W. NEILSON.

PILING.

APPLICATION FILED SEPT. 9, 1908.

912,020.

Patented Feb. 9, 1909.

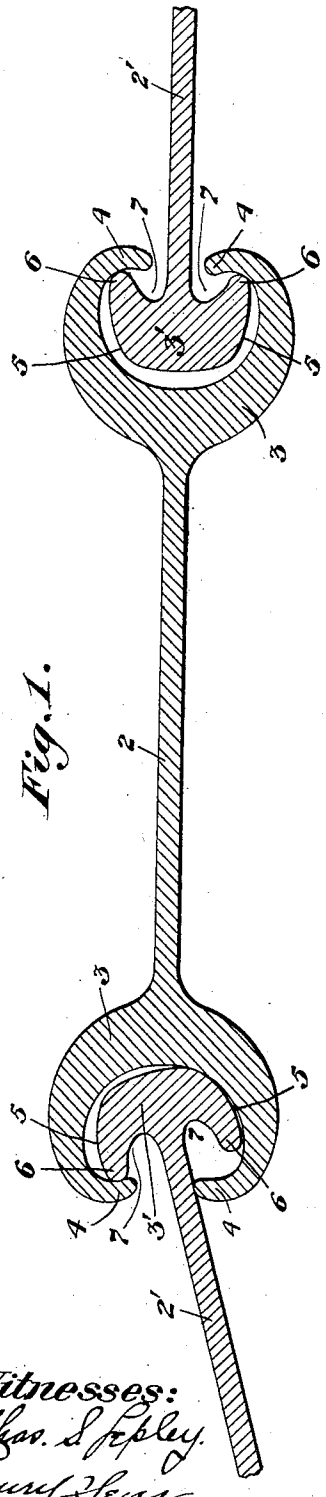


Fig. 1.

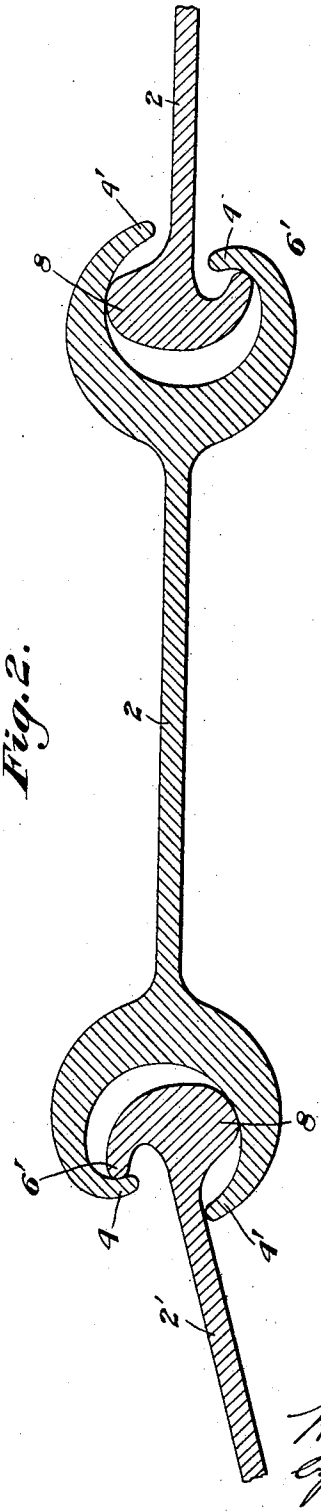


Fig. 2.

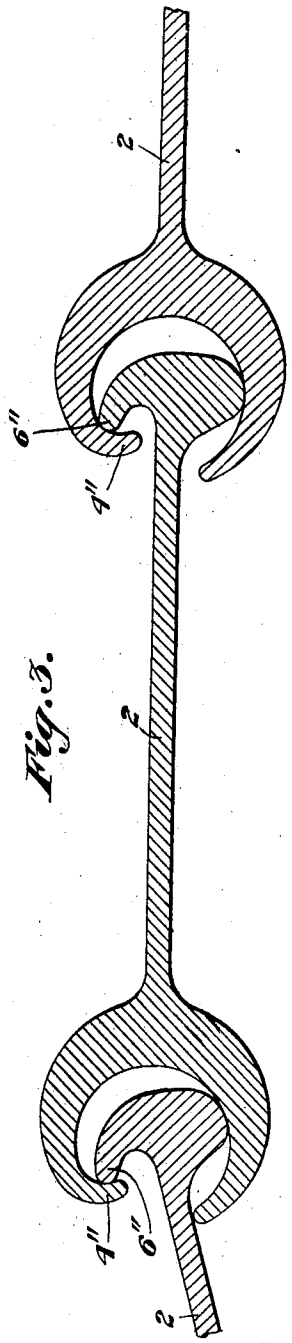


Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM NEILSON, OF PITTSBURG, PENNSYLVANIA.

PILING.

No. 912,020. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed September 9, 1908. Serial No. 452,212.

To all whom it may concern:

Be it known that I, WILLIAM NEILSON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Piling, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention refers to improvements in metal piling, of the class wherein a series of rolled metal piles are connected together at their edges by means of co-acting holding portions capable of relative longitudinal movement and providing for lateral deflection of the several piles of a series when connected.

The particular object of the invention is to provide a construction whereby the edge of one pile will be engaged by the other to provide a strong flexible joint, prevent the spreading of the holding elements and counteract the various strains to which constructions of this class are subjected in use.

Heretofore in steel piling wherein one of the edges is engaged within or between the embracing edges of the next adjacent pile, strains tending to separate the piles have caused the said elements to open or spread, and one of the objects of my invention is to so construct the piles as to provide bearing edges which are so arranged as to oppose spreading strains at the various positions which the piles may assume with relation to each other.

In the drawings accompanying the specification:—Figure 1 is a cross sectional view showing a plurality of piles assembled, of alternate uniform construction. Fig. 2 is a similar view showing a modified construction of the terminal holding elements. Fig. 3 is a similar view but showing the pile provided with male and female terminal edges, co-acting with similar piles.

Generally stated, each pile consists of a longitudinal web portion 2, having boundary edges of either male or female form adapted to telescopically interfit and co-act with the edge of an adjoining pile. In the construction shown in Fig. 1 the web 2 is provided at each edge with female enlargements 3, 3, partly cylindrical in form, having gradually reduced tapering body portions rounding outwardly at each side and toward the terminals 4, 4. As shown said terminals are abruptly deflected inwardly so as to provide retaining longitudinal edge flanges for engagement with the male terminal edge or edges of the co-acting pile. Said co-acting pile as shown, is composed of a similar web 2′ and terminal heads 3′ of sufficient cross-section to provide for strength and rigidity, having the outer curved faces 5, rounded to bear against the face of the interior cavity within the embracing portions of the female terminal of the co-acting pile. The head 3′ is provided with rearwardly extending longitudinal bearing edges or ribs 6, 6, rounded as shown, and extending backwardly toward the web portion with intervening clearance recesses 7, 7. At the right of Fig. 1 said male pile is shown in longitudinal alinement with the web of the female pile, while at the left of said figure the male pile is shown as deflected at an angle thereto, one of its terminal ribs 6 only bearing against the reversed flange 4, the other rib 6 being receded from engagement due to the deflected position, while its outer rounded head portion 5 is shown in substantially bearing engagement with a portion of the interior cavity of the female member. In either position it will thus be seen that the inwardly deflected flange or flanges 4 positively engage with one or both of said ribs 6, so that the opposing strains will be counteracted without any tendency to spread the embracing female portions, while the body portion of the male terminal is substantially in bearing engagement with the interior cavity throughout.

In Fig. 2 the female tie is shown as provided with a returned terminal 4 at one side of its double embracing portion only, the other terminal 4′ tapering to a terminal edge without variation of the cylindrical curvature as shown, while the head of the male pile is correspondingly provided at one side only with a co-acting bearing rib 6′, the other side of the head being bulbously enlarged and rounded so as to provide a bearing body portion 8 adapted to engage the substantially uniformly cylindrical interior face of the female pile, as clearly shown. Like Fig 1, Fig. 2 shows the male pile in longitudinal alinement with the web of the female pile at the right of said figure, the male pile at the left thereof being deflected as in Fig. 1.

In Fig. 3 I show a composite pile having a female element at one edge and a male element at the other, adapted to co-act and

interfit with the corresponding elements respectively of the next adjacent pile or piles. This construction constitutes an embodiment in a single pile of the several elements heretofore described, adapted to act in the same manner, the only difference being that all of the piles are alike and when connected in series, the backwardly turned embracing edge 4″ of the female portion constantly engaging the longitudinal projecting lip portion 6″ of the male side or edge of the next adjacent pile, the other elements co-acting as stated.

With either construction it will be seen that, due to the inwardly turned terminal or terminals of the female elements, the rib or ribs of the male elements will be rigidly retained under pulling strains at whatever position the parts may assume. Also that the large heads of the male elements will be enveloped within the receiving cavities of the female portions, providing rounded bearing faces at all positions, permitting free movement or adjustment, while insuring a constant maintenance of interlocking continuity.

The piles are of simple construction, they may be readily rolled in properly designed rolls, either entirely or partly by rolls and then finished by suitable dies or other machinery. The disposition of the metal is such as to secure the best results, while the prevention of spreading or opening of the joints will be found to avoid one of the common defects of this type of construction and to provide a continuous, strong and efficient piling.

While the construction, proportion, or arrangement of the parts may be variously changed or modified by the skilled mechanic and while the drawings show some of the various forms which may be adopted in practice, the essential feature of advantage is the hooked engagement of the co-acting elements.

Having described my invention that which I claim is:—

1. A rolled metal pile having separated terminal edges, one of said edges being deflected backwardly, substantially as set forth.

2. A rolled metal pile having separated terminal edges turned inwardly and backwardly toward the body portion of the pile.

3. A rolled metal pile consisting of a web provided with a divided portion having a backwardly bent bearing terminal, substantially as set forth.

4. A rolled metal pile having an edge portion provided with a backwardly turned bearing terminal and a receiving recess for a corresponding element of a co-acting pile, substantially as set forth.

5. In rolled metal piling, the combination of a pile having a divided edge portion, an inwardly and backwardly turned terminal element, and an interfitting co-acting element provided with a longitudinal bearing flange, substantially as set forth.

6. In rolled metal piling, the combination of a pile having a side portion composed of embracing portions terminating in inwardly turned retaining edges, and a co-acting pile having a bulbous side portion provided with a backwardly turned retaining edge, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM NEILSON.

Witnesses:
C. M. Clarke,
Geo. B. Bleming.