

W. NEILSON.

PILING.

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912,021.

Patented Feb. 9, 1909.

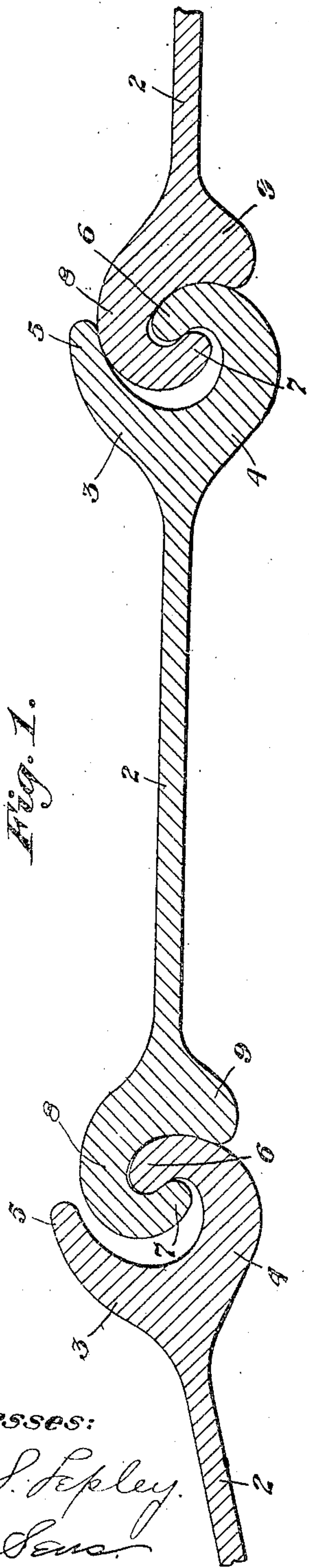


Fig. 1.

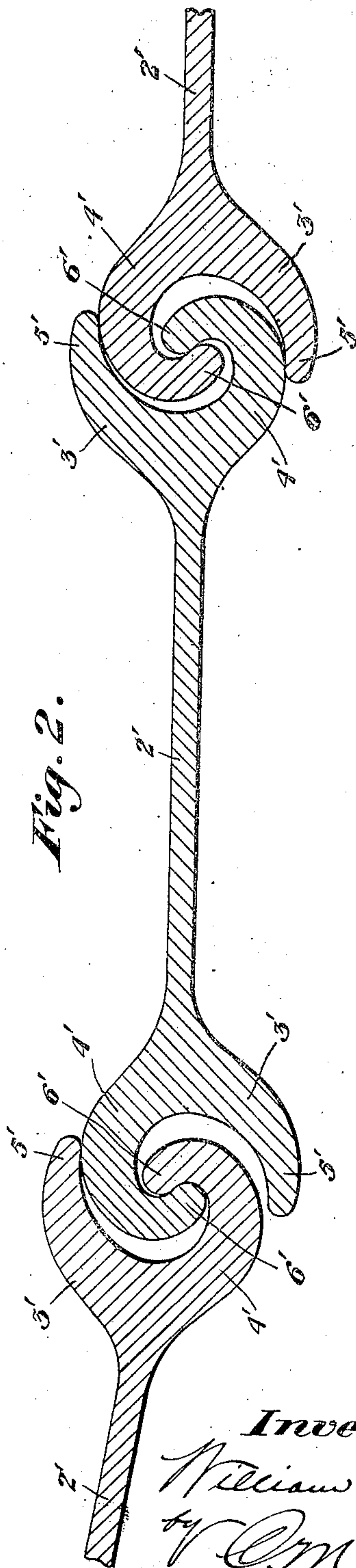


Fig. 2.

Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM NEILSON, OF PITTSBURG, PENNSYLVANIA.

## PILING.

No. 912,021.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed November 2, 1908. Serial No. 460,746.

*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 consists of an improvement 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, preventing the spreading of the holding elements and counter-acting the various strains to which constructions of this class are subjected in use; and especially to provide a construction wherein interlocking engagement is maintained by co-acting hook elements and embracing elements respectively, of adjacent piles.

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.

The present invention embodies improvements over that shown in my prior application filed September 9th, 1908, Serial No. 452,212.

In the drawings accompanying the specification: Figure 1 is a cross sectional view showing a plurality of piles assembled, each pile being provided with interlocking terminal edges co-acting with the appropriate edges of adjacent similar piles. Fig. 2 is a similar view showing an amplification of the construction of Fig. 1.

Generally stated, each pile consists of a longitudinal web portion 2 having boundary edges arranged to telescopically interfit and co-act with the edges of adjoining piles. In

the construction shown in Fig. 1 the web 2 is provided at one of its edges with enlargements 3, 4, partly cylindrical in form, both inside and out, having gradually reduced tapering body portions rounding outwardly at each side and toward their terminals 5, 6. As shown, one of said terminals 5 gradually tapers to its rounded terminal edge without substantial variation of the inner and outer cylindrical curvature, while the other terminal 6 is similarly tapered but is abruptly deflected inwardly, beyond an intervening receiving cavity, so as to provide a retaining longitudinal edge flange for engagement with the terminal edge of a co-acting pile constructed as is the other edge at the left side of web 2. Said edge of such co-acting pile or of the other side of the same pile, terminates in a tapering rearwardly deflected retaining longitudinal edge flange 7, with a similar intervening cavity adapted to snugly receive the terminal edge 6, and a rounded body portion 8 at one side adapted to bear against embracing terminal portion 5. The other side of such edge portion of the interfitting pile is bulbously extended as at 9, to embrace or partly embrace the outer rounded portion of terminal 6, as will be readily understood. The co-acting hook terminals 6 and 7 are preferably located substantially in alinement with the web 2 of the pile, or approximately so and sufficiently off-set therefrom, so that when engaging each other as shown, the separating strain will be counteracted approximately in the plane of the webs when in alinement or substantially at the middle portion of the joint in any position. As thus constructed it will be seen that the hooked elements of the adjacent edges of connected piles will interfit with each other; that ample space is provided inwardly between terminals 5 and 6 for reception of terminal 7 and its rounded enlarged body portion 8 so that the piles may be deflected laterally in either direction in the manner of a hinged joint with considerable freedom, without in any way impairing the interlocking engagement. The holding heads will be embraced within the receiving cavities of the companion pile, providing retaining bearing faces at all positions, permitting free movement or adjustment and insuring a constant maintenance of interlocking continuity, while the outer portions 5 and 9 tend to strongly brace and bind the



parts in rigid engagement when set, while permitting flexibility or adjustment and insuring a practically water-tight joint throughout.

5 In Fig. 2 I have illustrated an amplification of the construction shown in Fig. 1, in which the interlocking piles are of substantially the same cross section, being merely made in right and left hand forms  
10 at the respective edges of the pile. In such construction the web 2' is provided at each of its edges with divided enlargements 3', 4', partly cylindrical in form having gradually reduced tapering body portions rounded  
15 outwardly at each side and toward the terminals 5', 6'. As shown one of said terminals 5' gradually tapers to its rounded terminal edge without substantial variation of the inner and outer cylindrical curvature,  
20 while the other terminal 6' is similarly tapered but is abruptly deflected inwardly so as to provide a retaining longitudinal edge flange for engagement with the corresponding edge flange of a co-acting pile of  
25 similar form. As thus constructed and interfitted it will be seen that the hooked elements of the adjacent edges of connected piles will interfit with each other in the same general manner as has been described  
30 as to the construction of Fig. 1 and that the embracing terminals 5' at each side will maintain the parts in braced engagement, counteracting any strains tending to open up or separate the operating parts, while  
35 providing uniformity of construction of the pile at each edge, and permitting the piles to be interchangeably inserted at either end.

With either construction it will be seen that, due to the inwardly turned terminals  
40 and outer bracing portions of the engaging edges, the interfitting holding elements will be rigidly retained under pulling strains at whatever position the parts may assume. Also that the interfitting hooked terminals  
45 6' and 7 or 6' and 6' will be inclosed within the receiving cavities of the other pile, providing rounded bearing faces at all positions and efficiently performing the functions intended.

50 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  
55 such as to secure the best results while the prevention of spreading or opening of the joints will be wound to avoid the common

defects of this type of construction and to provide a continuous, strong and efficient piling.

60 While the construction, proportions, 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  
65 practice, the essential feature of advantage is the hooked engagement of the co-acting elements and the additional strength secured by the terminal-embracing elements.

Having described my invention, what I  
claim is:

1. A rolled metal pile having at its edge a backwardly turned bearing terminal and a receiving recess for a corresponding element  
75 of a co-acting pile, and an outer embracing portion adapted to engage the backwardly turned bearing terminal of a similar co-acting pile, substantially as set forth.

2. A rolled metal pile consisting of a web provided with a divided edge portion having  
80 a backwardly bent bearing portion terminating in a plane substantially in the plane of the web.

3. A rolled metal pile consisting of a web provided with a divided edge portion having  
85 a backwardly bent bearing portion terminating in a plane substantially in the plane of the web, and having a receiving recess for a corresponding element of a co-acting pile, substantially as set forth.

4. A rolled metal pile consisting of a web provided with a divided edge portion having  
90 a backwardly bent bearing portion terminating in a plane substantially in the plane of the web, and having a receiving recess for a corresponding element of a co-acting pile,  
95 and an embracing portion adapted to engage the backwardly turned bearing terminal of a similar co-acting pile, substantially as set forth.

5. In rolled metal piling, the combination of inter-engaging piles each having a backwardly bent hooked bearing terminal,  
100 an outer embracing portion adapted to engage such terminal of the other pile, and an intervening cavity to receive such terminal, substantially as set forth.

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

WILLIAM NEILSON.

Witnesses:

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C. M. CLARKE.