H. R. & M. T. Barnes.

Well Tubing.

No. 49,362. Patented Aug. 15, 1865.

Fig. 1.

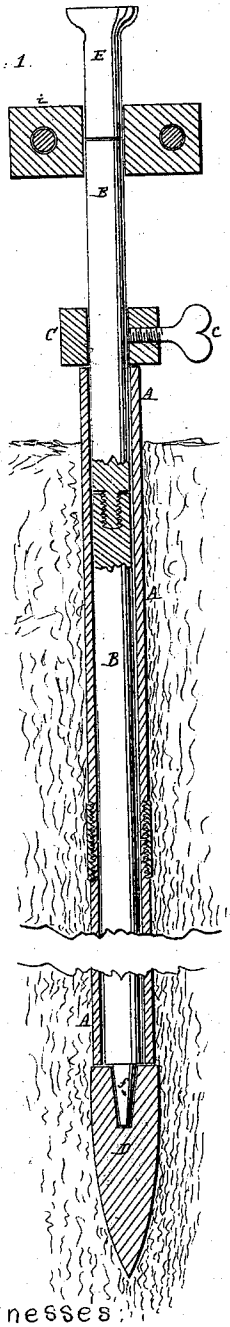


Fig. 3.

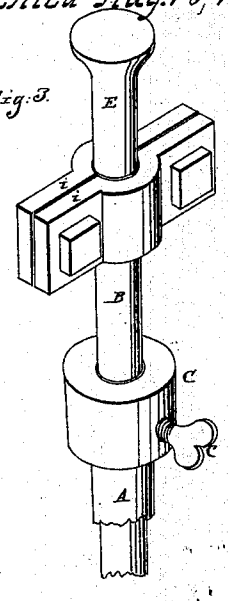


Fig. 4.

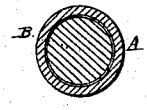
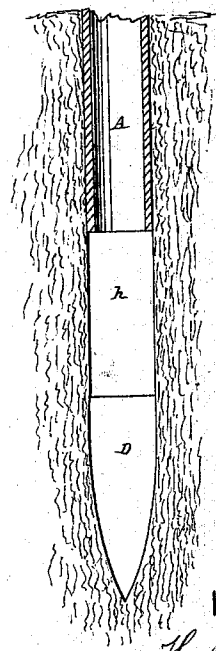


Fig. 2.



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UNITED STATES PATENT OFFICE.

H. R. BARNES AND M. T. BARNES, OF WATKINS, NEW YORK.

IMPROVEMENT IN SINKING DEEP-WELL TUBES.

Specification forming part of Letters Patent No. **49,362**, dated August 15, 1865.

To all whom it may concern:

Be it known that we, H. R. BARNES and M. T. BARNES, of Watkins, in the county of Schuyler and State of New York, have invented a new and useful Improvement in Driving Pipes into the Earth for Raising Water; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a central vertical section of the apparatus in the act of being driven into the earth; Fig. 2, a similar view of the bottom of the water-pipe, but with the interior rod or tube withdrawn and the point or head driven some distance below the extremity of the pipe for the purpose of making an opening or fountain for the collection of water; Fig. 3, a perspective view of the upper portion of the apparatus; Fig. 4, a cross-section of the pipe and interior rod or tube employed in driving.

Like letters of reference indicate corresponding parts in all the figures.

The ordinary process of digging a well and adjusting the pipe and pump for raising water is a tedious and expensive one. To obviate this difficulty a process has been recently adopted, which consists in driving the pipe itself by positive force into the ground, the pipe at its lower end being provided with a fixed point or head, which opens the passage, and provided also with perforations at the side, to admit the water to be raised when the pipe has been adjusted. Although correct in principle there are several disadvantages in the application and use of such a device, as follows: In driving, the pipe is liable to bend, especially if the soil is hard, so as to stand at an angle instead of vertically, as it should. The pipe is frail in its construction, and the blows of the sledge in driving frequently break it, so as to render it useless, especially where a considerable depth has been attained, requiring considerable power to force it down. For the same reason, if the pipe is not very stiff, the force applied to drive it down will frequently bend it beneath the surface and double it up, thus rendering it ineffective, even if the pipe is not broken. In such a device as this, as the point or head that opens the way is rigidly secured to the end of the pipe, which thus cannot be left open, it is necessary to perforate the sides of the lower end of the pipe in order to admit water. In driving down, the sand or earth enters through these perforations and clogs the inside of the pipe in such a manner that it is frequently necessary to raise the pipe during the operation to clear it, and, finally, when the pipe is driven down and suitably adjusted no cavity or depression for the water to settle in to be drawn up is produced in the earth, but the same must be formed gradually by pumping up the dirt that enters through the perforations of the pipe with the water.

It is the object of our improvement to obviate these difficulties; and the invention consists in the employment of a solid rod or a tube within the water-pipe in the act of driving in such a manner as to stiffen the pipe and enable it to be driven down vertically without bending or breaking; also, in combination therewith, in the employment of an adjustable shoulder or stop to hold the pipe in place on the interior rod or tube while being driven down; and, finally, in the employment, in connection with the interior rod or tube and water-pipe, of a detachable point or head, which, when the pipe is driven in place, can be forced down still farther, thus forming a depression or cavity in the earth beneath the water-pipe for the water to settle in.

As represented in the drawings, A is a water-pipe of ordinary construction, which is made in sections, and as it is driven into the earth is coupled in any desirable manner, as shown at *a*, Fig. 1. The lower end of this pipe may be left open, or its sides may be perforated, or both, in order to admit the water to be raised. Within this pipe fits a core, consisting either of a solid rod, B, or equivalent tube of sufficient stiffness for the purpose designed. This rod or tube is also made in sections, which are coupled as it is driven into the earth in any desirable manner, as shown at *b*, Fig. 1.

For the purpose of holding the pipe in place on the interior rod or tube we provide a sliding shoulder or stop, C, on the latter, which adjusts up and down, and is secured in any desired position by means of a set-screw, *c*, or equivalent. By this means (a suitable point or head being provided for opening the way) the interior rod or tube and the pipe are easily driven into the ground by striking with a sledge upon the end of the former. By this arrangement we avoid the difficulties experienced when no interior core is employed, viz:

We insure the pipe being driven vertically into the earth and prevent bending, for the whole apparatus, pipe and core combined, is so stiff that it cannont bend, and we prevent the clogging of the interior of the water-pipe, as no sand or dirt can enter through the perforations in the side on account of the core filling the whole interior. Therefore there is no necessity of removing the pipe to clear it. At the same time there is very little strain comes upon the pipe in driving, and therefore there is no danger of breakage. The great force of the blows comes upon the interior rod or tube.

The use of the adjustable shoulder or stop C enables us to not only hold the pipe in place as it is being driven down, but also to insert a new section at any time without the least difficulty, and also, when the pipe has been driven in place, to be raised so that the opening point or head can be driven still lower, as will presently be explained.

The lower end of the interior rod or tube, B, projects through the water-pipe, and is connected with a point or head, D, in any suitable manner, so that when driven into the ground and the rod or tube drawn back the two will readily separate, the point remaining in the ground. In the drawings the coupling is shown as a conical projection, *f*, of the rod or tube fitting into a similarly-shaped socket of the point The diameter of the point is that, or a little more, of the couplings of the water-pipe, so that the latter will pass down easily. When the water-pipe has been forced down to a suitable distance the adjustable shoulder C is loosened and raised, and the interior rod or tube is driven still lower, forcing the point D below the end of the pipe, which remains stationary, thus producing a depression or cavity, *h*, Fig. 2, in the earth, which serves as a fountain for the collection of the water to be raised. This effect we believe to be original with ourselves.

We employ an end piece, E, at the top of the interior rod or tube, to receive the blows of the sledge, being coupled with the rod or tube by means of suitable clamps, *i i*, or equivalent, bolted together so as to prevent the end of the rod or tube from bruising.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The employment of an interior rod or tube, B, in combination with a water-pipe, A, in driving into the earth, substantially as and for the purpose herein set forth.

2. In combination with the rod or tube B and pipe A, the adjustable shoulder C, substantially as specified.

3. In combination with the rod or tube B and pipe A, the detachable point D, so arranged that when the pipe is driven in place the point may be forced still lower to make a depresion in the earth, substantially as described.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

H. R. BARNES.
M. T. BARNES.

Witnesses:
GEO. E. HURD,
J P. BARNES.