

(No Model.)

2 Sheets—Sheet 1.

E. S. JARRETT.
CAISSON.

No. 582,744.

Patented May 18, 1897.

Fig. 1.

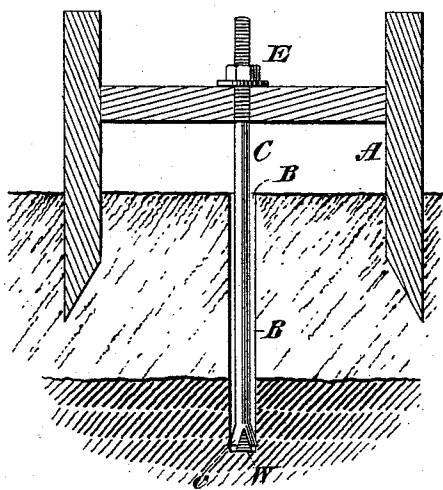


Fig. 4.

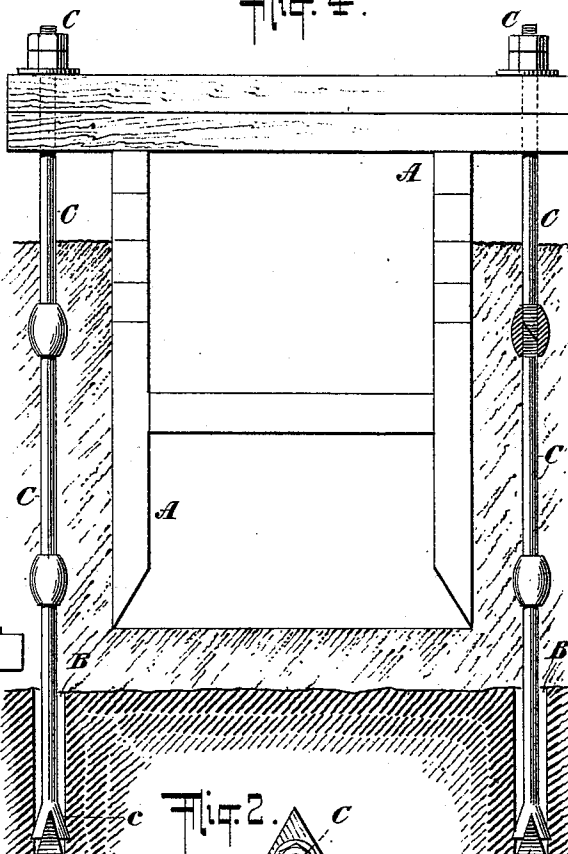


Fig. 3.

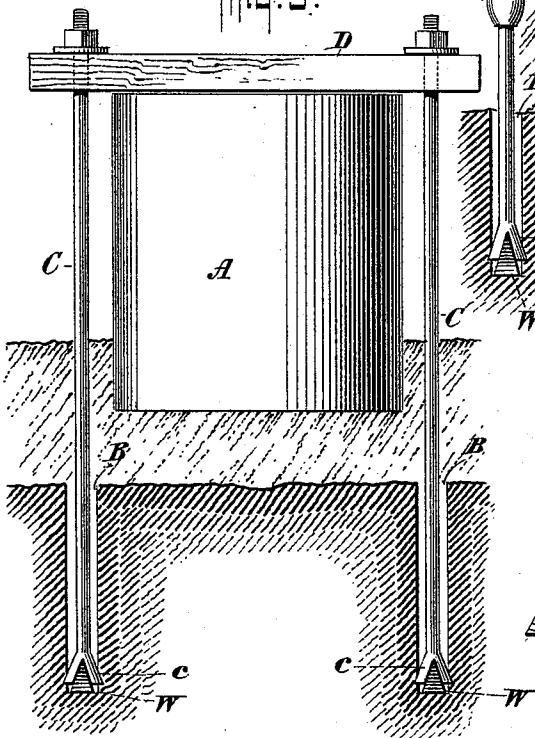
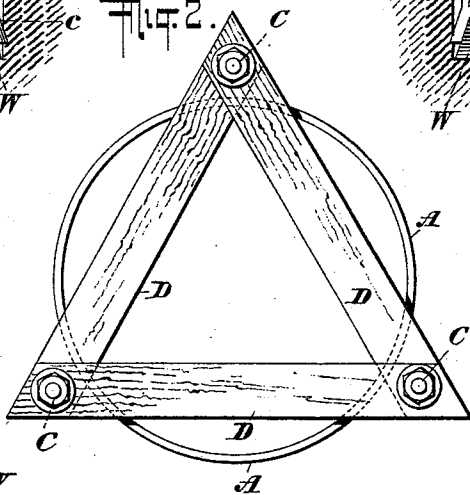


Fig. 2.



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Fig. 5.

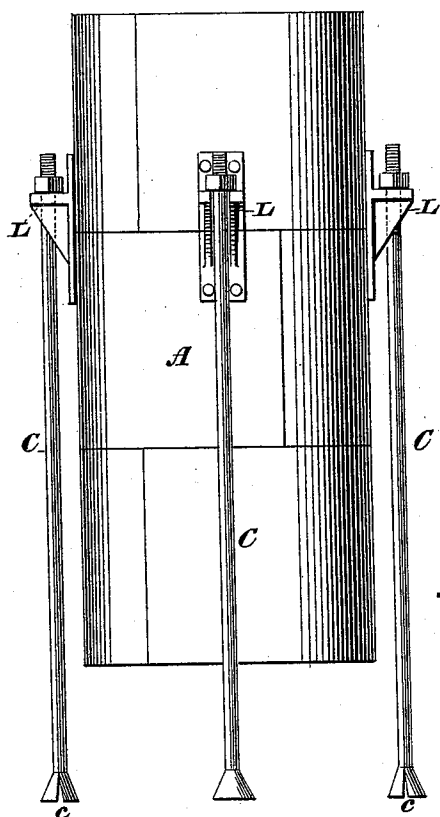


Fig. 6.

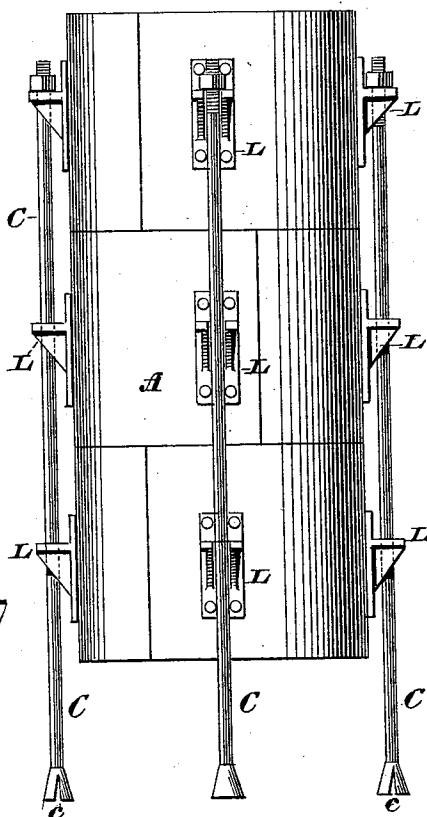


Fig. 7.

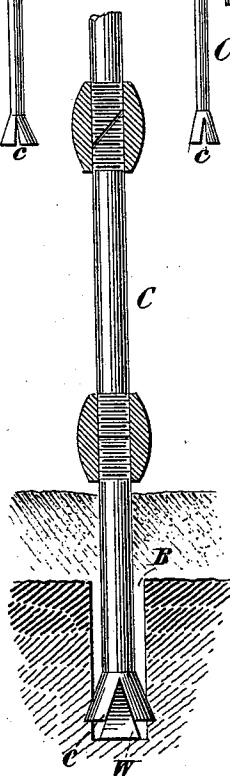


Fig. 8.

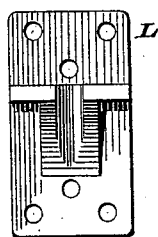
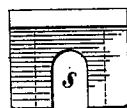


Fig. 9.



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UNITED STATES PATENT OFFICE.

EDWIN S. JARRETT, OF NEW YORK, N. Y.

CAISSON.

SPECIFICATION forming part of Letters Patent No. 582,744, dated May 18, 1897.

Application filed February 17, 1896. Serial No. 579,482. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. JARRETT, of the city, county, and State of New York, have invented a new and useful Improvement in Caissons, of which the following is such a full, clear, and exact description as will enable others skilled in the art to make and use the same when taken in connection with the accompanying drawings, in which—

10 Figure 1 is a cross-section of my improved apparatus. Fig. 2 is a top view of another form of the apparatus. Fig. 3 is a vertical cross-section of the apparatus shown in Fig. 2. Fig. 4 is a vertical cross-section of another form of my apparatus. Fig. 5 is a face view of the apparatus as applied to shafts. Fig. 6 is a face view of a modification of the same as applied to shafts. Fig. 7 is an enlarged view of the suspender-rods, showing the manner in which the sections thereof are jointed together. Fig. 8 is a face view of a bracket sometimes used on the caissons or shafts, and Fig. 9 is a top view of the same.

25 The object of this my invention is to sink through soil or other material a caisson, crib, well, curb, or other structure without the necessity of placing thereon weights to cause the same to sink, and the means of accomplishing the same is by attaching a rod, cable, or other suspender to the rock underlying the material into which the caisson or other structure is to be sunk and pulling the structure down into the soil or other material by the tension exerted through the rods, cables, or other suspenders on the caisson, crib, or structure to be sunk.

30 In carrying out this my invention I use the caisson, crib, or other structure of the form ordinarily employed, and in the rock below the material through which I wish to sink the caisson or other structure, either within the radius thereof or outside the radius of such structure, I key fast one or more suspender-rods and attach the same to the caisson or structure to be sunk, so that by exerting tension on the suspender-rods the structure will be forced into the soil or other material.

40 In Fig. 1 is shown the simplest construction, where through the center of the caisson A has been sunk a bore B into the rock below the caisson, in which is sunk a rod or suspender C, passing through the center of the

caisson A and having at its lower end a slit c, adapted to receive a wedge W, which wedge W is placed with its edge in the slit c, so that it will hold fast while being lowered to the bottom of the bore B without expanding the end of the rod C. When the wedge W comes on the rock at the bottom of the bore B, the rod C is driven down on the wedge, which entering the slit c expands the rod, causing it to firmly grip the sides of the bore B at or about its lowest point. This suspender-rod C is provided on the top of the caisson with a screw-nut E, which may be turned so as to force the caisson down into the soil. This construction would of course be only useful in small work, as no means is provided for keeping the caisson or crib in proper alinement.

Another form of my invention is shown in Fig. 2, where heavy timbers D D D are provided about the top of the caisson A, projecting at three points beyond the edge, and the suspenders C C C are anchored in the rock outside the line of the walls of the caisson A, as shown in Fig. 3.

It is manifest that one, two, three, four, or more suspenders C may be used on one caisson or curb, as circumstances require.

Fig. 4 is a cross-section of a caisson on which four suspender-rods C C are used.

Fig. 5 is a face view of a caisson A, having four or more suspenders C attached thereto, the caisson being made of sheet metal. It has attached brackets or lugs L L L L. (Shown in detail in Figs. 5, 8, and 9, wherein a slot s in the center of the bracket is shown, so that the suspenders or rods C may be put therein without going through a bore in the brackets.) By this arrangement the caisson A may be sunk to such point that an additional section of the caisson or shaft must be added to it, which is accomplished by riveting the same on the top and supplying it with additional brackets or lugs L, to which the suspenders are attached by their proper nuts, as shown in Fig. 6, and the pressure being then exerted on the upper lugs the pressure on the lower series of lugs will be relieved, and the lugs themselves may be removed by cutting off the rivets and closing the rivet-holes in the caisson, leaving a smooth surface on the caisson at the section where the lugs had been. It is manifest that the same course may be

pursued until the required depth of the caisson has been sunk.

The two series of lugs are shown in Fig. 6 as still on the shaft. It is manifest that the lower lugs may be removed, as they serve no purpose after the upper ones are put on.

The rods or suspenders C, I may make with a screw-joint at or near the surface of the material into which they are fastened, so that the suspender may be unscrewed at that joint from the top or surface, as is shown in Fig. 7, wherein the rod C at its lower end is split and driven on a wedge W, introduced for that purpose, so as to expand the rod into the material in which it is sunk, the other joints of the rod being made with a bevel-splice, so they will not uncouple on the turning of the upper section of the rod C. By this means I am able to recover all the suspender-rod C excepting the lower section, and as these rods are ordinarily made of the finest steel, such as they use for machinery-shafting, it is important that they should be recovered when the work is completed.

The suspender-rods C may be attached to rock, hard-pan, or other hard material with good results.

It is manifest that the direction of the caisson or curb A may be regulated by the amount of pressure applied to the sides or corners thereof on the different suspender-rods C, so that the caisson may be kept straight with great accuracy and without the application of weights, as is usually found necessary. Weights may, however, be used on the caisson or curb A to force it down, as well as the suspender-rods, without departing from the nature of the invention, but I have ordinarily found that weights are unnecessary when the suspenders are properly adjusted.

The specification and drawings show the power applied as a nut working on a threaded shaft to draw the caisson down, but it is

manifest that hydraulic or pneumatic pressure-levers or like devices may be used between the suspender-rods C and the caisson A to exert the necessary force to sink the caisson A, instead of the nut and threaded shaft.

I am aware that caissons have heretofore been sunk by driving piles into the ground and pulling up on the piles and down on the caisson, but such pulling is limited by the friction of the pile on the soil and is inapplicable to hard soils or rock formation. The pile depends for its resistance entirely on friction, while in the method here described the attaching of the suspender-rods C is positive and much greater tension or strain may be exerted in pulling down the caisson A than the friction of the pile would permit of.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination herein described of a suspender-rod positively attached to the underlying rock and to the caisson, and mechanism to apply a downward tension on the caisson and upward pull on the suspender-rods, substantially as specified and set forth.

2. The combination in a caisson, of a suspender-rod having a split end, wedge-key, and screw-joint at or near the lower end of the suspender-rod, substantially as specified and set forth.

3. The combination in a caisson, of a slotted or open-edge bracket, and a suspender-rod anchored in the rock below the material into which the caisson is to be sunk, provided on its upper end with a nut to bear upon the upper side of the open-edge bracket, substantially as specified and set forth.

Dated New York, February 13, 1896.

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Witnesses:

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