

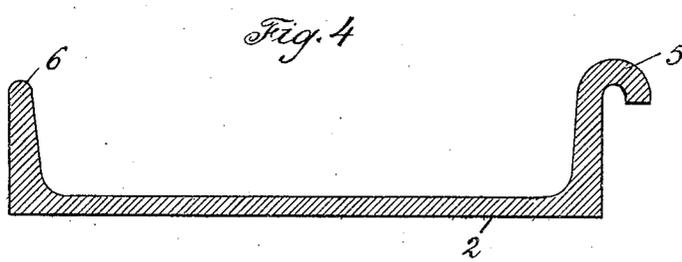
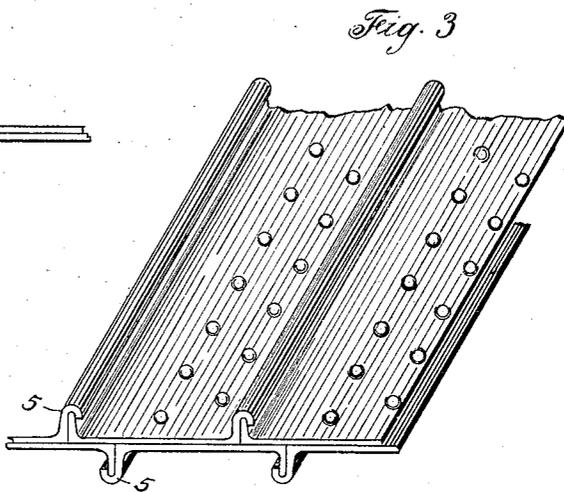
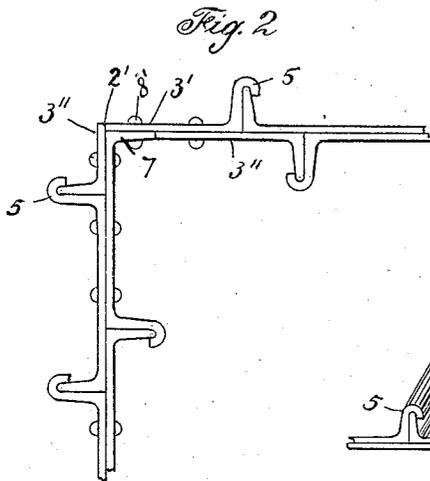
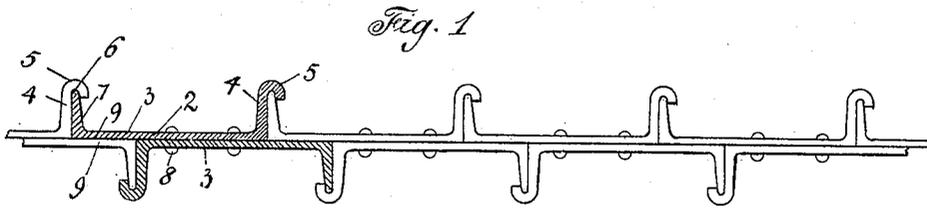
No. 763,526.

PATENTED JUNE 28, 1904.

M. R. VANDERKLOOT.
PILING.

APPLICATION FILED OCT. 21, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

MATHIAS RYER VANDERKLOOT, OF CHICAGO, ILLINOIS.

PILING.

SPECIFICATION forming part of Letters Patent No. 763,526, dated June 28, 1904.

Application filed October 21, 1903. Serial No. 177,898. (No model.)

To all whom it may concern:

Be it known that I, MATHIAS RYER VANDERKLOOT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Piling, of which the following is a specification.

This invention relates to piling used in engineering for temporary and permanent purposes, such as coffer-dams, bases for permanent structures, permanent structures such as dams for diverting, dividing, or arresting the flow of water, walls, and various sub and super terrene works.

The general object of my invention is to provide an improved form of interlocking metallic piles with joints that offer a maximum of resistance to separation or flexing with the use of a minimum amount of material and complexity of construction.

Another object is to provide the simplest possible form of piling offering the least possible amount of resistance when driven home, and a still further object is to provide a system of piles having joints which interlock positively, firmly, and closely against relative displacement and which offer rigid resistance against pressure on either side of the structure by means of ribs extending from both sides thereof in different planes.

The invention consists in the foregoing and other improvements embodied in the novel details of construction hereinafter more fully described, illustrated in the drawings, and pointed out in the claims.

In the drawings, Figure 1 illustrates an end view, partly in section, of a series of piles embodying my invention. Fig. 2 is an end or top view showing the arrangement for a corner. Fig. 3 is a perspective view representing a fragment of two piles joined. Fig. 4 represents an enlarged detail view of one section or substantially half of a pile embodying my invention.

Referring to the drawings, 2 represents one of the piles, (shown clearly in its relation to adjacent piles in the sectioned portion of Fig. 1.) Said pile consists of substantially identical sections or channel-bars 3 3, each of which

is a plate bent at its ends into wings, ribs, lips, or flanges, one wing, 4, of which is formed into channel, groove, or hook 5, adapted to engage the edge 6 of the opposite wing 7, which is straight. The two plates have their body portions suitably apertured for rivets 8, and the opposite ends of said plates overlap each other, so that the bent or grooved wings 4 extend from the opposite plates intermediate of their ends, while the straight wings 7 project in opposite directions from the ends of the body portion. The "ends" herein referred to have reference to the extremities of the pile, as seen in Figs. 1, 2, and 4, or its width terminæ, the extent of its length being immaterial for the purpose of this specification. Each pile, therefore, presents at and near each of its ends a hooked and a straight wing, rib, or flange projecting in opposite directions and in different planes, so that the combined resistance to lateral strain of each pair of wings is divided and each wing supports the opposite plate intermediate of its ends, and provision is made for portions 9, which overlap when a series of piles are joined together, as shown in Fig. 1. Said portions 9 are held upon each other by the wings 7 engaging the bent portions 5, and as the latter engage both sides and the edge of each wing 7 the latter is held against lateral movement with relation to the wing 4 of adjacent pile. The series of piles are therefore firmly locked together against any but a sliding movement upon each other, In order that water may pass through the joint thus formed, it must first pass in a substantially semicircular path within the channel formed by the hook or curved portion 5, thence in a straight line between the wings 4 and 7, when it meets the wall interposed at right angles to its path by one of the portions 9 and its course is deflected between the portions 9 9 to be again interrupted by another wall at right angles to its path or the wing 4 and, finally, must pass around the edge of the opposite wing 7. It is evident, therefore, that in order to pass the joint the water is checked twice by walls at right angles to its path and twice forced to completely reverse its direction of flow. The

long path and the numerous obstructions interposed to a direct flow tend to readily gather and hold solids or sediment which quickly seal the joint substantially water-tight. I accomplish all of these obstructions to flow of water through the joint with piles, each consisting of but two integral plates riveted together and overlapped and bent in the novel manner described. So far as I am aware this has not been possible of accomplishment with constructions heretofore devised, which have usually required separate reinforced parts riveted or secured at the joints. These, while making the pile considerably thicker and stronger at the joint, have added nothing to the body of the pile or that portion intermediate of the joint portions.

By entirely obviating special reinforcements and making the pile as a whole out of two identical plates having similar wings, said wings and body of the pile overlapping the entire width thereof, I am able to make a much cheaper, better, and stronger structure for all the purposes for which they are intended. It will be observed also that I obviate riveting at the joints and that each of the members forming the latter is a rigid and integral part without reinforcements liable to work loose when hastily fastened together. The only riveting I employ is that which holds the two integral plates together, and upon these rivets practically no bending strain is imposed on account of the hook portions engaging opposite sides of the piles and opposite sides of opposite wings 7.

Another exceedingly valuable feature of my invention resides in the uniform thickness of the series of piles when joined together, the only added thickness being the extreme end of the curved portion 5. While I have shown the heads of the bolts or rivets 8 projecting beyond the surfaces of the plates, it is obvious that they may be countersunk therein, in which event there would be no projections whatever to engage the walls of the opening made in the earth as the pile is driven in. The material being evenly or uniformly distributed there are no weak points. It is obvious that joints formed by a double thickness of material add nothing to the rigidity of the structure between the joints, and, like a chain, the whole thereof is no stronger than its weakest link, which in this instance applies to bending strains rather than tensile strength.

The feature of uniform thickness or overlapping of the parts is exceptionally valuable in pile structures or dams which must withstand a great deal of lateral pressure as well as the strain of impact when driven into the earth.

In Fig. 2 is illustrated a method of forming the corner-piles for rectangular or angular structures, which consists of the angle 2', formed substantially of members 3 cut in two,

whereby is provided members 3' and 3'', riveted together and overlapping, substantially as shown in Fig. 1, with the exception of variations in their respective lengths and extent of projection over each other. The upper side of the angle 2' has its member 3' projecting over the end of the member 3'', and the lower side of the angle has its member 3'' projecting only sufficiently to cover the end of the member 3'. The two sides of the angle thus formed are secured together, as shown, by means of one row of rivets 8', only one rivet of which is shown in Fig. 2.

The method of joining the piles will be readily understood from the foregoing description. One of the piles being driven, the wing 6 of the next pile is inserted in the groove or hook 5 of the first-mentioned pile, and the hook 5 of said next pile is caused to engage the wing 7 of the first pile and is then driven home, held in close engagement with the pile already driven, and so on.

It is obvious that numerous modifications may be made in the embodiment of my invention without departing from the spirit thereof, and I therefore do not desire to confine my invention to the specific details or form of construction herein shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A pile consisting of but two separately integral members bolted or riveted together and having a straight and a hooked flange, said flanges being arranged substantially parallel but in different planes.

2. A pile consisting of a body portion having two pairs of flanges projecting in opposite directions from said body portion, each flange occupying a separate plane, and means for interlocking said flanges.

3. A pile consisting of two substantially identical plates riveted together, each of said plates having a pair of flanges projecting at an angle from its body and one of said flanges terminating in a hook.

4. A pile consisting of two substantially identical members riveted together and having a pair of flanges at each end projecting in opposite directions and in different planes, one of said flanges terminating in a hook and the other being substantially flat.

5. A pile consisting of a body portion having two flanges projecting in the same direction from each side of said body and means forming an integral portion of said flanges for interlocking same with a similar adjacent pile.

6. A pile consisting of two plates bent at their ends substantially at right angles, whereby is provided two flanges, one of said flanges having a hook portion and the other being plain, said plates partially overlapping each other, and suitable riveting for securing said plates together.

7. A pile consisting of two similar plates

partially overlapping each other, provided with two curved flanges extending in opposite directions intermediate of its ends and two straight flanges extending in opposite directions at its ends.

8. A pile consisting of a body portion having a pair of oppositely-projecting hooks one near each end and an oppositely-projecting flange at each end adapted to engage a similar said hook of an adjacent pile.

9. A series of interlocking piles having substantially uniform thickness throughout, each pile provided with flanges projecting from both sides thereof, the flanges on one side occupying different planes from the flanges on the other side, and means for interlocking the flanges of adjacent piles.

10. A channel-bar for sheet-piling provided at one edge with a plain flange and at the opposite edge with a hooked flange corresponding in interior outline to the exterior outline of the plain flange.

11. A channel-bar for sheet-piling provided with parallel flanges on the same face of the channel, one of said flanges being a plain flange or lip and the other being a hooked flange corresponding in interior outline to the exterior outline of the plain flange.

12. A section or unit for sheet-piling con-

sisting of two channel-bars secured together face to face in parallel relation but offset laterally with respect to each other, each channel-bar provided with longitudinal parallel flanges on its opposite face from the other channel and one of said flanges being a plain flange or lip while the other is a hooked flange corresponding in interior outline to the exterior outline of the plain flange, the two channels being secured together with the hooked flange of each channel inside of the plain flanged edge of the opposite channel.

13. A section or unit for sheet-piling consisting of two channel-bars secured together face to face in parallel relation but offset laterally with respect to each other, each channel-bar being provided with longitudinal parallel flanges on its opposite face from the other channel and one of said flanges being a plain flange or lip while the other is a hooked flange corresponding in interior outline to the exterior outline of the plain flange.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

MATHIAS RYER VANDERKLOOT.

Witnesses:

J. A. THAIN,

PAUL GERHARDT.