E. BELL.

Imp^d Coffer Dam.

PATENTED

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Fig 1

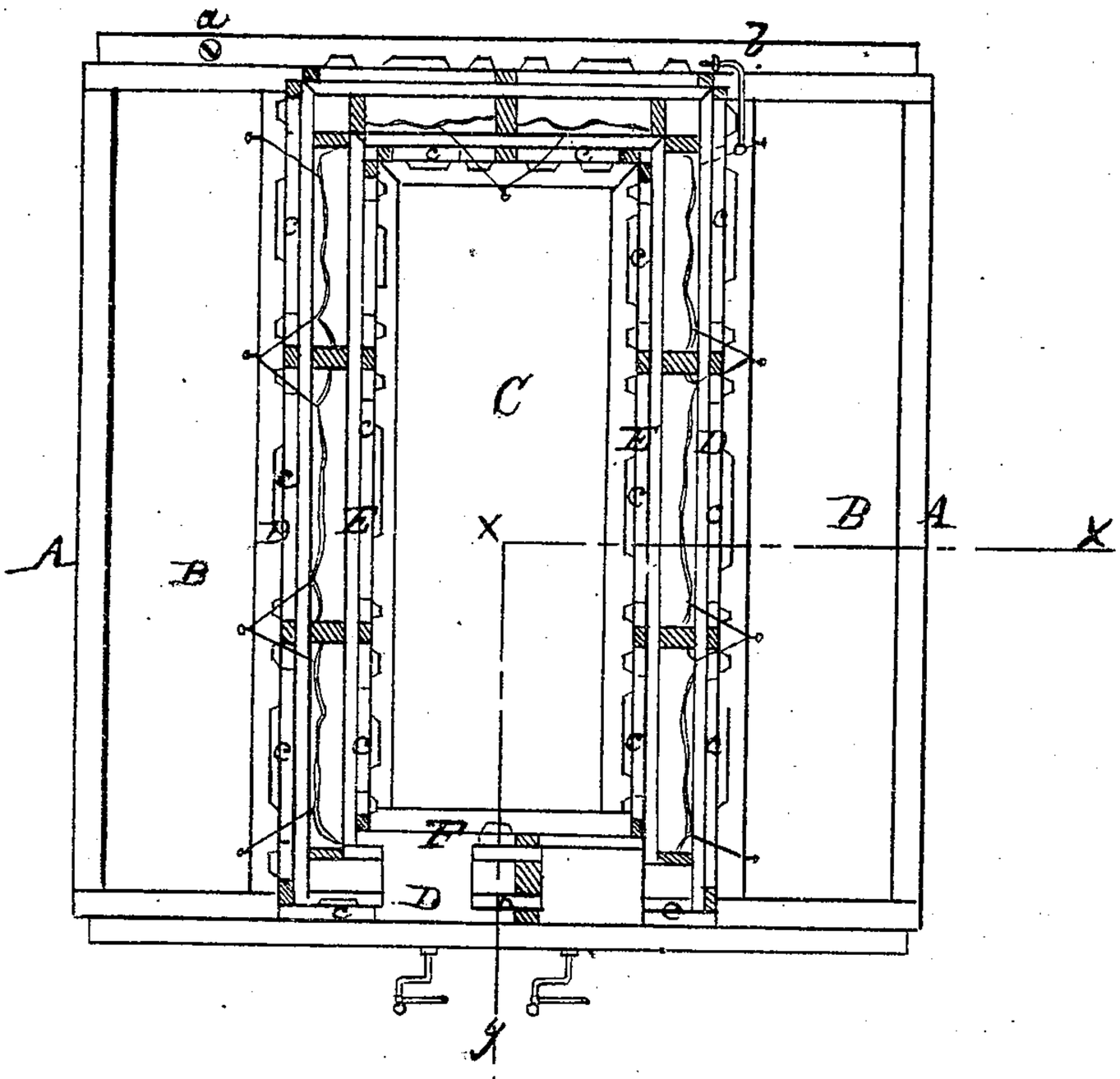
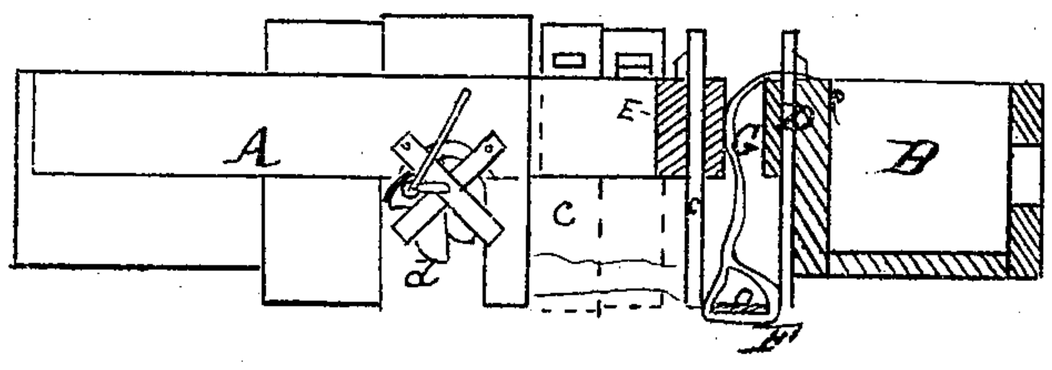


Fig. 2.



Witnesses
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EDWIN BELL, OF ST. PAUL, MINNESOTA.

Letters Patent No. 73,566, *dated January* 21, 1868.

IMPROVEMENT IN COFFER-DAMS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EDWIN BELL, of St. Paul, in the county of Ramsey, and State of Minnesota, 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 thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention consists in making a new and improved floating coffer-dam, for removing the water, so that snags, wrecks, dirt, or rocks may be conveniently removed from the bottoms of rivers or harbors, or so that walls or piers may be conveniently built or rocks blasted. In the drawings—

Figure 1 represents a top plan view, and

Figure 2 represents a vertical section on the lines *x x* and *x y* of fig. 1.

In constructing my coffer-dam, I make a strong barge, A, of any desired size, having two water-tight compartments, B B, one on each side of the barge. Between these compartments B B, I leave a large opening, C, which I surround with two frames, D E. These frames D E, I connect at their sides with one another, and also with the water-tight compartments, and at their ends with the main frame of the barge, placing them at a short distance from each other, and over the opening C in the centre. Each of the frames consists of two parallel pieces of timber, placed far enough apart to allow boards or plank to be passed between them, as shown in fig. 1. In the opening between the frames D E, and at its lower side, and around its whole extent, I place a bag or sack, F, made of India rubber, India-rubber cloth, or any flexible water-tight material, having a strong, wide bottom, and an extension-apron, G, of similar material, at the top, and long enough to reach and stretch over the frames D E, or, at least, above the water-line. In the bag F, I place short, flat pieces of iron, *o*, as shown in fig. 2, which are attached to a line running through it, so as to be moved. These flat pieces of iron serve to hold the bag F close to the ground.

My barge is so constructed that one end of the coffer-dam may be opened by turning on the hinge *a*, and, when closed, is fastened by the hook *b*, as shown in fig. 1. The water-tight compartments I provide with holes and plugs, so that, at any time, by removing the plugs, the whole barge may be readily and easily sunk.

In operating my movable coffer-dam, after moving it to the place where it is to be used, I pull the plugs out of the water-tight compartments B B, and sink the whole barge. Then I drive boards *c* through the openings in each of the frames D E, and down into the ground, as shown in figs. 1 and 2. I use boards of different widths, if necessary, so as to adjust them to the lay and character of the ground, and also in case of their coming in contact with rocks of uneven surface, that they may be made to fit them the more closely. After driving down these two tiers of boards *c* through the frames D E, I pass the bag or sack F around between them, sinking it, by means of the flat pieces of iron *o*, fig. 2, and holding it then by means of long strips of boards, which are keyed down against it. I then draw up the aprons G, which are attached to the bag F, and fasten them up above the water-line. This done, I fill the bag F with air or water, when it serves to make a water-tight packing along the lower sides of the boards *c*, and, in connection with the apron G and the boards *c*, on either side, makes a water-tight wall. I then pump the water out of the opening or coffer-dam C, as well as out of the space between the two tiers of boards *c*, by steam or other power, which leaves the bottom within the coffer-dam exposed for such operations as may be desired.

Instead of using a pump, the water may be drawn out of the coffer dam by means of a screw, *d*, shaped like a propeller, and turning in a tube or proper opening in the side of the dam, and worked by a pitman connecting it with the engine. In the use of a large coffer-dam, two or more such screws may be used, or, when a small one is employed, the water may be removed by the use of the Archimedes screw.

Whenever it is desired to move the coffer-dam, I insert the plugs in the water-tight compartments, then pull up the boards *c*, raise and empty, if necessary, the bag F, and pump the water out of the water-tight compartments B B. This done, the whole is ready to be floated to such other place as may be desired.

In streams or rivers where the current is strong and rapid, other barges may be attached to the movable coffer-dam, in order to anchor it or hold it more steadily in place.

Having thus described my invention, what I claim is—

1. In combination with a floating "coffer-dam," constructed substantially as described, the flexible bag, sack, or pipe F, for packing the same, and excluding the water.

2. I claim, also, the use of an apron, of rubber cloth, canvas, or other flexible material, made water-proof, for packing the joints between the tiers of planks forming the inner walls of the dam, substantially as described.

EDWIN BELL.

Witnesses:

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