

1,063,942.

Fig 1.

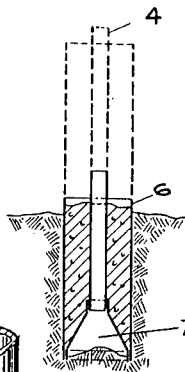


Fig 2.

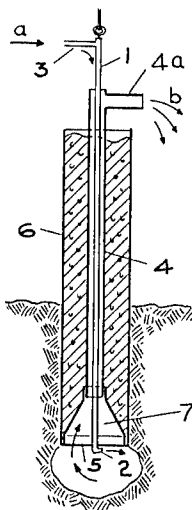


Fig 3.

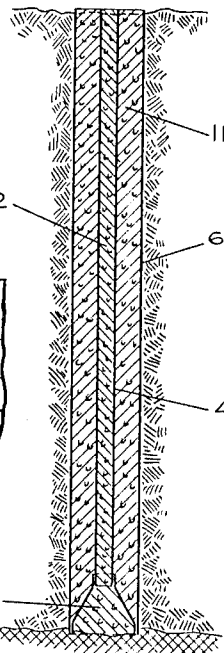


Fig 4.

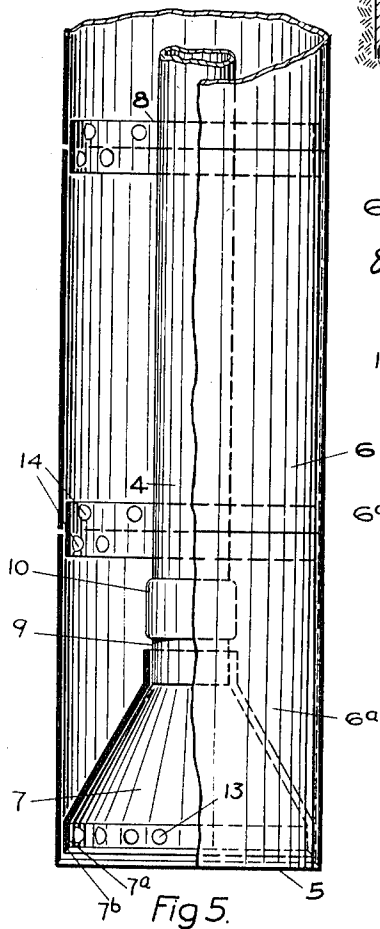


Fig 5.

WITNESSES:

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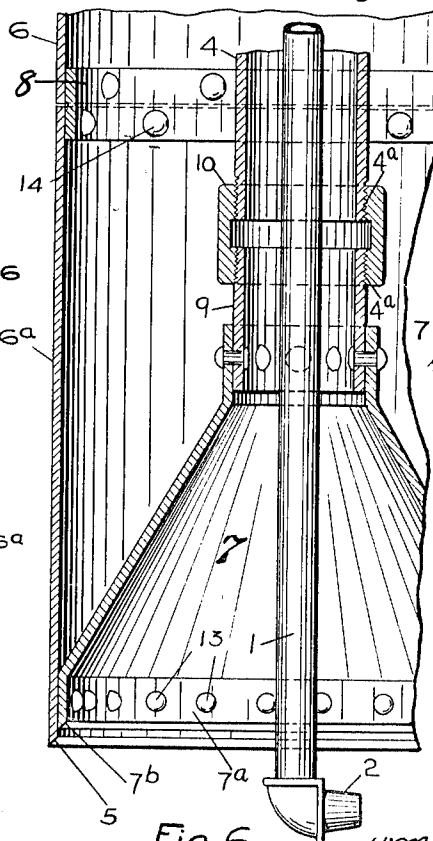


Fig. 6.

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CONCRETE-PILE-FORMING MEANS.

1,063,942.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed March 17, 1911. Serial No. 615,165.

To all whom it may concern:

Be it known that I, WILLIAM R. PHILLIPS, a citizen of the United States, residing at Portland, county of Multnomah, and State of Oregon, have invented a new and useful Improvement in Concrete-Pile-Forming Means, of which the following is a specification.

My invention relates to the construction of concrete piles in place, and has for its general purpose to render such construction both convenient and expeditious.

To this end my invention comprises a cylindrical shell formed of a plurality of sections, and convenient means for washing away the soil from the hole in which the pile is to be built. These and incidental features are hereinafter fully described.

In the accompanying drawings: Figures 1 to 4 inclusive, represent diagrammatically the method in which my pile construction is carried out; Fig. 1 representing the first or lowermost course of the pile as placed over the spot where it is to be sunk, Fig. 2 representing the pile as having been sunken into the ground to nearly the top of the first course, Fig. 3 illustrating the mode in which the soil is washed from under the pile so as to form a cavity for the pile to sink into, and Fig. 4 showing the completed pile in place; Fig. 5 is an enlarged sectional elevation of the lowest or bottom two courses of the pile, it also illustrates a convenient mode for fastening the courses of the shell of my pile end to end; this view also shows the inner discharge tube, built into the shell and through which the material washed from under the pile is expelled; and Fig. 6 is an enlarged sectional detail of the construction of the same parts shown in Fig. 5, and also shows the lower end of a nozzle-ended pipe, inserted in the central discharge tube, for washing away the soil from under the bottom of the pile, so as to obtain a cavity for the latter to sink into.

The pile consists of a sheet metal casing or shell, 6, of a diameter suited to the load which the pile has to sustain, or to other conditions regulated by the purpose for which the pile is to be used. The shell is preferably of cylindrical form, and is made up of a plurality of courses joined end to end, so that the pile will be of such ultimate length as required. Centrally within the outer shell, 6, is provided a discharge tube 4, to the bottom end of which is fastened a conical

part 7, formed like an inverted funnel, and preferably formed with a rim flange 7^a, which is riveted in place by rivets 13, in the bottom of the lowest course 6^a of the shell 6.

As more clearly shown in Fig. 6, the bottom edge 5 of the shell 6^a, as well as the edge 7^b of the conical part 7 of the discharge tube 4, are beveled so as to adapt them to cut into the ground. The widest portion of the conical member 7 is made of such diameter as to just fit snugly the interior of the course 6^a, and said conical part constitutes a bottom for the lowest course of the shell 6, so as to retain the filling 11. The discharge tube 4 is built up in length in correspondence with the shell 6, so as to extend to the top of the uppermost course of the latter. Said discharge tube 4 is conveniently constructed of piping of suitable diameter, the pieces thereof being threaded at their opposed, abutting ends 4^a, and connected by a coupling as 10; the lowermost piece of the discharge tube 4 being formed of a half-nipple 9, as shown in Fig. 6. The discharge tube, 4, constitutes a channel or core through which the soil washed away from under the pile is expelled, as shown by the arrow, *b*, in Fig. 3. The discharge tube 4 is made of such diameter as to permit a jet pipe 1 to be inserted therein, as shown in Figs. 3 and 6; said jet pipe being connected at 3 with a suitable head of water, and formed at its bottom end with a nozzle 2; the latter extending preferably at a right angle from the jet pipe 1.

The manner in which I construct a pile is as follows: The lower section or course of the shell 6 is set upright over the spot where the pile is to be sunk. The space 11 is then filled with concrete as shown in Fig. 1; a guide frame (not shown) having been previously set up around the shell, so as to guide the pile straight when sinking into the ground. The jet pipe 1 is then inserted and water under a suitable head is discharged through said jet pipe, and the latter being manipulated in such manner as to wash away the earth from under the bottom of the shell 6. The right angular portion 3 of the jet pipe 1 also serves as a handle, facilitating the manipulation of the latter. The soil washed away from under the shell 6 is discharged, together with the water, through the spout 4^a of the discharge tube 4, as indicated by the arrows in the lower part and at *b* in Fig. 3; the arrow *a*, in the same fig-

ure, represents the inflow of water through said jet pipe 1. As the soil is washed from under a course of the pile, the weight of the concrete 11, with which it is filled, will cause it to sink in the cavity formed in the soil. When the course has been so far sunk into the ground that its upper end is almost flush therewith, the shell of the next course of the pile is fastened in place. This may be conveniently done as shown in Figs. 5 and 6, the ends of the shell being connected by means of butt straps 8 riveted in place by rivets 14. Next an upper section of the discharge tube 4 is fastened in place, the shell of such upper course is then also filled with concrete, and the process of sinking the pile is continued. In Fig. 4 the pile is shown as sunk its full depth, and as having the discharge pipe 4 also filled with concrete, 12, which is the final step in the construction of my pile.

In some cases the filling 6 of the shell, as well as the discharge tube 4, instead of being of concrete may be sand, or other material which will pack sufficiently to impart solidity to the pile as a whole, and render it adapted to support its load.

I claim:

1. Concrete pile forming means comprising a tubular shell formed of a plurality of sections, a flaring bottom affixed in one sec-

tion of said shell, said bottom being formed with a neck, and a tube formed of a plurality of sections and having the lower of such sections connected with said neck, and said tube having a diameter sufficient to permit the insertion of a hydraulic pipe.

2. Concrete pile forming means comprising a tubular shell formed of a plurality of sections, a flaring bottom affixed in one section of said shell, said bottom being formed with a neck, and a tube comprising a plurality of sections and connected with said neck, one of said tube sections being provided with a lateral discharge spout, said tube having a diameter sufficient to permit the insertion of a hydraulic pipe having its bottom end provided with a lateral nozzle.

3. Concrete pile forming means comprising a tubular form made of outer and inner shells spaced apart, said shells made in sections, and means for providing a scouring space in the lower end of that section of the form bearing on the ground, the inner shell having a diameter sufficient to permit the insertion of a hydraulic pipe and also to provide an outlet.

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Witnesses:

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