J. F. HUME.

Cast Iron Piers.

No. 167,253. Patented Aug. 31, 1875.

Fig. 1.

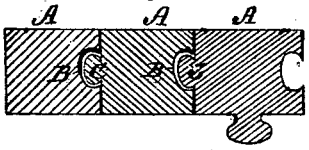


Fig. 2.

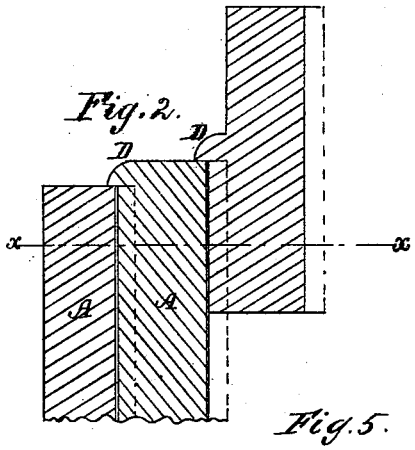


Fig. 4.

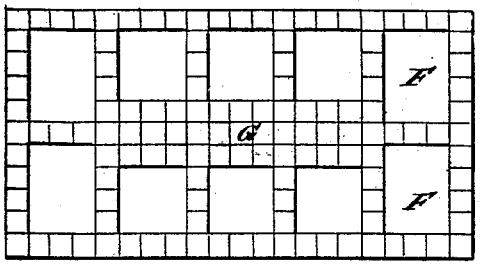


Fig. 3.

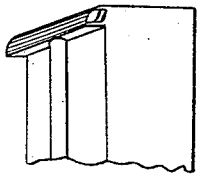
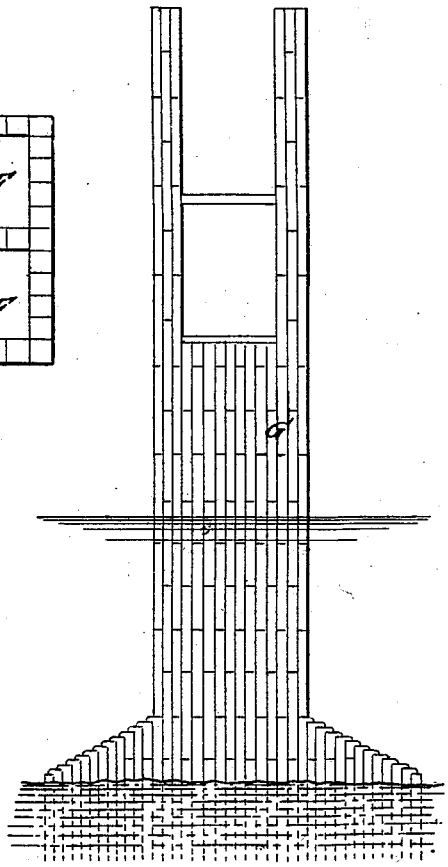


Fig. 5.



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IMPROVEMENT IN CAST-IRON PIERS.

Specification forming part of Letters Patent No. **167,253**, dated August 31, 1875; application filed June 5, 1875.

To all whom it may concern:

Be it known that I, JOHN F. HUME, of the city, county, and State of New York, have invented new and useful Improvements in Cast-Iron Piers, of which the following is a specification:

My invention consists of piles for cast-iron piers, contrived, in their longitudinal direction, to interlock when driven side by side, so as to bind them together securely for building piers, the forms of the interlocking ribs and grooves being so contrived that the sand, sediment, or other matters filling the grooves of the piles that have been driven may be displaced by the piles being driven without binding and clogging. The invention also consists of a means of locking the piles together vertically, and finishing the top of a foundation, or a pier, or constructing a lateral abutment, by means of a flange on the piles, to overlap, and rest the head of one on another.

Figure 1 represents piles in cross-section on line *x x* of Fig. 2, showing the method of connecting them side by side. Fig. 2 is a sectional elevation of the piers, showing the manner of binding the piles vertically. Fig. 3 is a perspective view of the flange part of pile. Fig. 4 is a top view of a pier and foundation; and Fig. 5 is a side elevation of a pier for a suspension-bridge constructed of piles, as I propose.

Similar letters of reference indicate corresponding parts.

A represents end sections of piles of cast-iron, which may be of any approved size and length, two of the sides of which are grooved, as represented at B, and the other two sides are ribbed, as at C, the grooves being much narrower at the side of the pile than in the interior, and the ribs being of corresponding form, so as to be interlocked by sliding the rib of one lengthwise in the groove of the other, and to securely connect the piles against lateral separation. The grooves are also much larger in the interior portion than the corresponding portion of the rib, in order that space may be provided in which the sand and sediment filling the groove of a pile that is driven, and which cannot be expelled by the pile being driven, may be packed so as not to bind and obstruct the driving of one pile with its rib in the groove of another, as it will if the groove is only large enough for the rib. At the same time the dimensions of the mouth of the groove and the neck of the rib are such that the piles are held closely together. D represents the flange or head for holding the piles together vertically in building a foundation, or making any lateral reduction in the size of the structure. This flange may be placed directly on the end of the pile, as in Fig. 2, if the reduction is to be abrupt; or it may be placed more or less distant from the end, according to the graduation wanted, as in Fig. 3.

The foundation of the pier, Fig. 5, is represented as constructed of piles having the flange at the end, giving a low rise to the top; but it may be increased by having thicker flanges, or having them more distant from the end. By means of these flanges, in combination with laterally-connected piles, lateral supports of any form may be readily provided for the main structure.

This system of overlapping caps may be carried into the central shaft, so that the whole mass becomes firmly consolidated.

Fig. 4 is intended to represent a simple arrangement whereby a great saving of material, without any sacrifice of strength, can be had in the foundation, and whereby the lateral removal of the sediment into which the piles are driven may be largely avoided, and the sediment itself utilized as a means of support.

The entire foundation might, as a general thing, in this manner, be formed in compartments F, or pockets, from which either a solid or hollow shaft, G, could rise; or it might be carried out at the sides in buttresses, and particularly on the side needing greatest support on account of pressure from ice, drift-wood, or currents.

A principal advantage of this plan is that the foundation can be made of any form or extent best suited to withstand such pressure, as well as to consult the substance upon which, or in which, it is to rest, and to avoid or conform to interposing obstructions, the character and location of which can be easily determined in advance by boring.

The flanges or caps D are designed to pre-

vent a vertical movement of the piles when exposed to upward pressure that is calculated to throw them out of their desired position. By the grooves and ribs they are secured against lateral pressure, but without the flanges an inclination of the structure tends to force up the farther piles. By my flanges D each pile is enabled to hold the next adjacent one against any tendency to an upward movement.

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

1. Piles connecting together, side by side, an interlocking groove in one and rib on the other, when the groove is arranged to afford space in addition to that required for the rib, in which to dispose of the sediment, substantially as specified.

2. The combination of an overlapping flange, D, with a pile constructed to be connected to other piles side by side, substantially as specified.

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