June 29 , 1926.

1,590,301

J. LINDENLAUF

ROLLED METAL PILING

Filed Jan. 15, 1926

Fig. 1.

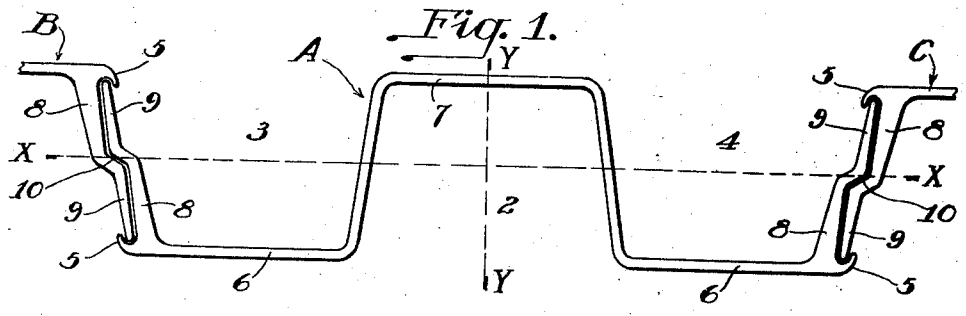


Fig. 2.

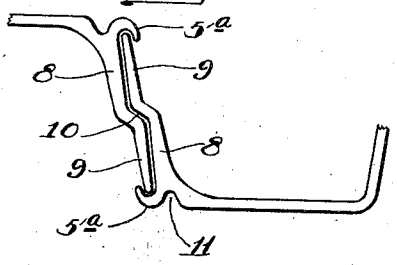


Fig. 3.

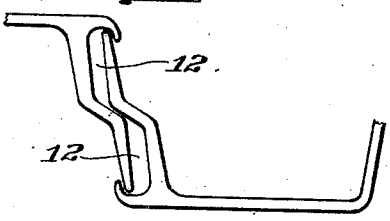


Fig. 4.

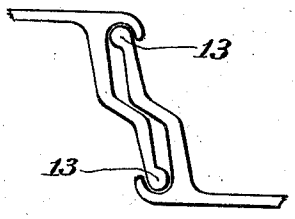


Fig. 5.

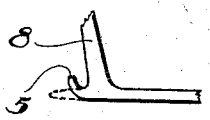
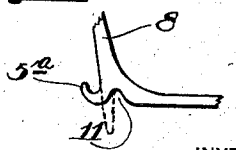


Fig. 6.



INVENTOR

Joseph Lindenlauf

by James C. Bradley atty

Patented June 29, 1926. 1,590,301

UNITED STATES PATENT OFFICE.

JOSEPH LINDENLAUF, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR OF THREE-EIGHTHS TO HERMAN STRATMAN AND TWO-EIGHTHS TO HARVEY M. ARONSON, BOTH OF PITTSBURGH, PENNSYLVANIA.

ROLLED-METAL PILING.

Application filed January 15, 1926. Serial No. 81,394.

The invention relates to rolled interlocking metal piles of the type, which, when connected together, form a continuous wall consisting of a series of troughs or U-sections. The invention has for its principal objects, the provision of a pile construction; (1) having a great degree of strength and rigidity, both longitudinally of the wall formed, and transversely thereof, in proportion to the weight of metal employed; (2) which can be easily rolled by ordinary methods; (3) in which the neutral axis of the pile is parallel to the axis of the wall and which either coincides with such axis of the wall or is very close to it in all cases; (4) and in which the interlock is of a very substantial character, readily formed in the rolling operation, and designed to impart a maximum amount of strength and rigidity to the completed wall. Certain embodiments of the invention are shown in the accompanying drawings, wherein:

Figures 1, 2, 3 and 4 are end views showing different forms of the construction, and Figs. 5 and 6 are fragmentary detail views showing the manner of rolling the hooks of Figs. 1 and 2 preliminary to bending them.

Referring to Fig. 1, A is one complete pile, while B and C are the end portions of adjacent piles identical in construction with A. The pile A consists of a central U-trough or section 2 and two side U-troughs or sections 3 and 4. The pile may be constructed of a greater number of U-sections, but three of such sections, as illustrated, is the preferred number, as a greater number render the pile more or less unwieldy and difficult to handle and roll.

The pile may be rolled by the three roll system, the hook being formed during the rolling operation, as indicated in dotted lines in Fig. 5, after which it is bent to the final form as shown in Fig. 1. The neutral axis of the pile section is somewhat below the axis x—x of the wall, due to the fact that the two webs 6, 6 lie on the same side of the axis x—x with only the single web 7 on the other side of such axis, but this departure is not great, and, if desired, the central section 2 may be rolled somewhat deeper than 3 and 4, or with its web 7 slightly thicker than the webs 6, 6, in order to bring the neutral axis into coincidence with the axis of the wall.

The end flanges of the piles are formed as interlocks and are preferably substantially equal in length to the depth of the troughs 2, 3 and 4. This disposes the metal of the flanges to the best advantage, and adds greatly to the stiffness of the complete wall as compared with the one made up of piles having short interlocks. Each flange or interlock is made up of two parts 8 and 9, substantially equal in length and having an inclined or oblique connecting part 10. It is the coaction of the two engaging inclined parts 10, 10 on the flanges of adjacent piles, which prevents the piles from separating after they are once assembled. This expedient does away with the requirement of thickened or bulbous portions at the ends of the interlocking flanges, such as would be required to prevent a separation of the piles, if the inclined parts 10, 10 were not employed. The interlocks with bulbous thickened portions at the ends have the disadvantage of increased difficulty in rolling. The location of the hooks 5, 5 on the outer sides of the interlocking flanges, instead of on their inner sides, also involves a constructive advantage, as no difficulty is experienced in forming the hooks during the ordinary rolling operation, if these hooks are formed on the outer sides. This is not the case if they were formed on the inner sides of such flanges. It will also be noted that the pile is symmetrical around its axis y—y at right angles to the axis x—x so that there is no tendency of the individual piles to twist, either in driving, or when placed under stress applied at right angles to the wall formed, and to which the structure is ordinarily exposed when used as a retaining wall. The advantages of the structure incident to its strength per unit of weight, to the ease with which it may be rolled, and to the superior character of the interlock, will be readily apparent to those familiar with the requirements in sheet metal pile constructions.

Figs. 2, 3 and 4 illustrate modifications. If it is desired to roll the shape by means of the old two-roll system, the hook 5^a is preferably rolled in the position shown by the dotted lines in Fig. 6, after which it is bent to the position of Fig. 2. The groove 11 is provided to facilitate bending after rolling, although this may be dispensed

with. Fig. 3 shows two spaces 12, 12 which can be used for packing or which can serve the purpose of providing an earth cushion when driving. Fig. 4 shows a bulb 13 on the ends of the interlocking flanges, thus increasing the bearing at the ends of such flanges and giving a somewhat more secure interlock combined with the packing recesses than is the case in the Fig. 3 construction. This pile has, however, the disadvantage of greater difficulty in rolling than the Fig. 1 construction.

What I claim is:

1. A wall made up of a plurality of similar interlocking piles, comprising integral rolled sections arranged with their neutral axes in parallelism, and each pile consisting of a plurality of U-shaped troughs with the successive webs thereof on opposite sides of the neutral axis of the pile and remote therefrom and with the outer sides of the outer troughs constituting interlocking members having a length substantially equal to the depth of the troughs, and each having a hook on its outer side at its base receiving the end of the next interlocking member, each of said interlocking members comprising an inner and an outer part lying in substantially parallel planes and connected by a part directed transversely of the planes of such inner and outer parts.

2. A wall made up of a plurality of similar interlocking piles, comprising integral rolled sections arranged with their neutral axes in parallelism, and each pile consisting of a pair of U-shaped troughs with a reverse trough therebetween, the outer side of each of said pairs of U-shaped troughs being formed as an interlock having a length substantially equal to the depth of the U-shaped troughs and having a hook on its outer side at its base receiving the end of the next interlock, each of said interlocks being formed in two parallel and substantially equal parts with a transverse connecting part therebetween and the neutral axis of the pile lying substantially midway between the webs of the troughs.

3. A wall made up of a plurality of similar interlocking piles, comprising integral rolled sections arranged with their neutral axes in parallelism, and each pile consisting of a plurality of U-shaped troughs with the outer sides of the outer troughs constituting interlocking members having a length substantially equal to the depth of the troughs, and each having a hook on its outer side at its base receiving the end of the next interlocking member, each of said interlocking members comprising an inner and an outer part lying in substantially parallel planes and connected by a part directed transversely of the planes of such inner and outer parts, and each of said members being of decreasing thickness from its base to its outer end.

4. A wall made up of a plurality of similar interlocking piles, comprising integral rolled sections arranged with their neutral axes in parallelism, and each pile consisting of a plurality of U-shaped troughs with the outer sides of the outer troughs constituting interlocking members having a length substantially equal to the depth of the troughs, and each having a hook on its outer side at its base receiving the end of the next interlocking member, each of said interlocking members comprising an inner and an outer part lying in substantially parallel planes and connected by a part directed transversely of the planes of such inner and outer parts, and each of said members being of a thickness at its outer end which is no greater than that at its base and the neutral axis of the pile lying substantially midway between the webs of the troughs.

In testimony whereof, I have hereunto subscribed my name this 6th day of January, 1926.

JOSEPH LINDENLAUF.