No. 771,426. PATENTED OCT. 4, 1904.

W. C. HARDER.

SHEET PILING.

APPLICATION FILED OCT. 1, 1903.

NO MODEL.

Fig. 1.

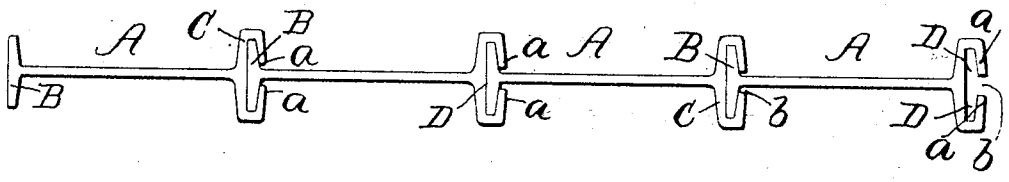



Fig. 2.

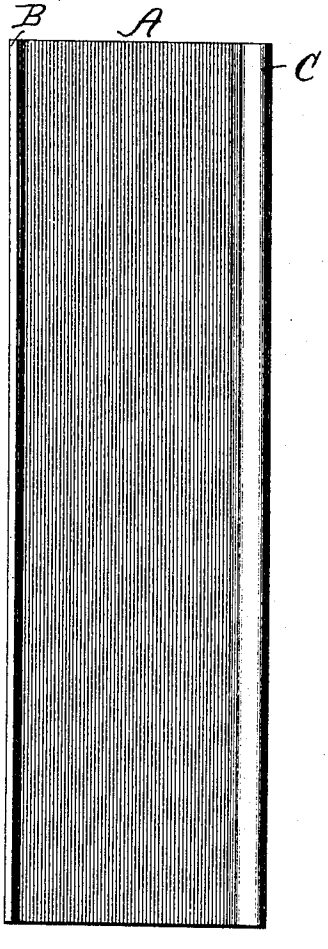



Fig. 3.

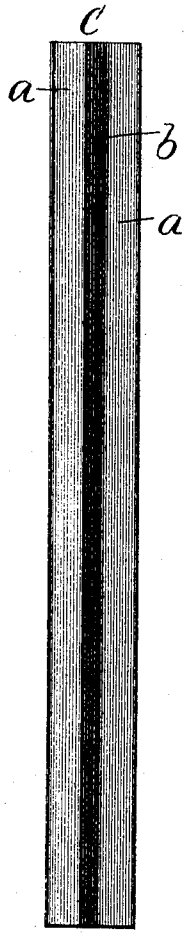



Fig. 4.

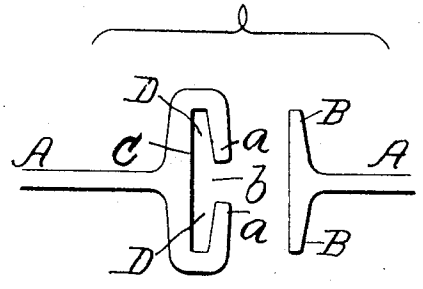
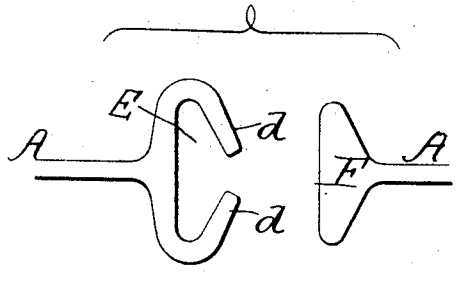



Fig. 5.




Witnesses:
Chas. S. Seyford.
Geo. C. Dawson.

Inventor:
Walter C. Harder.
By L. B. Copeland.
Atty

PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 771,426. Patented October 4, 1904.

# UNITED STATES PATENT OFFICE.

WALTER C. HARDER, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHARLES W. ANDREWS, OF CHICAGO, ILLINOIS.

## SHEET-PILING.

SPECIFICATION forming part of Letters Patent No. 771,426, dated October 4, 1904.

Application filed October 1, 1903. Serial No. 175,348. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER C. HARDER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Sheet-Piling, of which the following is a specification.

This invention relates to improvements in metal sheet-piling for use in the construction of sea-walls, levees, docks, coffer-dams, caissons, bridge-pier foundations, sheeting for mine-shafts, and all similar work whether of a permanent or temporary character.

This invention has for its object to provide beam-piling sections in which the interlocking features necessary in holding the sections loosely together when assembled in a wall structure is made an integral part of the piling-sections, which are duplicates of each other, and dispenses with the use of a separate locking means mechanically secured to the beams.

In the drawings, Figure 1 is a plan of a wall structure, showing a number of beam-sections assembled together which embodies the improved features. Fig. 2 is a side elevation of one of the beam-sections. Fig. 3 is an edge elevation of the same. Fig. 4 is a plan of the joining edges of two sections in a disengaged position, and Fig. 5 is a modification.

The beam-piling sections A are duplicates of each other, so that the same reference character will be used on each section as a whole.

One edge of each beam-section is formed with a straight cross-flange B, like that of the ordinary **I**-beam flanges. The other edge is provided with a similar cross-flange C, having an inturned angle-hook extension *a* from what would be the terminal edges of the cross-flange part and forming an integral interlocking beam edge of a contour corresponding to the letter **C**. The respective hook edges *a* stop short of each other and leave a longitudinal opening *b* for the reception of the adjacent web part of the joining beam-sections. In assembling the sections the cross-flange B of next joining beam-section telescopes endwise into engagement with the longitudinal groove or recess D, formed in the **C** edge, the hook edges *a* overlapping the inner side of the flange B and locks the parts together, as shown in Fig. 1. The groove D and the engaging flange will be of a corresponding shape, so as to comparatively form a tight joint and at the same time permit of the parts being assembled or separate with facility. By means of this integral locking arrangement much valuable time, material, and expense is saved, as the use of all separate parts, such as angle and **Z** irons, are entirely dispensed with.

The contour of the interlocking engaging parts may be varied or changed, as shown in the modification Fig. 5, and without materially departing from the characteristic features of the improvement set forth.

In the modification referred to the groove or recess E in the **C** part presents a greater area, the hook edges *d* being more widely extended, the engaging flange F being correspondingly large, with a greater slope to the bearing sides overlapped by the clamping-hook edges of the engaging section.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In sheet-piling, a beam-section, provided on one of its edges with an integral cross-flange and having a flanged recess in the other edge corresponding to the contour of said cross-flange.

2. A beam piling-section, comprising in its integral structure, a web part, a cross-flange on one edge thereof, and a cross-flanged recess in the opposite edge.

3. A beam piling-section, having a straight cross-flange on one of its edges and a **C**-shaped flange on the other edge.

4. In sheet-piling, a beam-section provided with a **C**-shaped flanged edge and a companion beam provided on its joining edge with a cross-flange engaging the recessed **C** edge.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER C. HARDER.

Witnesses:

EDWARD I. BUCKLIN,

G. E. CHURCH.