W. S. BLUNT.

DRIVEN WELLS.

No. 184,695. Patented Nov. 28, 1876.

FIG. 8.

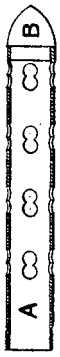


FIG. 7.

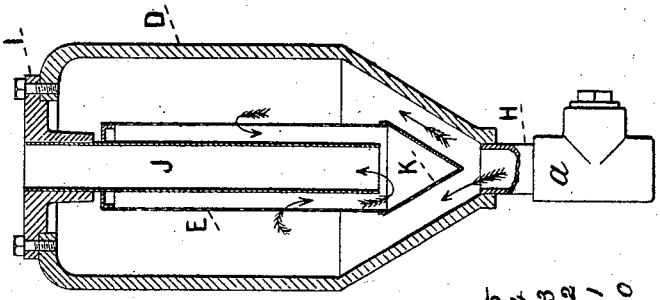


FIG. 6.

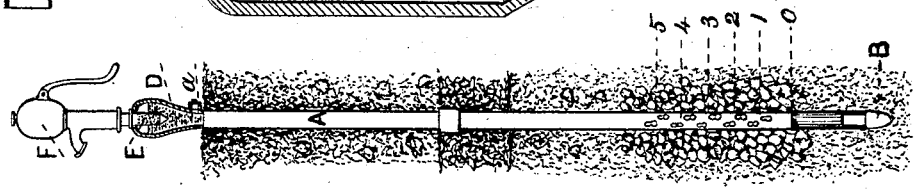


FIG. 5.

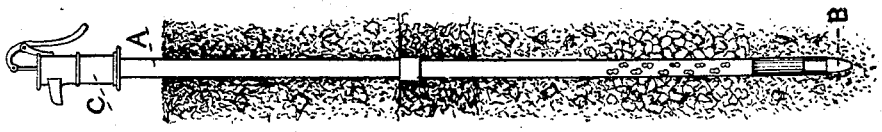


FIG. 4.

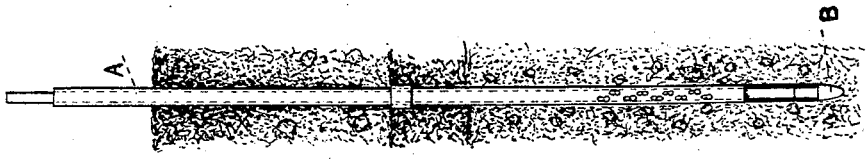


FIG. 3.

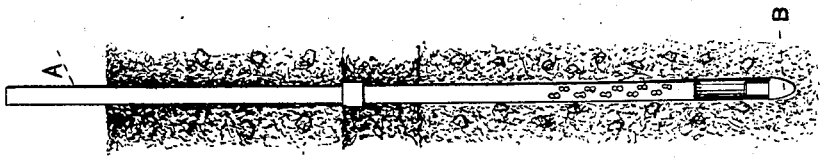


FIG. 2.

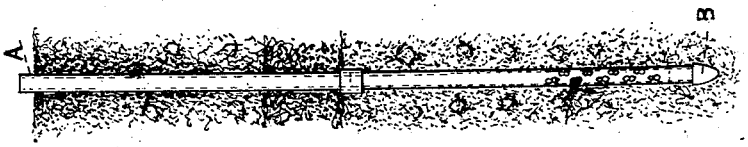
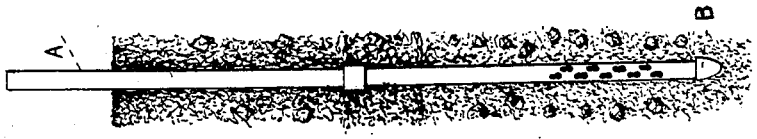


FIG. 1



WITNESSES.

Henry A. Gordon

John Cook

William S. Blunt by Sidney, Brown Atty.

INVENTOR.

UNITED STATES PATENT OFFICE.

WILLIAM S. BLUNT, OF BAY RIDGE, NEW YORK, ASSIGNOR TO KATE S. BLUNT, OF SAME PLACE.

IMPROVEMENT IN DRIVEN WELLS.

Specification forming part of Letters Patent No. **184,695**, dated November 28, 1876; application filed March 7, 1876.

To all whom it may concern:

Be it known that I, WILLIAM S. BLUNT, of Bay Ridge, Kings county, New York, have invented, made, and applied to use Improvements in the Construction of Pumps for Driven Wells; and that the following is a full, clear, and correct description of my improvements, reference being had to the accompanying drawing, making part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is an illustration showing the pipe and spear-headed point driven down to the proper depth to obtain water. Fig. 2 is an illustration showing the pipe and point driven some eighteen inches beyond the first step. Fig. 3 is an illustration, showing the pipe drawn back to the position reached in Fig. 1, and the spear-headed point is detached. Fig. 4 is an illustration of the manner of detaching the spear-headed point from the pipe sometimes used. Fig. 5 is an illustration showing the sand-pump used in combination with the pipe. Fig. 6 is an illustration showing a permanent pump and vacuum-chamber and strainer used in connection with the pipe. Fig. 7 is a sectional view of the vacuum-chamber and strainer. Fig. 8 is a view of the perforated tube and spear-headed point inserted therein.

In the drawing like parts of the invention are pointed out by the same letters of reference.

The nature of the present invention consists in improvements in the construction of pumps for driven wells, as more fully hereinafter set forth, the object of the invention being, by the employment of the pump constructed as described, to obtain a more freely working well.

To enable those skilled in the arts to make and use my invention, I will describe the same.

I use, first, a pipe, A, of iron or any suitable material, perforated from its lower end about two and a half feet upward, the perforations being double, their diameters overlapping, causing the perforations to form one opening having the outline of a figure 8. The perforations are thus shaped that no stone can close the perforations entirely from the outside. Second, a round spear-head point, B, made of suitable metal, the metal being continued in its manufacture, so as to form a shank or neck exactly fitting the interior of the pipe A. The portion of the point which projects beyond the shank forms a square shoulder, upon which the lower part of the pipe A rests, and which prevents the point B from being jammed in the pipe A, and also protecting the lower end of the pipe from injury from any stones or foreign matter while being driven. Third, I combine with a pipe, A, after the point B has been detached therefrom, a vacuum-chamber, D, provided upon its interior with a screen, E, over which vacuum-chamber may be placed an ordinary hand-pump, F, for permanent use. The vacuum-chamber may be provided with a T-joint, as at *a*, so that connection may be established between the pipe A and a second or additional pump, if at any time it is found necessary to remove any sand that may accumulate around the perforations of the pipe A, thereby obviating the necessity of removing the pump F or the vacuum-chamber D.

Such being the construction, I will describe the operation of the same. The pipe A, perforated as shown, and having the round spear-head point B inserted in its lower end, is first driven into the earth in the usual manner, until the desired vein of water to be used is reached. After this vein of water is reached (which may be ascertained by sounding or any of the known means availed of for this purpose) the pipe and point are driven some eighteen inches farther down, and the pipe is then drawn back to the position occupied by it at the termination of the first step, leaving the point B at the point to which it was driven, or some eighteen inches below the end of the pipe. If found necessary to separate in another way the point from the pipe, a rod may be inserted in the pipe A, and driven down through the same, so as to separate the point from the pipe A. This manner of separating the point from the pipe is clearly shown in Fig. 4 of the drawing. The point having been removed from the pipe, an ordinary sand-pump, C, is attached to the top of the pipe A, that the sand or débris may be pumped up through the pipe A to clear the well. After this has

been done the sand-pump may be removed, and a vacuum-chamber, D, provided with a sand-screen, E, may be attached to the pipe A, and above it, for permanent use, may be placed a hand-pump, F, by which the water may be pumped up through the pipe A, the screen in the vacuum-chamber intercepting the sand (if any) that may be brought up with the water.

As already stated, the vacuum-chamber may be provided with a T-joint, so that if at any time there should be an accumulation of sand around the perforations of the pipe A, having a tendency to be drawn into and obstruct the pipe, connection may be made between the pipe A and a second pump, and the sand be pumped up without the necessity of removing the vacuum-chamber and the permanent pump. The vacuum-chamber is cylindrical in shape, the lower portion of it being provided with inclined sides, (inclining to the point where the pipe H enters it.) It is provided with inclined sides, so that no sand or residuum shall lodge in the vacuum-chamber, but shall settle gradually from the vacuum-chamber through the pipe A, to and out of the bottom of the pipe, away from suction, or where suction is weakest. Inserted in the vacuum-chamber from the top is a plate, I, having attached to it a pipe, J, projecting downward. This pipe is provided with a conical shield, K, at its point of entrance, to meet and divide the ascending stream of water, and also to receive the impact of any sand which might rise with the water. The screen is stretched over a collar attached to the pipe J at its lower end, and also over the upper portion of the shield K, attached to the pipe J at its lower end. The screen being removed some distance from the pipe J, which it surrounds, as shown, gives a very large straining-surface, protected and shielded from direct action of the sand by the action of the shield K, and with the suction so widely distributed over the surface of the screen as to prevent the sand being drawn through the interstices of the screen.

The advantages of the invention thus fully described may be found in the fact that as the perforations in the pipe A are not covered with wire-gauze, as is usual in drive-points, the water to be raised will enter the pipe A more rapidly and easily, and that the necessity of withdrawing the pipe A and supplying its place with a second one, from the destruction of the wire-gauze covering the perforations in the ordinary point being destroyed by contact with stones or foreign matter while being driven, is obviated.

In addition to the advantage of the vacuum-chamber already set forth, by its use the flow of the water is rendered more uniform, and from its peculiar shape, if the water be let out of the pump above, it will also entirely leave the vacuum-chamber. The strainer also can be easily removed from the vacuum-chamber by removing the plate I, to which the pipe J is attached, if necessary to repair it. The advantage of making the point detachable is, that if at all necessary to remove the pipe A it is more easily done, losing only the point—a trifling loss—and that all the sand intercepted by the strainer is returned to the bottom of the well, and deposited below, where the suction is weakest, and where the sand is least likely to give trouble, the figure 0 representing the minimum of suction, and 1, 2, 3, 4, and 5 indicating the various degrees of suction, 5 designating the maximum.

Having now set forth my invention, what I claim as new is—

1. The vacuum-chamber D, provided with inclined sides, the pipe J, shield K, and sand-screen E, constructed and operating substantially as and for the purposes specified.

2. The combination of the vacuum-chamber D, provided with inclined sides, the pipe J, shield K, and sand-screen E, the pipe A, provided with the perforations, as shown, and the removable point B, constructed and operating substantially as described, and for the purposes set forth.

WILLIAM S. BLUNT.

Witnesses:

A. SIDNEY DOANE,

HENRY R. GORDON.