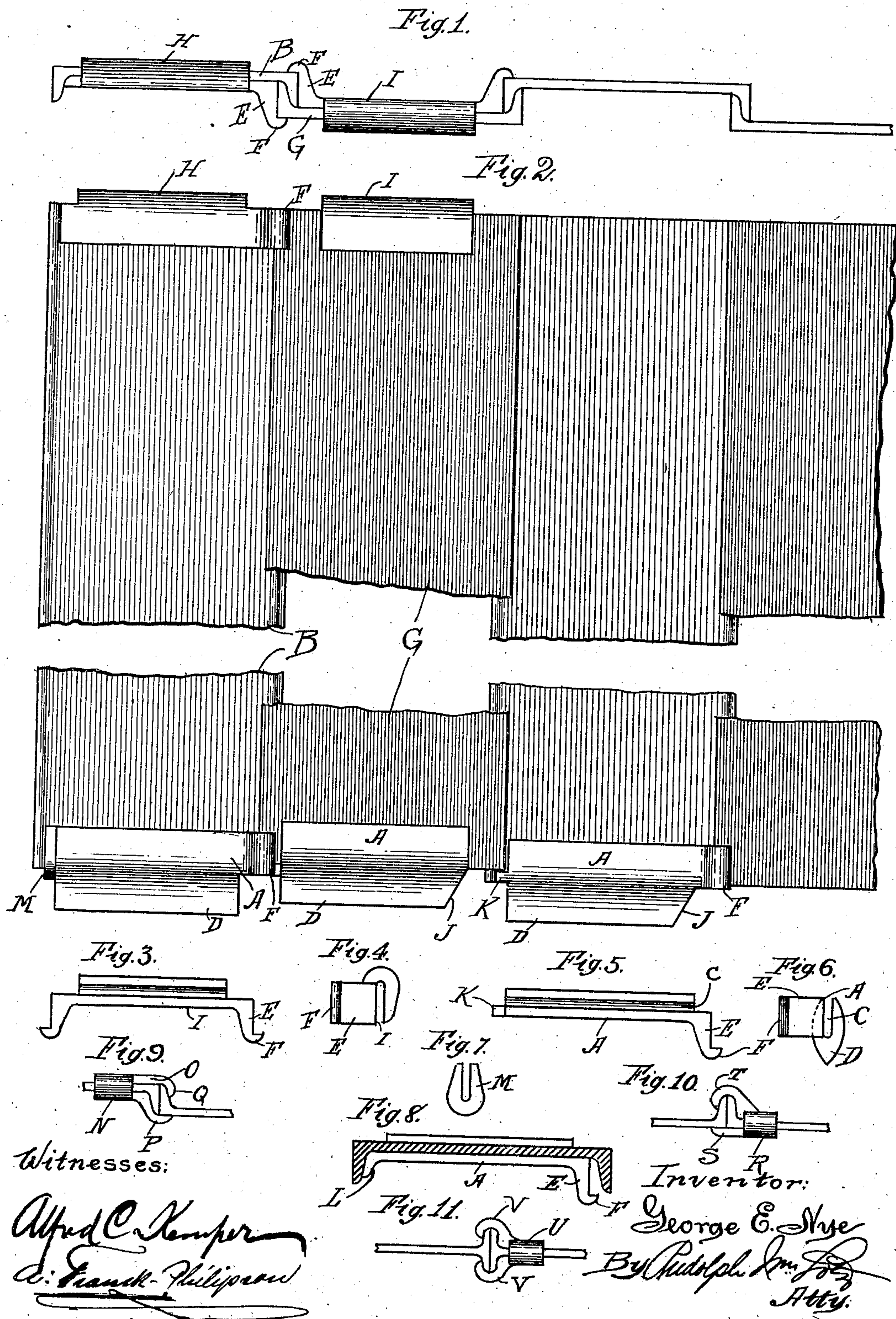


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G. E. NYE.
INTERLOCKING MEANS FOR SHEET PILING.

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INTERLOCKING MEANS FOR SHEET-PILING.

No. 860,053.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE E. NYE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Interlocking Means for Sheet-Piling; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to a novel construction in devices adapted for use in connection with structural iron to enable the same to be used as sheet piling and to be driven in such a manner as to be guided similarly to interlocking sheet piling the object being to provide 15 simple, cheap and efficient devices of this character which are capable of being easily mounted upon and removed from the structural iron and consists in the features of construction and combinations of parts hereinafter fully described and claimed.

20 In the accompanying drawings illustrating my invention Figure 1 is a top plan view of sheet piling showing devices constructed in accordance with my invention disposed thereon. Fig. 2 is a view in side elevation partly broken away of sheet piling similarly 25 provided with said devices. Fig. 3 is a bottom plan view of a guide member adapted to be mounted on the upper end of the sheet piling unit. Fig. 4 is an end elevation of the same. Fig. 5 is a top plan view of a guide member adapted to be disposed on the bottom of 30 a sheet piling unit. Fig. 6 is an end elevation of the same. Fig. 7 is a detail view in side elevation of a member employed in connection with the driving member at the lower end of a unit. Fig. 8 is a top plan view of a driving member of modified construction 35 adapted to be disposed on the lower end of a unit and showing a channel bar upon which the same is mounted. Fig. 9 is a fragmentary detail plan view of sheet piling of modified form and showing a modified form of construction of guide member disposed thereon. Figs. 40 10 and 11 are similar views showing further modifications in construction.

Sheet piling for light work such as construction of sewers, dikes, reinforcement of foundations of buildings and the like may be very light and need not 45 necessarily be of the interlocking type. It is desirable, however, in the construction of such sheet piling to provide proper means for guiding each unit in driving the same with relation to the preceding unit or units driven so as to provide an unbroken relatively 50 straight wall thereof.

Interlocking sheet piling of many different forms has been designed for this particular purpose but the construction of such piling is relatively very expensive

and consequently such piling is not well adapted for the uses above mentioned. 55

Recently the idea has been conceived of constructing interlocking sheet piling in which the units interlock at their upper and lower ends only, such interlocking means serving mainly as guides in driving each successive unit. This construction necessitates the 60 permanent securing of the interlocking members or devices to the units and the latter being obliged to be punched and the interlocking means then riveted or bolted thereto.

To punch the units for which special facilities are required costs approximately three dollars per ton and the bolting or riveting of any parts thereof costs approximately four dollars a ton irrespective of the length of the units or the number of holes punched and rivets or bolts inserted, the total cost being approximately 70 seven dollars per ton.

The structural iron employed as sheet piling units should preferably be so constructed as to enable the same to be used for ordinary purposes after the same has been used for piling, but where interlocking means 75 are secured permanently, the cost of disassembling detracts so much from the value as to render it salable for ordinary structural purposes only at a great loss.

The object of my invention is to provide removable guiding and interlocking devices for structural iron 80 such as channel bars and I-beams to adapt the same for use as sheet piling and which said devices are mounted and removed at substantially no cost whatsoever for labor and relatively very small cost of material, thus affecting a very considerable saving on each ton. To 85 these ends I provide a guide member A adapted to be mounted upon the lower end of the channel bar B, and be driven therewith into the earth and said member consisting of a U-shaped plate in the recesses C of which the lower end of the web of the channel bar B is adapted 90 to be received, said recesses being preferably of slightly less width than the thickness of said web so that when driven on the latter, it will hold very tightly thereto. The said member A is preferably provided with a sharp extension D to render the driving of the unit relatively 95 easy and is provided at one end of one of its flanges with a flange E having a short flange or projection F at its free end, said projection being disposed adjacent one flange of the channel bar and the flange F overhanging the recesses between said flange of said channel 100 bar and said flange E, said recesses being adapted to receive the oppositely disposed flange of an adjacent channel bar G and serving as a guide for driving said channel bar B parallel with and in relatively close contact with said channel bar G. 105

In driving a wall of sheet piling consisting of a num-

ber of alternately oppositely disposed channel bars, the first thereof is driven in proper position being devoid of any guiding or interlocking means. In driving the next adjacent channel bar, one of said guide members A is disposed on the lower end thereof and engages the flange and adjacent edge portion of the rear face of the web of the already driven channel bar in order to cause said lower end of said channel bar to be driven to follow the course of the first driven channel. In order to prevent the upper end portion of said channel bar to be driven or being driven from moving laterally out of the desired path, a guide member H of construction substantially identical with the guide member A is disposed upon the upper end of the driven channel and similarly engages the channel to be or being driven, each channel being thus guided at two points with relation to the next preceding driven channel. The said member H is devoid of the enlargement or extension D of the member A and need not necessarily hug the web of the channel bar closely as it will be removed after having performed its function after each successive unit or channel bar driven. After having driven two of said channel bars and it is desired to drive a third or more of said units, a guide member I is provided which is provided at both ends of one of its flanges with said flanges E and short flanges or projections F at the free ends of said flanges, the distance between the outer faces of said flanges E being such as to provide sufficient space between the same and the inner faces of the adjacent flanges of the channel bar on which said member is mounted to receive the flanges of the next two adjacent channel bars. Thus one of said flanges E will engage the flange of the unit driven next in advance to that upon which said member I is mounted, while the recesses between the other of said flanges and the outer or free flanges of the unit on which said member is mounted will receive and guide the flange of the unit to be next driven. The latter will, at the same time, carry a member A at its lower end as previously described.

Where the channel bars are driven in the relation shown in Figs. 1 and 2, the tendency of each successive unit driven will be to hug the next preceding driven unit, this being due to the pressure of the earth thereon, thus causing the inner faces of opposing flanges of adjacent units to remain in close contact. This action may, however, be further insured by cutting away one end of the projection D of the member A at an incline as at J in an obvious manner, such inclined surface serving to deflect the channel bar slightly in its downward course so as to cause the inner faces of the flanges of the already driven channel bar and that being driven to be maintained in snug contact. As previously stated, said members A are driven upon the lower faces of the channel bars and obtain a very firm hold thereon. This is not essential in driving the unit as the pressure of the earth would hold such guide member in position, but in withdrawing such members from the earth, such hold would cause said members A to be withdrawn from the earth with said units so that the latter would not all be lost. The loss thereof would not be of consequence as the expense is relatively very small, but such loss could be somewhat reduced by providing a sufficiently firm hold as described.

In order to prevent lateral movement of said members on the channel bars, it is necessary that the end opposite the flange end of each member A should abut against a stop. To this end the flange of the member A disposed in contact with the inner face of the web is preferably provided with a projection K at one end which abuts against the outer or free flange of the member being driven. In driving the next succeeding channel bar or unit, however, the lower end thereof may strike said projection or a flange L which may be provided in place thereof as shown in Fig. 8, and thus knock said member A either entirely off the unit on which it is mounted or at least so far loosen and cant the same as to prevent it from being withdrawn with the unit subsequently. I prefer therefore instead of employing said projection K on said member A to provide a small U-shaped member M which is disposed between the free flange of the member being driven and the adjacent end of the member A mounted thereon, and which may be knocked off by the next succeeding unit or channel bar driven without disturbing said member A, said channels as herein illustrated being driven from right to left successively. Said channels are not necessarily of uniform length. Attention is directed to the fact that the inclined portion J of the member A on the unit G is disposed on the opposite end relatively to the portion J on the next adjacent unit.

My said device may be variously modified to adapt it to different forms or relative positions of the structural iron units as shown in Figs. 9, 10 and 11. If, for example, it is desired to drive the channel bars so that the flanges thereof are in contact with each other on their outer ends and alternate channel bars are oppositely disposed a U-shaped guide member N may be employed which is provided at one end of each of its flanges with projections O and P respectively, the flange O being provided at its free end with a hook Q adapted to engage the free end portion of the flange of the next adjacent bar and the projection P being adapted at its free end to engage the outer face of the web of the next adjacent channel bar thus effectually guiding said channel bars with relation to each other.

If the channel bars are driven so that the outer faces of their flanges are in contact and extend in the same direction, the U-shaped member R may be provided with a straight projection S and a hooked projection T, the latter of which is adapted to receive the free ends of both the abutting flanges of two adjacent channel bars.

As shown in Fig. 11 the U-shaped member U may be provided with two hook projections V each of which is adapted to receive the free ends of the flanges of two adjacent I-beams, on one of which said member U is mounted.

My said device is exceedingly simple and efficient and in light sheet piling work will affect a great saving in cost of construction.

I claim as my invention:

1. The combination with structural iron units, of U-shaped members adapted to be removably mounted upon the ends of the webs thereof, and projections on said members adapted to engage adjacent units to prevent relative lateral movement of said units.
2. The combination with a driven structural iron unit and a unit to be driven, of a U-shaped member receiving the lower end of the latter and provided with a projec-

tion engaging the former, and a similar U shaped member receiving the upper end portion of the driven unit and provided with a projection engaging the unit to be driven. said U-shaped members serving to prevent relative lateral movement of said units.

3. The combination with a driven structural iron unit, and a unit to be driven, of a member having a recess adapted to receive the lower end of the web portion of the unit to be driven, and means on said member engaging said driven unit at a plurality of points to cause the lower end of said unit to be driven to follow said driven unit.

4. The combination with a driven structural iron unit, and a unit to be driven, of a member having a recess adapted to receive the lower end of the web portion of the unit to be driven, and means on said member engaging said driven unit at a plurality of points to cause the lower end of said unit to be driven to follow said driven unit, a member having a recess adapted to receive the upper end of the web of the driven unit, and means on said member engaging the unit to be driven at a plurality of points to guide the same.

5. The combination with structural iron sheet piling units having flanges at their edges, and adapted to be driven side by side to form a continuous wall, of members having recesses adapted to receive the ends of the webs of said units, and flanges on said members pro-

vided at their free ends with projections and coacting with the flanges of the units on which they are respectively mounted to engage the flanges of the other unit to prevent relative lateral movement of said units.

6. The combination with structural iron sheet piling units having flanges at their edges, and adapted to be driven side by side to form a continuous wall, of members having recesses of less width than the thickness of and adapted to receive the ends of the webs of said units, and flanges on said members provided at their free ends with projections and coacting with the flanges of the units on which they are respectively mounted to engage the flanges of the other unit to prevent relative lateral movement of said units.

7. The combination with units each comprising a web portion provided with edge flanges, of members provided with recesses adapted to receive the ends of the webs of said members, and projections on said members coacting with the flanges of said units on which they are mounted to form recesses adapted to receive the flanges of adjacent units to prevent relative lateral movement of said units.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

GEORGE E. NYE.

Witnesses:

A. FRANCK-PHILIPSON,
RUDOLPH WM. LOTZ.