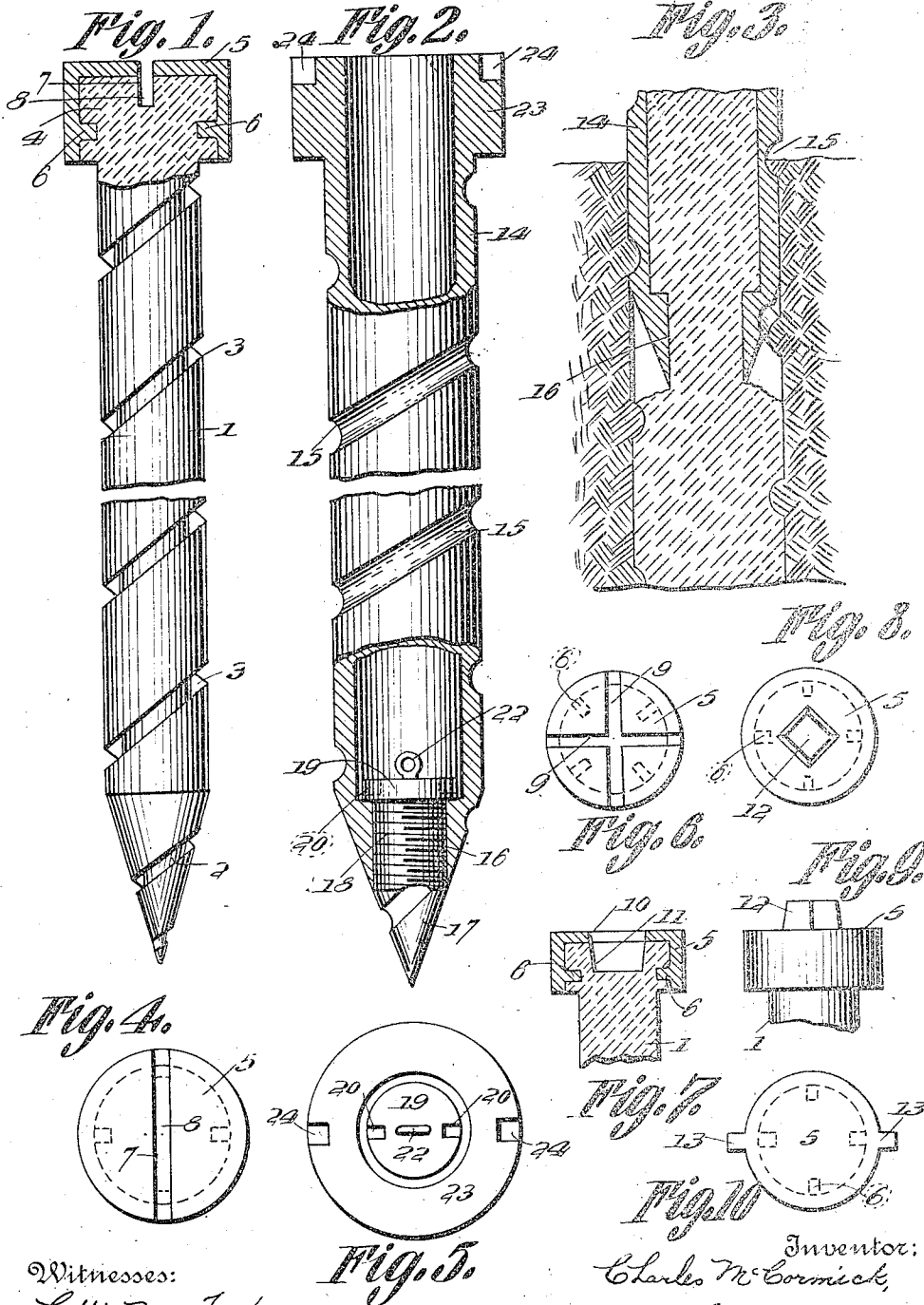


C. McCORMICK.  
CONCRETE PILE AND METHOD OF FORMING SAME.  
APPLICATION FILED AUG. 17, 1911.

1,052,738.

Patented Feb. 11, 1913.



Witnesses:  
Lottie M. Fox.  
Bertha von Behrens.

Inventor:  
Charles McCormick,  
By Hugh K. Wagner,  
his Attorney.

# UNITED STATES PATENT OFFICE.

CHARLES McCORMICK, OF ST. LOUIS, MISSOURI.

CONCRETE PILE AND METHOD OF FORMING SAME.

1,052,738.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed August 17, 1911. Serial No. 644,589.

*To all whom it may concern:*

Be it known that I, CHARLES McCORMICK, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have  
5 invented certain new and useful Improvements in Concrete Piles and Methods of Forming Same, of which the following is a specification.

This invention relates to certain new and  
10 useful improvements in concrete piles and method of forming same, and the object of the invention is to provide an improved concrete pile which may be easily and quickly  
15 driven into the earth, and further to provide a simplified method of forming a concrete screw-threaded pile in the ground.

In the drawings: Figure 1 is a side elevation of a screw-threaded concrete pile, the head thereof being shown in section, Fig. 2  
20 is a side elevation partly broken away and shown in section of the device employed for carrying out the method, Fig. 3 is a sectional view of a pile in the course of construction, Fig. 4 is a top plan view of Fig. 1,  
25 Fig. 5 is a top plan view of a modified form of head for the concrete pile, Fig. 6 is a similar view of another modified form of head for the concrete pile, Fig. 7 is a fragmentary sectional view of a still further  
30 modified form of head for the concrete pile, Fig. 8 is a top plan view of another modified form of head for the concrete pile, Fig. 9 is a fragmentary side elevation of Fig. 8, and Fig. 10 is a top plan view of a still  
35 further modified form of head for the concrete pile.

In carrying the invention into practice, a concrete pile 1 is formed with an auger end 2, and with a spiral groove 3, which extends  
40 substantially the length of the pile, the groove acting as a passage to receive the dirt which is freed by the auger 2, when the latter is driven into the ground. The pile is formed with an enlarged head 4  
45 which is molded integral therewith, and is surrounded by a metal cap 5, the latter being secured rigidly to the head 4, by any suitable means such for instance as the inwardly extending projections 6, which extend  
50 into the head 4. In order to drive the piles into the ground, the heads thereof are formed with suitable means to engage with an engine or other driving connection.

In Figs. 1 and 4, the metal cap 5 has its  
55 top formed with a diametrically extending slot 7, which registers with a similar slot 8, formed in the head of pile 1, in which slots

the blade of a driving connection like that of a screw driver, enters.

In Fig. 6, the top of cap 5, and the head of  
60 the pile are formed with cruciform registering slots 9, for the reception of a driving connection, which latter has a cruciform projection to enter the slots.

In Fig. 7 the cap 5 and the head 4 of the  
65 pile are formed with opening 10 and depression 11, respectively, the two registering and combining to form an outwardly flaring socket into which a projection of similar form of the driving means extends.  
70

In Figs. 8 and 9, the metal cap 5 is provided with an upwardly extending projection 12, of angular cross-section, which fits  
75 in a socket of similar cross-section carried by the driving means.

In Fig. 10, the metal cap 5 is formed with rigid and preferably integral diametrically  
80 opposed ribs 13, which extend along the sides of cap 5. In this form of the invention, the driving means is formed to engage with the ribs 13, in order to effect rotation of the pile. The metal cap 5, assists in  
85 strengthening the pile especially at the head thereof where the greatest stress in driving the pile occurs. The driving of the pile into the ground may be accomplished, either by  
90 rotation, by means of an engine in the same manner as a screw driver drives a screw into wood, or it may be accomplished by straight line pressure by means of compressed air or the like. In some cases, it may be found desirable or necessary to form the concrete  
95 pile in the ground, and in such cases, a longitudinally bored or hollow shell 14 is employed which is provided with an external spiral groove 15, the lower end of the bore being reduced and threaded, as indicated by  
100 the numeral 16 to receive a removable gimlet point 17. The shank 18 of the gimlet point is threaded and engaged in the threaded portion 16, of the shell bore, and the upper end of said shank bears a head 19  
105 formed with diametrically opposed peripheral notches 20, for engagement with any suitable means to rotate the gimlet point so as to permit same to be disengaged from the shell, and then withdrawn through the bore thereof by means of a rod having a hook  
110 which is caused to enter an eye 22 secured to the head 19, or any other suitable withdrawing means may be employed. The upper end of shell 14 is provided with a head 23, formed with diametrically opposed peripheral notches 24 for engagement with a

driving connection or the like, the shell bore opening through said head, as shown in Fig. 2.

In forming a pile in the ground, the shell 5 14 is screwed into the ground, the gimlet point occupying the position depicted in Fig. 2. After the shell has been driven into the ground to the proper depth, the gimlet point is removed as above described, thus 10 leaving the lower end of the shell open. Plastic concrete under pressure is then introduced into the shell bore and the shell is rotated so as to cause same to be withdrawn from the ground, and the concrete being under pressure exudes from the 15 lower open end of the shell and compactly fills and naturally shapes itself into the form of the hole made by the screw-like shell, as depicted in Fig. 3 of the drawings. Thus 20 a concrete mass of screw-threaded exterior form is left in the ground, which, when it solidifies, provides a concrete pile of the same form as that depicted in Fig. 1 of the drawings.

25 Great advantage is obtained by the use of a screw-threaded pile, as it is held more firmly in place than is possible in the case of a smooth-sided pile.

While the drawings show the screw- 30 threads countersunk, yet it is within the purview of this invention and the claims herein that said screw-threads may be formed by the provision of projecting spiral blades.

35 What is claimed is:

1. The method of forming externally-threaded concrete piles in the ground which consists in screwing into the ground an externally threaded hollow shell having a removable boring point at its lower end; withdrawing said point through the bore of said shell at the conclusion of the boring operation, to leave said shell end open; rotating said shell to withdraw the same from 40 the hole made thereby; and forcing plastic concrete under pressure through said shell bore and its open lower end into said hole simultaneously with the withdrawal of said shell, to cause the concrete to fill said hole and assume the exact configuration thereof.
2. The method of forming externally-threaded concrete piles in the ground which consists in screwing into the ground an externally threaded hollow shell; rotating said shell at the conclusion of the boring 45 operation, to withdraw the same from the hole made thereby during such operation; and forcing plastic concrete through the bore of said shell into said hole simultaneously with the withdrawal of said shell, to cause the concrete to fill said hole and assume the exact configuration thereof.
3. A device for forming externally

threaded concrete piles in the ground consisting of an externally-threaded substantially cylindrical shell adapted to be screwed into the ground and provided with a bore which opens through the opposite ends thereof; and a boring point removably fitted in the lower end of said bore and having 65 means for withdrawing it upwardly through the latter.

4. A device for forming externally-threaded concrete piles in the ground consisting of an externally-threaded substantially cylindrical shell adapted to be 75 screwed into the ground and provided with a bore which opens through the opposite ends thereof; and a boring point removably fitted in the lower end of said bore and 80 having means for withdrawing it upwardly through the latter, said shell being formed at its upper end with a driving head.

5. A device for forming externally-threaded concrete piles in the ground consisting of an externally-threaded substantially cylindrical shell adapted to be screwed 85 into the ground and provided with a bore which opens through the opposite ends thereof, the lower end of said bore being 90 reduced and threaded; and a boring point having a threaded shank removably fitted in said lower bore end and adapted to be withdrawn through the upper end of said bore, said shank being provided with with- 95 drawing means.

6. A device for forming externally-threaded concrete piles in the ground consisting of an externally-threaded substantially cylindrical shell adapted to be 100 screwed into the ground and provided with a bore which opens through the opposite ends thereof; and a boring point removably fitted in the lower end of said bore and adapted to be withdrawn upwardly through 105 the latter, said point being provided at its inner end with withdrawing means.

7. A device for forming externally-threaded concrete piles in the ground consisting of an externally-threaded substantially cylindrical shell adapted to be screwed 110 into the ground and provided with a bore which opens through the opposite ends thereof, the lower end of said bore being reduced and threaded; and a boring point 115 having a threaded shank removably fitted in said lower bore end and adapted to be withdrawn through the upper end of said bore, the inner end of said shank having a head provided with withdrawing means. 120

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES McCORMICK.

Witnesses:

LOTTIE M. FOX,

BERTHA VON BEBENS.