J. I. McGILL.

METAL PILING.

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1,007,718. Patented Nov. 7, 1911.

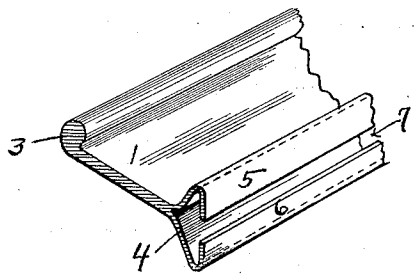

Fig. 1.

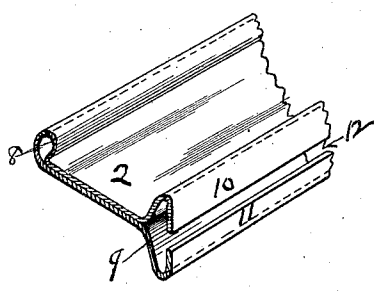

Fig. 2.

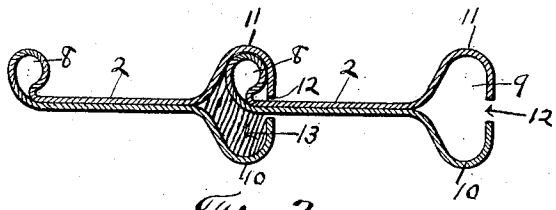

Fig. 3.

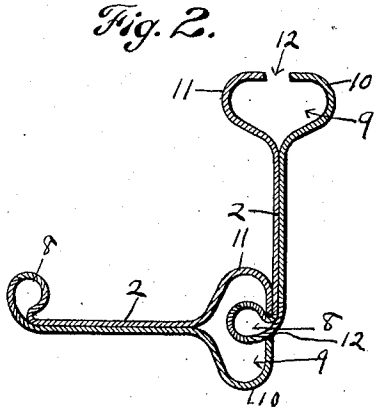

Fig. 4.

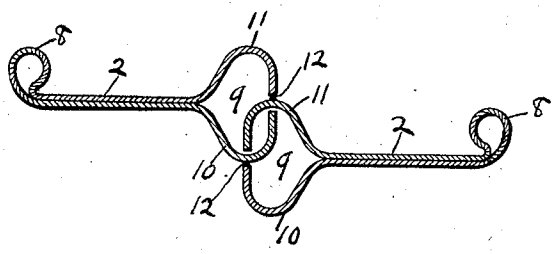

Fig. 5.

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METAL PILING.

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To all whom it may concern:

Be it known that I, JOHN I. McGILL, a resident of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Metal Piling, of which the following is a full, clear, and exact description.

My invention relates to metal piling and more particularly to steel piling and is particularly adapted for foundations and cofferdams or other similar means employed in submarine construction or in those constructions where quicksand or soft earth is met with.

My piling is made up of a series of sections each of which may be constructed of any suitable length, width and thickness all of which may vary in accordance with the conditions met in the construction operations where such piling is used. Ordinary sections will be made from 1 ft. to 120 ft. long; 1 inch to 72 inches wide and from ¼-inch to 3 inches thick, but of course these dimensions are only explanatory and may be varied as desired.

In producing my invention I have sought to create a piling which would be complete in itself and simple and at the same time be one which would interlock perfectly so that each adjoining section would have the same theoretical strength. Preferably the sections of my piling are made of rolled steel and each section is so constructed that it has a sliding interlocking connection with each of the other sections and when this interlocking connection is made the sections are so adapted that they may be united so as to form a straight sheet of piling or they may be driven to place in such a manner that the web of one section may within the limits of 180°, have any desired angular relation with the web of its next adjacent section or sections. Moreover the interlocked sheet of piling may be so arranged that it will form a water proof sheet and at the same time may be locked in position so that it will be free from possible lateral displacement. Having these objects in view I have produced the invention hereinafter described and illustrated in the accompanying drawings.

Referring now to the accompanying drawings: Figure 1 represents a perspective view of one form of my piling. Fig. 2 represents a perspective view of a modified form of my piling. Fig. 3 is an end view of two sections of my piling interlocked so that the webs of the sections are in the same longitudinal line. Fig. 4 is an end view of two interlocked sections showing their capability of angular relation to each other. Fig. 5 is an end view of two interlocked sections illustrating another means of arranging the lateral relations of the webs of the sections.

It will be noted that the web of the section illustrated in Fig. 1 may be made solid as there shown or as illustrated in Figs. 2, 3, 4 and 5, it may be made of two abutting thicknesses of sheet metal as shown at 2.

In the form shown in Fig. 1 the web 1 is provided with a solid enlarged bead or rounded edge 3 deflected rearwardly or backwardly but it will be clear from the herein description that this bead 3 may be of any desired conformation, that is, it may be rounded, hexagonal, or triangular as desired. The opposite edge 4 of this construction is formed by splitting the web 1 so that the two sections 5 and 6 of the split web form a slotted channeled base. The slot 7 so formed is adapted to exactly receive the web 1 of another section and the bead 3 will pass into the channeled base making a sliding interlocking union so that the bead 3 will be held interlocked within the channeled base or edge 4 and at the same time the two interlocked sections will be capable of assuming any desired angular relation with each other so far as their webs are concerned and within the limits of 180°. The section 5 and the section 6 of the base each forms a lateral wing and into either one of these wings the bead 3 of another pile may pass and thus be interlocked within said base.

Referring now to the modified construction shown in Figs. 2, 3, 4 and 5 it will be noted that the edge 8 (which corresponds to the edge 3 of Fig. 1) is a looped rolled edge which may be of any desired size. The opposite edge of the base 9 is made of the same conformation as the base or edge 4 of Fig. 1 and it is formed into a slotted channeled base by means of the two edges 10 and 11 of the rolled sheet being bent as shown in Fig. 2. The slot 12 corresponds to the slot 7 of Fig. 1 and is adapted to receive the web 2 of the next section in such a manner that the web will exactly fit the slot 12 and the edge 8 of the next section will slidingly interlock

within the channeled base 9 as clearly shown in Fig. 3. As in the case of the construction of Fig. 1, described in the last foregoing paragraph, the section 10 and the section 11 each forms a lateral wing and into either one of these wings the bead 8 may pass and thus be interlocked with the said base.

As is well-known in cofferdam or foundation constructions it frequently happens that obstructions in the nature of boulders or other impediments are met with and it is difficult to drive a sheet of piling in such a manner that the webs will all be in the same longitudinal line. It becomes necessary therefore to dodge these obstructions by varying the line of the sheet of piling and it is therefore a great advantage to have the sections of the sheet arranged in their interlocking relation in such a manner that the two sections may be offset with relation to each other as may be done by means of my invention as clearly shown in Fig. 5; or two adjacent interlocked sections may be advantageously arranged with relation to each other in such a manner that the webs of the two sections will occupy any desired angular relation with each other. This latter advantage is obtainable by means of my invention as clearly shown in Fig. 4 where it will be seen that the two adjacent interlocked sections may be initially placed with relation to each other at any desired angle within the limits of 180°. Preferably the edges 5 and 6 or 10 and 11 should approach each other sufficiently far so that the web of the next interlocking section can easily be slid to place through the slot formed between such edges. It will be noted that the end of the base, which end is formed by the ends of the wings 5 and 6 of Fig. 1 and 10 and 11 of Figs. 2, 3, 4 and 5, is substantially flat and substantially at right angles to the plane of the web of the section. If it be desired it is possible to so pack the channeled base 4 or 9 with some cellulose material and thus make the interlocked joints water-proof. Obviously if it is desired to prevent lateral displacement of the sheet of piling that end may be accomplished by driving to place within the space 13 of the base 4 or 9 a wedged bar as clearly indicated in Fig. 3.

In practical construction it will be clear to those skilled in the art that the joints between the two sections should be broken. This is desirable whenever several tiers of sections are superimposed. In such case of course each superimposed section will abut the lower section and will interlock with at least one of the adjacent sections of the lower tier. In this manner the superimposed tiers of the piles will be locked together.

Clearly the sheet piling made from sections such as herein described may be used so as to form any desired contour, such as, circular, square, hexagonal or straight sheets of piling or the sheet of piling may have any desired number of lateral displacements. The sections may be interlocked by having the looped edge 8 or the solid beaded edge 3 united as shown in Figs. 3 and 4, or two adjacent sections may be interlocked by having the slotted channeled base 4 or 9 connected with each other in the manner shown in Fig. 5.

Manifestly in general contour the sections of my sheet of piling are very similar to the contour of a railroad rail provided at its upper part with only half of the flange tread and while I prefer this general conformation it will be clear that modifications from this exact conformation may be made without departing from the spirit of my invention.

Clearly whenever sheet metal sections are used such as those shown in Figs. 2, 3, 4 and 5, the two thicknesses of the web 2 may be suitably united if desired by means of rivets or bolts or otherwise, but in ordinary construction these uniting means may be dispensed with.

Either the construction shown in Fig. 1 or that shown in Figs. 2 to 5 may be used as desired with substantially the same results. The choice between these two constructions will be governed by manufacturing conditions and the relative adaptability of such constructions for use under varying practical conditions.

Having thus described my invention what I claim is:

1. A sheet pile comprising a web, an enlarged bead at one edge and a channeled base at its opposite edge provided with a slot substantially the width of, and in parallel plane with, said web, said base being adapted to receive the beaded edge of another pile.

2. A sheet pile comprising a web, an enlarged bead at one edge and a slotted channeled base at its opposite edge, said base being provided with an end which is substantially at right angles to the plane of said web.

3. A sheet pile comprising a web, an enlarged bead at one edge, and a double-winged-slotted-channeled base at its opposite edge, either wing of which base is capable of receiving the enlarged beaded edge of another pile.

4. A rolled steel pile comprising an enlarged bead at one edge, and a slotted channeled base at its opposite edge adapted to receive the slotted channeled base or the enlarged beaded edge of another pile.

5. A rolled steel pile provided with an enlarged looped edge, a web, and a slotted channeled base adapted to receive the enlarged looped edge or the slotted channeled base of another pile.

6. A sheet pile comprising a web, an en-

larged bead at one edge, and, at its opposite edge, a channeled base formed with a lateral wing capable of receiving the enlarged beaded edge of another pile, said base being also provided with a slot substantially the width of, and in parallel plane with, said web.

7. A sheet metal pile consisting of a single sheet of metal folded together so as to form an enlarged looped edge, a web composed of two thicknesses of the sheet, and a slotted channeled base adapted to receive the looped edge of another pile.

8. A sheet metal pile consisting of a single sheet of metal folded together so as to form an enlarged looped edge, a web and a slotted channeled base adapted to receive the looped edge of another pile.

9. A pair of piles having sliding interlocking connection with each other and each of them comprising a web, an enlarged bead at one edge and a double-winged-slotted-channeled base at its opposite edge either wing of which base is capable of receiving the enlarged beaded edge of another pile.

10. A pair of piles having a sliding, interlocking connection with each other, each of them comprising a web, an enlarged bead at one edge, and, at its opposite edge, a channeled base provided with a slot substantially the width of, and in parallel plane with, said web, whereby the said piles may be interlocked, into any desired position relative to each other, within the limits of 180°.

11. A sheet metal piling composed of metal pile sections having sliding interlocking connection with each other, each of said sections comprising a web, an enlarged rolled edge and a channeled base provided with a slot substantialy the width of, and in parallel plane with, said web.

12. A sheet metal piling composed of metal pile sections having sliding interlocking connection with each other, each of said sections comprising a web, an enlarged rolled edge and a double winged channeled base provided with a slot substantially the width of, and in parallel plane with, said web.

13. A sheet metal piling composed of a series of sections capable of sliding and interlocking connection with each other each of said sections comprising a web, an enlarged beaded edge a slotted channeled base and means for locking any two connected sections together so as to prevent lateral displacement.

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

JOHN I. McGILL.

Witnesses:
J. Wm. Ellis,
E. A. Kelly.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."