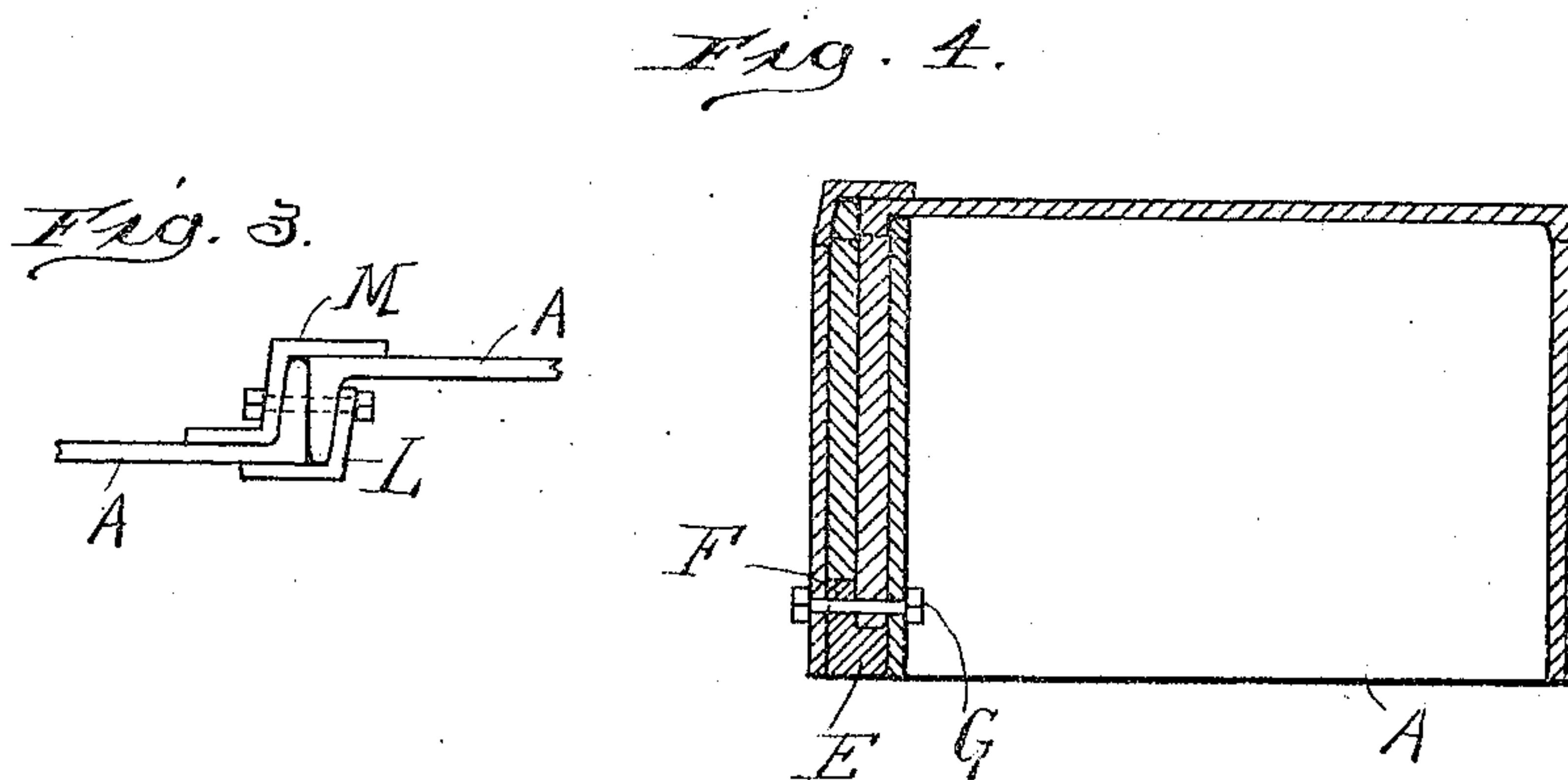
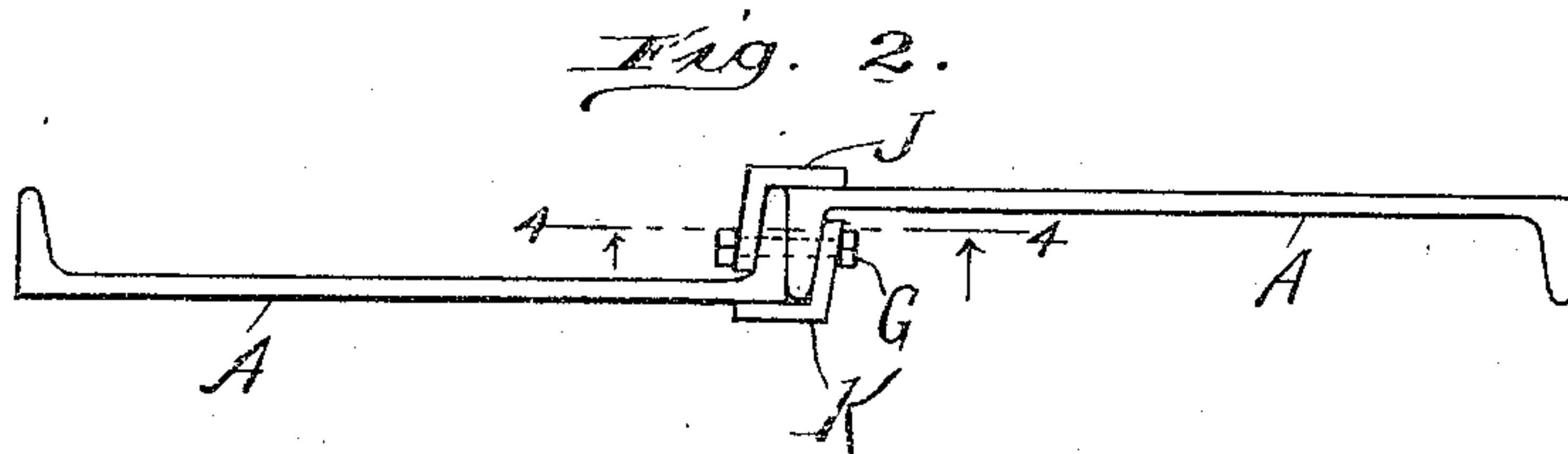
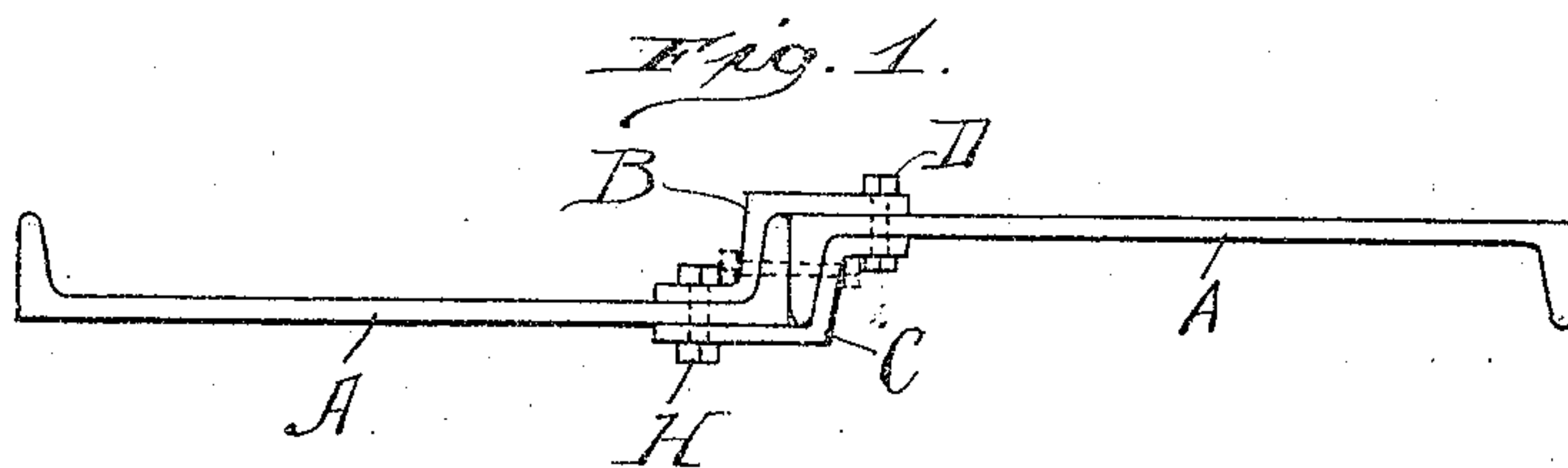


No. 840,952.

PATENTED JAN. 8, 1907.

G. E. NYE.  
INTERLOCKING METAL SHEET PILING.

APPLICATION FILED JUNE 26, 1906.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## INTERLOCKING METAL SHEET-PILING.

840,952.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed June 26, 1906. Serial No. 323,513.

*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 Metal 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.

My invention relates to a novel construction in interlocking metal sheet-piling, the object being to provide sheet-piling in which the units employed consist entirely of standard structural iron; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a plan section of sheet-piling constructed in accordance with my invention. Figs. 2 and 3 are similar views of slightly-modified forms of construction. Fig. 4 is a fragmentary vertical section on the line 4 4 of Fig. 2.

My said invention consists of channel-bar units A disposed with the outer faces of the flanges of adjacent units in contact, said units being, however, alternately oppositely disposed. To each of said units adjacent one side thereof I secure Z-bars B and C, said Z-bar B being disposed so that one of its flanges lies in contact with the outer face of the web of the channel-bar and so that its web portion is disposed substantially parallel with the outer face of the flange of said channel-bar adjacent which said Z-bar is secured. Said Z-bar C is secured to the channel-bar, so that one of its flanges lies in contact with the inner face of the web of said channel-bar and so that its web portion lies practically in contact with the inner face of the flange of said channel-bar adjacent which said Z-bar is secured. The other flange of said Z-bar C projects beyond the side edge of the channel-bar and together with said Z-bar B and the outer face of the flange of the channel-bar forms the L-shaped recess in which the side edge portion and flange of the next channel-beam A is adapted to be received, the latter being held therein against lateral movement in all directions, as will be obvious. Both of said Z-bars B and C may be secured to the chan-

nel-bar by means of bolts D, passing through the first-named flanges thereof and through the web of the channel-bar, or said Z-bars may be maintained loosely in position on said channel-bar in the following manner.

I provide a foot-piece E, consisting of a cast block the body of which corresponds in shape and in size with the cross-sectional area of two abutting flanged portions of adjacent oppositely-disposed channel-bars and which at its upper end is cut away on one-half its area to provide a recess in which the flanged portion of one of said channel-bars is adapted to be received, the flanged portion of the other channel-beam being adapted to rest upon the projecting portion F of said block. A bolt G passes through said portion F of said block, through the flange of the first-named channel-beam extending into said recess or cut-away portion of said block, and through the webs of said Z-bars B and C, the latter being thus secured at one end to the channel-bar and at their other ends or throughout practically their entire flanges being free. In driving a unit thus constructed the Z-bars will obviously be drawn into the ground with the channel-bar, and the pressure of the earth on said Z-bars will act to maintain said bar C firmly in position on the channel-bar and will serve also to crowd said bar B against the outer corner of the channel-bar. The upper end portion of the latter may then easily be forced outwardly to admit the flanged portion of the next unit into the recess between the web portion of said bar B and flange of said driven channel-bar. In driving the next unit said bar B will obviously be crowded outwardly to admit the flange of said second unit, and after the latter has been driven the projecting upper ends of said Z-bars may obviously be bolted to the upper ends of said channel-bars by means of a bolt H and other bolts disposed in alinement with the bolt D. The pressure of the earth would of itself maintain all of said parts in proper relative position, as will be apparent. The crowding in of said part may obviously be avoided by primarily bolting or otherwise securing the same to the channel-bar throughout its length.

In place of using two Z-bars in the relation above described two angle-irons J and K may be employed, which are secured at one end to said foot-piece F, together with one of



said channel-bars A, in the same manner as the Z-bars above described. The said angle-irons act in exactly the same manner as said Z-bars except that the angle-iron K cannot be rigidly secured to the channel-bar before the same is driven in the manner of said Z-bars. If desired, said angle-iron J may be secured to the channel-bar with which it is driven by means of bolts or rivets passing through the web of said channel-bar and through one flange of said angle-iron, and said angle-iron K may be secured to the flange of said channel-bar by means of rivets, as will be obvious, such means for securing said bars being common, and therefore omitted from illustration. It is my intention, moreover, to avoid the use of means for rigidly securing the Z-bars or channel-irons to the channel-bar throughout the entire lengths of all parts in order to avoid expense of labor as far as possible, and, furthermore, for the reason that I do not deem this necessary on account of the action of the earth, the pressure of which will obviously perform the same function as bolts or rivets.

In Fig. 3 I have illustrated another modified form of construction, in which the angle-iron L and a Z-bar M are employed. This construction does not differ materially from those previously described, and particular description thereof is therefore omitted.

It will be noted that by means of this construction the benefit of the full width of each channel-bar is obtained. The interlocking means, of which many various kinds are employed, are of use only to guide successive units, as after the units have once been driven there is little if any danger of their becoming relatively displaced in most instances. Where the piling is subjected to very unequal pressures, such as would tend to relatively dis-

place the units, means for holding them against lateral displacement at opposite ends will usually be found amply sufficient.

I claim as my invention—

1. Metal sheet-piling comprising in combination, alternately oppositely disposed channel-bars having the outer faces of their flanges abutting against each other, and independent interlocking means comprising two opposing members each adapted to engage the free end portion of a flange of one unit and the web of the next adjacent unit, said members being connected at one end with a foot-piece and being adapted to be driven with one of said units and serve as a guide for the next adjacent unit, the free portions of said members being adapted to be maintained in proper position relatively to said units by pressure of the earth.

2. Metal sheet-piling comprising in combination, alternately oppositely disposed channel-bars having the outer faces of their flanges abutting against each other, and independent interlocking means comprising two opposing members each having two relatively angularly disposed plane portions adapted to receive the free end portion of the flange of one unit and the adjacent web portion of an adjacent unit, a foot-piece connecting said members at one end and on which said units are adapted to rest, the free portions of said members being adapted when driven to be held by pressure of the earth in engagement with the said units to interlock the same.

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

GEORGE E. NYE.

Witnesses:

RUDOLPH WM. LOTZ,  
ARTHUR A. LOTZ.