J. STEWART.

PROCESS OF MAKING PILES.

APPLICATION FILED MAY 29, 1912.

1,157,442.

Patented Oct. 19, 1915.

Fig. 6.

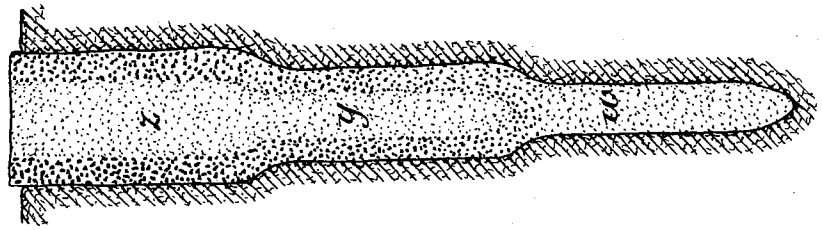


Fig. 5.

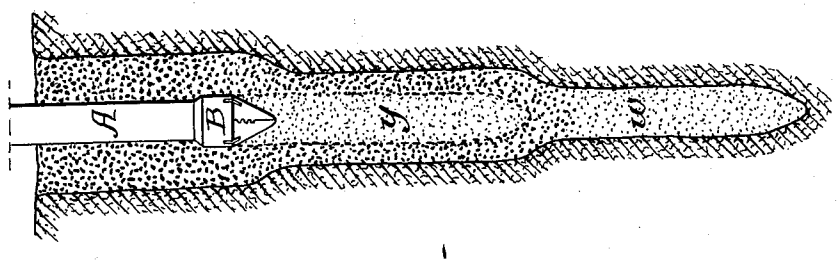


Fig. 4

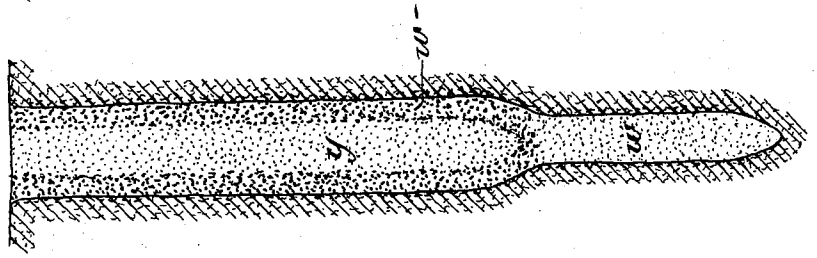


Fig. 3.

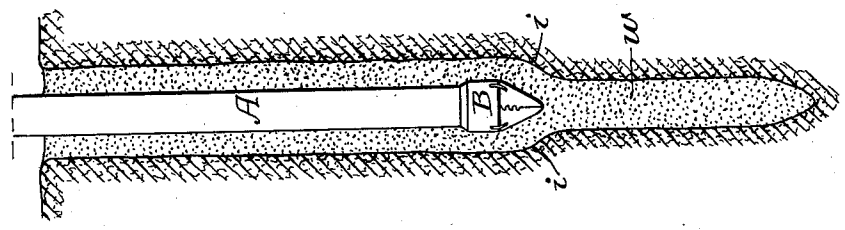


Fig. 2.

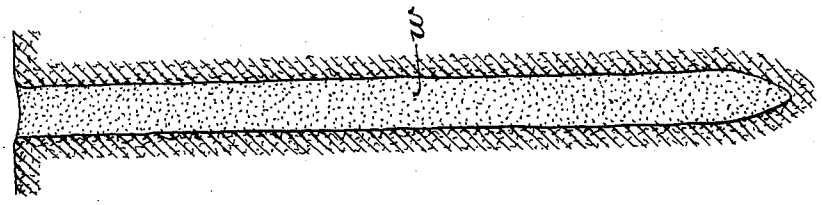
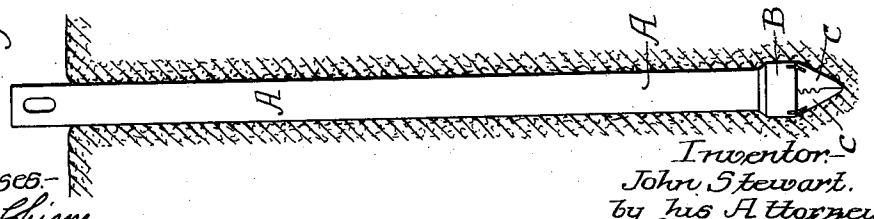


Fig. 1



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UNITED STATES PATENT OFFICE.

JOHN STEWART, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE SIMPLEX CONCRETE PILING COMPANY, OF WASHINGTON, DISTRICT OF COLUMBIA, A CORPORATION OF THE DISTRICT OF COLUMBIA.

PROCESS OF MAKING PILES.

1,157,442. Specification of Letters Patent. Patented Oct. 19, 1915.

Application filed May 29, 1912. Serial No. 700,481.

To all whom it may concern:

Be it known that I, JOHN STEWART, a citizen of the United States, residing in Washington, District of Columbia, have invented certain Improvements in the Process of Making Piles, of which the following is a specification.

My invention relates to certain improvements in the process of making concrete piles.

The object of my invention is to make a concrete pile with an enlarged upper portion, which will form a suitable support for a beam or other load. This object is attained by increasing the diameter of the pile by displacing the concrete forming the body of the pile by a pile form and then filling the opening thus formed with additional concrete.

By my invention a pile can be readily driven to the depth desired, after which the upper portion of the pile can be expanded in order to produce a pile having a large area at the upper end; this being accomplished without the necessity of using heavy apparatus in driving the pile.

This object I attain in the following manner, reference being had to the accompanying drawings, in which:—

Figure 1, is a view showing the pile form driven to the depth desired; Fig. 2, is a view showing the concrete placed in the opening made by the pile form; Fig. 3, is a view showing the pile form driven into the concrete to a certain depth to increase the diameter of a portion of the pile; Fig. 4, is a view showing the pile form removed and additional concrete placed in the opening formed thereby; Fig. 5, is a view showing the pile form again driven into the concrete at a less depth than that illustrated in Fig. 3, by which the diameter of the pile is again increased; and Fig. 6, is a view showing the pile form removed and the additional concrete placed in the pile to form an enlarged head.

Referring to the drawings, A is the pile form, consisting of a metallic tube having a point B at the lower end, preferably of a greater diameter than the body portion of the pile form. This point is made in two sections *c*—*c*, hinged to the body portion so that it will open as the pile form is raised. In some instances, a detachable point may be used in place of the point illustrated.

The pile form is driven in the ordinary manner to the depth desired; the form being of such a diameter that it will properly compress the earth surrounding the opening made by it. Concrete is then placed in the pile form and the form gradually raised. As soon as the pile form is moved upward, the concrete within the pile form opens the sections *c* of the point and will flow out of the bottom of the pile form into the opening in the ground. This is continued until the pile form is completely removed and the opening filled with concrete, as indicated at *w*, Fig. 2.

This is the present method of making what is known as a "Simplex" pile, but, in some instances, it is desirable to increase the diameter of the greater portion of the pile; particularly the top of the pile, which forms the head on which a beam, or other structure, is mounted. I, therefore, drive the pile form into the concrete *w* before it sets, preferably immediately after the hole is filled with the concrete. This pile form I preferably drive about two-thirds of the depth of the pile, as indicated in Fig. 3. The concrete thus displaced enlarges the opening and compresses the earth around the pile to a greater extent than the previous compression. This process forms a shoulder, as at *i*. Concrete is then discharged into the pile form and as the pile form is raised the concrete flows out of the bottom and fills the opening made in the mass of concrete, as illustrated at *y*, Fig. 4.

If it be desired to still increase the size of the pile, particularly at the upper end, then the pile form is again driven into the concrete, forming the pile, as indicated in Fig. 5. The pile form is preferably driven about one-third the length of the pile; displacing the concrete and increasing the diameter of the hole; compressing the ground surrounding the pile to a still greater extent. Concrete is again placed in the pile form and as the pile form is removed the concrete flows from the form and into the pile, producing an enlarged head, as illustrated at *z*, Fig. 6.

The extent to which the pile form is driven into the ground will vary under dif-

ferent conditions. In some instances, it may only be necessary to form one enlargement, whereas, in other cases, as illustrated in Fig. 4, it may be found desirable to make two or more enlargements.

In place of concrete, gravel, or other material, may be used to fill the opening or openings in the concrete.

I claim:

1. The process herein described of making concrete piles having a greater diameter at the top than at the bottom, said process consisting in driving a pile form in the ground to the full depth desired; wholly removing the pile form and filling or partly filling the opening thus formed with concrete; then driving the said pile form into the concrete in the opening to a depth less than the depth to which it was previously driven so as to increase the diameter of that portion of the hole in which the concrete was placed and in which the pile form was driven; removing the pile form and filling the opening in the concrete, thus forming a pile having an upper section greater in diameter throughout than the lower section.

2. The process herein described of making concrete piles of a greater diameter at the top than at the bottom, said process consisting in first driving a pile form into the ground to the full depth desired; wholly removing the form and filling or partially filling the opening with concrete and before the concrete is set driving the pile form into the concrete to a depth less than the full depth of the pile so as to force the concrete out laterally to enlarge the opening in the ground; removing the pile form and filling the hole in the concrete with additional concrete; then driving the pile form into the concrete at a less depth than that to which it was previously driven so as to force the concrete laterally to increase the diameter of the opening and the diameter of the finished pile and so as to provide a head of large diameter; and then filling the opening thus formed in the concrete to retain the said concrete in position.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN STEWART.

Witnesses:
FRANK SHERMAN,
W. C. BURKHOLDER.