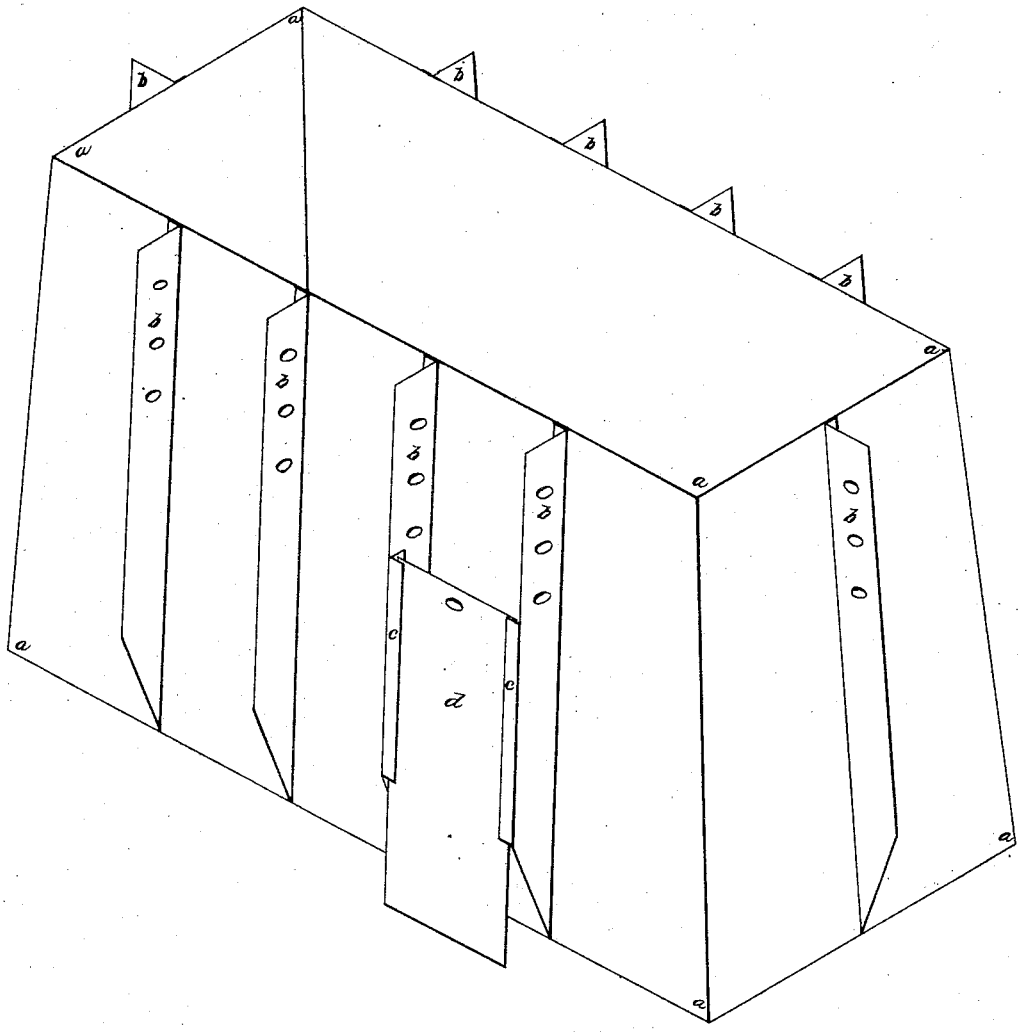
A. Folsom.

Coffer Dam.

No. 46,098. Patented Jan. 31, 1865.



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UNITED STATES PATENT OFFICE.

ARTHUR FOLSOM, OF NEW YORK, N. Y.

IMPROVED COFFER-DAM.

Specification forming part of Letters Patent No. **46,098**, dated January 31, 1865.

To all whom it may concern:

Be it known that I, ARTHUR FOLSOM, of New York, in the county and State of New York, have invented certain new and useful Improvements in Coffer-Dams; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, and to the letters of reference marked thereon.

In the ordinary method of making coffer-dams for the foundations of sea-walls, bridges, and other similar structures under water, two or more rows of piles, properly hooped and shod with iron, are driven around the site of the proposed work a sufficient distance apart to admit the bracing requisite for strength, and to provide space for the reception of a quantity of clay or other puddling material to prevent leakage. When the coffer-dam thus constructed is of large size, the bracing of the sides thus exposed over their entire length to a pressure that cannot be otherwise adequately provided for, on account of the inconvenience, and sometimes the impossibility, of admitting anything within the interior line of piles for that purpose, involves an expense in construction which has often been greater than the cost of the material and labor more directly expended upon the work itself, the construction of which it has been designed to assist. In making coffer-dams in water of considerable depth this difficulty is greatly enhanced by the rapid increase of the pressure on each square inch, amounting to about a pound for every two feet, so that the pressure on an area of ten feet square at the depth of fifty feet amounts to about one hundred and eighty tons. In commencing a structure of this character, therefore, upon a foundation of yielding character the exterior pressure tends to displace the unstable material between the piles, and if the foundation be hard or rocky the difficulty in placing and fixing in position such long piles becomes almost insuperable.

It is from these considerations arises the fact that in building a coffer-dam after the ordinary plans the work must necessarily be performed in so thorough a manner that when its office has been fulfilled but little of the material can be again used to advantage, and it costs more to remove it than it is worth, and nearly as much as it did to construct.

Owing to the difficulty and expense of constructing wooden coffer-dams, it has been hitherto attempted to make them of cast-iron piles, driven some distance apart in the rows, and formed with grooves in their sides for the reception of cast-iron sheet piling to fill the intervening spaces; but it has been found as costly to provide and more difficult to manage, and involves nearly as much loss in its removal.

The object of my invention is to provide a coffer-dam that is free to a very great extent from these objections; and it consists in making it of wrought or sheet iron, stiffened and strengthened to the degree required by means of corrugations or angle-iron ribs, and provided with appliances for adapting it to the irregularities of the bottom upon which it may be used.

To enable others skilled in the arts to which it appertains to make and use my invention, I will proceed to describe its construction and operation with reference to the drawing.

The sheet or boiler iron box *a a* is made without a bottom, and furnished with angle-iron ribs *b*, that are provided with suitable holes for the attachment of chains or ropes for the purposes of transportation or retaining it in position. These ribs, or as many of them as may be necessary, are supplied or fitted with angle-irons *c* on the exterior edges to retain the slides *d*. If the coffer-dam were to be used on a level surface, it would not be necessary to use these supplementary slides *d;* but where the foundation is uneven these slides are supplied to those portions of the coffer that are above the greatest depressions, and are extended down to meet them; or the coffer may be entirely incircled with slides that may be extended as required. The spaces between the slides and the coffer-dam should be filled with a puddling of well-tempered clay or with other suitable material by which the joint between the dam and the bottom may be entirely closed. Where the inequalities of the bottom require them, the sides of the coffer may be extended by similar slides between the external ribs and placed against the coffer,

so that the clay or other puddling material is retained between an internal and an external slide.

The coffer-dam represented by the drawing is made smaller at the top than at the bottom, in conformity with the ordinary shape of piers for bridges, and it is designed to be used in the formation of concrete or beton work, which is molded to its interior shape, and around which it is retained until the concrete has completely set. Sea-walls may be built in sections, and in section after section with the same coffer, and without injury to the latter, as, where it may be impracticable to hoist the coffer in removing it from the work in its interior, it may be divided at joints previously provided on the sides or at the angles, or both, to remove its several sections.

I claim as my invention and desire to secure by Letters Patent—

The coffer-dam, constructed and operated substantially in the manner described.

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