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E. D. WATT ET AL

1,865,657

COMPOSITE PILE JOINT

Filed Jan. 24, 1931

FIG.1.

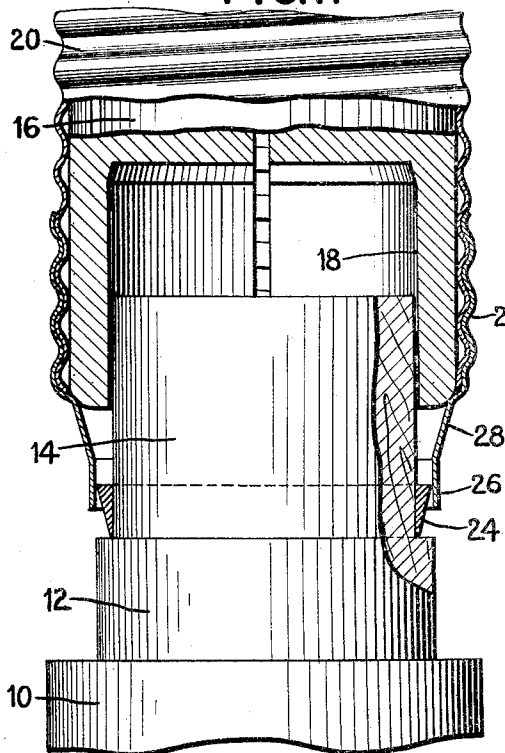


FIG.2.

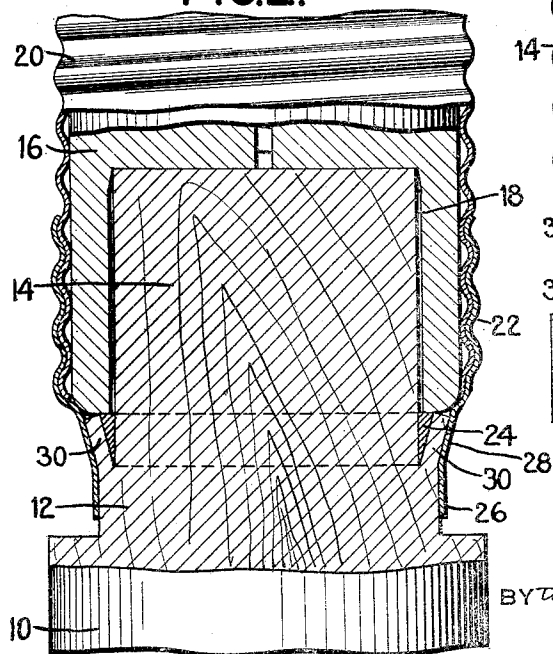


FIG.3.

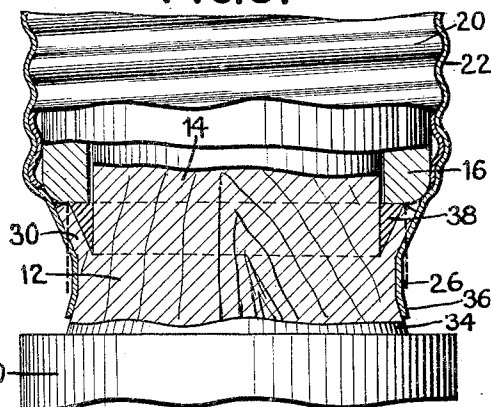
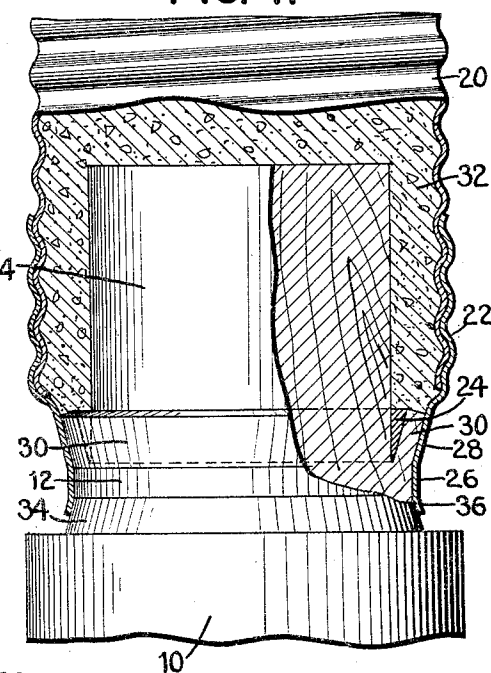


FIG.4.



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COMPOSITE PILE JOINT

Application filed January 24, 1931. Serial No. 510,896.

This invention pertains to composite piles in which the lower section is of wood and the upper section is of concrete.

The primary object of the invention is to disclose an improved joint for interlocking the upper and lower sections to prevent their separation after driving.

Further and other objects of the present invention will be hereinafter set forth in the specification and claims and shown in the drawing, which by way of illustration show what I now consider to be a preferred embodiment of the invention.

In the drawing:

Figure 1, which is partly in section, shows the joint in process of assembly;

Fig. 2 shows the joint assembled;

Fig. 3 shows a modified form of joint; and

Fig. 4 shows a joint after the driving core has been removed and the upper shell filled with concrete.

The lower pile section 10, of wood, is provided with a two-diameter tenon, the lower portion 12 being of less diameter than the pile section 10, and of larger diameter than the upper tenon portion 14. To drive the lower section a driving core 16 is provided, having its lower end counterbored as at 18 to surround tenon 14. The core may be solid or collapsible as best suits the particular job.

The upper concrete pile section is cast in situ in a shell 20 which is here shown with screw-threaded corrugations and has at its lower end a boot-ring 22 which for convenience of manufacture is shown detachable and screwed onto the shell. When it is desired to couple the shell to the lower pile section a wedge ring 24 is slipped over tenon 14 to rest with its lower sharp edge close to tenon 14 on the top of tenon 12. The lower end of boot-ring 22 has a cylindrical portion 26 of proper diameter to fit snugly around tenon 12, and a conical portion 28 to interconnect ring 26 and the body portion of the shell or boot-ring 22. The upper part of conical portion 28 contacts with the lower end of core 16.

After the parts are in place as above described and as shown in Fig. 1, driving core 16 is lowered to first start ring 26 around

tenon 14 and then, as the core is lowered still further, to force wedge ring 24 into the top of tenon 12, thereby splitting off a ring of wood 30 which is forced outwardly to fill the space between wedge ring 24 and the conical portion 28 of the boot-ring (Fig. 2).

The depth of counterbore 18 is equal to the height of tenon 14, therefore after the parts have reached the positions shown in Fig. 2, the driving of the lower pile section may be continued, the impact being taken by the top of tenon 14, shell 20 being then drawn down either by engagement of its corrugations with the driving core or by tension applied to its lower end by boot-ring 22 which is of course locked to tenon 12 by wedge 24 and ring 30.

After the driving is finished, core 16 is withdrawn and the shell is filled with concrete 32 as in Fig. 4, thus preventing displacement of ring 24 and insuring a permanent joint between the upper and lower pile sections.

It is sometimes desirable to prevent entrance of water between ring 26 and tenon 12 and for that purpose the lower part of tenon 12 is made conical as at 34 (Figs. 3 and 4). This means that cone 34 will be wedged into the lower part of ring 26 so as to make a water tight joint therebetween and may even flare out ring 26 as at 36 to fit the surface of cone 34.

In all figures except Fig. 3, the wedge ring 24 is of less diameter than ring 26 and can therefore be placed in position as in Fig. 1 before ring 26 is lowered around tenon 12. It is possible, however, to use a wedge ring such as 38 (Fig. 3) of greater diameter than ring 26, in which case the wedge ring is lowered into position on top of tenon 12 through shell 20, after ring 26 has been lowered around tenon 12.

It will be appreciated that shell 20 and boot-ring 22 are made as separate pieces only for convenience of manufacture. They may be welded together if desired or the end of shell 20 may itself be formed into surfaces 26 and 28.

It is to be understood that the invention is not limited to the specific construction and embodiment herein described but may be used in other ways without departure from

its spirit as defined by the following claims.

We claim:

1. In a composite pile, a lower section of wood, a tenon on the upper end thereof a shoulder on the tenon intermediate its length, a shell surmounting said lower section and adapted for receiving concrete to form the upper pile section, said shell being of diameter greater than said tenon and having a lower end of restricted diameter snugly surrounding said tenon below said shoulder; and means for spreading out the shoulder above the restricted shell portion whereby said shell is locked to said lower pile section.
2. The invention set forth in claim 1 in which said flaring means comprises a wedge ring entered in said shoulder.
3. The invention set forth in claim 1 in which said flaring means comprises a wedge ring adapted to be automatically forced into said tenon during the driving of said lower section.
4. The invention set forth in claim 1 in which means is provided for forming a water tight joint between said tenon and shell section in contact therewith.
5. The invention set forth in claim 1 in which said tenon is outwardly flared at its lower end whereby a water tight joint is provided between said tenon and the lower end of said shell when said shell is forced onto said tenon.
6. The invention set forth in claim 1 in which said shell is filled with concrete to form the finished pile structure, said concrete serving to hold said flaring means in operative position.
7. In the method of forming a composite pile having a lower section of wood and a shell surmounting said lower section, said shell having a lower end of restricted diameter, the steps of mounting said shell on said lower section whereby said restricted portion surrounds said lower section, flaring out said lower section in the space above said restricted shell section during the driving of the lower section, and then filling the shell with concrete.
8. The invention set forth in claim 1 in which a reduced upper end of the tenon serves to locate the wedge ring.

In testimony whereof we hereunto affix our signatures.

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