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W. C. LYON.

APPARATUS FOR USE IN MAKING CONCRETE PILES.

APPLICATION FILED MAY 12, 1903.

NO MODEL.

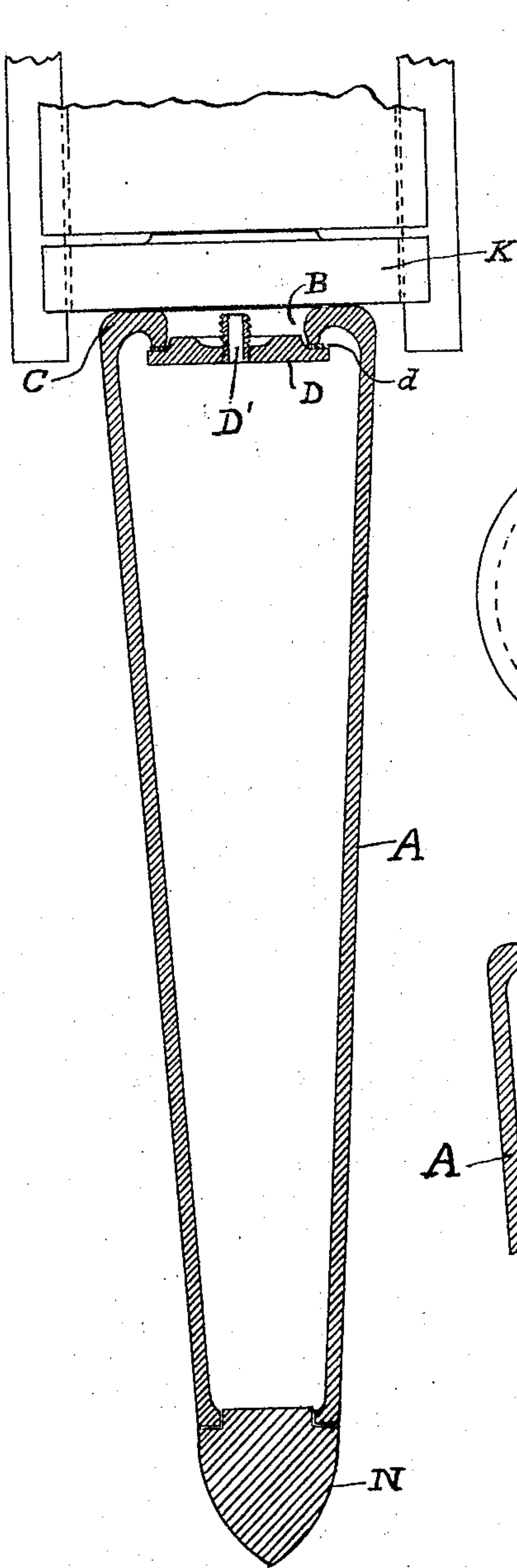


Fig. 1.

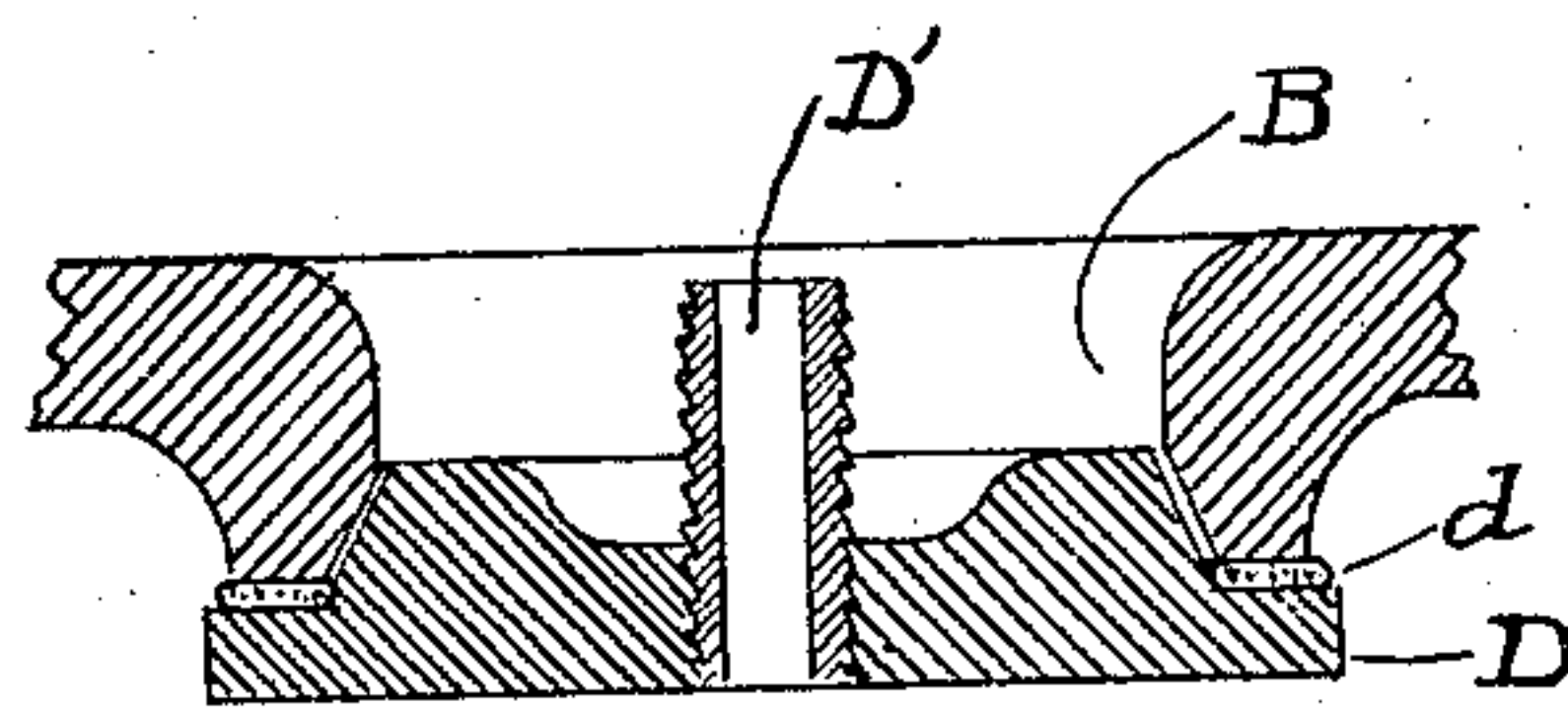


Fig. 3.

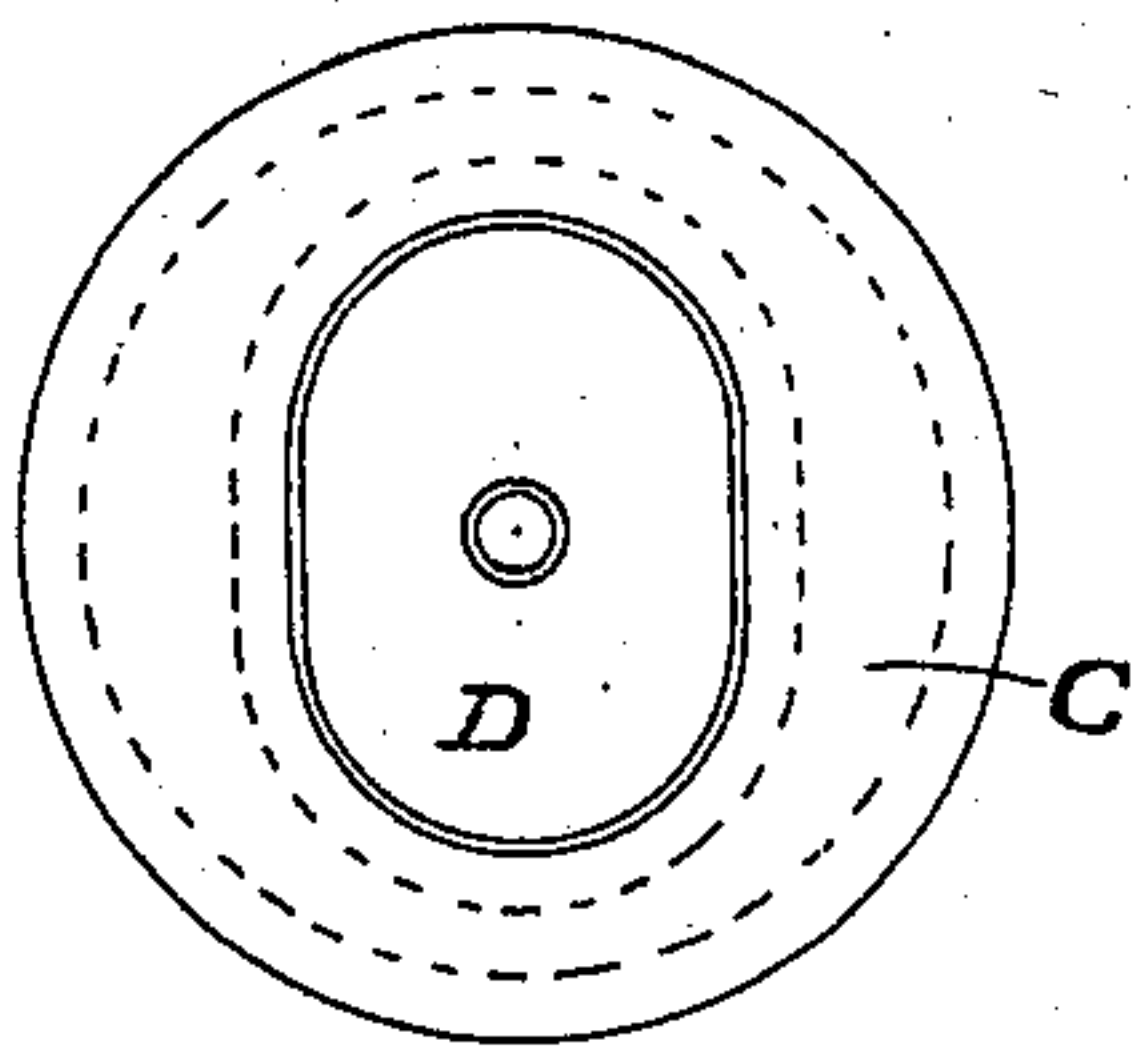


Fig. 4.

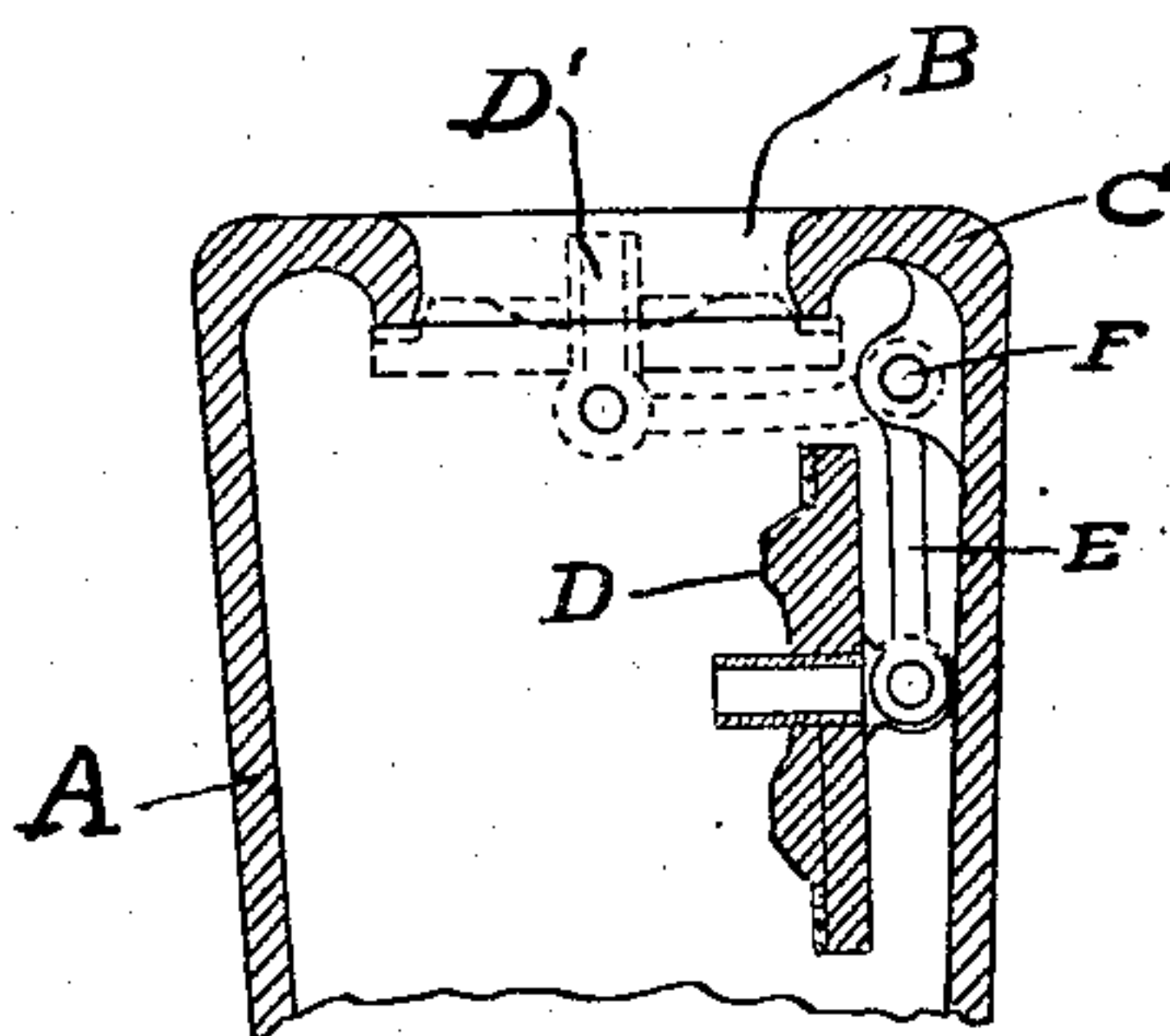


Fig. 5.

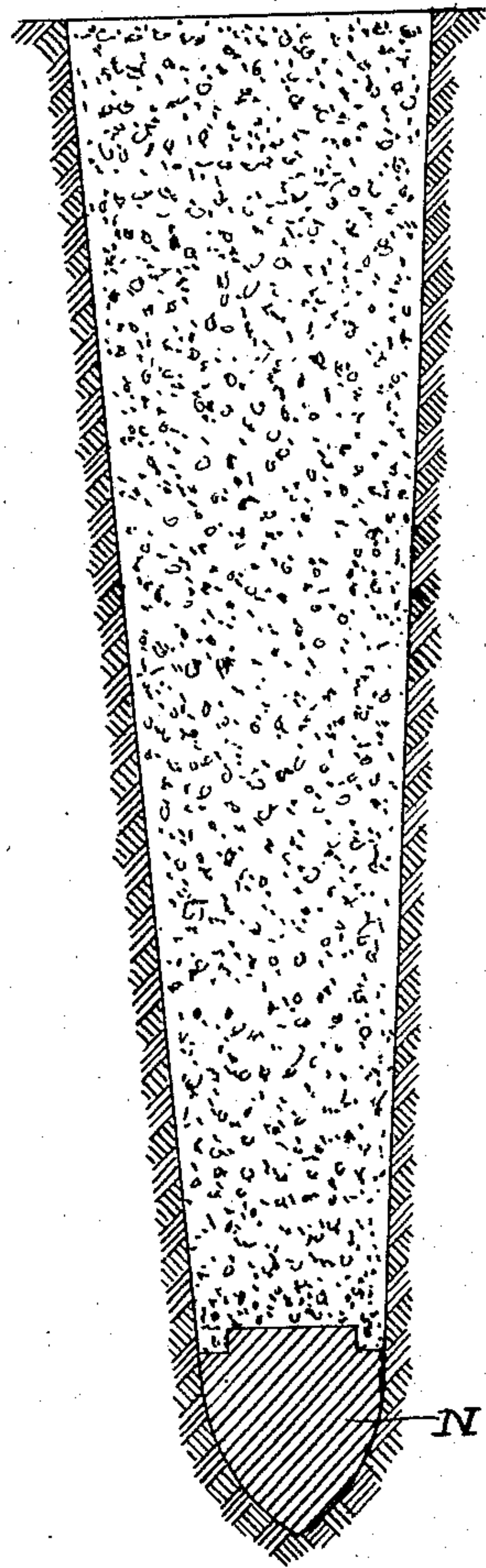


Fig. 2.

Witnesses

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APPARATUS FOR USE IN MAKING CONCRETE PILES.

SPECIFICATION forming part of Letters Patent No. 754,376, dated March 8, 1904.

Original application filed September 3, 1902, Serial No. 121,988. Divided and this application filed May 12, 1903. Serial No. 156,853. (No model.)

To all whom it may concern:

Be it known that I, WALLACE C. LYON, a citizen of the United States, residing at Hyattsville, in the county of Prince George and State of Maryland, have invented certain new and useful Improvements in Apparatus for Use in Making Concrete Piles; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in apparatus for making concrete piles; and it consists, essentially, in the provision of a former, which may be solid or hollow, adapted to receive temporarily a shoe in one end thereof, to be driven by the former into the ground and left permanently as a footing for a concrete pile after the former has been withdrawn from the ground.

The invention consists, further, in the provision of an apparatus for forming concrete piles, consisting of a former carrying a shoe at one end, which is driven by the former into the ground, and having in its opposite ends the filling-aperture through which a semi-liquid concrete is passed, and in the provision of an apertured valve designed to close the filling-aperture and through which valve fluid-pressure may be introduced to act upon the surface of the concrete and the valve and adjacent end of the former, whereby said former may be raised out of the ground and the concrete forced out of the lower end to replace the space occupied by the former.

The invention consists, further, in various details of construction and combinations of parts, as will be hereinafter fully described and then specifically defined in the appended claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal central sectional view through my improved pile-forming apparatus. Fig. 2 is a sectional view through a pile made with my apparatus. Fig. 3 is an

enlarged sectional view through the upper end of the former and valve. Fig. 4 is a top plan view of the former, showing the valve fitted over the aperture in the end of the former. Fig. 5 is a sectional view showing a slight modification, comprising a pivotal means for connecting the valve to the shell of the former.

Reference now being had to the details of the drawings by letter, A designates a former, which in the present instance is shown as hollow and slightly tapering, although it will be understood that the same may be made either solid or hollow and cylindrical or any other shape which may be found well adapted for the purpose. The upper end of the former has a curved flange C, the inner margin of which forms a filling-aperture B, preferably of oval shape, as shown in Fig. 4 of the drawings, in order to facilitate the entrance of the valve D in the former. Said valve D when adjusted in place after the shell is filled with concrete assumes the position shown in Fig. 1 of the drawings, in which a gasket 7 is interposed between the valve and the edge of said flange about the filling-aperture.

N designates a shoe, which in the present instance is shown solid and tapering and having a shouldered portion upon which the lower end of the former rests, the contracted portion of said shoe entering the end of the former a slight distance.

The valve D is provided with a pipe D', having threaded connection with an aperture in the valve and to which pipe connection may be had with any apparatus, whereby fluid-pressure may be introduced into the shell after the same has been nearly filled with concrete.

K designates a buffer which is adapted to contact with the top of the former and designed to receive the impact of a blow imparted by a hammer for driving the former into the ground.

In Fig. 5 I have shown a slight modification in which the valve is pivotally connected by means of a link E to a pin F, which is carried by ears formed integral with the shell, as shown.

In operation the apparatus, as illustrated in

Fig. 1, is driven into the ground with the shoe held in the position illustrated, and after a hole has been formed concrete in a semi-liquid condition is placed within the former and the valve D closed over the filling-aperture, after which fluid-pressure is introduced into the top of the former, which will cause the valve to be held securely to its seat, and when sufficient force is exerted between said valve and the top of the former the latter will begin to rise from the hole in the ground and the concrete will be forced out through the lower end of the former and against the wall of the hole in the ground, thus preventing any caving in of the same, and the shoe will be permanently left at the bottom of the hole, forming a footing for the pile, and as the shell is raised by the fluid-pressure a solid pile of concrete is produced, forming a substantial foundation for any superstructure which may be built upon the same.

While I have shown a particular construction of apparatus illustrating my pile-forming apparatus, it will be understood that I may make alterations in certain details of construction of the device without departing from the spirit of the invention, which consists in the forcing of a shoe by means of a former into the ground and leaving the same permanently as a footing for a concrete pile.

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

1. An apparatus for making concrete piles comprising a former, a shoe adapted to be driven by the latter into the ground and forming the footing for a concrete pile, as set forth.

2. An apparatus for making concrete piles comprising a former, with a valved top, a shoe adapted to be driven by the latter into the ground, said former designed to receive concrete which is forced out of the bottom thereof as the former is raised, thereby producing a concrete pile with said shoe as a footing to the latter, as set forth.

3. An apparatus for making piles, comprising a hollow tapering former, a tapering shoe engaging one end of the former and adapted

to be driven thereby into the ground, said former designed to receive concrete which is forced out of the lower end of the former as it is raised out of the ground, thereby leaving said shoe as a footing for the pile.

4. A pile-forming apparatus comprising a hollow former, a shoe engaged by said former and driven thereby into the ground, a valve-regulated filling-aperture in said former and through which fluid-pressure is introduced to raise the former from the ground and force the concrete within the former out through the lower end thereof, whereby a pile is formed of solid concrete with said shoe as a footing, as set forth.

5. An apparatus for making piles comprising a hollow former, a shoe having an annular shoulder upon which the lower end of the former is adapted to rest, the opposite end of the former being flanged forming a filling-aperture, and a valve adapted to seat over said filling-aperture, as set forth.

6. A pile-forming apparatus comprising a hollow former, a shoe engaging one end thereof and adapted to be driven by the former into the ground, a filling-aperture at the other end of the former, a valve adapted to seat over said aperture and having a pipe connection through which fluid-pressure may be introduced to the former, and a link pivotally connecting said valve to the shell, as set forth.

7. An apparatus for making concrete piles comprising removable former and a shoe detachable therefrom and adapted to be driven thereby into the ground to form the footing for a concrete pile.

8. An apparatus for making concrete piles comprising a removable hollow former and a shoe normally closing the lower end of the same but detachable therefrom, said shoe being adapted to be driven into the ground by the hollow former to constitute the footing for a concrete pile.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WALLACE C. LYON.

Witnesses:

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FRANKLIN H. HOUGH.