3.



WITNESSES:

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JOHN P. GRISCOM, OF POTTSVILLE, PENNSYLVANIA.

DIAMOND DRILL.

SPECIFICATION forming part of Letters Patent No. 272,681, dated February 20, 1883.

Application filed January 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. GRISCOM, a citizen of the United States, and a resident of Pottsville, Schuylkill county, Pennsylvania, have invented certain Improvements in Diamond Drills, of which the following is a specification.

My invention relates to that class of rock-boring tools in which a ring studded with diamonds and attached to the lower end of a tube is combined with an inner tube for receiving the core of rock; and the object of my invention is to retain within the said inner tube not only the broken core, but also many of the fragments which would otherwise remain behind when the tool is raised, and which must be removed, as they interfere materially with the action of the tool after it is lowered.

In the accompanying drawings, Figure 1 is a vertical section of the lower end of a diamond boring-tool with my improvement; Fig. 2, an enlarged view of part of Fig. 1; and Fig. 3, a sectional plan on the line 1 2, Fig. 1.

A is the outer tube of the boring-tool, this tube being provided at its lower end with a screw-ring, B, which is studded with diamonds in the usual manner.

D is the detachable portion of the inner tube, E, which receives the core left by the tool in boring into rock.

In tools of this class it has been usual to make in the inner tube yielding catches, which would retain the core by forming a support for the same until the tool could be withdrawn from the hole in the rock; but when the core was broken, or when the tool was boring through a layer of gravel, the fragments of rock and gravel were not retained by the catches, but remained behind when the tool was withdrawn, so that it became necessary to remove them by other means. In order to obviate this difficulty, I secure to the inner tube a series of elastic wires, *d*, preferably curved, as shown, and extending so near to the center of the tube that they will form a cage, these wires terminating at a small central opening, *e*. These elastic wires will yield to the core, and when a portion of a broken core has passed the wires it cannot return, at the same time the wires are so close together that gravel or fragments of rock which pass between them cannot return, but must accompany the tube when the tool is elevated for the purpose of removing the broken core and fragments from said tube. I prefer to secure the wires to the tube D in the manner shown in Figs. 1 and 2, on reference to which it will be observed that an annular recess, *f*, is formed in this tube, and that a series of vertical grooves, *g*, extend from the annular recess to the lower end of the tube. This recess *f* enables me to drill the inclined holes *h* for the reception of the wires, and after each wire has been introduced into one of the inclined holes it is bent downward and lodged in one of the vertical recesses, the lower end of each wire being bent inward and adapted to an opening, *m*, in the tube, so as to prevent the wire from turning.

I claim as my invention—

1. The combination, with the tube of a diamond boring-tool, of a cage composed of an annular series of elastic wires, *d*, projecting inward from said tube and extending nearly to the center of the latter, substantially as set forth.

2. The combination of the tube D, having holes *h*, annular groove *f*, and vertical recesses *g*, with the series of wires *d*, passing through the holes *h*, and having their ends bent downward into the recesses *g*, as set forth.

3. The combination of the tube D, having vertical recesses *g*, holes *h*, and openings *m*, with the wires *d*, adapted to the holes *h* and recesses *g*, and having bent ends projecting into the openings *m*, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN P. GRISCOM.

Witnesses:

ELIAS F. LEONARD,

JOSEPH SHELLY.