

(No Model.)

J. A. WOODHOUSE.

WELL BORING TOOL.

No. 349,192.

Patented Sept. 14, 1886.

Fig. 1.

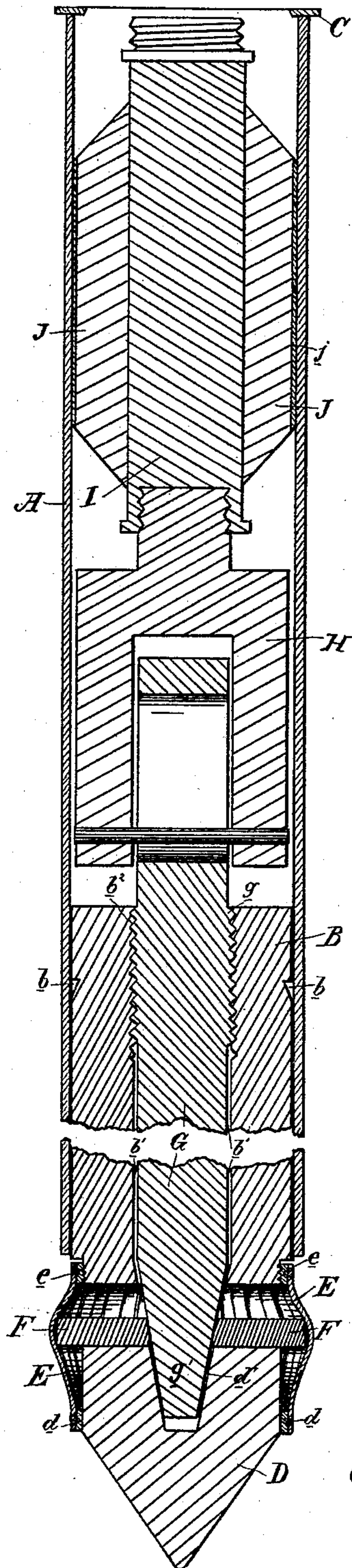


Fig. 3.

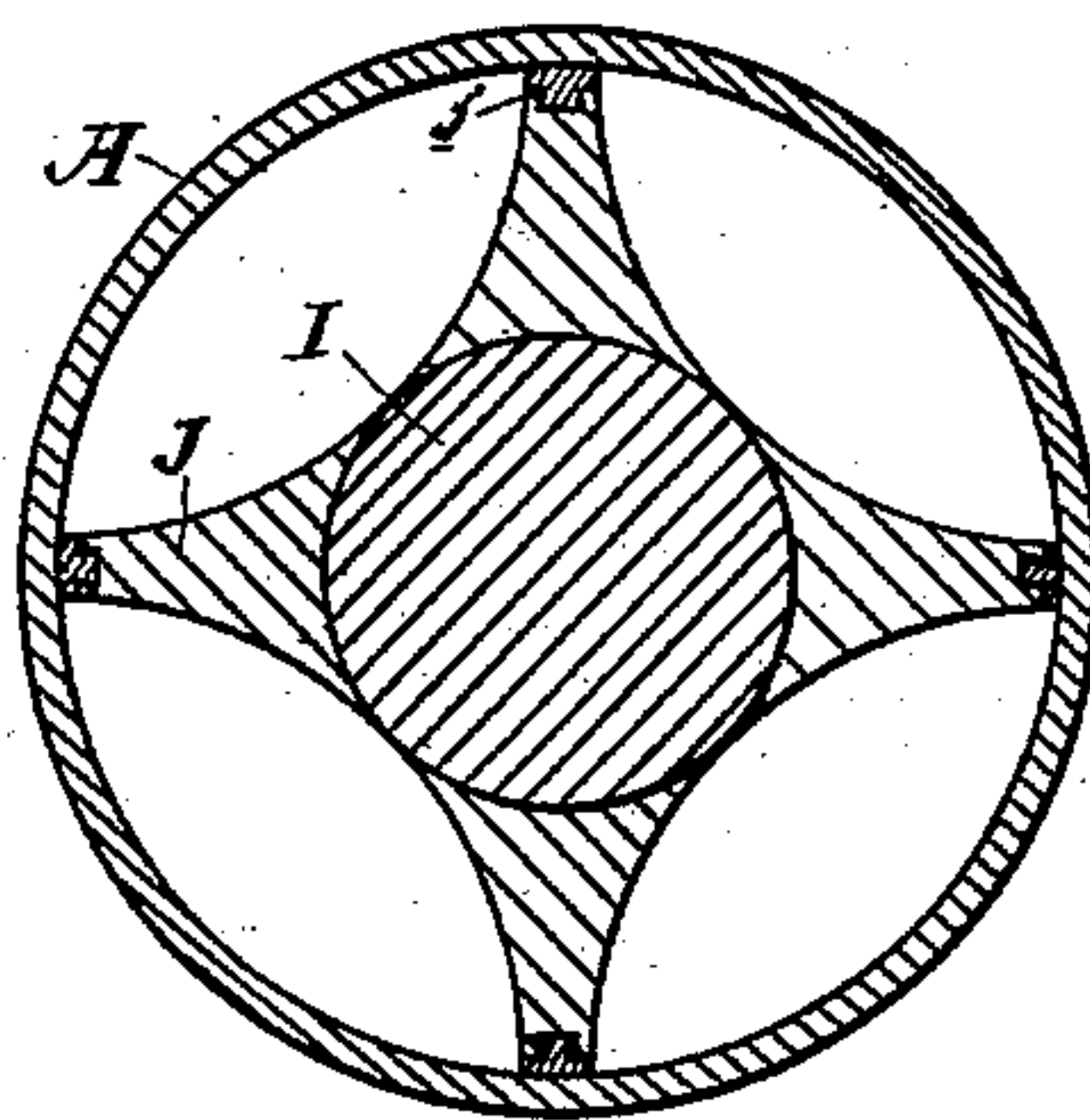
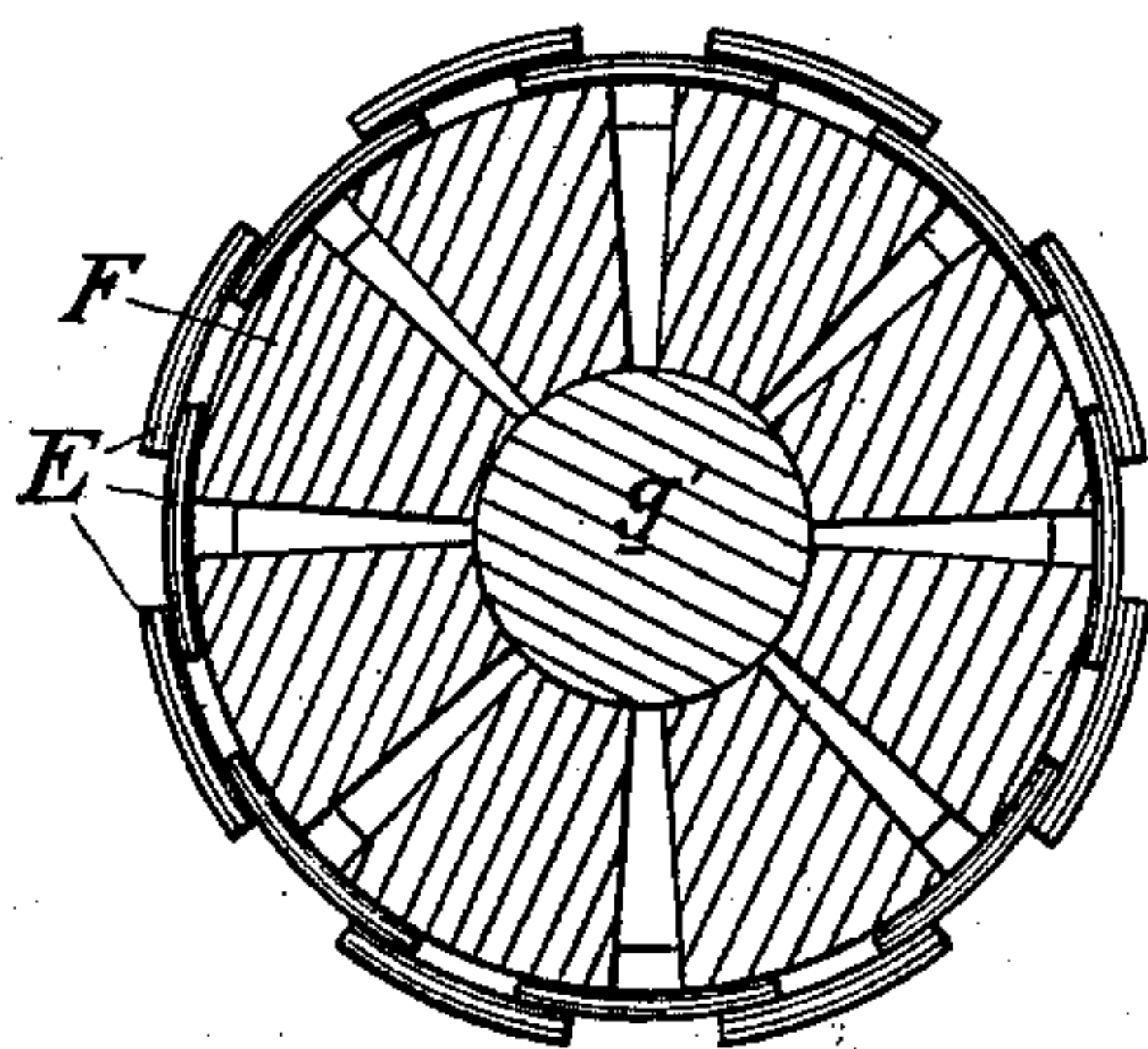


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN ADAM WOODHOUSE, OF SANTA ANA, CALIFORNIA.

WELL-BORING TOOL.

SPECIFICATION forming part of Letters Patent No. 349,192, dated September 14, 1886.

Application filed December 24, 1885. Serial No. 186 634. (No model.)

To all whom it may concern:

Be it known that I, JOHN ADAM WOODHOUSE, of Santa Ana, county of Los Angeles, and State of California, have invented an Improvement in Well-Boring Tools; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the class of well-boring tools, and especially to a new and useful tool or implement for displacing bowlders and stones in the hole in advance of the descending pipe.

My invention consists in a cylindrical stock, a proper point, a series of expansible spring-plates uniting the stock with the point, an expanding sector-block upon the head of the point and bearing against the spring-plates, a rod screwed into the stock, and having a conical point for adjusting and operating the sector-block, and a peculiar guide and sinker coupled through the intervention of suitable jars to the head of the tool, all of which, together with details of construction, I shall hereinafter fully describe by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of my well-boring tool, showing it let down in the pipe. Fig. 2 is a cross-section through the expanding-block. Fig. 3 is a cross-section through the sinker and guide.

The object of my invention is to provide a well-boring tool adapted for use in rocky strata, and which will displace and hold back the loose rock, bowlders, &c., leaving a space larger in diameter than the pipe which follows the tool.

A is the pipe.

B is the stock of the tool, of a cylindrical shape, and having notches *b*, by which, when first put into the pipe, it is suspended from cap C on top of the pipe.

D is the point of the tool, consisting of a conical-shaped steel piece having a cylindrical upper portion.

E are a number of spring-plates arranged in an annular series and in a double layer, the outer layer covering and overlapping the joints of the inner layer. These plates are at their upper ends bolted to a screw-ring, *e*, seated on the lower end of the stock B, and at their lower ends they are secured to a ring, *d*, on the base of the cylindrical portion of the

point D, which said ring is so secured as to be readily detached when required.

Upon top of the point D are seated and guided the sectors F of an expanding block, the outer ends of which bear against the inner surfaces of the spring-plates E, which connect the point and stock of the tool.

In the stock is a central passage or perforation, *b'*, and in the upper portion of the point is a continuation-socket, *d'*, of a tapering or inverted conical shape.

G is a rod having an upper threaded portion, *g*, which screws into a threaded portion, *b''*, of passage *b'*, and a conical or tapering point, *g'*, which fits within the socket *d'* of the point, and bears on the inner ends of the sectors F.

Coupled to the head of the tool are the jars H, to which is coupled the sinker-bar I. This sinker-bar consists of a cylindrical rod having attached to or formed with it radial wings forming guides J. The outer ends of these guides are grooved to receive Babbitt metal *j*, to avoid wear on the pipe A.

The operation of the tool is as follows: When the rod G is not screwed down, the spring of the plates E is sufficient to straighten them out, whereby the diameter of the whole series is small enough to permit the tool to pass readily through the pipe. The tool is first let down into the pipe until its notches *b* rest in the cap C. The jars are then hoisted and let down upon and coupled to the top of the rod G, and then the tool is freed from the cap and lowered until the top coupling of the jars is on a level with the cap. Then the sinker and guide bar is coupled to the jars and the usual connecting-rods to the said bar, and the whole device lowered away until the point of the tool and the spring-plates E are below and free of the pipe. The rod G is now given a few turns, so that its point *g'* forces outwardly the sectors F, which bearing against the spring-plates E, expand them to a diameter larger than the pipe, and thus they become a shield or guard, which forces and holds the bowlders and rocks back. The sinker-bar I is guided in its lifting and falling movement by the guide-wings J, and this movement through the jars H gives a blow to the tool, whereby it is driven down, carrying the pipe A with it, the spring-plates

E all the time holding back the rocks, &c., and thus making a hole larger than the descending pipe.

The object of the double layer of spring-plates E breaking joints, as described, is to prevent sand and earth from working in.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a well-boring tool having a stock and a suitable boring or inserting point, an expanding guard or shield around the tool adapted to increase its diameter when relieved from the pipe, substantially as and for the purpose herein described.

2. In a well-boring tool having a stock and a suitable boring or inserting point, an annular series of spring-plates around the tool adapted to expand to a greater diameter when relieved from the pipe, substantially as and for the purpose described.

3. In a well-boring tool, the combination of the stock B, the point D, and the annular series of spring-plates E, uniting the stock and point, substantially as herein described.

4. In a well-boring tool, the combination of the stock B, the point D, and the spring-plates E, uniting the stock and point, said plates being arranged in an annular series of two layers, the outer layer breaking joints with the inner layer, substantially as described.

5. In a well-boring tool, the combination of the stock B, the point D, the annular series of spring-plates E, uniting the stock and point, and the means by which the plates are secured, consisting of the screw-ring e, to which

their upper ends are attached, and the detachable ring or band d, to which their lower ends are attached, substantially as herein described.

6. In a well-boring tool, the stock B and point D, in combination with the annular series of spring-plates E, uniting the stock and point, and a means for expanding said plates and holding them positively to a greater diameter after being relieved from the pipe, substantially as described.

7. In a well-boring tool, the stock B, having a central passage, b', the point D, having a central inverted conical socket, d', and the annular series of spring-plates E, uniting the stock and point, in combination with the sectors F on the point, bearing against the spring-plates, and the rod G, threaded in the passage of the stock, and having a conical point, g', seated in the socket of point D and bearing against the sectors, substantially as and for the purpose herein described.

8. The stock B, the point D, and the spring-plates E, uniting stock and point, the expanding sectors F, and the conical-pointed screw-rod G, for operating the sectors, in combination with the jars H, coupled to the head of the rod G, the sinker-bar I, coupled to the jars, and the guide-wings J of said rod, substantially as described.

In witness whereof I have hereunto set my hand.

JOHN ADAM WOODHOUSE.

Witnesses:

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