

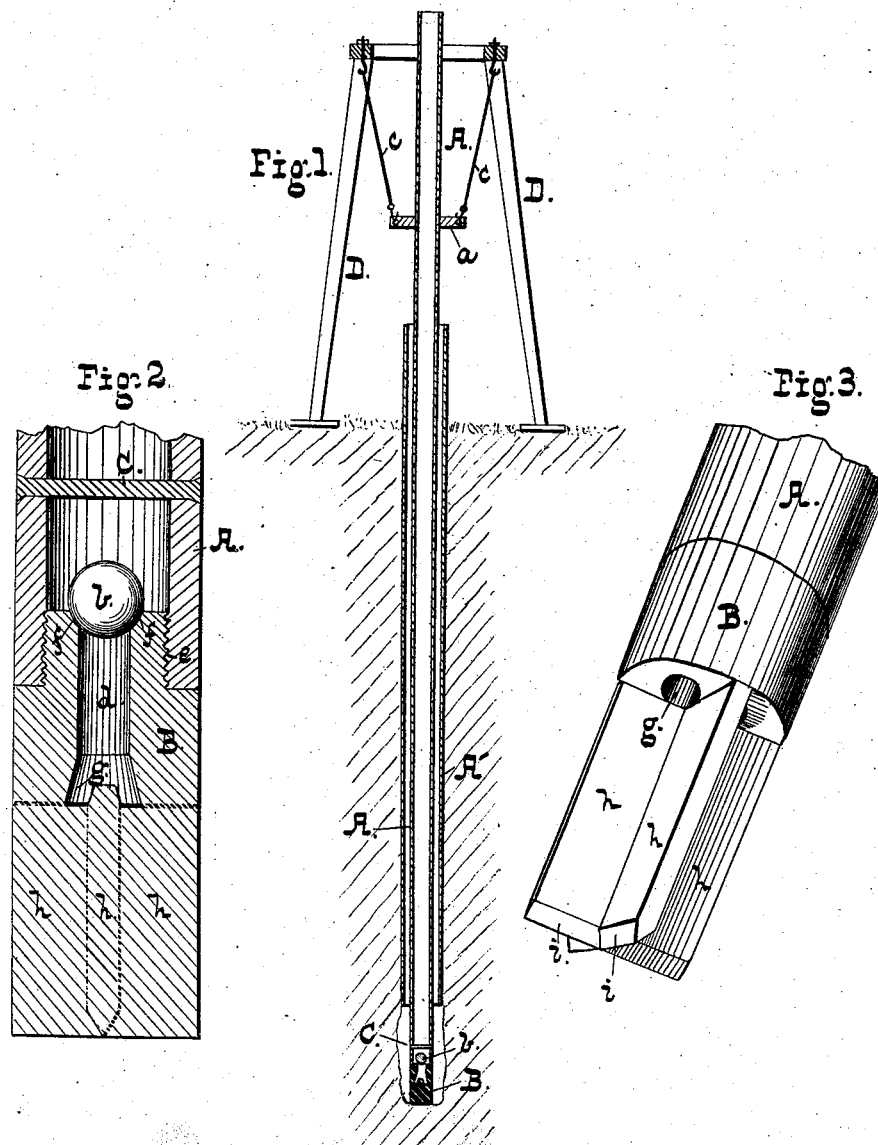
(No Model.)

C. H. LEACH.

EXCAVATING EARTH FOR SINKING TUBING.

No. 260,483.

Patented July 4, 1882.



Witnesses  
N. A. Butam  
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# UNITED STATES PATENT OFFICE.

CHARLES H. LEACH, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF  
TO ALPHEUS P. SHARP, OF SAME PLACE.

## EXCAVATING EARTH FOR SINKING TUBING.

SPECIFICATION forming part of Letters Patent No. 260,483, dated July 4, 1882.

Application filed April 6, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. LEACH, of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Excavating Earth for Sinking Tubing; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal sectional view of the apparatus complete, and Figs. 2 and 3 are respectively sectional and perspective views of the drill-tip.

My invention has for its object to provide a means for readily and expeditiously sinking tubing into the earth either for subsequent use as a well or for prospecting for minerals—in a word, for such purposes as those to which the drive-well and diamond drill are devoted.

In carrying out my invention I sink a tube into the earth by causing a pipe, shod at its lower end with a drill, or not, according to the nature of the soil, to reciprocate within an inclosing pipe, and at each downstroke to strike the earth opposite its end, a supply of water being introduced between the pipes; and my invention may be said to consist therein, and in certain features of construction and combinations of parts adapted to the attainment of the desired end, as hereinafter set forth.

In the drawings, A is a pipe having at its lower end a drill-point, B, which is screwed to the pipe at *e*, and has a number of cutting-wings, *h*, beveled, as shown at *i*. From the meeting edges of the wings lead orifices *g* to a common channel, *d*, having at its top a seat, *f*, for the ball *b*. A rod or spider, C, serves to limit the lift of the ball.

To the pipe A is attached a clamp, *a*, from which rubber or equivalent elastic connections *c* lead to a trestle, D, and serve to sustain the pipe. A' is the exterior pipe, of a sufficient size to pass the pipe A freely and leave an annular channel between for the downward flow of water.

In operation a hole is sunk into the ground for a short distance to serve as a starter, the pipe A' is thrust into it to the bottom, and the pipe A is passed down the pipe A' until the drill rests at the bottom of the hole. Water

is then poured between the pipes and rises of course to the same height in each pipe. The inner pipe is then caused to reciprocate within the outer one, the drill striking the ground at each stroke and loosening the earth. On each upstroke of the pipe the ball *b* seats itself, trapping all the matter above it. On the downstroke, which is made rapid—faster than the natural drop of the pipe—the latter slides down, as it were, past its contents, forming a vacuum at the bottom, into which the water and disintegrated suspended earth rush, assisted by the hydrostatic head without, and lift the ball. Very little water is used, and the material which rises in the pipe A and is discharged at the top is in some soils, notably clays, nearly as stiff as the natural clay. This is due to the fact that the disintegrated matter, being heavier than water, sinks and remains at the bottom of the hole. As the latter deepens, the pipe A' is forced down nearly to its bottom, as shown, and fresh sections are from time to time screwed onto the top of both pipes.

Only in deep digging is the suspending device *a c D* necessary; but with its aid the labor of reciprocating the pipe is greatly lessened, as the bands *c* sustain the entire weight of the pipe.

The drill need only be used in sinking the pipes in hard material. For ordinary use in earthy or clayey material the end of the pipe A may be merely serrated; or, indeed, in sandy soils, it may be cut short off.

The device is especially adapted for sinking tubing into quicksands, in which it operates as well as in other soils.

I am aware that it is very old to mount a drill-point on the end of a tubular shaft, and to trap any detritus which enters the shaft by means of a valve; but I am not aware and do not believe that prior to my invention such shaft has been made to extend to the surface inclosed by an outer pipe, the intervening space being used as a water-channel.

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

1. The combination, in an apparatus for sinking tubing, of a pipe having an upwardly-opening valve, and formed at its lower end to cut

or disintegrate the soil, an exterior pipe arranged to follow the first in its descent, and means for reciprocating the central pipe, as set forth.

- 5 2. In an apparatus for sinking tubing, a pipe shod with a drill and containing a ball-valve, an exterior pipe arranged to follow the first in its descent, a water-supply communicating with the channel between the pipes, and means  
10 for reciprocating the inner pipe, as set forth.

3. In combination with the pipes A A', the elastic suspending device, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 31st day of March, 1882.

CHS. II. LEACH.

Witnesses:

A. P. SHARP,  
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