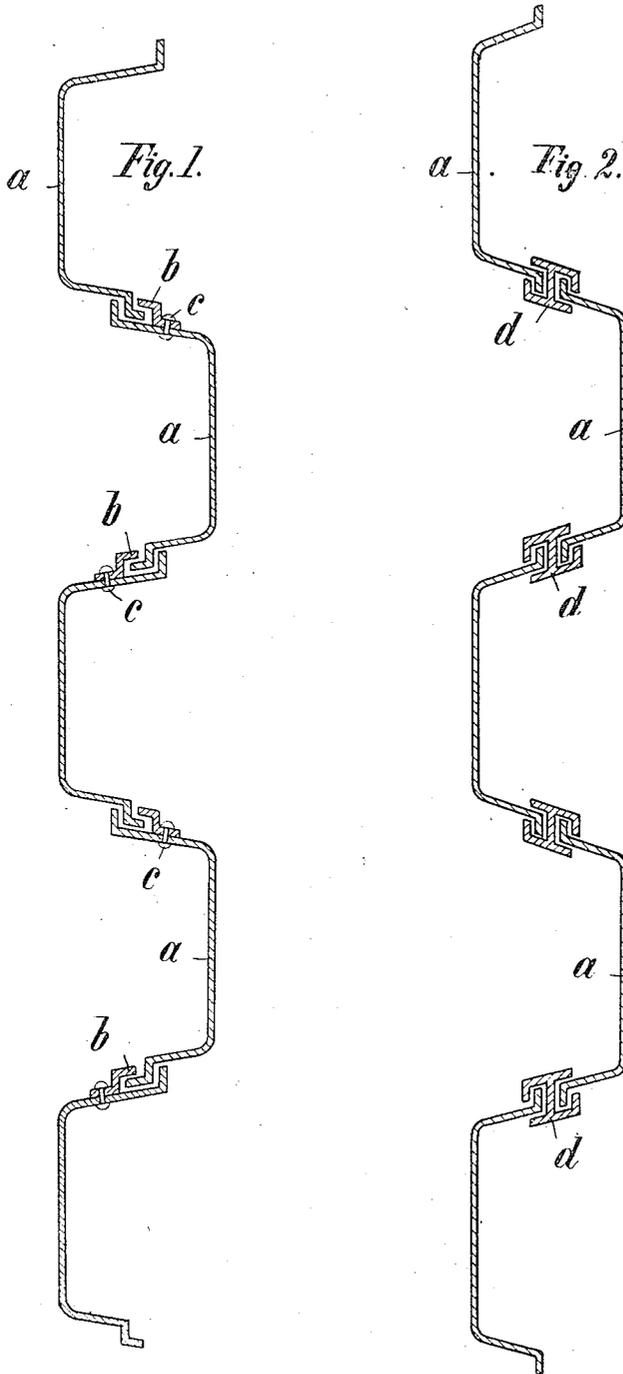


T. LARSEN.  
SHEET PILING.

APPLICATION FILED MAR. 1, 1909.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

TRYGGVE LARSEN, OF BREMEN, GERMANY.

## SHEET-PILING.

No. 839,608.

Specification of Letters Patent.

Patented Dec. 25, 1906.

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*To all whom it may concern:*

Be it known that I, TRYGGVE LARSEN, a citizen and resident of the free and hanseatic town of Bremen, in the German Empire, have invented certain new and useful Improvements in Sheet-Piling, of which the following is a specification.

Iron-pile planking as heretofore in use suffers from the disadvantage of being useless for large embankments and the like owing to the profile of the planking employed and to the imperfect joining of the same, because the moment of resistance of the so-made sheet-piling is too small.

The present invention has for its object to provide with minimum expenditure of material sheet-piles having a large moment of resistance. For this purpose dished sheet-piles of one and the same rolled profile are fitted alternately right and left. The guidance and locking (joining) of the sheets is effected by virtue of the peculiar formation of the profile and may be completed, if need be, by riveted guide-bars or by special guide-bars or locks without rivets.

In order that my invention may be more fully understood by one skilled in the art to which it appertains, I shall now proceed to describe the same in detail and shall refer for that purpose to the accompanying sheet of drawings, wherein—

Figure 1 is a diagrammatic cross-section of a sheet-iron planking having riveted guide-bars constructed in accordance with and embodying my invention; and Fig. 2 is a similar sectional view showing a modification of the sheet-iron planking having guide bars or locks without rivets.

Similar letters of reference refer to similar parts throughout the figures.

In the construction shown by Fig. 1 the pile-sheets *a* are set alternately facing right and left and are laid with the flanges of one sheet meeting those of that next adjacent. The said flanges may be overturned at their edges, one edge being of **Z** form, and overlap slightly, and the two adjoining sheets are held together by a bar *b* of suitable section, riveted by rivets *c* to one of the sheets *a* or to

its flange and engaging the flange of the 50 other sheet.

Alternately, instead of arranging the flanges to overlap these are brought close together, as illustrated in Fig. 2, and are locked by means of bars *d* of substantially **I**-section engaging the overturned edges of the flanges, so that no riveting is required.

The bulk of the profiled material is thus as far as possible from the neutral axis and the edges of the flanges at or near the neutral axis. 60

The advantages of the new construction are as follows: A simple profile of the sheets which can be rolled without difficulty and is especially adapted for the construction of sheet-pilings because the same profile is used on either side; a large moment of resistance is given to the complete pile, relatively low profiles of small-resistance moment being connected at or near the neutral axis of the combined cross-section, so that the total moment of resistance of the pile is a multiple of that of the single profile; a simple guidance and locking of the sheets in all directions and that at or near the neutral axis where the inevitable weakening exercises no prejudicial effect. 75

I claim—

1. Sheet-piling comprising a plurality of single troughs alternately directed to opposite sides, and means at the edges of adjacent troughs substantially in the neutral axis of the piling to connect the troughs together and adapted to permit the independent driving of the troughs. 80

2. A piling comprising a plurality of trough-shaped plates each having a web and lateral flanges, the edge of one of said flanges bent over, a locking-bar secured to said flange and cooperating with the latter and its bent edge to retain the adjacent trough-shaped plate, substantially as described. 85

3. A piling comprising a plurality of trough-shaped plates each having a web and flanges, and one of the flanges having its edge bent outward and then substantially parallel with the flange, whereby said edge is practically **Z**-shaped. 95

4. A piling comprising a plurality of inter-

locking plates each plate having a web and flanges, one of said flanges having its edge bent outward and a locking-bar secured thereto to cooperate with the bent edge of the flange, and the other flange of said plate having its edge bent substantially Z-shaped, whereby said edge will be held between the bar and bent edge of the flange of the next adjacent plate, substantially as described.

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