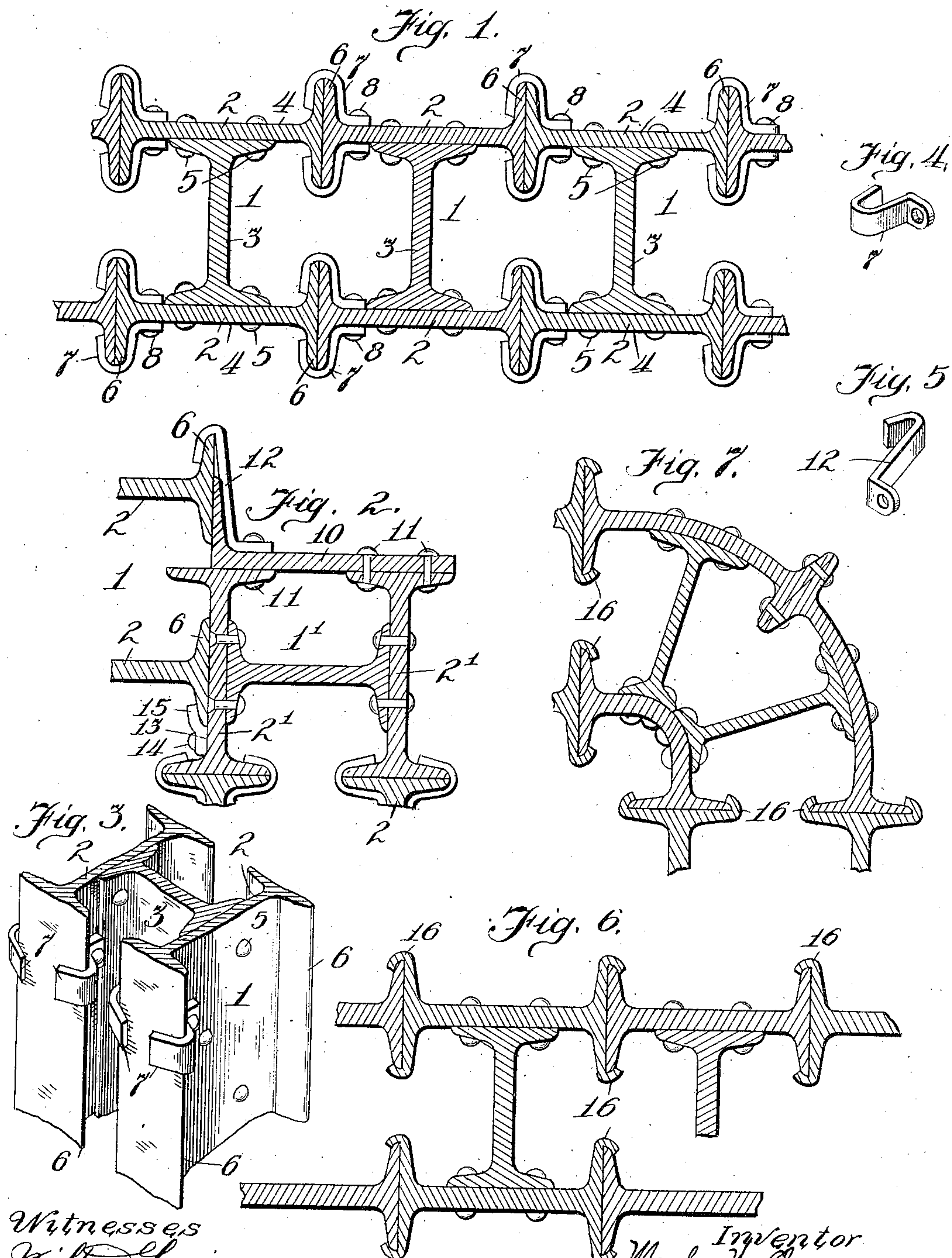


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METAL SHEET PILING.

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To all whom it may concern:

Be it known that I, MANLEY W. CLUXTON, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metal Sheet-Piling, of which the following is a specification.

This invention relates to improvements in metal sheet-piling and refers more specifically to a double walled construction such as is used in coffer-dams, shafts, excavations and the like.

Among the salient objects of the invention are to provide a construction in which the opposite units of the sheet-piling which form the two walls are first rigidly secured together and the united sections then driven into position; to provide a construction in which not only the sections or units of the piling which form each wall but also the transversely extending locking members between the two walls may be made of commercial rolled shapes or bars such as I-beams; to provide a double walled piling of the character referred to in which the angles thereof may, if desired, be formed from units of well known commercial construction; to provide simple slip-joint inter-locking connections between the sections of each wall which at the same time serves as guiding means to keep each section in alinement with the wall as it is being driven, the arrangement being such that each section is guided by the section previously driven; to provide a construction of maximum strength and rigidity in which the various parts cooperate to strengthen each other; and in general to provide a simple economical construction of the character referred to.

While I am aware that interlocking sheet-piling, the sections of which are of well known I-beam construction, is not broadly new, nevertheless the construction herein shown is believed to be novel and is at the same time commercially desirable.

The invention will be understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a horizontal sectional view of a plurality of interlocking units or I-beams which together form the double wall construction; Fig. 2 is a similar view showing one method of forming an angle in the wall.

Fig. 3 is a fragmentary perspective view showing two opposed units of the walls and the manner of connecting the same. Fig. 4 is a perspective view of one of the clips used in locking the flanges of adjacent I-beams together. Fig. 5 is a slightly modified construction of the clips shown in Fig. 4 and is more especially adapted for use in forming an angle in the wall as shown in Fig. 2. Fig. 6 is a horizontal sectional view similar to Fig. 1 showing a modified construction. Fig. 7 is a view similar to Fig. 6 and showing another method of forming an angle in the wall.

Referring to the drawings 1 designates as a whole one of the sections of the double walled construction which are adapted to be placed end to end to form the wall. Each of these sections comprises oppositely disposed units 2, 2 which may be of the well known I-beam construction, and these units are rigidly united to each other by means of a transversely extending I-beam 3 secured to the webs 4 of the parallel beams 2 by means of suitable rivets 5. In practice the oppositely disposed units 2 are first integrally united with each other as shown and then driven into the ground, the marginal flanges 6 of the parallel units 2 of adjacent sections lying flat against each other and suitably united in interlocked alinement. As seen in the drawings, not only the parallel units 2 but also the cross beams 3 are or may be exactly identical in construction and made of a well known commercial type which materially adds to the economy of construction. The use of the cross units 3 not only permits of the two arms being built up at the same time but insures the proper alinement of the same and also materially increases the strength and rigidity of the construction as a whole.

In practice each double section, as it is being driven, is guided into place by means of the preceding section. To this end relatively narrow guiding clips 7 are provided, these clips being suitably riveted as shown at 8 to the web portions 4 of the units 2 and thence extending laterally therefrom over the marginal flanges 6 so as to embrace and confine the similar abutting flanges of the adjacent section. These clips of which there are any desired number for each section, serve the double purpose of guiding the sec-

tion which is being driven and of interlocking adjacent sections together and thus more effectively providing a continuous wall. They may be alternately disposed 5 and attached in the manner shown in my prior Patent No. 878,773 *i. e.* the lower clip being secured to the section which is being driven and the upper clip to the section already in place, or they may all be secured 10 to the same end of each of the sections in which event they may all be riveted in place before the sections are driven.

Describing now the manner of forming an angle in the wall as for example, in 15 turning a corner, one united double section designated for convenience 1' is driven at right angles to the end of the last driven section 1, so that the web portion of one of the parallel units 2' lies flat against the 20 horizontal flange 6 of the inner beam of the section last driven. In order to lock this corner section 1' to the end of the wall, I provide a beam 10 of well known angle iron construction which is rigidly secured by 25 means of rivets 11 to the marginal flanges 6 of the corner section, and this angle iron is in turn interlocked to the marginal flange 6 of the outer I-beam of the adjacent section 1 by means of clips 12 generally similar 30 in construction to the clips 7 heretofore described. The other end of the section is secured to the opposite marginal flange 6 by means of clips 13 riveted at 14 to the web 2' and provided with a lateral extending 35 portion 15 which fits over the end of the marginal flange as shown clearly in Fig. 2. It will thus be seen that this corner section is rigidly interlocked with the end of the wall, and at the same time the double 40 wall feature is maintained.

Referring to Figs. 6 and 7 I have therein shown a somewhat modified construction in which the various double sections are interlocked with each other without the use of 45 the clips. To this end alternate sections have the marginal flanges of the respective I-beams folded inwardly toward each other on their longitudinal marginal portions as shown at 16 to provide grooves in which the 50 flanges of the adjacent units fit. These grooved flanges 16 are adapted to have sliding interlocking connection with the flat outer faces of the flanges of the adjacent sections as shown.

In Fig. 7 I have shown another method of turning a corner in the wall in which the I-beams are curved inwardly as shown, and the outer I-beams of the corner integrally 55 united with the inner corner beam by means of a pair of transversely disposed beams as shown. 60

It will be noted that the transversely extending beams 3 divide the double wall construction into a series of chambers, and

these chambers may be filled if desired in 65 order to increase the strength of the structure as a whole. Where the device is used in coffer-dams and the like, the meeting edges of the adjacent parallel units may be calked or made water tight in any suitable 70 manner.

It is of course apparent that my invention may be varied in details of construction without in any manner departing from the spirit of the invention. 75

I claim as my invention:

1. In a metal sheet-piling, the combination with two parallel rows of units, each unit comprising a flat web and marginal flanges, means uniting the adjacent units of 80 each wall, and units composed of flat webs and marginal flanges uniting the opposed parallel units of the respective walls.

2. In a double wall sheet metal piling, the combination with parallel rows of units, 85 each unit comprising a flat web portion and a flange at each edge of the latter, slip-joint connections detachably uniting the adjacent units of each wall, and cross units rigidly uniting opposed members of said parallel 90 units and substantially similar in construction to the latter.

3. A double wall metal sheet piling consisting of a plurality of sections, each section comprising two parallel units of I-beam 95 construction and a third unit of similar construction, the marginal flanges of said latter I-beam being respectively rigidly united to the webs of opposed parallel units.

4. A double wall metal sheet-piling consisting of a plurality of aligned sections, each section comprising two parallel units composed of flat webs of marginal flanges and a third unit of similar construction, the 100 marginal flanges of which are respectively rigidly united to the webs of opposed parallel units. 105

5. A double wall metal sheet-piling consisting of a plurality of sections adapted to be successively built up to form said wall, 110 each section comprising two parallel units composed of flat webs and marginal flanges, a third unit of similar construction, the marginal flanges of which are respectively rigidly united to the webs of opposed parallel 115 units, and slip-joint connections for locking adjacent sections together.

6. A double wall metal sheet-piling consisting of a plurality of sections, each section comprising two parallel units composed 120 of flat webs and marginal flanges, a third unit of similar construction, the marginal flanges of which are rigidly united to the webs of opposed parallel units, and means for locking said sections together so that the 125 opposed marginal flanges of adjacent sections lie flat against each other.

7. A double wall metal sheet-piling con-

sisting of a plurality of sections, each section comprising two parallel units composed of flat webs and marginal flanges, a third unit of similar construction the marginal flanges of which are respectively united to the webs of opposed parallel units, means for interlocking adjacent sections, and means

for forming an angle in said double wall construction.

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