F. F. VANDEVORT.

INTERLOCKING SHEET PILING.

APPLICATION FILED MAR. 20, 1914.

1,171,281. Patented Feb. 8, 1916.

Fig. 1.

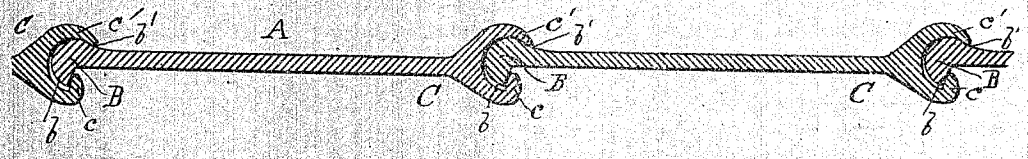


Fig. 2.

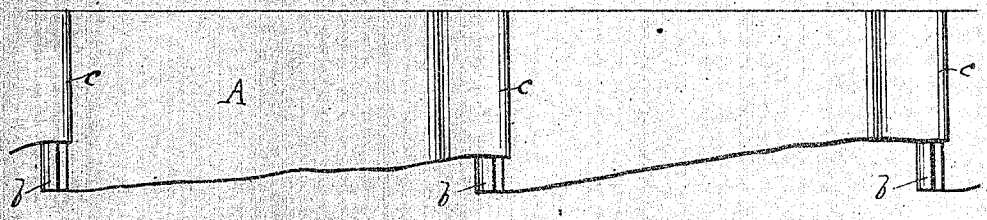


Fig. 3.

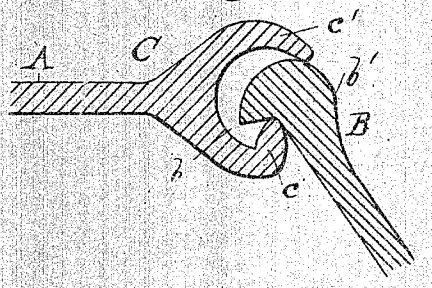


Fig. 4.

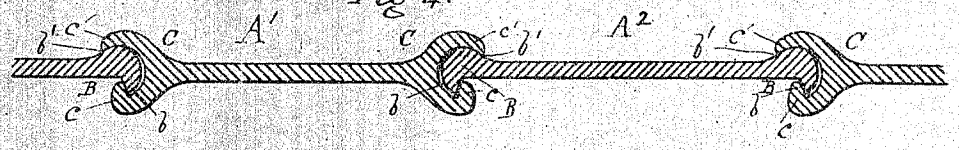


Fig. 5

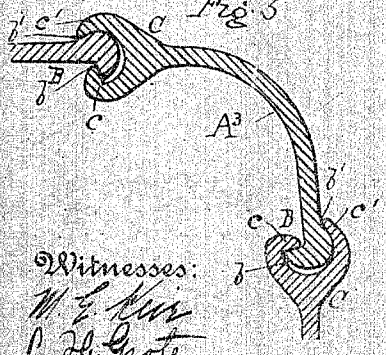
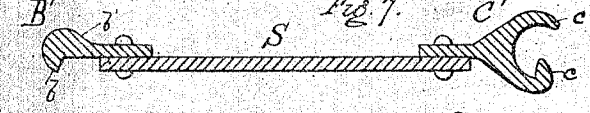


Fig. 6.



Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

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INTERLOCKING SHEET-PILING.

1,171,281. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed March 20, 1914. Serial No. 826,053.

To all whom it may concern:

Be it known that I, FRANK F. VANDEVORT, a citizen of the United States of America, residing in Germantown, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Interlocking Sheet-Piling, of which the following is a specification.

My invention relates to sheet piling, the sections of which have longitudinal interlocking edges, such that they may be engaged by a lateral entrance, while permitting independent longitudinal movement of the joined sections. The sections may be made of metal or reinforced concrete, but I prefer to make them of metal.

The main object of my invention is to so construct the sheets as to provide interlocking edges of great strength and preferably also of a shape which can readily be produced by rolling or otherwise.

In the accompanying drawing, Figure 1 is a sectional plan view of several interlocked sections of my improved piling sheets; Fig. 2 is a corresponding elevation of the upper part of the same, broken away; Fig. 3 is a plan view, drawn to a larger scale, illustrating how the two parts of the interlocking joint are made; Fig. 4 is a sectional plan view of united sections of a slightly modified form; Fig. 5 is a sectional plan view illustrating how a corner section of a caisson may be made; Fig. 6 is a plan view of a modified shape; Fig. 7 is a section of another modification.

I am aware that it has heretofore been proposed to make interlocking sections of sheet piling with longitudinal interlocking edges, adapted to be engaged by a lateral entrance, and to form such sections of metal by rolling, bending or other operations, and to form the grooved interlocking edges either in one with the body of the section or by riveting a flange or flanges along the edge. Some or all of these features are available in the carrying out of my invention, which relates essentially to an improvement in the construction of the interlocking feature such as to increase its strength. At the same time, my invention makes it convenient to produce the sheets by a simple rolling operation.

In the construction shown in Figs. 1, 2 and 3, I have illustrated all the sheets of like cross section, and as a rule this is preferable, since it requires only one shape to be rolled. Along one edge of each sheet A, in this instance, there is formed a thickened part B of the interlocking joint, to be connected to one adjacent sheet, and along the other edge, a flanged jawlike part C for connection with the adjacent sheet on that side.

The part C is formed of two flanges spaced apart to form a jaw like section, Figs. 1 and 3, one flange c having its outer edge bent into a plane approximating the perpendicular to the plane of the body of the sheet, while the other flange c^1 is curved and somewhat overhanging or projecting beyond the hook-like flange c.

The part B of each joint consists of a thickened and rounded edge on the plate with a hook-like part b at one face of the plate to engage with the hook-like flange c of the part C, and with a rounded shoulder b^1 on the other face of the plate to fit into and engage with the inner curved face of the flange c^1 of the part C. As will be readily understood by reference to Fig. 3, the faces of the parts are so curved that two piling sheets may be joined laterally by introducing the part B of one sheet into the part C of the other sheet with a hinging movement of one or both sheets, but when the sections have been thus joined in line, as in Fig. 1, for example, any strain in the general direction of the plane of the united sheets tending to pull them apart, will be resisted at two bearing points, one where the hook b engages the flange c, and the other where the rounded shoulder b^1 on the opposite face of the plate engages the curved inner face of the flange c^1. In order that this hinging or pivotal engagement between the head B and jaw C may take place, it is necessary that the entrance opening between the jaws be slightly greater than the greatest transverse diameter of the head taken from the pivoting point at the base of the hook to the opposite margin of the head as the latter is swung in between the jaws C. On the other hand the greatest transverse diameter of the head from the end of the hook to the opposite margin of the shoulder is greater than said entrance opening, so that in assembled position a proper bearing against both jaws is secured. At the same time, this joint is such that if in driving the piling it is desirable or necessary to advance one sheet A more rapidly or to a farther distance than another, the joint will not interfere with

such a forward independent movement of any one or more of the sections.

It is the thickened part B with its rounded shoulder b^1, which, by its coöperation with the curved flange c^1, constitutes the important improvement in these interlocking sheet pilings, for the reason that I thereby provide two strong bearing points, as described, against strains tending to pull the joined sheets apart, and at the same time, the holding power of the hook b is strengthened. It is preferable to make the coacting faces of the flange and hook b slightly inclined to the plane of the sheet to facilitate the shoulder b^1 finding its bearing against the curved inner face of the flange c^1. This also gives a section which is readily rolled. This inclination of the coacting faces of the flange c and hook b may vary. In Figs. 1 and 3, I have shown the inclination greater than in the modification, Fig. 4. In this Fig. 4, I have also shown the sections as variously formed. Thus section A^1 is shown as provided with the jaw part of the interlocking joint at both edges, while section A^2 is shown as with the hook and shoulder part at both edges.

In Fig. 5, I have shown how a corner for a caisson may be formed by simply rolling one of the sections A^3 into a trough-like shape.

Other shapes may be made according to my improvement, without departing from the spirit of my invention as defined in the following claims. For example, in Fig. 6 I have shown how the body of the section may be of corrugated cross-section to make for strength.

In cases where it is desired to have a piling of other than the standard width, such piling may be built up of two or three parts. Thus in Fig. 7, I have shown how both locking edges B^1 and C^1 may be rolled or otherwise formed separately to be riveted or otherwise secured to an intermediate sheet of suitable width.

I claim as my invention:—

1. Sheet piling formed in sections, and having pivotally joined interlocking edges, one part of the interlocking joint consisting of two longitudinal flanges spaced apart to form an open jaw, and the other part consisting of a thickened edge forming a head, said head having its longest transverse diameter greater than the entrance opening between the jaw flanges, but said entrance opening being slightly greater than the transverse diameter of the head taken from its pivoting point to the opposite margin of the head so that the latter may enter between the jaw flanges by a hinging movement into engaging position within the jaw.

2. A piling unit for sheet piling formed in sections and having pivotally jointed interlocking edges, said unit comprising a piling sheet having at one edge two longitudinal flanges spaced apart to form an open jaw and having at its opposite edge a thickened head, the longest transverse diameter of the latter being greater than the entrance opening between the jaw flanges, but said entrance opening being slightly greater than the transverse diameter of the head taken from its pivoting point to the opposite margin of the head, so that the latter may enter between and engage the jaw flanges of an adjacent unit by a hinging movement.

3. A sheet piling unit having at one edge a pair of longitudinal recurved flanges forming an open jaw with restricted opening, and at its opposite edge a thickened bead forming a head having a hook along one side and a shoulder on the opposite side, the transverse diameter of the head from the end of the hook to the opposite margin of the shoulder being greater than the entrance opening of the jaw, while the transverse diameter of the head from the base of the hook to the opposite margin of the shoulder is less than said opening, whereby said unit may be interlocked with a like unit by a hinging motion, in which the hook of the head is first inserted in the entrance opening and the head then swung into the jaw while pivoted at the base of the hook, substantially as described.

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

FRANK F. VANDEVORT.

Witnesses:
WALTER ABBE,
HUBERT HOWSON.