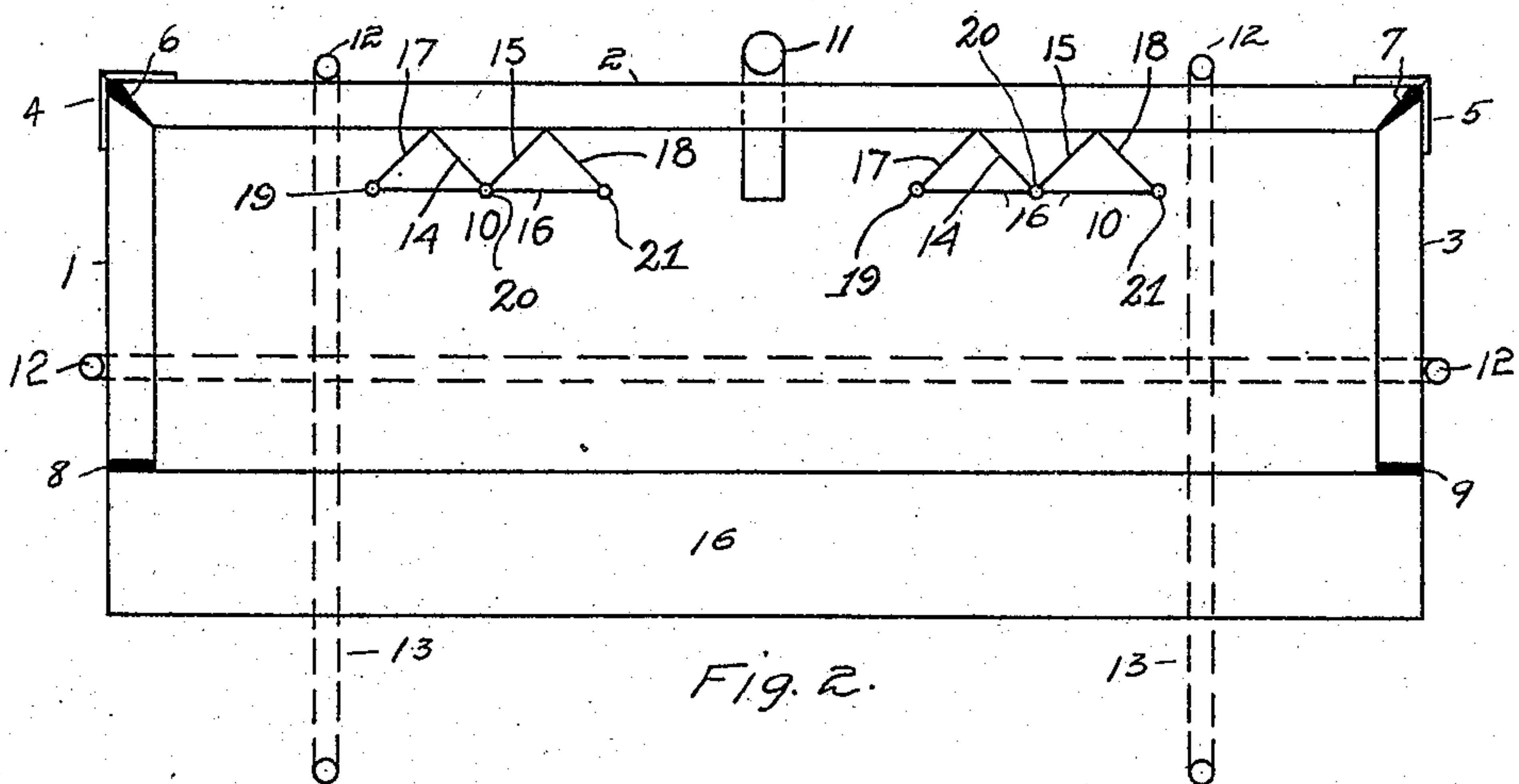
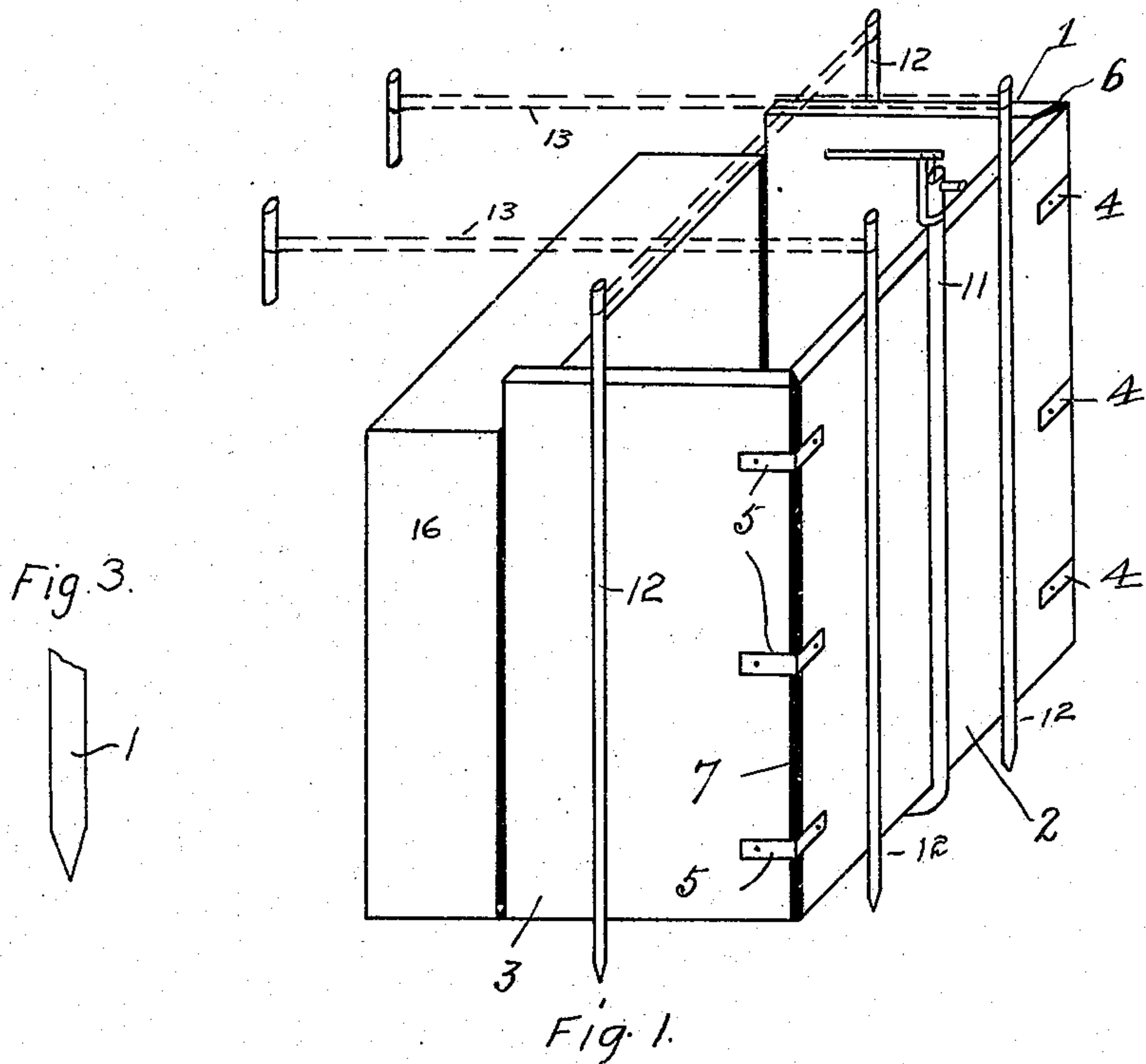


E. H. KIRK.
BUILDING CONCRETE WORK IN THE WATER.
APPLICATION FILED AUG. 31, 1908.

936,638.

Patented Oct. 12, 1909.



WITNESSES:

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BUILDING CONCRETE WORK IN THE WATER.

936,638.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD H. KIRK, a citizen of the United States, residing near Belle Center, in the county of Logan and State of Ohio, have invented a new and useful Improvement in Building Concrete Work in the Water, of which the following is a specification.

My invention relates to certain improvements in the means and methods of building concrete work, such as walls, abutments, &c. in water; and is intended to supersede the usual form of coffer dams now in use, and consists in first building a section of the wall on the solid ground, and working outward from this as a base into the water, section by section, in such manner that the wall, when done forms a homogeneous whole when completed, and as fast as constructed forms a base to work from.

Figure 1 is a perspective view of the apertures I use. Fig. 2 a plan view of one section built on land, and my device in position for extending the wall. Fig. 3 is a side view of the bottom of my frame, showing it sharpened, to drive into the ground, easily.

The object of my invention is to provide a means for extending a wall or abutment out into the water. At present it is necessary in this kind of work to build an expensive, inconvenient and troublesome coffer dam. By my method I first make my excavation in the solid ground, at the side of the body of water where the abutment is to start, and put up a section of my abutment the full width of the same. To the outside face of this wall I attach my device, a rectangular frame, having three sides only, the outer face of the wall forming the fourth side of an inclosure, my device being furnished with means for holding it tight against the face of the wall, and forming a water tight joint. The bottom edge of the three sides of my rectangular frame is sharpened so that it can be driven into the earth, to keep water from coming in at the bottom.

The construction of my device is as follows: The principal feature of my device is a rectangular frame composed of the three sides, 1, 2, 3. The parts of the frame are hinged together at 4, 5, and have rubber cushions 6, 7, at the junctions of the parts, and also have heavy rubber facings or cushions 8, 9, where they fit against the outer face of that part of the wall already con-

structed. On the inside face of my frame are a number of collapsible cores 10, that extend from the top to the bottom of the frame, intended to form dovetail pockets in the face of each section. The collapsible cores are formed of hinged sections 14, 15, 16, 17, 18, hinged together at 19, 20, 21, and when in position, the sections 14, 15, are braced against the side 2 of the frame by the sections 17, 18. After a section of the structure is completed, the frame 1, 2, 3, is removed, releasing the sections 14, 15, allowing them to swing toward each other, being hinged at 20, thereby allowing the sections 17, 18, to fold inwardly on the hinges 19, 21, the section 16 can then be folded at its center, allowing the withdrawal of the entire core. On the outside of the center piece of the frame is a pumpstock or pipe 11 that passes down alongside the frame and through the same near the bottom.

Besides the dovetail pockets in the face of each section to receive fresh cement from the next mixing and bind the sections together, the separate sections can also be bound together by pieces of iron extending from one face into the other.

The operation of my device is as follows: An excavation of the width and depth of the proposed wall, having been dug in the ground near the edge of the stream or other body of water, a form is erected and a section of the wall is built up the full width and height of the wall, by pouring in a mixture of concrete. Proper cores 10, are incorporated in the outer face of section to form dovetail pockets in said face. When this cement has set sufficiently, the rectangular frame 1, 2, 3, is placed in position in the water outside the section of wall built up, with the rubber pieces or cushions 8, 9, against the face of the wall. The sharpened lower edges of the frame are then driven into the ground, or bottom of the stream, and iron bars 12 driven into the ground outside and alongside the frame. These bars extend above the top of the frame, and are drawn tight against the sides of the same, and are held tight by chains 13 or otherwise, to hold it in position against said face, and exclude the water. The rubber strips 6, 7, prevent leakage at the joints between the parts 1, 2, 3. The water in this inclosed space is then pumped out through pipe 11, and the dirt excavated to the proper depth, when the cement is then filled in to form another section

of the wall. After the wall has set sufficient to stand, the collapsible cores are removed, the form or frame taken away and put in position for the building further sections to the wall. The ends of the side pieces 1, 3, can be made to overlap the ends of the section already built, the rubber cushions being placed on the inside of the pieces and pressed against the wall by the iron bars 12, driven in the ground alongside of them and chained together at the top. The separate sections set fast enough to be used as bases to work from, but the face remains pliant enough for the new work to unite therewith and form a homogeneous mass.

My invention can be used in building work on land as well as in the water, and by putting two of my frames, face to face a dam can be formed for building or starting work in midstream.

Ordinarily, in small work, I build each section up to full height of the abutment, but sometimes find it advisable to build the sections only just above the surface of the water, and then build the balance of the height

in one piece, extending over the whole, or over all of the sections so built.

What I claim is:

1. In apparatus for building concrete walls in water the combination with a section of wall built at the edge of the water, of the three-sided, hinged frame, having its lower edges sharpened to drive in the ground, the impervious, compressible corner and face cushions, 6, 7, 8, 9, the top tightening chains for drawing the form against the face of the wall, and the collapsible pockets, as and for the purpose set forth.

2. In apparatus for building concrete walls in water, the combination with a section of wall already built, of a three sided hinged frame, having its lower end adapted to be driven into the ground, the compressible corner and face cushions 6, 7, 8, 9, and means for drawing the form against the face of the wall, as and for the purpose set forth.

EDWARD H. KIRK.

Witnesses:

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