No. 725,544. PATENTED APR. 14, 1903.

J. DAIME.

STRENGTHENED CAST CEMENT.

APPLICATION FILED AUG. 5, 1901.

NO MODEL.

Fig. 1

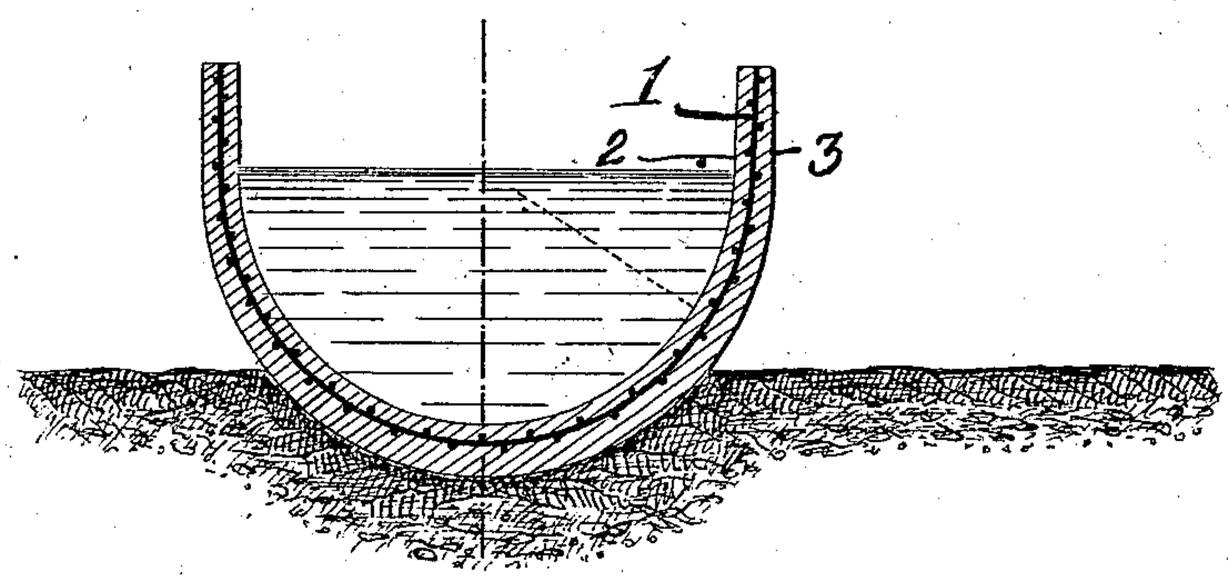
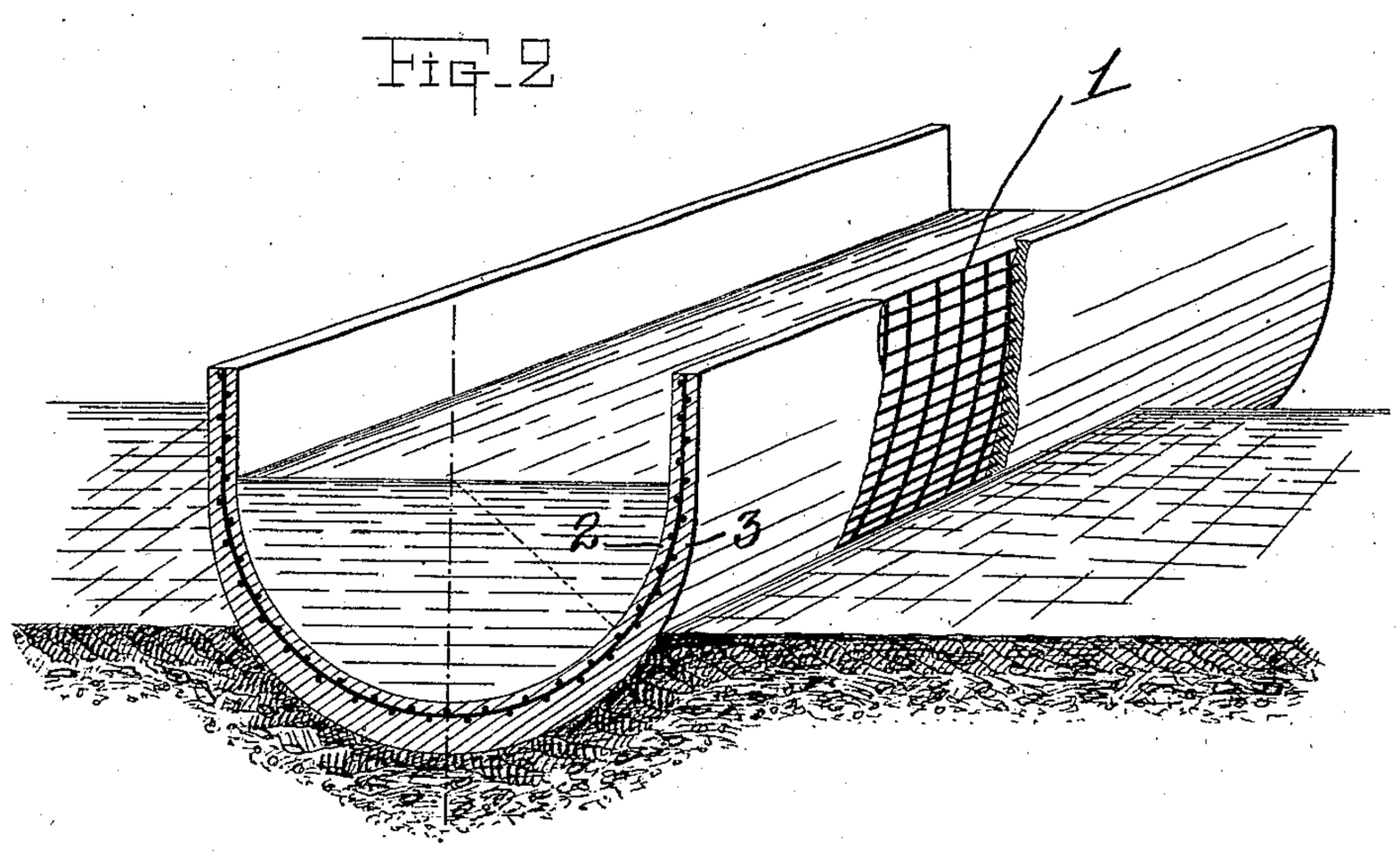


Fig. 2



Witnesses:
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UNITED STATES PATENT-OFFICE.

JOSEPH DAIME, OF MARSEILLES, FRANCE.

STRENGTHENED CAST CEMENT.

SPECIFICATION forming part of Letters Patent No. 725,544, dated April 14, 1903.

Application filed August 5, 1901. Serial No. 70,898. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH DAIME, a citizen of France, residing at 38 Rue Consolat, Marseilles, France, have invented certain new and useful Improvements in Strengthened Cast Cement, of which the following is a specification.

Strengthened cast cement—viz., cement cast around a network or skeleton of iron—is at present employed to replace sheet or cast iron in closed water-conduits, pipe systems, and underground conduits. It has also been employed, although to a limited extent, for conduits or channels open to the air; but in this case the form adopted for the trough part or section has always been rectangular. This, in fact, appears at first sight to be the most natural and practical; but from a very careful examination of the question it becomes clear that in spite of some small practical difficulties in molding the semicylindrical form surmounted by vertical side walls is superior from all points of view to the rectangular form for an open cement channel of this kind.

In practice it is desirable for a given section to reduce the molded part to a minimum, but the circle being, as is known, the greatest area which can be inclosed within a given perimeter it is evident that according to theory the curve to be given consists of a semicylinder surmounted by vertical side walls of little height. The stream of water in the trough part should reach up to the diametrical line, and the vertical sides need not be higher than is necessary to prevent the water from overflowing under the action of the wind or from imperfections in the slope.

The annexed drawings show in section, Figure 1, and in perspective, Fig. 2, a portion of a conduit or channel made according to the present invention.

Referring to the drawings by reference-numerals, 1 denotes the middle portion of the trough, preferably formed of a metallic network, 2 the inner portion, formed of hard cement, and 3 the outer portion, formed of hard cement, the outer portion 3 being of a greater thickness than the inner portion 2. This form of conduit secures an industrial result at once definite and important—namely, the diminution of the molded width for a given section of flow, whence accrues an increase in the output or delivery of the system for one and the same section. A second industrial advantage of this form is that for any determined delivery the area of the trough or channel, and, in consequence its cost, is reduced to a minimum. A third advantage of this form is that it is extremely well adapted as regards the resistance of its side walls to the pressure or lateral thrust of the liquid. A fourth advantage of the semicylindrical trough over and above the retangular trough is that it is much more elastic, and consequently more capable of change of form without damage or breakage to suit the settling down of the earth on which it is bedded. For these various reasons the semicylindrical form that I give to open conduits or channels in strengthened cement is very superior to the forms adopted up till now, which have been either rectangular or trapezoidal. It is evident, moreover, that the thrust or pressure of the water against the side of the channel or trough may be counteracted either by metallic ties joining the two opposite edges, by ties of strengthened cement, or by external supports, or simply by the resistance of the trough itself. This latter may be, if desired, reinforced by suitable straps or bands, or in the case where it forms a simple casing or revetment for a channel dug in earth it may depend for reinforcement on the reaction of the earth.

What is claimed, and desired to be secured by Letters Patent of the United States, is—

A trough having its lower portion semicylindrical in contour and merging into vertical side walls, said trough consisting of a network body portion embedded in a mass of hard cement, the mass of hard cement forming the semicylindrical portion of the trough of greater thickness than the mass of cement forming the vertical side walls.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH DAIME.

Witnesses:
ALPHONSE PUGET,
FREDERIC FIGNIEU.