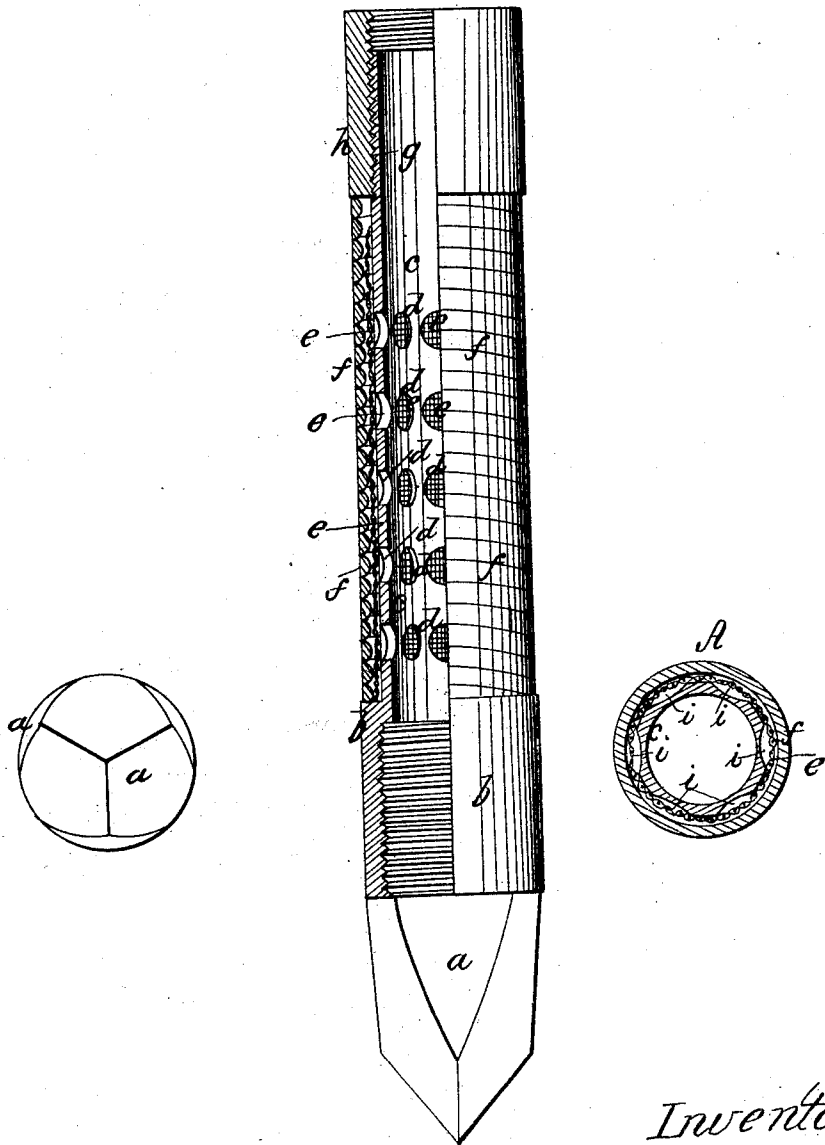


J. W. Ricker.

Well Tubing.

N^o 65,276.

Patented May 28, 1867.



Witnesses;
L. B. Tucker
W. W. Frothingham

Inventor;
J. W. Ricker
by his Atty
Proby & Cowell

United States Patent Office.

JOHN W. RICKER, OF CHELSEA, MASSACHUSETTS.

Letters Patent No. 65,276, dated May 28, 1867.

IMPROVEMENT IN TUBE WELLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN W. RICKER, of Chelsea, in the county of Suffolk, and State of Massachusetts, have invented an Improvement in Tube Wells; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

This invention relates to the construction of apparatus used for and in sinking that class of tube wells made by driving metal tubes into the earth, each of said tubes being shod at its lower end with a drill or auger or piercing point, to displace the earth and facilitate the entrance of the tube, and with holes through the tube just above said point, so that when the tube is sunk sufficiently deep, and a pump is applied directly to the top of the same, the well is complete. To prevent the perforations in the end of the tube from becoming clogged with foreign matter during the driving process, a short section of pipe or a skeleton frame, pierced with holes or covered with a strainer and fitting within the lower end of the main pipe, has had a solid-pointed end, against the shoulder of which the end of the main pipe remained in contact till withdrawn therefrom, after the driving, to expose the openings for the water in the short section, leaving this and its attached point where placed by the driving operation. But in this form of construction, though the inlet apertures were protected from foreign matter during the act of driving the pipe, they were subject to become filled up, as, under the action of the water, foreign matter lodged therein; moreover, the main pipe was liable to settle or fall back upon the shoulder of the piercing point, thus shutting off the water. My invention particularly relates to such a construction of strainer that the openings through it can be changed in size, at any time, from the upper end of the tube, thus causing or allowing displacement of any foreign matter which may obtain a lodgment in said openings.

The primary object of my invention is to provide the tube at the perforated end with a casing, capable of being driven with the tube and in direct contact with the earth, as a close cylinder, and of being opened at its sides, more or less, as circumstances may require, after the tube is driven, or at any point during the operation of driving, such casing being used either with the strainer and induction tube, or with the induction tube alone, according to the nature of the earth or to other requirements. For this purpose I place around the tube (adjacent to the perforations) a stout coiled spring, the lower end of which abuts against an enlargement or shoulder of the tube, and its upper end against a cylindrical nut or screw-coupling, by which the perforated end of the tube is jointed to the section of tube above, said coupling working upon a thread cut on the perforated tube, so that by turning it in one direction the coils of the spring are forced closely together, making of the spring a tight or approximately tight tube, while by turning the coupling in an opposite direction the coils of the spring open so as to freely admit water to and through the perforations in the tube. It is this construction, and whether such spring be used with a strainer interposed between it and the tube perforations or without such interposed strainer, that constitutes the main part of my invention.

The drawing represents, partly in section and partly in elevation, a well-tube end embodying my invention.

a denotes the drill-point applied to a short tube, *b*, to which is fixed the suction or induction tube *c*, provided with any suitable number of inlet-passages *d*, in the usual manner. (The tube is shown as surrounded by a strainer, *e*, though this may or may not be applied, as before stated.) Encompassing the tube is a stout coiled spring, *f*, having an external diameter corresponding with the main tube, its lower end abutting against the piece *b*, as shown in the drawing. The upper end of the induction tube *c* has a screw, *g*, cut round it, and upon this screw a coupling, *h*, works, the spring *f* being confined between this coupling and the piece *b*. By turning the coupling down towards the point it will be obvious that the coils of spring will be compressed and brought into contact, (as seen in the drawings,) and by turning back the coupling the coils will separate by the stress of the spring, as will be readily understood.

When the tube is to be driven into the earth the coupling is turned down, making an unopen and impervious or nearly impervious surface all along the spring, whereby, as it is driven, no dirt, gravel, or extraneous matters can enter the tube or come in contact with or clog the strainer, if a strainer be used. When the tube is driven sufficiently deep a wrench is applied to the upper end of the upper section of tube, and rotated in a direction to turn back the coupling and open the coils of the spring, the connections of the sections of tube joined together at and above the coupling being such as to cause the strain exerted by the wrench to turn and only turn the coupling *h*, the drill-point preventing the lower end or the induction tube from turning with the

coupling. This opening of the coils of course permits the water to percolate freely to and into the induction tube, and if the spring at any time becomes clogged it will be obvious that it may be freed by compressing or by opening its coils through means of the coupling *h*.

Well-tubes have generally been shod with round or with chisel-points, and sometimes with auger-points. But it is often found impracticable or exceedingly difficult to force either of such points through clay and some other formations of earth. I have found that by giving a triangular point to the entering end, and by slightly concaving the surfaces of the same, the drill-point can be much more easily driven, and that if at any time the point binds tightly, it may be freed by rotating the tube slightly by a wrench or lever applied at its top. The outer sides of the induction tube *c* are scored or channelled out longitudinally in the line of the induction holes *d*, (as seen at *i* in the cross-section A,) these grooves preventing the strainer from lying closely against the surface of the tube between the holes in line, and thereby allowing the water to gain free access to the holes.

I claim, in combination with the induction well-tube, a coiled spring, arranged to operate substantially as and for the purpose set forth.

Also, in combination with a well-tube, the concave surfaces and triangular-pointed drill, substantially as set forth.

J. W. RICKER.

Witnesses:

J. B. CROSBY,

F. GOULD.