A. MAST.

POINT FOR CONCRETE PILES.

APPLICATION FILED FEB. 3, 1910.

1,018,979. Patented Feb. 27, 1912.

Fig. 1

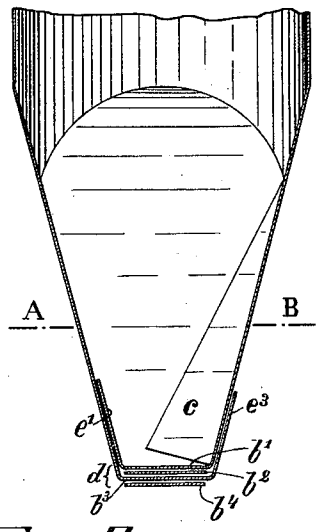


Fig. 4

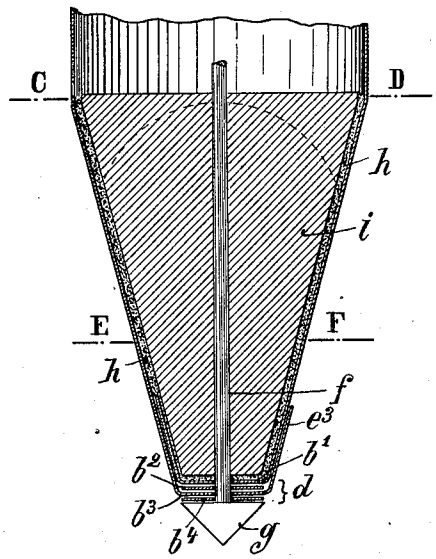


Fig. 2

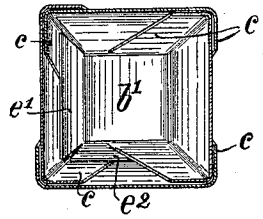


Fig. 5

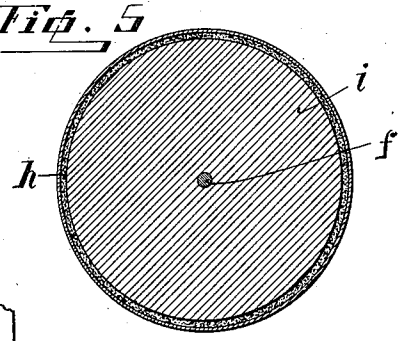


Fig. 3

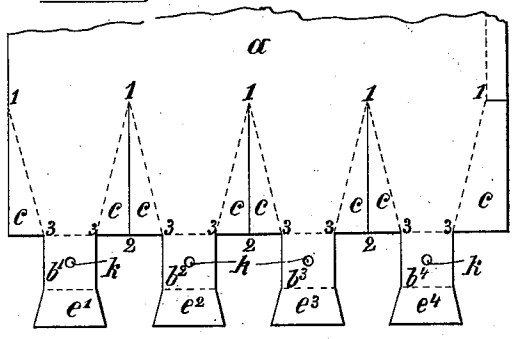
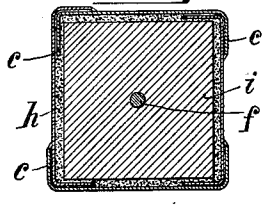


Fig. 6



WITNESSES

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POINT FOR CONCRETE PILES.

1,018,979. Specification of Letters Patent. Patented Feb. 27, 1912.

Application filed February 3, 1910. Serial No. 541,669.

To all whom it may concern:

Be it known that I, ADOLF MAST, a subject of the King of Prussia, residing at Tempelhof, near Berlin, 105 Berlinerstrasse, Kingdom of Prussia, Germany, have invented new and useful Improvements in Points for Concrete Piles, and do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in concrete piles, which are chiefly intended to be used for foundations in bad building ground. Such piles are preferably constructed in the earth itself by sinking a tube into the earth and then filling the same with concrete. In order not to impair the compression of the ground, which is so essential for the carrying capacity of piles, when withdrawing the tube it is of advantage to use tubes, which can remain in the earth. Such a tube consists preferably of sheet metal and may have a circular, rectangular or other suitable section, a special point being provided at the bottom end. Heretofore the point of such tubes has always been specially made and secured to the sheet metal tube in suitable manner, for example by screws or rivets. The construction of the tube and point in two different parts has the drawback that the point is easily driven somewhat crooked, or even broken from the tube, by the blows of the ram used to drive in such tube, with the result that not only increased expenses for repairs are entailed, but also the work much delayed. This difficulty is overcome by the present invention, by forming the point from bent flaps of the tube, so that the tube and point consist of one piece. In order to avoid the flaps forming the point from being bent away from each other when driven into the earth, they must be kept together in suitable manner, for example, by screws or rivets, although I prefer to weld them together. I have also found it to be of great advantage to provide a ram core in the bottom or point of the tube, and to pass an iron rod through the sheet metal flaps folded over each other, which rod is provided underneath said flaps with a solid point preferably of a conical or pyramidal shape. In this case it is impossible for the parts of the point to give way laterally, so that it is not necessary to connect the sheet metal flaps by welding or other means.

In the accompanying drawing representing my invention by way of example: Figure 1 is a longitudinal section through the bottom part of the tube. Fig. 2, a cross section on the line A—B of Fig. 1. Fig. 3 shows the construction of the flaps in a preferred form and the manner of bending the same. The lines for the cuts are drawn in full, whereas the lines for folding or bending are dotted. Fig. 4 is a longitudinal section of the point of the tube provided with a ram core and conical or pyramidal point. Fig. 5 shows a section on the line C—D of Fig. 4. Fig. 6, a section on the line E—F of Fig. 4.

The tube or caisson is formed from a sheet of metal a (Fig. 3). In order to obtain a point four flaps are formed at the bottom of the metal sheet a by cuts. These flaps consist of the rectangular parts b^1, b^2, b^3, b^4, which communicate along the top edge with the metal sheet a, while their bottom edges are bordered by the trapezoids e^1, e^2, e^3, e^4 which obviously might have another shape, for instance, a substantially rectangular one. At the middle between the flaps b^1, b^2, b^3, b^4 the metal sheet a is provided with three cuts 1, 2, so that, by these cuts, and the sides of the metal sheet, 8 substantially triangular flaps c are formed, which are united with the metal sheet along the lines 1, 3. The flap c at the right end has a different form from the others, being somewhat broader, because it has to cover the other edge of the metal sheet when the tube is bent.

In order to form the tube, the metal sheet is rolled into the form of a cylinder and the points b, c, e are folded along the dotted lines (Fig. 3). The flaps b^1, b^2, b^3, b^4 are so bent as to come at right angles to the axis of the pile and to form a disk d (Figs. 1 and 4) of fourfold thickness. At the same time, the ends e^1, e^2, e^3, e^4 are bent up laterally, and, finally, the flap c is folded around the edges of the pile as shown in Figs. 1 and 2. When it is desired to drive the pile thus formed into the earth, the parts of the point must be united together, by welding or in some other suitable manner. The pile can then be driven into the earth in any suitable manner, for example, that disclosed in patent to Le Grand *et al.*, 216,042, June 3, 1879, or by some similar means. As soon as the tube has been driven down sufficiently deep, the body mentioned is drawn up and used for the next pile. Each tube thus driven

sufficiently deep into the earth is then filled with concrete in the usual manner.

A special connection of the flaps forming the point is however not necessary, when an iron rod f is passed through the bottom d, and carries at the bottom end a solid point g preferably of pyramidal shape. In order to enable the iron rod to be passed through the flaps b^1, b^2, b^3, b^4, the latter are provided with a hole k at the middle. At the top this iron rod f is guided by a ram core i inserted into the bottom of the tube and preferably coated with a layer of asphalt h. The top end of the rod should preferably project for a short distance over the top of the core, in order to enable the body inserted into the tube to receive the blows of the ram to be placed exactly in the middle. The stresses, in this case, are distributed in the best manner possible, because the bottom d formed by the four flaps b^1, b^2, b^3, b^4 is subjected simultaneously to the blows of the ram or hammer from above and meets from below the resistance offered by the earth to the pyramidal point g. A lateral displacement of the parts of the sheet metal point is prevented by the iron rod f.

After the tube has been driven in, the ram core should preferably be drawn out, in order to obtain a uniform concrete pile. It is not necessary to provide a core when the body inserted into the tube to receive the blows of the ram is suitably shaped at its bottom end. As soon as the tube has been driven sufficiently deep into the earth, the interior is filled out with concrete in the usual manner.

What I claim and desire to secure by Letters Patent of the United States is:

1. A pile point which comprises a metal tube and flaps formed by cuts in the bottom end of said tube and folded together so that the parts of said flaps bordering the metal tube form the sides of the points, the outer parts of said flaps being bent up at the sides of the point, substantially as set forth.

2. A pile point which comprises a metal tube and flaps formed by cuts in the bottom end of said tube, said flaps having rectangular and trapezoidal parts and being folded together to form the point, substantially as set forth.

3. A pile point which comprises a metal tube and flaps having rectangular and trapezoidal parts formed by cuts at the bottom end of said tube and so folded to form the bottom of the point that the rectangular parts are at right angles to the longitudinal axis of the pile, substantially as set forth.

4. A pile point which comprises a metal tube, and flaps formed by cuts in the bottom end of said tube and each consisting of a rectangular and trapezoidal part, which parts are so folded that the rectangular part of each flap lies at right angles to the longitudinal axis of the pile, while the trapezoidal parts are bent up at the sides of said point, substantially as set forth.

5. A pile point, which comprises in combination a metal tube, flaps formed by cuts in the bottom end of said tube, and triangular flaps formed in the bottom of said tube by cuts between said first flaps and parallel to the longitudinal axis of said tube, substantially as set forth.

6. A pile point, which comprises in combination a metal tube, flaps formed by cuts in the bottom end of said tube, and triangular flaps formed by cuts in the bottom end of said tube between said first flaps and parallel to the longitudinal axis of said tube, said first flaps being folded to form the bottom, and said second flaps being folded over each other, substantially as set forth.

7. A pile point, comprising in combination, a metal tube having flaps formed by cuts in the bottom end of said tube and bent to form the bottom, and having a hole therein; an iron rod passed through said hole; and a solid point at the bottom of said rod; substantially as set forth.

8. A pile point, comprising in combination, a metal tube having flaps formed by cuts in the bottom end of said tube and bent to form the bottom, and having a hole therein; an iron rod passed through said hole; a solid point at the bottom of said rod; and a core inserted in the bottom of said tube; substantially as set forth.

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

ADOLF MAST.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.