2 Sheets--Sheet 1.

C. PONTEZ.

Making Artesian and other Wells.

No. 158,865. Patented Jan. 19, 1875.

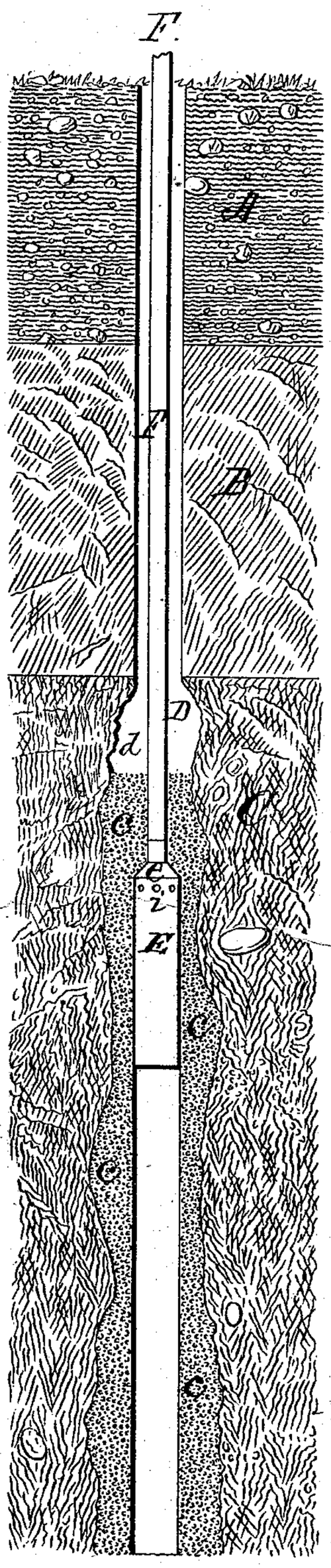

Fig 1

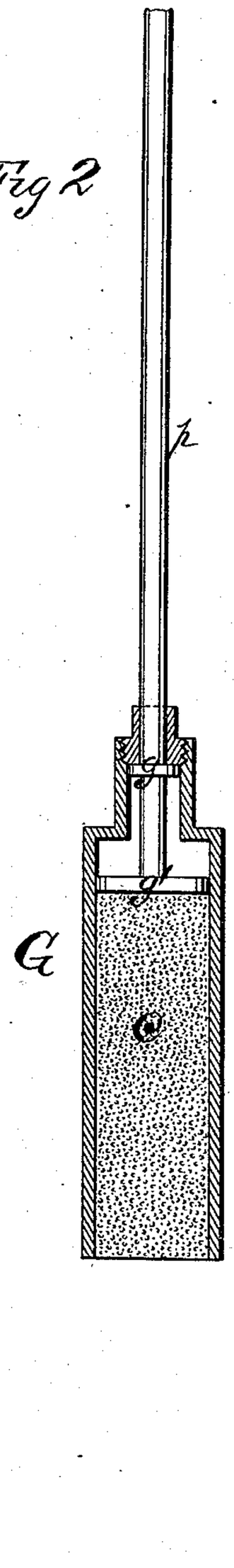

Fig 2

WITNESSES

Villette Anderson.

Frank J. Masi

INVENTOR

Charles Pontez

Chipman & Sommerville

ATTORNEYS

2 Sheets--Sheet 2.

C. PONTEZ.

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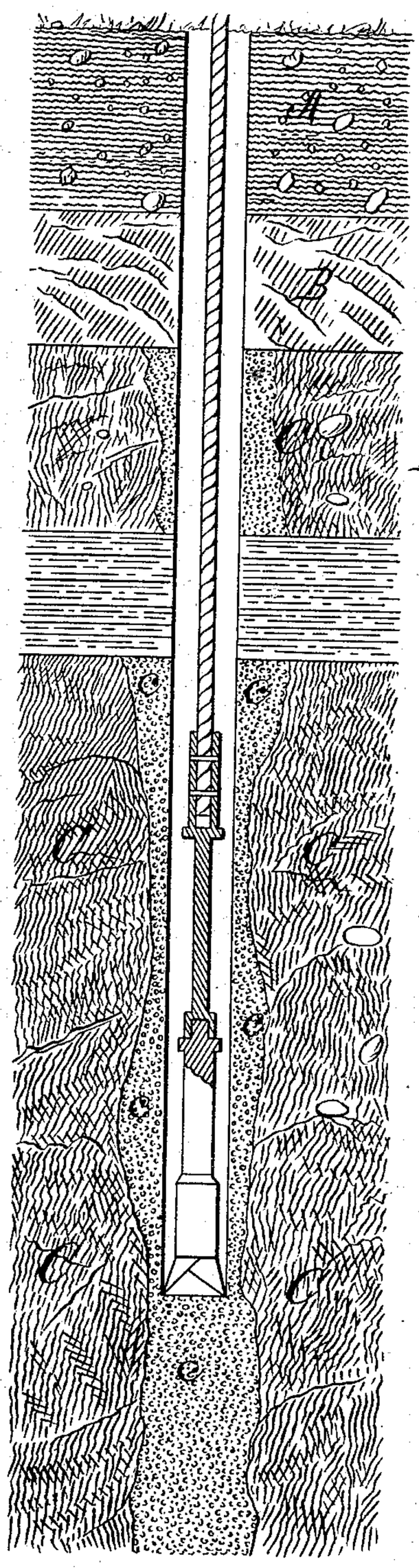

Fig 3

WITNESSES

Villette Anderson.

Frank J. Masi

INVENTOR

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THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

CHARLES PONTEZ, OF OMAHA, NEBRASKA.

IMPROVEMENT IN MAKING ARTESIAN AND OTHER WELLS.

Specification forming part of Letters Patent No. **158,865**, dated January 19, 1875; application filed November 28, 1874.

To all whom it may concern:

Be it known that I, CHARLES PONTEZ, of Omaha, in the county of Douglas and State of Nebraska, have invented a new and valuable Improvement in Making Artesian or other Wells; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a longitudinal section of a well constructed after my method. Fig. 2 is a sectional detail view, and Fig. 3 is a longitudinal sectional view, of a well constructed after my method.

This invention has relation to means for preventing the sides of artesian wells and other like boring from caving in. In boring wells to great depths through various stratums of earth and stone, at times quicksand will be encountered, which will cause the sides of the bore to cave in. From this cause the boring is frequently abandoned as impracticable, and when persisted in it becomes necessary to use an iron lining.

The object of this invention is to decrease the cost of such bores by dispensing with the iron lining and substituting a less expensive material, which may be applied either to the sides of the entire bore or only to those parts thereof which, by caving in, render such a lining indispensable.

To this end the nature of the invention consists in giving to artesian wells a lining of hydraulic cement, either throughout the whole extent of the bore or only in such parts thereof as may, by their caving in, require it, which, when it becomes set, shall form a tube, whereby a false wall is given to the said bore, as will be hereinafter more fully explained.

In the annexed drawings, A and B designate, respectively, stratums of earth and stone, followed by a third stratum, C, of quicksand, as shown in Fig. 1. D represents a bore made in the usual well-known manner through the stratums A, B, and C, the latter of which (the quicksand) is shown as caving in at *a*. Heretofore, when this occurred, it was found necessary to lower into the bore section after section of iron pipe, until the quicksand was penetrated and a firm stratum of earth or rock reached, when the boring was again renewed. Independent of the delay thus occasioned, a very great expense was incurred, which frequently caused an abandonment of the work.

I remedy this defect in the following manner: I lower to the bottom of the bore a cylindrical iron plunger, E, of suitable length, and, preferably, of equal diameter with the bore. This plunger is connected with the surface of the earth by means of a cable, jointed rods, or by iron pipes F, and its upper conical end, *e*, is provided with a cavity to contain a lubricant. Cement is now poured into the bore until the space about the cylinder and several feet above it is filled, and after a short time, but before the cement has had time to harden, the plunger is drawn through the mass, plastering the sides of the bore, and forming a smooth cylindrical tube of the same diameter as the rest of the well. As the plunger is drawn up through the cement, which I shall now designate by the letter *c*, the lubricant escapes through the openings *i* of the cavity, and, flowing down the sides of the plunger, effectually prevents the adhesion of the cement thereto.

Instead of making the lining as above described, I may, under certain circumstances, substitute the following: I fill the entire bore with cement, and before it has become set—that is, while it is still soft, yet possessed of sufficient cohesion to retain its shape—I rebore the well through this central core of cement, and in this manner also secure a lining of sufficient strength to arrest all further displacement of the walls of the well or bore. When the bore has to be continued beyond the lining of cement already made, and it again becomes necessary to arrest the caving in of the lower part of the boring, I pass additional cement through the bore by means of a hollow iron cylinder, G, (shown in Fig. 2,) of the same diameter as the bore, having a double piston, *g g'*, the said cylinder being lowered into the shaft and raised therefrom by means of pipes *p*. The interior of this cylinder is filled with cement, and when it is lowered into the shaft and reaches nearly to its bottom, its contents are expelled by forcing air through the pipes

p, thereby actuating the pistons *g g'*, when the cement will be discharged. This process is rapidly repeated until that portion of the bore below the lining already formed is filled, when it may be immediately bored out with great speed and ease.

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

In the boring of wells in the earth, the process of lining the walls with a cement which will readily harden and prevent the caving in thereof, by the means substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHARLES PONTEZ.

Witnesses:

A. D. CLARKE,

S. WARREN CHASE.