

J. JOHNSON.  
Tubular Pile.

No. 225,061.

Patented Mar. 2, 1880.

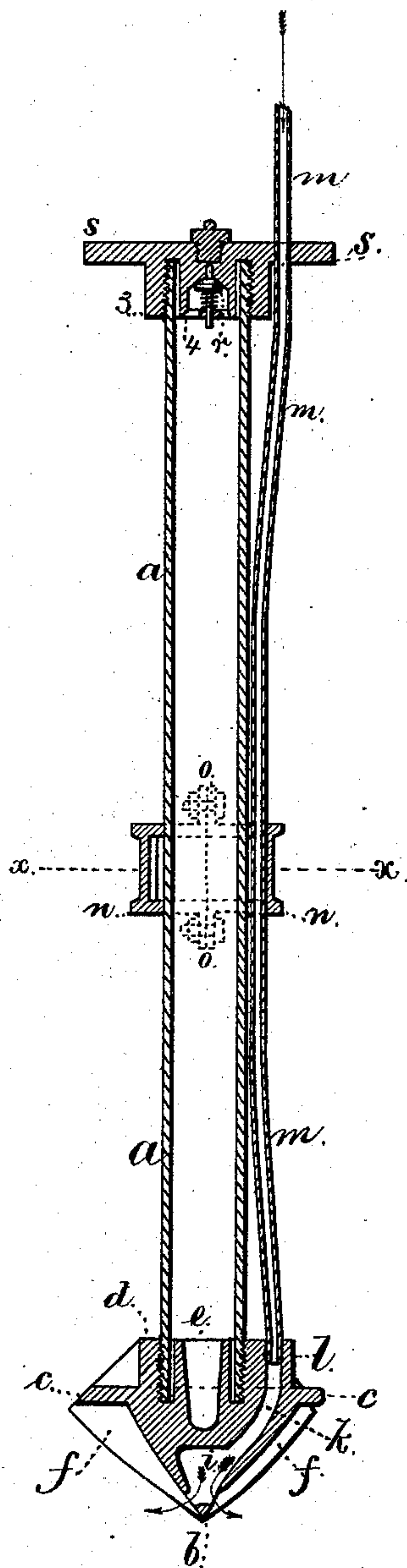


Fig. 1.

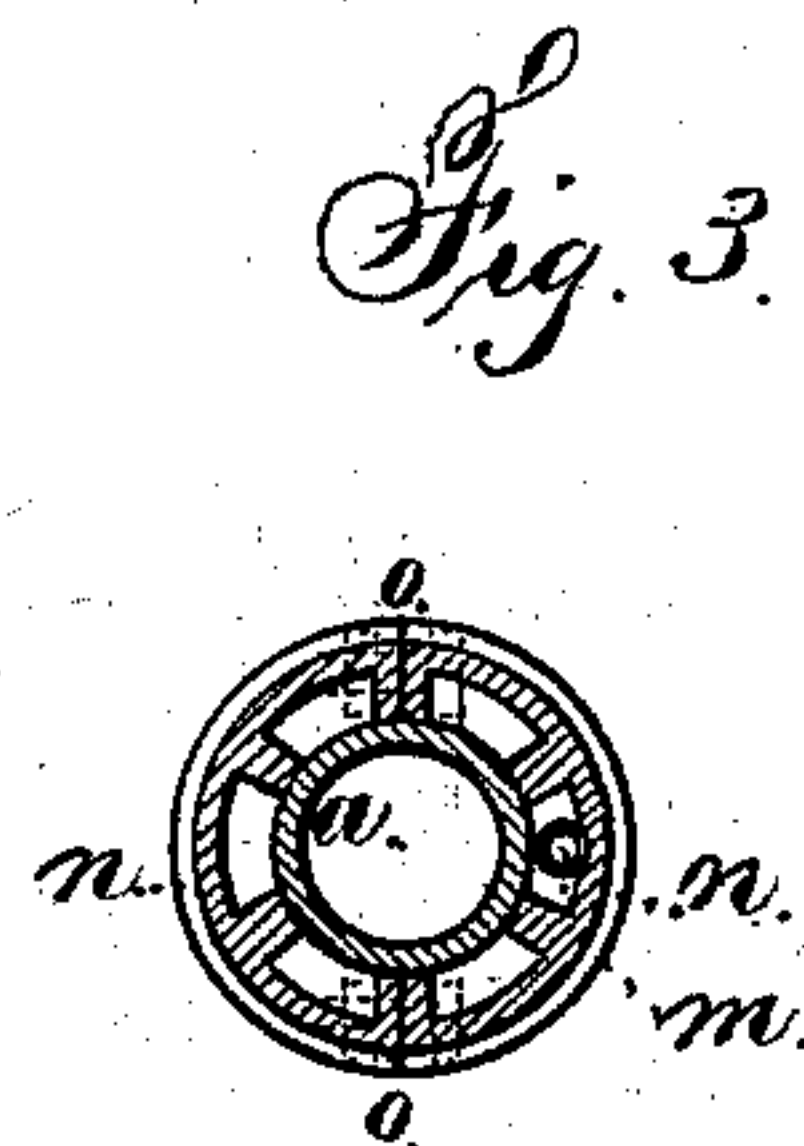


Fig. 3.

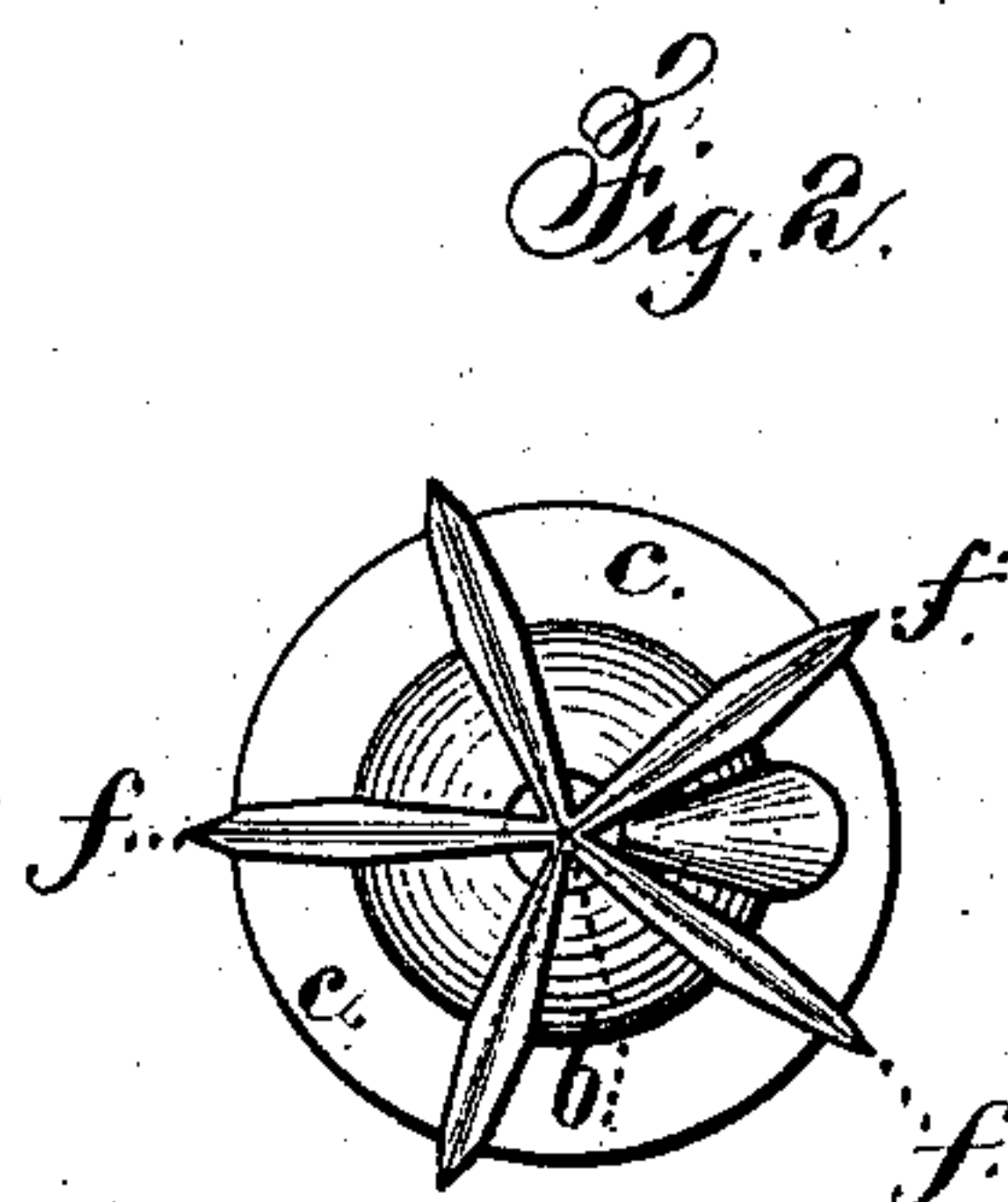


Fig. 2.

Witnesses  
Harold Terrell  
Chas H. Smith

Inventor  
Job Johnson  
per Lemuel W. Terrell  
att.

# UNITED STATES PATENT OFFICE.

JOB JOHNSON, OF BROOKLYN, NEW YORK.

## TUBULAR PILE.

SPECIFICATION forming part of Letters Patent No. 225,061, dated March 2, 1880.

Application filed November 17, 1879.

*To all whom it may concern:*

Be it known that I, JOB JOHNSON, of Brooklyn, in the State of New York, have invented an Improvement in Tubular Piles, of which  
5 the following is a specification.

The object of this invention is to facilitate the sinking of piles in sand, gravel, shale, or harder substances, to insure the vertical and central movement of such pile, to prevent injury to the inside of the pile by the action of moisture, to prevent the rise and fall of the tide acting to loosen the pile, and to prevent injury to the pile by the tools that are employed in sinking the same.

15 In the drawings, Figure 1 is a vertical section of the pile. Fig. 2 is an inverted plan of the point, and Fig. 3 is a sectional plan at the line *x x*.

20 The pile is made of a metal tube, *a*, of the desired diameter and length, either in one piece or coupled together, and at the bottom of the pile there is a shoe having a conical point, *b*, a horizontal disk, *c*, two short vertical cylinders, *d* and *e*, upon the upper surface,  
25 and inclined cutting-blades *f f*. The lower end of the tubular pile *a* is entered into the annular space between the short cylinders *d e*, and is securely leaded therein. It may also be more firmly secured by bolts or keys, the object being to render the tubular pile perfectly water-tight at the lower end and to prevent the parts working loose as the pile is revolved in sinking it.

30 The cutting-blades *f* extend at their upper end beyond the edge of the disk *c*, so that in passing through shale, gravel, or hard substances the hole that is made by rotating the pile will be larger than the disk, and give opportunity for the same to descend freely, and  
40 also for the water and refuse material to rise, as hereinafter described.

This construction of penetrating-point is to be distinguished from those heretofore used, where there were radial scrapers on a flat disk  
45 or conical scrapers with notched edges, as the scrapers did not in either case extend beyond the disk, and therefore did not clear the hole sufficiently for the disk to descend freely, and the conical point of the blades becomes a pivot  
50 on which the pile can be revolved, and it is in line with the axis of the tube; and hence the

pile will descend vertically and will not become misplaced, as it would in cases where the scrapers do not come to a point.

In some instances the water-supply has been 55 through the column, the delivery being central between the scrapers. In this instance a core of hard material will be left that may close the delivery-orifice.

In other instances the water-supply has been 60 by a pipe that passes through the disk at the lower end of the pile. In this instance the action of the water has not been central, and the pile is liable to be displaced.

I avoid both these difficulties by providing a 65 central water-chamber, *i*, above the conical points of the scrapers, opening into the spaces between all the scrapers, and from this chamber the pipe *k* or water-way passes up in the shoe or point to the socket *l*, into which is  
70 screwed the lower end of the water-supply pipe *m*. Thereby the water is central in its action in washing away the materials from between all the scrapers simultaneously, and the pile is kept central as it is forced down, and  
75 the scrapers or blades drill into any hard substance, such as shale or rock, and make an opening sufficient for the passage of the disk or shoe *c*. It is to be understood that water under a suitable pressure is forced through the  
80 pipe *m*, and that after the pile has been sunk the tube *m* can be unscrewed and used with the next pile. In sinking the pile it is necessary to rotate the same. I therefore provide a sectional clamping-drum that is made of two  
85 or more parts, *n n*, secured together by bolts *o*, and there are inward ribs or flanges that extend from the cylindrical part of the pulley to the tubular pile, so that such ribs grasp and  
90 firmly hold the pile when the pulley is bolted together, and at the same time there are spaces between the ribs, through which the water-pipe *m* can pass. By this improvement the water-pipe is kept out of the way of the mechanism that acts upon the pulley *n* and ro- 95 tates the pile.

The pulley and pile may be rotated by a 100 bait applied to the former and driven by suitable power, or a pipe-wrench may be applied to the cylindrical surface of the pulley.

The cap *s* of the pile is made with two short cylinders, 3 and 4, between which the upper



end of the tubular pile is received and securely fastened by lead, so as to be air-tight, and through this cap is a hole with a valve-seat. The valve *r* fits this seat, and it may  
5 open either inwardly or outwardly. I either exhaust the air from the pile, so as to prevent the injurious effects of the atmosphere upon the inside, or else I force into the pile a preserving-fluid, that coats the interior of the pile  
10 or otherwise preserves the same from rust or injury.

I claim as my invention—

1. The combination, with a pile, of a shoe or drill-point having a disk with a conical point  
15 beneath it, and with radial blades uniting at a central point and their upper ends extending beyond the disk of the shoe, substantially as and for the purposes set forth.

2. The shoe for a pile having a disk, a conical point with radial blades, a cavity within  
20 the point, openings from the same between

the blades, a socket outside the pile for the reception of a separate water-supply pipe, and a tubular water-way between the socket and cavity, substantially as set forth. 25

3. The combination, with the tubular pile, of a divided pulley having inward ribs to bear upon the tube and clamping-bolts to secure the same to the pile, as and for the purposes set forth. 30

4. The tubular pile having a point and a cap, that are both connected to the tube so as to be air-tight, in combination with a valve applied to a hole in the cap, as and for the purposes set forth. 35

Signed by me this 13th day of November, A. D. 1879.

JOB JOHNSON.

Witnesses:

GEO. T. PINCKNEY,  
HAROLD SERRELL.