

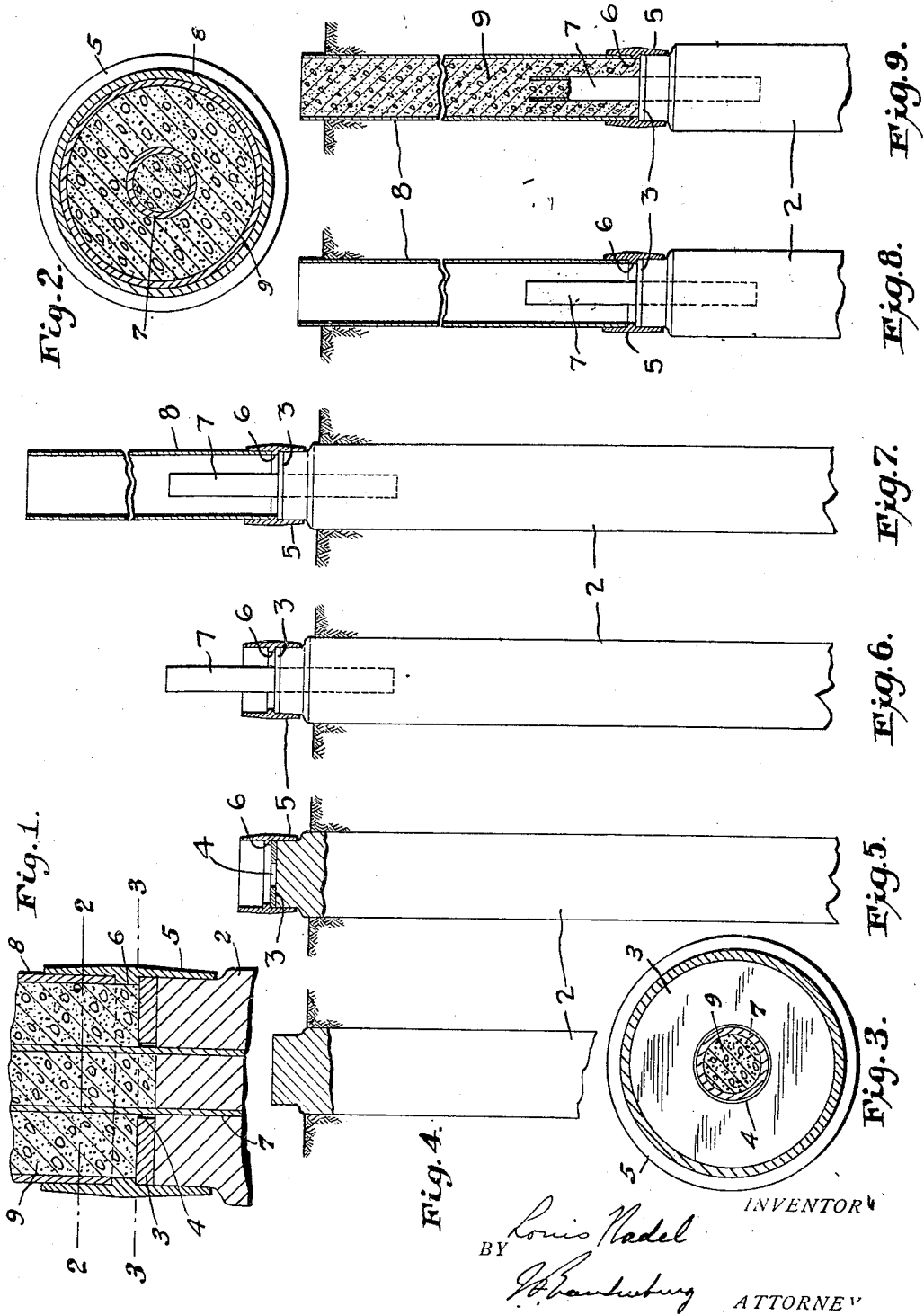
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COMPOSITE FILE

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COMPOSITE PILE

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This invention relates to composite piles which comprise a wood pile having a concrete pile section united to its upper end, this top section being of proper length so that the top of the wood pile is below the water level in soil, or below low water level in the case of structures built over water, the reason for the concrete top section being that it is not affected like wood by exposure to the atmosphere or to alternating conditions of wetness and dryness.

The invention relates more particularly to a composite pile in which the top section is encased in a permanent driving form. The object of the invention is to provide a composite pile which has much greater strength than ordinary composite piles and which is simple to construct and to drive and which is comparatively inexpensive.

In the preferred mode of carrying out the invention, a wood pile is driven into the ground and its upper end is trimmed to receive a metal sleeve having an internal rib intermediate its ends. A plate or disc having a central opening is placed on top of the wood pile, and the sleeve is then slipped over the upper end of the wood section so that the rib rests on the margin of the plate. Then a tubular dowel is driven through the guide hole in the plate half way, more or less, into the wood. This dowel can be provided very inexpensively by using a short section of standard pipe of suitable size, preferably four inch pipe. The tubular dowel is easy to introduce into the wood section and displaces comparatively little wood; however, the displacement which it occasions produces a tighter fit between the wood pile and the sleeve, which increases the strength of the connection, and at the same time the sleeve binding the top of the pile is a protection to the latter.

A length of comparatively large diameter pipe, preferably ten inch, is then stepped into the upper part of the sleeve, and driving force is applied to the upper end of this follower, the force being transmitted through the rib of the sleeve to the plate and by the latter distributed over the head of the wood pile. When the driving assemblage has been

sunk to the required depth concrete is filled into the follower, which constitutes a permanent form. This concrete fills the interior of the part of the tubular dowel which rises above the wood and the concrete likewise surrounds the dowel, giving a double surface for the bond between the concrete and the metal. The presence of this dowel and of the sleeve encircling the proximate portions of the wood pile and the follower form produces a connection of great strength between the sections of the composite pile.

Heretofore, wood piles have been shaped at their upper ends to provide an integral wood tenon, which was necessarily of large diameter. The plan of the present invention allows for much more concrete around the dowel and also gives the additional bond of the concrete inside the dowel. The tendency of the relatively short concrete section of composite piles to rock on the wood section is effectively overcome by the present invention, and great strength against both shear and tension is obtained. Frequently the upper sections of composite piles tend to pull away from the wood, and that is prevented in the present pile, because the adherence between the dowel and the wood is powerful, and that between the concrete and the dowel is equally so.

In the accompanying drawings forming part hereof:

Fig. 1 is a vertical section of a portion of composite pile constructed in accordance with the invention;

Figs. 2 and 3 are horizontal sections taken, respectively, on the lines 2—2 and 3—3 of Fig. 1; and

Figs. 4 to 9 are views illustrating different stages in the making and driving of the composite pile.

The wood pile is marked 2. This pile is driven into the ground, until its upper end is near and at a convenient distance above the ground level. Then the upper end of the pile is trimmed to the approximate shape shown in Figs. 1 and 4—9. Next a disc 3 having a central opening 4 is placed on top of the pile and a sleeve 5 is put on around the trimmed end of the pipe and the disc. This sleeve is

or may be a known article having an internal rib 6 between the ends. The rib overlaps and rests on the disc. This stage of the operation is represented in Fig. 5.

- 5 The small tubular dowel 7 is next driven through the disc until about half its length is in the wood (Fig. 6). A proper length of large steel pipe 8 is now introduced at its lower end into the upper part of the sleeve and against the shoulder 6 (Fig. 7). This pipe acts as a follower in the subsequent driving operation, which brings the assemblage to the position shown approximately in Fig. 8.

- 15 The remaining operation is to fill the lower or form 8 with concrete 9 down to the plate 3, the concrete filling the upwardly projecting portion of the tubular dowel and the relatively wide space around the dowel, as well as the rest of the height of the form.

The final result is a composite pile of exceptional strength, made and driven at low cost.

What is claimed as new is:

- 25 1. A composite pile comprising a wood pile, a plate thereon having a central opening, an external sleeve embracing the top of the wood pile and having an internal rib intermediate its ends overlying the margin of said plate, a permanent form stepped in the portion of said sleeve above said rib, a tubular dowel driven part way into the wood section, and a concrete filling inside said form and inside and outside the portion of said tubular
35 dowel above the wood.
2. The method of making and driving a composite pile which comprises driving a wood pile into the ground, placing an apertured plate on top of this pile, placing a
40 sleeve with internal shoulder over the upper end of the pile and said plate, driving a tubular dowel through the apertured plate part way into the wood pile, thereby producing a tighter contact between the sides of the wood
45 pile and the sleeve, inserting one end of a permanent form into the upper part of the sleeve and against the rib which in turn rests on the plate, driving the assemblage by force applied to the upper end of the form serving
50 as a follower, and filling the interior of the form and the upper portion of the tubular dowel with concrete.

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