

[54] FOOTING FORM FOR CASTING IN THE GROUND FOUNDATION PILES

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[58] Field of Search 61/63, 53.64, 53.66, 53.6, 61/53.62, 53.52; 52/155, 162

[56] References Cited

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[57] ABSTRACT

A casting form for foundation piles is disclosed, which consists of a tubular body having a solid pointed end, a swingable shell-valve mating the outer surface of the tubular body being hinged to said body. When the shell-valve is closed, it exactly mates the outer surface of the tubular form due to a rebate formed on the tubular body to house the shell valve, whereas the thrust of the filler material (e.g. fluidized concrete) opens the shell valve and the filler material is allowed to pour nearly axially downward, undisturbed.

3 Claims, 6 Drawing Figures

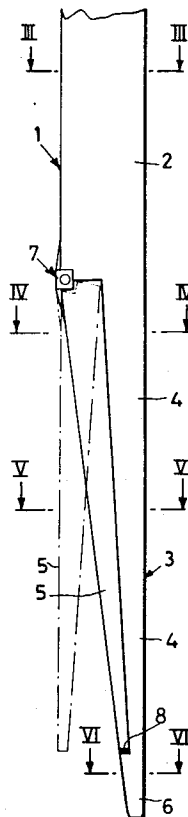


Fig.1

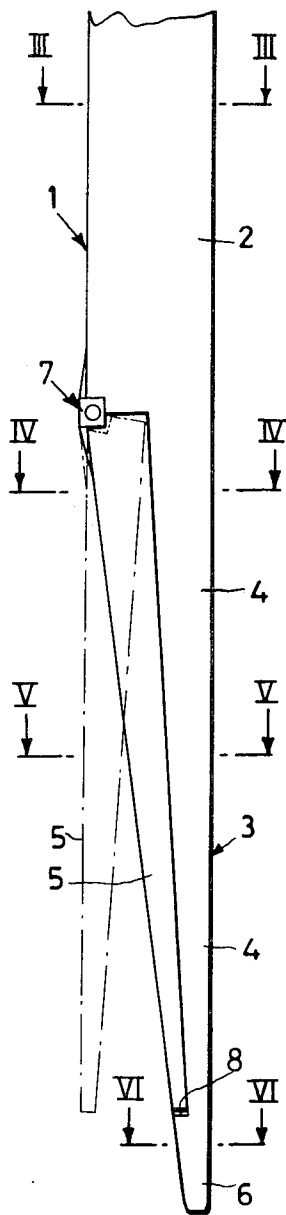


Fig.2

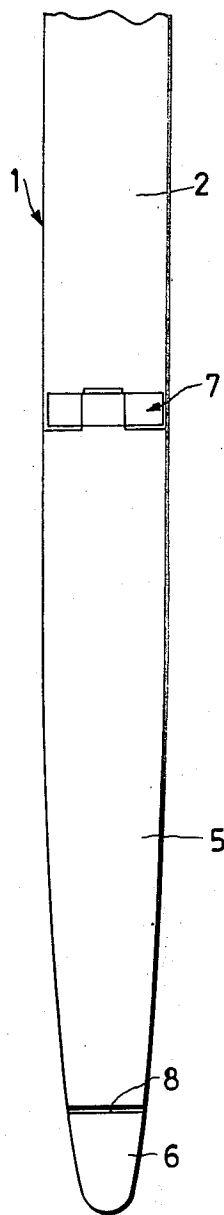


Fig.3

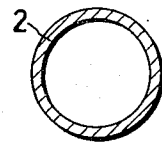


Fig.4

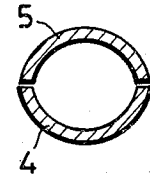


Fig.5

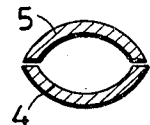


Fig.6



FOOTING FORM FOR CASTING IN THE GROUND FOUNDATION PILES

It is known that to cast on the foundation site foundation piles, a tubular metal footing form is directly driven in the earth, the form being commonly called a tuboform, which is equipped with a pile shoe intended to be left in the ground, or with a pile shoe fitted with a valve.

The pile shoe to be left in the ground, usually made of concrete, can be freely slipped out of the tubular form so that during the removal of the tubular form, it remains in situ in the foundation ground in order to permit that the material intended to be used to make the pile may pour out of the tubular form.

The pile shoes of this kind, inasmuch as they are intended to be left in situ, have the defect of being comparatively expensive.

The valve-fitted pile shoe comprises one or more movable members which, while the tubular form is being driven into the ground take a closed position so as to prevent the earth or portions thereof from entering the interior of the tubular form, and during the removal of the form they take such a position as to allow the pile-forming material to pour out.

The most elementary kind of valved shoe is formed by a substantially circular swash plate hingedly connected to the interior of the tubular form in correspondence with the bottom end thereof so that during progress of the form driving the peripheral portion of the plate may rest on one or more points, or continuously, against the edge of the tubular form so as to prevent the earth from entering therein and, during the removal of the form, on account of the eccentricity of its center of gravity with respect to the hinge point, it is rotated downwards thus affording an opening through which the filler material, such as concrete, gravel or sand, is permitted to flow.

Such a kind of valved shoe has, however, the serious drawback that it cannot be opened integrally: as a matter of fact a substantially circular plate hinged at a point of its circumference in correspondence with the bottom end of a vertical tube and in the interior thereof, cannot be opened completely towards the bottom, thus originating the shortcoming of being compelled to use extremely fluid materials.

Another defect of this kind of pile shoe is its inadequate capability of being driven through very compact earth layers.

Another kind of valved shoe as used today comprises a plurality of members, which are substantially a part of a conical surface, which are hinged at the bottom end of the tubular form and which, during the driving operation, remain united by means of a holding ring which has been freely slipped onto the pointed end, whereas during the withdrawal of the form they are opened since the action of the ground acts in such a way as to slip the ring out of said members and to remain in situ.

In this kind of valved point the opening of the members is a complete one so that the material flows as an entity and without any difficulty; there is, however, the serious defect that the hinges of the valve members are broken within a short time since they receive and transfer all the shocks and/or vibrations transferred by said members during the driving of the tubular form into the ground.

The principal object of the invention is to provide a form of tubular form having a valved point which is capable of removing or minimizing all the defects enumerated above which impair the conventional pile shoes, while retaining simultaneously all of the advantages thereof.

Another object of the invention is to provide a foundation form or tubular form having an extremely reliable, durable and cheap pointed end.

Having these objects in view, it has been envisaged to provide a footing form characterized in that it comprises an end tubular portion having a pointed end comprised of two portions, one fixed and the other movable, the fixed portion being integrally formed with said tubular portion, whereas the movable portion is hinged to said tubular portion and can be displaced between an open position where the filler material is allowed to flow, and a closed position where the free end of the movable portion goes to be housed in a rebated portion of a pointed end of the fixed portion.

In order that the features of the invention may be better understood an exemplary description thereof will be given in the following, reference being had to the accompanying diagrammatical drawings, wherein:

FIG. 1 is an elevational view showing a footing form made according to the present invention.

FIG. 2 is an elevational view showing the same form shown in FIG. 1 but rotated through an angle of 90 degrees with respect to that of FIG. 1.

FIGS. 3 to 6 are cross-sectional views taken along the lines III—III, IV—IV, V—V, and VI—VI of FIG. 1, respectively.

With reference to the drawings, the form in question is generally shown at 1 and is structurally composed by a metal tubular portion 2, of which the end portion only has been shown, and by a pointed end 3. The pointed end 3 has a substantially ovoidal cross-sectional outline which gradually tapers from top to bottom (FIGS. 4 and 6) and comprises two portions 4 and 5. The portion 4 is fixed and is integrally formed with the tubular portion 2 and has a solid pointed end 6 (FIG. 6) whereas the portion 5 is movable between a closed and an open position for its being hinged as at 7 to the tubular portion 2; the open position of the portion 5 is shown in FIG. 1 in dotted lines, whereas the closed position is shown in solid lines.

As clearly seen in FIGS. 1 and 2, the free end of said portion 5, in the closed position, goes to become housed in a rebated portion 8 formed in the pointed end 6.

By so doing, during the driving of the form into the ground body, the movable portion 5, which is kept closed by the lateral trust of the ground itself or by any suitable conventional means, and the relative hinges, are influenced to a minimum extent only by the shocks and/or vibrations which are transferred axially to the form while the latter is being driven down, these shocks and/or vibrations being nearly completely absorbed by the pointed end 6, the portion 4 and the tubular portion 2, as formed integrally.

During the withdrawal of the form from the ground, the portion 5 is opened in the position shown in dotted lines to permit the filler material to pour out, the latter following, on account of the form structure, an axial route so that it can be even not too fluid without causing any trouble thereby.

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In addition the comparatively acuminate shape of the form according to the invention permits its use in very compact grounds where the conventional forms could not be used without a preliminary drilling of the ground, which, obviously, is much objectionable from an economical standpoint.

What is claimed is:

1. A footing form for casting foundation piles directly in the ground comprising: an end tubular portion with an acuminate end consisting of two portions, one fixed and the other movable, said fixed portion being formed integrally with said tubular portion and being provided with a pointed end having a rebate forming a seat,

wherein said movable portion is hinged to said tubular portion and is displaceable between an open position to permit flow of filling material and a closed position in which the lower free end of said hinged movable portion becomes housed in said rebate forming a seat in said pointed end of said fixed portion.

2. A form according to claim 1, wherein said pointed end is solid and formed integrally with said fixed portion.

3. A form according to claim 1, wherein said end has a substantially ovoidal cross-sectional shape which gradually tapers from top to bottom.

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