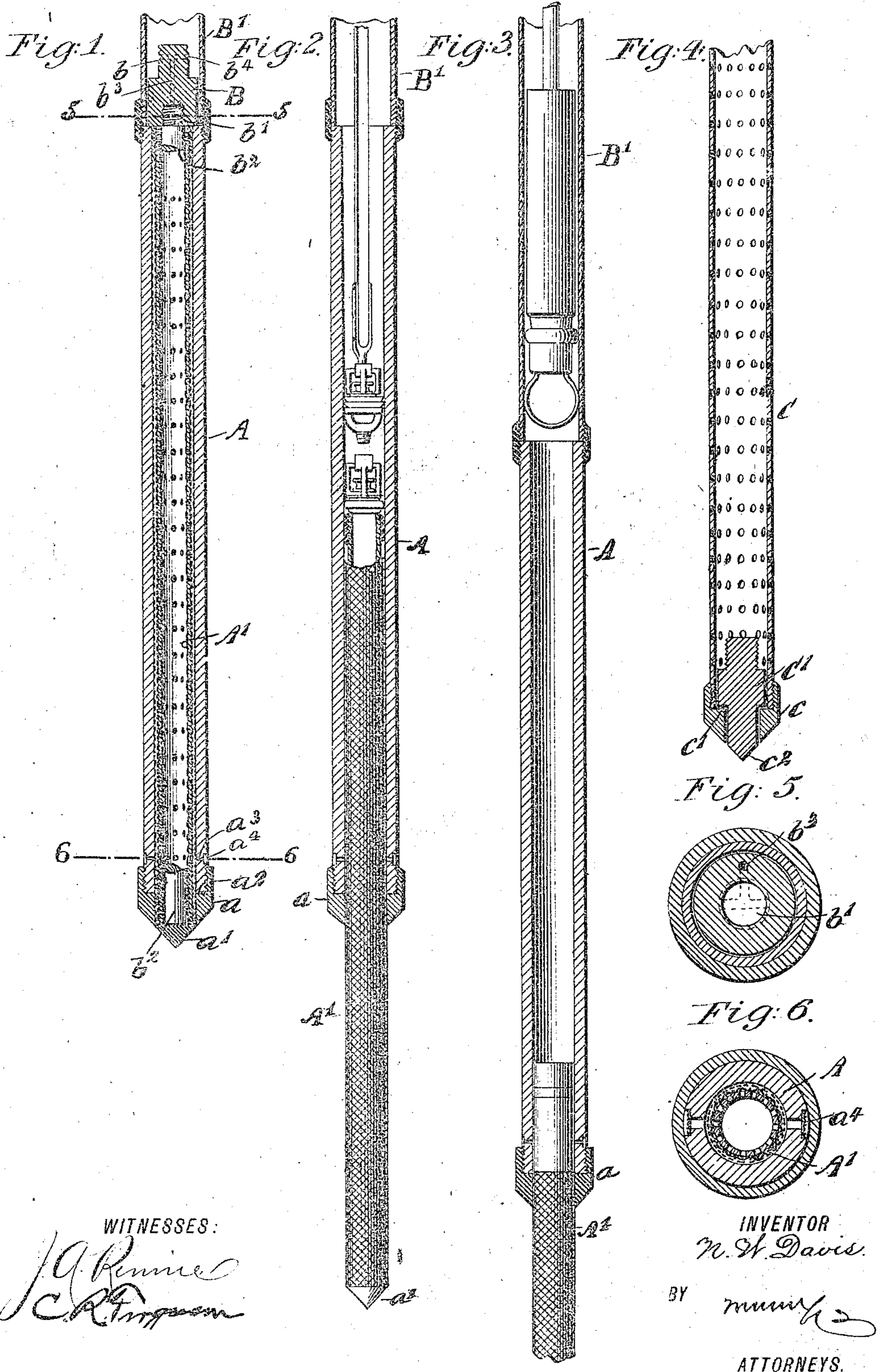


(No Model.)

N. W. DAVIS.
PIPE WELL AND DEVICE FOR DRIVING SAME.

No. 576,953.

Patented Feb. 9, 1897.



UNITED STATES PATENT OFFICE.

NELSON W. DAVIS, OF PORT JEFFERSON, NEW YORK.

PIPE-WELL AND DEVICE FOR DRIVING SAME.

SPECIFICATION forming part of Letters Patent No. 576,953, dated February 9, 1897.

Application filed March 6, 1896. Serial No. 582,042. (No model.)

To all whom it may concern:

Be it known that I, NELSON W. DAVIS, of Port Jefferson, in the county of Suffolk and State of New York, have invented new and useful Improvements in Pipe-Well and Devices for Driving the Same, of which the following is a full, clear, and exact description.

This invention relates to pipe or Artesian wells, their fixtures, and the method of driving the same, the object being to provide a means or method of driving whereby there is a great saving of time over the methods heretofore employed, also a more durable well, as new points may be put in when needed. In the methods heretofore employed the well-pipe is first driven into the ground with an open end and then pumped out or cleared, and then a strainer-section is inserted and forced into the ground or a closed-end strainer-point is screwed on the end of the well-pipe and driven into the ground with the screen unprotected, and the screen having a solid head there can be no new screen or points put in, when necessary, without drawing up the main well-pipe; and in driving such cylinders it has been the practice to apply the driving force directly to the upper end of the cylinder, which sometimes causes a deflecting or bulging of the pipe, whereas in my method of driving I apply the pressure at the lower end of the pipe and on top of the strainer, or at the lower end of the strainer in case a strainer is used instead of a pump-cylinder.

I will describe a pipe-well and method of driving the same embodying my invention, and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal section of a pipe-well embodying my invention, showing the position of the parts when the well is driven with the strainer-point protected within the cylinder. Fig. 2 is a section thereof showing the strainer as partly forced outward or in the position to receive water from a vein and pump-valves placed in position in the pump-cylinder. Fig. 3 is a longitudinal section with the point driven out of the cylinder and showing how a cylinder with valves may

be placed in the well-pipe above the cylinder at any point in the well-pipe. Fig. 4 shows a modification in the manner of driving. Fig. 5 is a section on the line 5 5 of Fig. 1, and Fig. 6 is a section on the line 6 6 of Fig. 1.

Referring to the drawings, B' designates a well-pipe of the usual construction, and A designates a screen-protector when being driven and a pump-cylinder when the screen is driven out into the water-vein, as indicated in Fig. 2. The pipe A is somewhat thicker than the pipe B', and its upper end forms a shoulder at the lower end of the pipe B', upon which a driving-head is adapted to rest, as will be hereinafter described. Within the pipe A is arranged a strainer A', the top of which is even with the shoulder formed by the pipe A, so that the driving-head will rest on top of the strainer.

The strainer A' has its body portion of the usual construction, that is, comprising an inner perforated pipe, a casing of sieve material surrounding the same, and a surrounding jacket of perforated metal. To the lower end of the pipe A is attached (here shown as by means of a screw-thread) a steel shoe *a*, which has its lower end tapered downward and inward, as indicated in the drawings. To the lower end of the strainer A' is attached a steel-shoe section *a'*, having a taper similar to the taper of the part *a*, and when the parts are in position for driving the wall of this part *a'* forms a continuation of the part *a*. It will be seen that the shoe *a* has an interior annular shoulder *a*², against which the end of the pipe A engages.

B indicates a driving-head adapted to engage on the upper end of the tube A within the well-pipe B', of enlarged diameter, secured to the pipe A by means of a suitable coupling. This driving-head B has a reduced shank portion *b*, having annular shoulders formed on it to be engaged by a suitable tool for withdrawing the driving-head from the tube when desired. The lower end of this driving-head is provided with a screw-threaded socket *b'*, into which is adapted to engage the screw-threaded end of a rod *b*², having a size substantially equal to the diameter of the interior of the strainer A', and as this rod *b*² extends down to an engagement with the upper side of the shoe-section *a'* it is

obvious that this rod, in connection with the other parts, will form a substantially solid rod to be driven into the ground. However, it is not my intention to be limited to the use of this rod, only a portion of which I have shown in Fig. 1.

The driving-head B is provided with a vertical channel b^3 , which extends nearly to the top of said driving-head and communicates with laterally-branched ports b^4 . At the lower end of the tube A ports a^3 are provided, and the outer ends of these ports are preferably covered by a netting a^4 to prevent the entrance of dirt. By means of these ports a^3 , which will admit water, it can be ascertained when the lower end of the pump-tubing shall have reached a vein of water, as the said water will rise and discharge through the ports b^3 b^4 .

Referring now to the modification shown in Fig. 4, the strainer-tube C is provided at its end with a tubular shoe c , similar to the shoe a before described excepting that it has an inwardly-extended annular shoulder c' , upon which engages an annular shoulder of a driving-head C', having a pointed shank portion c^2 extended through the tubular shoe c . This driving-head is provided with an upwardly-extended portion adapted to be grasped by a tool for withdrawing the driving-head. This form of driving-head and strainer-point has advantages in that the strainer can be used as an open or closed end drive-pipe at pleasure. For instance, when the point meets with material that it cannot be driven through, the driving-head may be removed and the hydraulic jetting or drilling process may be employed until the hard material is penetrated. Then the driving-head may be again inserted and the driving proceeded with.

In both examples of my improvement it will be seen that the driving blow is practically delivered at the lower end of the well-tube, so that the tube follows the blow, and consequently a harder blow may be given than in the usual method of driving. In the operation of driving a blow is delivered on the top of the driving-head by means of a

weight suspended by a line or other flexible connection.

In use the usual check-valve can be placed in the pipe A on or above the strainer-tube, and in deep wells where the water does not rise high it is preferable to operate the plunger in the pipe A, as indicated in Fig. 2, but in shoal wells or where the water rises high in the pipe the pipe-valves may be placed above the pipe A or at any point in the pipe B', as shown in Fig. 3. It is obvious that in this method of driving a considerable amount of time is saved, inasmuch as the pipe does not become filled with dirt or sand to be jetted out, as in the usual method, where an open-end pipe is employed.

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

1. In a tubular well, the combination with a well-pipe, of a screen-protector pipe secured to the lower end of the well-pipe, the said screen-protector pipe being of smaller interior diameter than the well-pipe, whereby a shoulder is formed at the upper end of the protector-pipe within the well-pipe, a tapered tubular shoe portion on the lower end of the protector-pipe, a strainer-tube having an external circumference to fit snugly, yet movably in the protector-tube, a tapered shoe portion on the lower end of the strainer-tube forming a continuation of the shoe portion on the protector-pipe, a driving-head adapted to engage with the upper end of the protector-pipe within the well-pipe, and a rod extended from the driving-head to engage with the shoe portion on the strainer-tube, the said rod fitting snugly within the strainer-tube, substantially as specified.

2. In a tubular well, a well-pipe having a water-inlet port through its lower portion, a tapered shoe portion on the pipe below said port, a strainer-tube within the pipe and having a shoe-point, and a driving-head having a port, substantially as specified.

NELSON W. DAVIS.

Witnesses:

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