

H. H. TUTHILL.
 CONCRETE PILING FOR BULKHEADS.
 APPLICATION FILED FEB. 18, 1911.

1,004,828.

Patented Oct. 3, 1911.

2 SHEETS—SHEET 1.

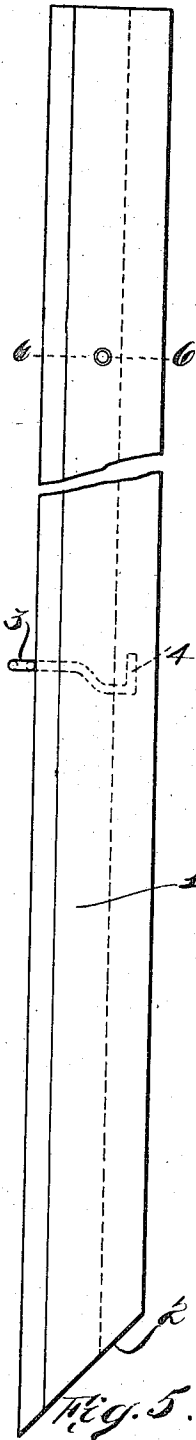


Fig. 1.

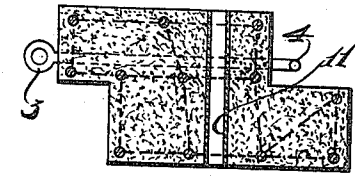


Fig. 2.

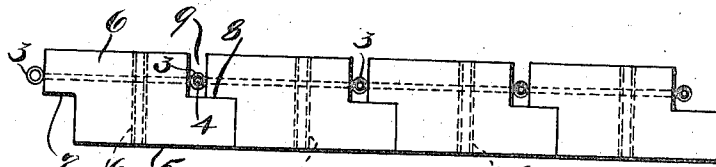


Fig. 3.

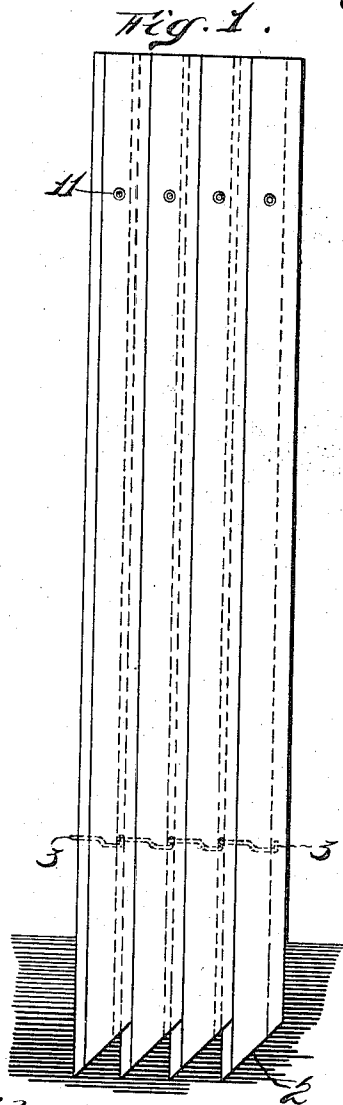


Fig. 4.

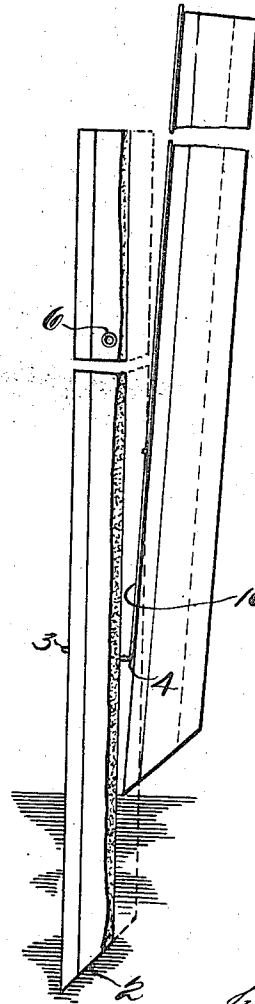


Fig. 5.

Witnesses
 E. A. Jarvis
 Albert H. Baugh

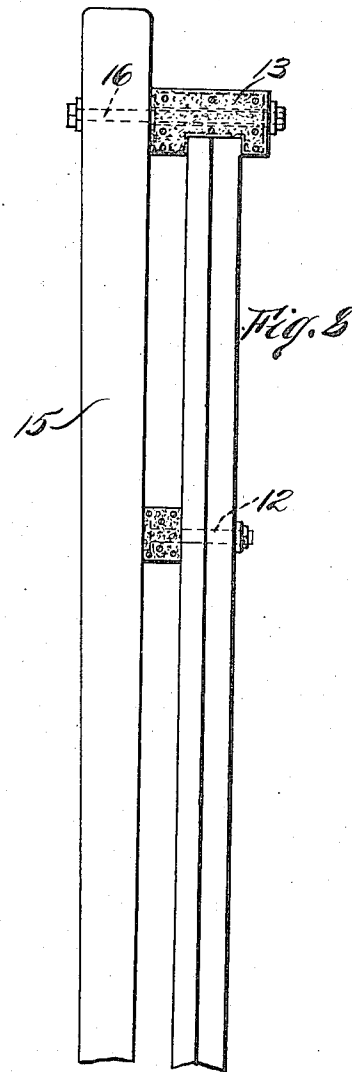
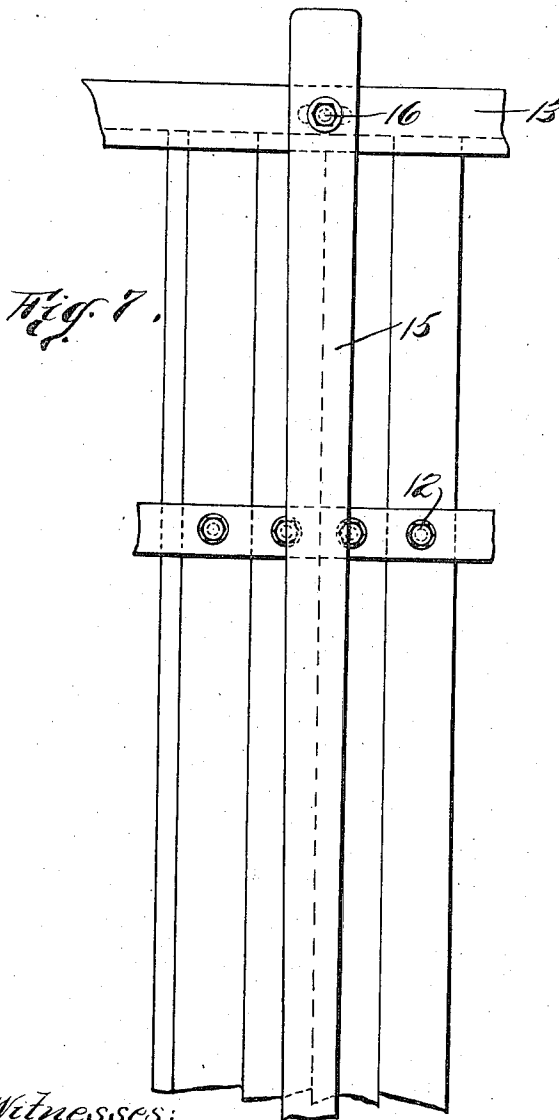
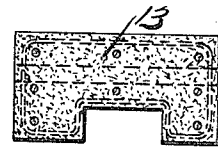
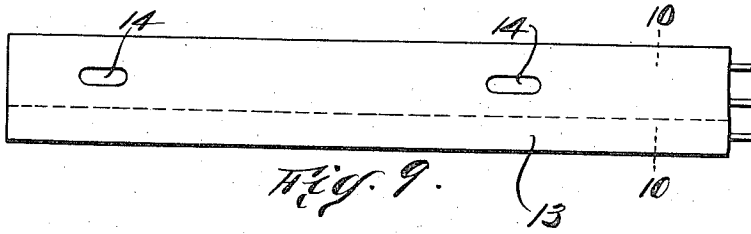
Inventor:
 Harry H. Tuthill
 by F. Warren Wright
 attorney

H. H. TUTHILL.
 CONCRETE PILING FOR BULKHEADS.
 APPLICATION FILED FEB. 18, 1911.

1,004,828.

Patented Oct. 3, 1911.

2 SHEETS—SHEET 2.



Witnesses:
 C. A. Jarvis
 Albert H. Baur

Inventor:
 Harry H. Tuthill.
 by F. Warren Whigley
 attorney

UNITED STATES PATENT OFFICE.

HARRY H. TUTHILL, OF NEW SUFFOLK, NEW YORK.

CONCRETE PILING FOR BULKHEADS.

1,004,828.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed February 18, 1911. Serial No. 609,384.

To all whom it may concern:

Be it known that I, HARRY H. TUTHILL, a citizen of the United States, residing at New Suffolk, Long Island, New York, have invented certain new and useful Improvements in Concrete Piling for Bulkheads, of which the following is a clear, full, and exact description.

The object of this invention is to provide an improved form of sheet piling of reinforced concrete, so that it will be simple to drive, efficient in use, and have closed joints.

A particular object is to so devise the piles that the adjacent piles may be attached or secured together near their base, so that there will be no tendency to spread out fan-wise at the base, which heretofore has resulted in making necessary the use of wedge shaped special pieces to take up the differences in alinement. I am thus enabled to make the individual piles standard and uniform in all respects, and do away with special work on the job to a great extent.

The form of reinforced concrete piling which I prefer to use is one having what is known as ship-lap joints, and I prefer to drive them by a jet of water displacing the sand or earth at their base into which cavity the piles are sunk. My improved sheet piling is particularly applicable for use in bulkhead work.

My preferred form of piling is properly reinforced, and of cast or molded concrete, so that one surface shall be of greater breadth than the other surface, while the sides are formed with reversed steps, one step having a wider tread than the other. As a consequence there will be a space left between the meeting faces on one surface of the pile, while no space will be left at the other surface. Within the space so left on one surface of the pile near its base, I provide a hook on one pile, and a loop on that side of the pile which is to be next to it, so that when a number of piles are in place the loop will engage the hook and hold the piles snugly together in proper vertical alinement at their base. I prefer that these hooks and loops for bulkhead work be a short distance above the solid bed.

The piles are preferably each formed with a hole some distance from the top, for the passage of a bolt, so that they may be bolted together by means of a horizontal stringer preferably also of reinforced concrete, while the tops of the piles are provided with a cap also of reinforced concrete, and preferably extending to one side of the sheet piling the same distance as the horizontal stringer. The cap is preferably formed of reinforced concrete, and may be made separate from the piles, and put into place by grout or it may be molded or cast in place. I preferably provide it with openings at right angles to its length for the bolting of wooden fender piles thereto.

In order that the piles may nest snugly together at their base without spreading as they penetrate the sand or soil, I provide a long tubular pipe, which I first place over a hook on a pile already vertically driven, the pipe passing through the loop on the pile about to be driven so that the pile, even if started at a cant, will have its sharp lower edge resting tightly against the side of the already driven pile, and prevent sand, rocks and stone from getting between the bottom edges of adjacent piles. The deeper the pile is driven the more will even a canted pile be brought into vertical position, although each individual pile should be driven vertical without the cant, the sharp edge in any instance serving to plow away any material that might otherwise lodge between adjacent piles. After the pile is sunk to its proper depth the loop will surround not only the pipe but the hook of the previous pile, when the pipe may be withdrawn, and used for the next driving. In this way, all piles will hug each other closely at their base, where they are within the bed, and as that is the only point where there is any great difficulty of proper alinement, the piles may be driven each one in a perfectly true vertical position.

The scope of my invention will be pointed out in the claims.

In the accompanying drawings: Figure 1 is a front elevation of a series of four piles driven according to my invention. Fig. 2 is

a front elevation showing one pile, partly broken away, and a second pile in proper position to begin its sinking. The slant of such pile is shown as exaggerated, and as explained herein, it may be vertical. Fig. 3 is a front view partly broken away of the pipe used for guiding one pile on the other. Fig. 4 is a plan of Fig. 1 enlarged. Fig. 5 is an enlarged view of one of the piles of Fig. 1, front elevation, and broken away at the middle. Fig. 6 is a sectional view through the pile of Fig. 5 on the line 6-6. Fig. 7 is a front elevation of sheet piling built according to my invention, properly capped with a stringer and fender pile in place. Fig. 8 is a side elevation of Fig. 7. Fig. 9 is an enlarged front elevation of a section of the capping stone for the sheet piling. Fig. 10 is a section through line 10-10, Fig. 9.

As shown in the accompanying drawings, 1 is one of the unit piles of the series which I use. It is formed with an oblique lower edge 2, terminating in a point. Within the concrete, a short distance above what is to be the bed in which the piles are sunk, I provide an iron formed with a loop 3, and a hook 4. Each pile is formed with a surface 5 of greater width than its opposite surface 6, and with two steps, one the step 7 having a tread narrower than the step 8. The hook 4 is located between the surface 6 and the tread of the step 8, while the ring or eye 3 is located as shown in Fig. 4, at the left hand side between the tread 7 and the surface 6. Consequently when the piles are nested together as shown in Fig. 4, there will be a space 9 left between adjacent piles on one side, while they will meet and join each other on their other surface. The purpose of the hook and eye is to hold together at their base adjacent piles to prevent their opening out fanwise, and necessitating as a consequence V shaped adjusting piles. Where the material of the bed will permit the piles may be vertically sunk, one after the other, and the hooks caused to engage with the irons, but as there is a tendency to spread at the base, I prefer to extend the hooks so that the hook will have a greater distance to engage the eye of the adjacent pile. This would obviously use considerable metal which is likely to bend, if the extension of the hook were integral therewith, and of its diameter, and hence I substitute for the extension of the hook a temporary extension in the shape of a tubular pipe 10, which may be passed over the hook and through the eye of adjacent piles, and then the pile lowered along the pipe either vertically or at the slight cant at the beginning of the operation until the pile begins to penetrate the bed. When the pile is penetrating the bed, the pile be-

ing sunk should be in vertical position, and slide down the pipe until the hook is engaged by the ring, when the pipe 10 may be removed. This pipe, hook and ring help to keep the plow edge of the sinking pile close up to the preceding one, and keep all dirt out between the pile, causing them to lie snugly together and each pile in its true vertical line. I prefer to provide each pile with an opening 11 at a distance from its upper edge for the passage of bolts 12, supporting a reinforced concrete stringer 13, and incidentally securing the piles together near their upper end. I also prefer to provide a cap of reinforced concrete 13 formed with openings 14 through which bolts may be passed for securing wooden fender bolts 15. The bolts are indicated at 16. The reinforcing caps may be cast, and put in position in sections, their joints with the top of the piling being well grouted or a frame may be put in position and the caps cast in place as is quite common in concrete work.

I claim as my invention:

1. Sheet piling of the class described, consisting of a series of similar concrete piles, a hook near the base of one pile, a loop to engage the hook on the adjacent surface of the next pile, means for guiding an unsunk pile, so that the hook and loop will keep in line and permit the foot of the pile being sunk to rest closely against the side of the already sunken pile.

2. Sheet piling of the class described, consisting of a series of similar concrete piles, each pile having offset portions on opposite ends of opposite sides of each pile, an offset portion at one side being longer than that at the opposite side, so that when the parts are assembled a space is left between certain portions of adjacent piles, the space thus formed between adjacent piles having respectively a hook and an eye near their base, occupying the space between these surfaces of adjacent piles which do not meet.

3. The herein described sheet piling consisting of a number of piles, each having offset portions on opposite ends of opposite sides of each pile, an offset portion at one side being longer than at the opposite side, so that when the parts are assembled a space is left between certain portions of adjacent piles, and a hook in such space on one pile and an eye in line therewith on the other pile, and means for guiding the eye on the hook during the insertion of one pile into place adjoining a sunken pile.

4. The herein described sheet piling consisting of a number of piles, each having offset portions on opposite ends of opposite sides of each pile, an offset portion at one side being longer than at the opposite side, so that when the parts are assembled a space

is left between certain portions of adjacent
piles, and a hook in such space on one pile
and an eye in line therewith on the other
pile, and means for guiding the eye on to the
5 hook during the insertion of one pile into
place adjoining a sunken pile, means com-
prising a detachable rod fitting over the
hook on the sunken pile.

Signed at New Suffolk, New York, this
13th day of February, in the year one thou- 10
sand nine hundred and eleven.

HARRY H. TUTHILL.

Witnesses:

A. F. PRICE,

BENJ. H. GARRING.
