

J. McMillan,

Well Tubing.

No. 102572.

Patented May 3, 1870.

Fig. 2.

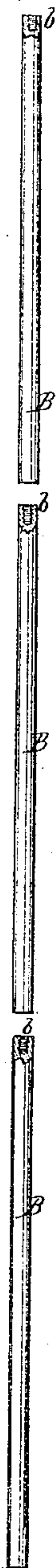


Fig. 3.

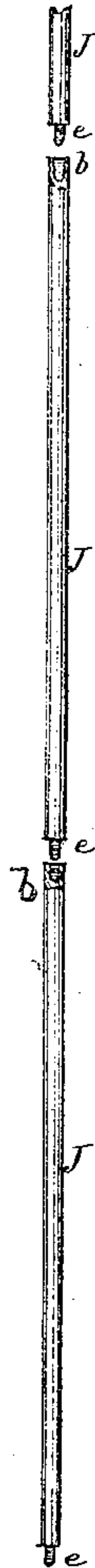


Fig. 4.



Fig. 5.

Fig. 6.

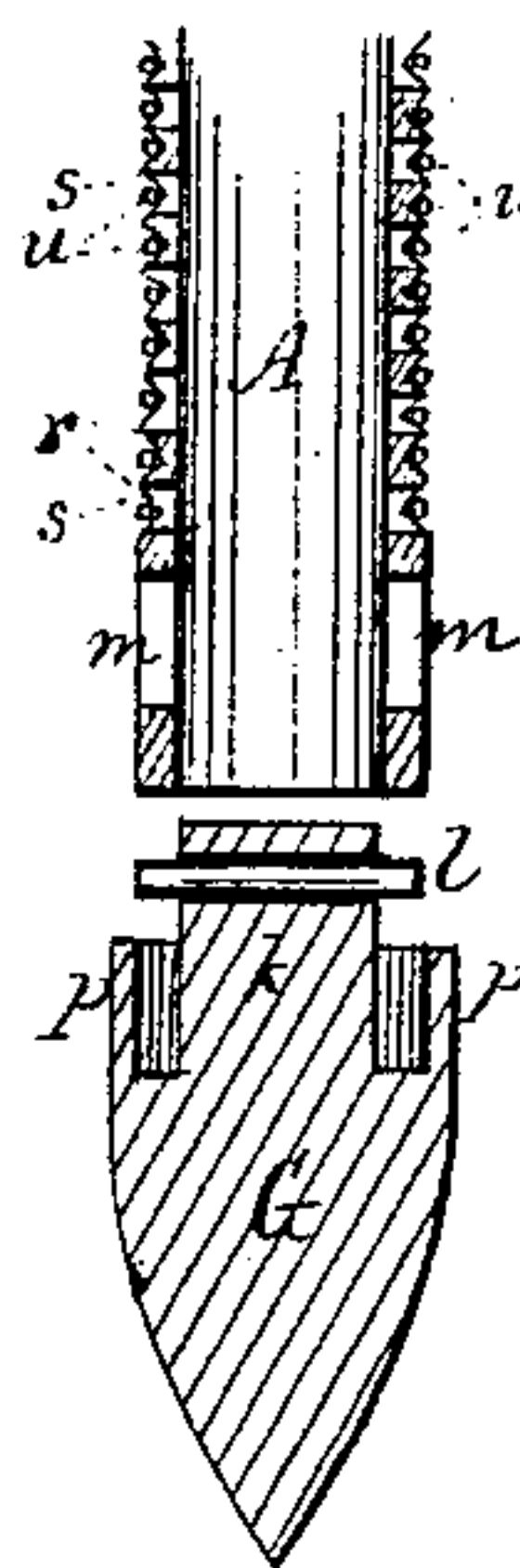


Fig. 6.



Witnesses
R. F. Asgrod
Geo. W. Mott

Inventor.

James McMillan,
By J. Fraser & Co.
Attys.

UNITED STATES PATENT OFFICE.

JAMES McMILLAN, OF FAIRPORT, NEW YORK.

IMPROVEMENT IN TUBE-WELLS.

Specification forming part of Letters Patent No. 102,572, dated May 3, 1870; antedated February 15, 1870.

To all whom it may concern:

Be it known that I, JAMES McMILLAN, of Fairport, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Constructing Tube-Wells, of which the following is a specification referring to the accompanying drawings.

This invention is an improvement upon that patented to H. R. and M. T. Barnes, August 15, 1865; and consists in an improved arrangement of the inner rod or tube and connecting parts; also, in an improved screen and driving-point at the bottom of the main tube.

In the drawings, Figure 1 is a section of my improvement, with the parts all in place; Fig. 2, an elevation of the inner driving-rod; Fig. 3, a similar view of the drawing-rod; Fig. 4, a view of the driving apparatus detached and separated; Figs. 5 and 6, enlarged views of the bottom of the tube and driving-point.

A A A are the sections of the main tube, which, as they are successively driven into the earth, are connected by couplings *a a* in the usual manner. B B B are the corresponding sections of the inner driving-rod, which are made of solid round iron. These sections, instead of being coupled together by a screw-tap and socket, as in Barnes's patent, are separated and detached, being square ended, and simply dropped, one on top another in the main tube, as it is driven down. The upper ends, however, are provided with screw-sockets *b b* for the insertion of the corresponding taps *e e* of the draw-rod J, which is also formed in sections, being made of small gas-tube, coupled in any desired manner.

The first section B placed in the main tube is shorter than the corresponding section of said main tube, and the subsequent sections the same or about the same length as the subsequent sections of the main tube, so that, when the shank *c* of the driving-shaft C is placed on top of each section in driving, the parts are perfectly adapted, leaving only a little space on said shaft for the insertion of washers *d d d d* (more or less in number) between the driving-coupling D, which screws on top each section, and the shoulder *f*, which forces the parts down as the blows are applied upon the head *g* by a sledge or pile-driver. These parts

are all shown in succession, separated, in Fig. 4.

The following is the operation of these parts, as far as described: The first section of the main tube has screwed upon its upper end the driving-coupling D, which is simply an ordinary collar of double thickness, to prevent injury to the tube. The first section of the drive-rod B is now dropped into the tube, its top coming just high enough for the shank *c* to rest thereon, with a few of the rings *d d* interposed, as before described. In this condition the blows are applied on top the driving-shaft till the tube is driven in place. A second section of the main tube is then applied, the drive-coupling changed, and a second section of the drive-rod dropped in loose upon the other, and the same operation gone through, and soon, till water-bearing strata are reached.

The advantages over Barnes's arrangement, before referred to, are as follows: First, by the use of the loose sections of the drive-rod B B, I avoid couplings of the same. Such couplings are constantly breaking with the taps in their sockets. When thus broken the sections cannot be drawn out without withdrawing the tubing, and as in Barnes's invention a loose driving-point is used at the bottom, the lower portion of such drive-rod frequently drops through and is lost. I obviate all difficulty of this kind by inserting the sections loosely, and providing them with the screw-sockets *b b*, by which means they can be drawn out, one after another, by the draw-rod J, before described. Second, I avoid the loose collar used by Barnes at the top of the pipe to hold the tubing down; also, the clamp he employs to hold the driving-shank. The collar, held by a screw or key, is constantly slipping up under the great strain and jarring to which it is subject, thus disarranging the tubing, and also frequently so bending and locking the key in place that there is great difficulty in disengaging it. The rings or washers *d d*, in my case, obviate all difficulty of this kind, as they always remain in place, and are subject to but little strain, as the great bearing comes on the inner driving-rod. I avoid the expensive clamp used by Barnes by simply running the shank *c* of the

driving-shaft down a distance in the pipe, which holds it in place, thus avoiding breakage, which occurs where the clamp is used. The washers *d d*, interposed around this shank, always fill up the intervening space to keep the main tube and inner rod in proper position.

The lower end of the main tube has an opening point, *G*, which is attached to the tube by means of a shank, *k*, forming a solid part of it extending up a distance in the tube, and having a pin, *l*, whose extremities pass out through elongated slots *m m* of the tube. This allows a degree of vertical play, while, at the same time, it attaches the point to the tube so that it can be drawn up with it and not be lost, which is the result in Barnes's patent when the tube is drawn up. The upper end of this point is also formed into an annular flange, *p*, which projects up around the lower end of the tube, and encircles it, as shown, the object of which is to protect the tube against splitting, breaking, or bruising as it is driven. This frequently results from striking stones, which deflects the tube from its straight course. It also has a special relation to the screen above, in protecting the same from contact with the shaft of the well, and, also, in staying and straightening that portion of the tube.

This screen is formed by first cutting an ordinary screw-thread, *r*, for a suitable extent up the tube, which tube is cut with perforations *s s*, then winding tightly into these threads a wire, *u*, which sets closely in, and is thus embedded within the surface, covering the perforations and forming a perfect screen. Many attempts have before been made to form

a screen at the bottom of the tube, but have been futile, owing to the great strain and pressure brought to bear at that point. My arrangement is effective, as the wires are sunk in the threads so as to receive but little friction or contact, and, at the same time, they have a bearing all around, except when they cross the perforations. I claim a special advantage in this arrangement.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of the detachable sections *B B* of the drive-rod, provided with screw-sockets *b b*, the screw-coupling *D*, the driving-shaft *C*, and the washers *d d*, the whole operating in the manner and for the purpose specified.

2. The draw-rods *J J*, combined with the driving-rod *B B*, in the manner and for the purpose specified.

3. The screen, formed with a screw-thread, to let in and support the wire, and leave a flush surface with the tube, substantially as described.

4. The point *G*, formed with an extended shank, *K*, and a flange, *p*, forming together a groove, in combination with the vertical slots *m m* and pin *l*, and operating substantially as herein shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES McMILLAN.

Witnesses:

R. F. OSGOOD,
GEO. W. MIATT.