(No Model.)

J. B. EDSON.

FORMATION OF DEEP WELLS IN QUICKSAND, &c.

No. 277,695. Patented May 15, 1883.

Fig 2

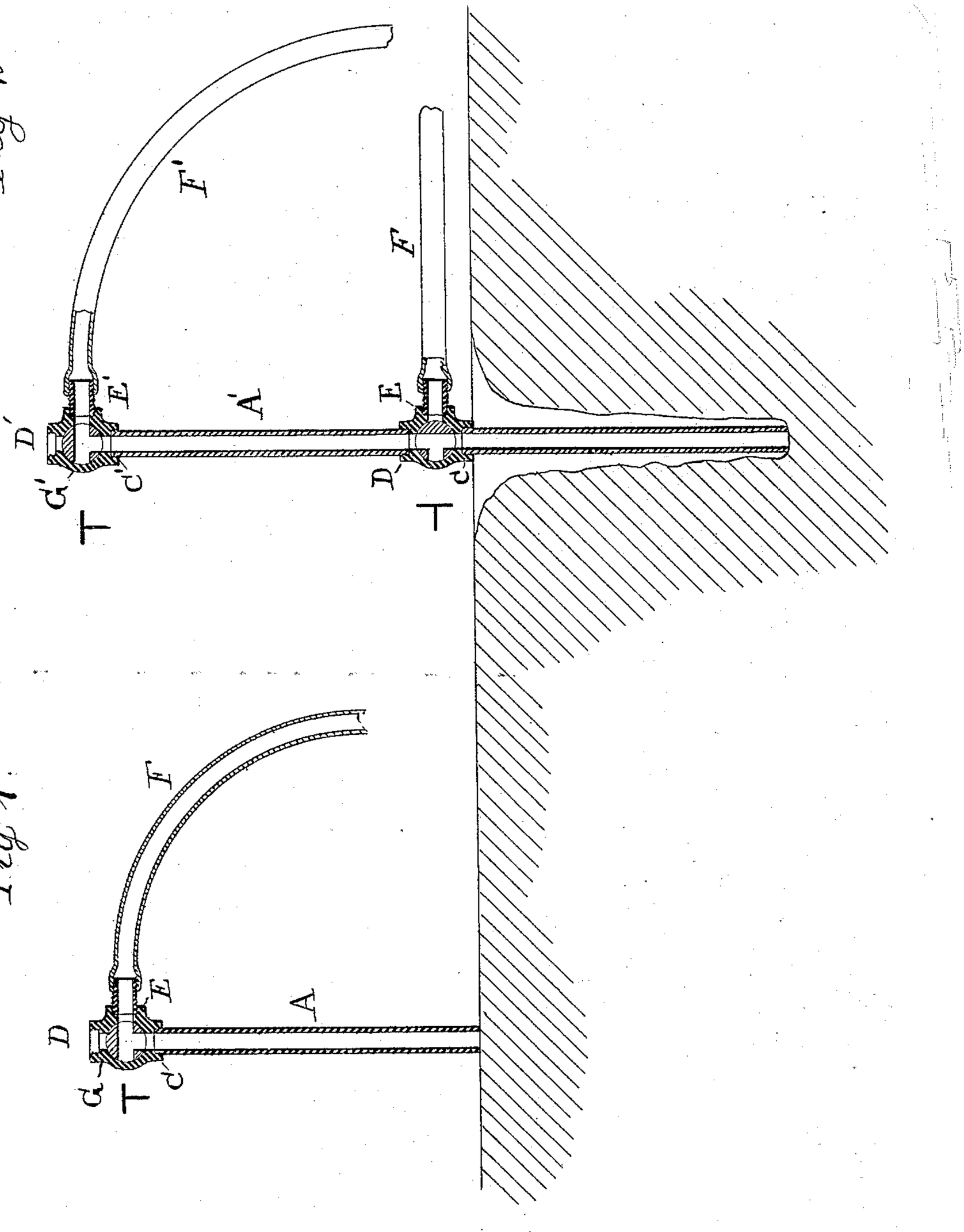

Fig 1.

Witnesses:
Eugene N Eliot
Boyd Eliot

Inventor
Jarvis B. Edson.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JARVIS B. EDSON, OF ADAMS, MASSACHUSETTS.

FORMATION OF DEEP WELLS IN QUICKSAND, &c.

SPECIFICATION forming part of Letters Patent No. 277,695, dated May 15, 1883.

Application filed February 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, JARVIS B. EDSON, a citizen of the United States, residing at Adams, in the county of Berkshire, in the State of Massachusetts, have invented certain new and useful Improvements in the Formation of Deep Wells in Quicksand, &c., by Washing, of which the following is a specification.

This invention pertains to that class of improvements in which wells for the purpose of obtaining water are formed through deposits or beds of quicksand, marl, clay, &c., by forcing water through a tube, which washes away the material around the lower end of the tube, and thereby permits it to settle down into the hole so formed, and thus becomes the lining or wall of the well itself after the washing process has ceased; and the invention consists, first, in the process or method of forming deep wells in quicksand, &c., by so continuing the operation of washing as that the material is not allowed at any time to settle or return around the lower end of the tube or pipe, or into the tube or pipe, until the desired depth is obtained, as will hereinafter appear; and, secondly, the invention further consists in combining a peculiar kind of coupling with each section of the tubing in such a manner that additional sections may be added from time to time as the tubing settles down in the hole, and without stopping the pressure of the water, as will hereinafter appear.

In the drawings, Figure 1 represents a single section of the tubing, and provided with a coupling at its upper end and with a hose-connection to supply the water from the pump, and in position to begin the operation of forming the well. Fig. 2 represents the same section as having descended its entire length in the well formed by washing, and with the second section attached, provided with a coupling at its upper end and a hose attached to supply the water required for continuing the operation.

At A is represented the tube, which may be of any diameter desired, and of any length convenient for the purpose. At B is provided a coupling formed with three branches, C D E. The two vertical branches C and D are for the purpose of receiving the ends of the tubing, and the branch E is for the purpose of receiving the hose-connection F, which conducts the water from the force-pump. (Not here shown.) This coupling is also provided with a three-way cock, G, of the ordinary form, a diagram of which is shown at Fig. 1, and which represents the cock as so turned that the upper section, D, of the coupling will be closed, allowing the water to enter at E and flow down the tube A through the branch C; but in Fig. 2, where another section of the tube, A′, is connected with the branch D, the coupling is represented as closing the water-connection at E and opening the branches C and D, so as to allow the water to flow in at the upper branch, E′, through the secondary hose F′; or, in other words, the cock is set at the upper end of the second section in the same manner that it was set at the beginning at the upper end of the first section of the tubing, the object of such an arrangement of connections and cocks being to connect the second section of tubing without disturbing the flow of the water from the force-pump, and, after the tubing has settled the length of the first section, then supplying the pressure from the pump through the second section as the first, before or soon after it is turned off from the supply to the first section, and in this manner the operation may be made substantially continuous, or so nearly continuous that the material to be washed out, after having been washed or formed into a fluid condition, cannot again return and flow around the pipe, and cannot clog it up to such an extent as to prevent the removal of the pipe, or the removal of the material from the inside of it, as I have found is the case when the operation of washing stops, if even for a few minutes.

I am aware that holes have been washed out in sand under water for the purpose of inserting piles along the sea-shore; and I am also aware that wells have been formed by driving down tubing in and through beds of sand, clay, soft marl, &c.; but these all have their limit on account of the resistance of the material surrounding the tubes; but I am not aware that any well has been formed in such substances by the process of washing to a greater depth than tubes can be driven in such material, and which in quicksand and soft marl is not practicable to the depth of fifty feet, whereas by my process and apparatus I have succeeded in inserting a tube to the depth of one hundred and seventy-five feet in a little more than two hours; but I have found by numer-

ous failures that it was essential that the operation should be made as nearly continuous as possible, as otherwise the silt or sand or marl would rise up in the tube and surround it, so that it could never be washed out, nor drawn out, nor driven down with any force that the tubes were able to bear.

I therefore claim—

1. The method herein described of forming deep wells, the same consisting in washing away the sand from the lower portion or end of the tubing in a continuous or substantially continuous manner until the well is completed.

2. In the formation of deep wells, the combination of two or more sections of tubing with an intermediate coupling or couplings for connecting the tubing and admitting a secondary supply of water before the first is checked, as and for the purposes hereinbefore set forth.

3. In combination with two or more sections of the tubing of a well, a three-way coupling and cock or valve for controlling the direction of the water used in forming the well, as and for the purposes hereinbefore set forth.

In witness whereof I have hereunto subscribed my name and affixed my seal in the presence of two subscribing witnesses.

JARVIS B. EDSON. [L. S.]

Witnesses:
EUGENE N. ELIOT,
HERMAN T. C. KRAUS.