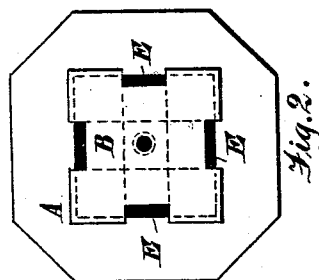
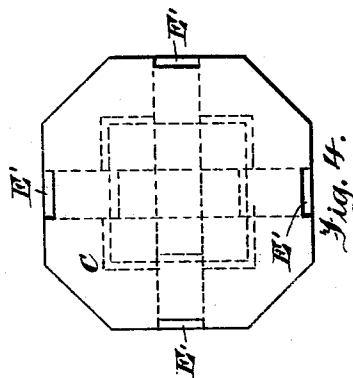
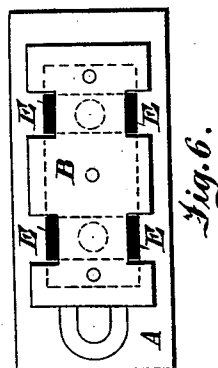
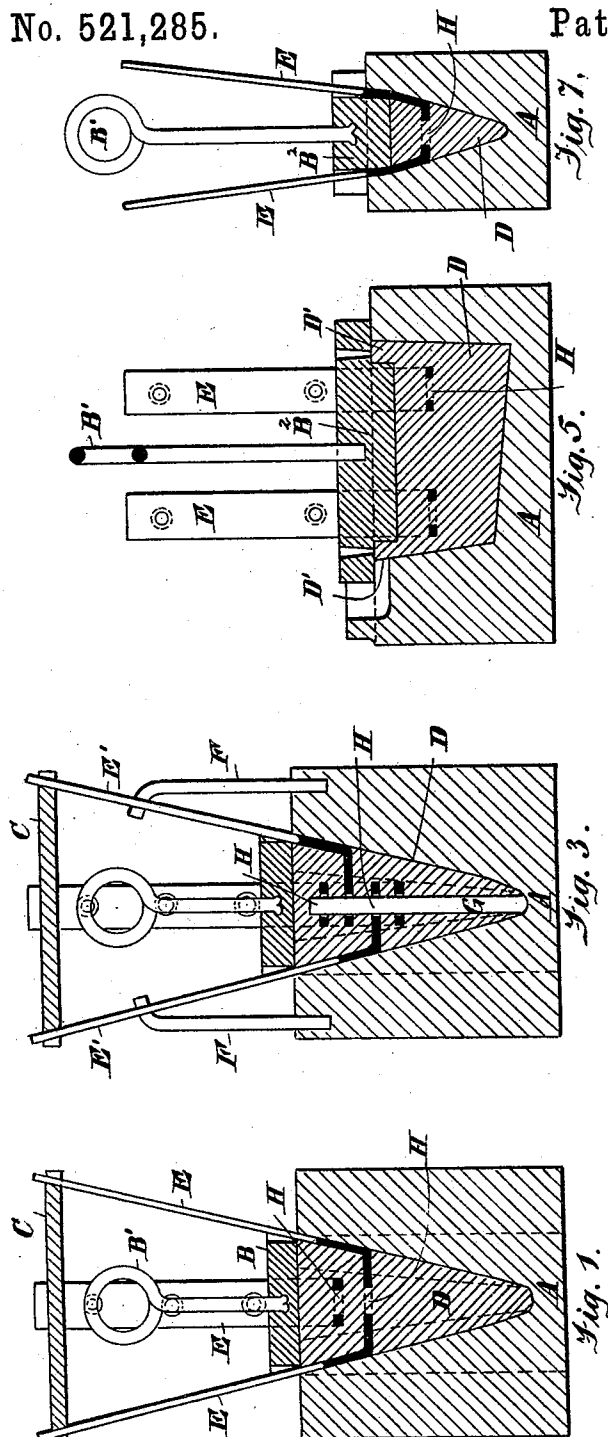


(No Model.)

A. HARRIS.
PILE SHOE.

No. 521,285.

Patented June 12, 1894.



Witnesses

J. M. Wiman
Peter A. Ross

Inventor

Anthony Harris
By Henry Comstock
att'y.

UNITED STATES PATENT OFFICE.

ANTHONY HARRIS, OF MIDDLESBOROUGH, ENGLAND.

PILE-SHOE.

SPECIFICATION forming part of Letters Patent No. 521,285, dated June 12, 1894.

Application filed March 3, 1894. Serial No. 502,183. (No model.) Patented in England November 10, 1884, No. 14,815.

To all whom it may concern:

Be it known that I, ANTHONY HARRIS, a subject of the Queen of Great Britain, residing at Middlesborough, in the county of York, in the Kingdom of England, have invented certain new and useful Improvements in Pile-Shoes, (for which I have received Letters Patent in England, No. 14,815, dated November 10, 1884,) of which the following is a specification.

Pile shoes are commonly used for protecting the ends of wood piles while they are being driven, and are usually made of wrought iron with arms welded on, or of cast iron with the arms riveted on, and, in sheeting-pile shoes, entirely of cast iron. It is well known that pile shoes of the ordinary kind frequently break during the process of driving, thereby occasioning great loss of time and money to contractors and engineers.

My invention has for its purpose the prevention of these breakages, and to enable the pull on the straps to be taken by the entire section of the strap instead of on a rivet or a weld which is always uncertain and sometimes unsound.

Referring to the drawings:—Figure 1 is a sectional elevation, and Fig. 2, a plan of a square shoe and the mold or chill in which it is cast; Figs. 3 and 4, similar views of a slight modification thereof; Figs. 5 and 6, similar views of a sheet-pile shoe and its mold; and Fig. 7, transverse section of Fig. 5.

In the drawings A is the chill or mold of cast iron in which the pile shoe is cast; B, cover block of same; B', handle or Lewis bolt to manipulate cover B; C, templet of any suitable material suitably notched to hold in proper position the pile shoe arms; D, the main casting or point of the shoe; E E, wrought iron or steel arms placed in the mold prior to casting so as to be embedded in the shoe. These can be roughened, or smooth, as preferred. They can be double, as shown in Figs. 1, 2, 5, 6 and 7, or in separate pieces, as in Figs. 3 and 4, at E' E'. In this case, they are held in place by a bar G passing through them, and in any case are preferably perforated in their horizontal part at H, so as to allow air bubbles to escape and allow the

molten metal to flow through and prevent honey-combing. When the arms are double—that is, the two opposite arms E are integral,—they are formed by bending an iron or steel bar at its middle and placing its bight in the chill. In any case, for a pyramidal shoe the parts of the arms embedded in the cast metal of the point D will cross each other in different planes, as clearly shown in Figs. 1, 2, 3 and 4.

In Figs. 1 and 2, the double arms E E are placed in the chill or mold A, and the notched templet C is placed over the top of them, the metal is then cast into the chill or mold A until it reaches the top, when the cap B is placed on the top of the chill or mold A and the shoe is left to cool.

In Figs. 3 and 4, the loose single arms E' E' are placed in the chill or mold A, being at the same time suspended upon supports F F by the holes in the arms E' E'. The notched templet C is then placed on the top of the arms E' E', the shoe point D cast, and the cap B placed on the top of the chill or mold A.

In Figs. 5, 6 and 7, the loose double arms are placed in the chill or mold A, the notched templet C is placed over the top of them, the shoe point is cast, and the metal cap B² is immediately placed on the top of the chill or mold A, displacing the molten metal so as to form the lips D' D' upon the shoe point, or the cap B or B² is placed in position first, and the metal poured in by suitable gates.

I declare that what I claim is—

1. A cast metal pile-shoe having oppositely arranged wrought metal arms, said arms being integral and formed of a U-shaped bar the bight of which is embedded in the mass of the shoe, as set forth.

2. A cast metal pile-shoe having two pairs of arms E, of wrought metal, the opposite arms of each pair being formed integrally of a U-shaped bar the bight of which is embedded in the mass of the shoe, said embedded portions crossing each other at different levels in the mass, substantially as set forth.

3. A cast metal pile-shoe having wrought metal arms with portions embedded in the mass of the shoe, the embedded portions of adjacent arms extending horizontally into the

mass of the shoe and crossing each other at different levels, as set forth.

4. A pointed, cast metal pile-shoe having a substantially rectangular base and provided
5 with four arms of wrought metal projecting upwardly at its respective sides, each of said arms extending down along the face of the shoe and having a bent portion which extends into the side of the shoe and is embedded in

the mass thereof to form an attachment of to the arm to the shoe, as set forth.

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

ANTHONY HARRIS.

Witnesses:

G. C. DYMOND,
H. R. SHOBRIDGE.