John C. Schooley's Levees & Embankments.

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Fig: 1

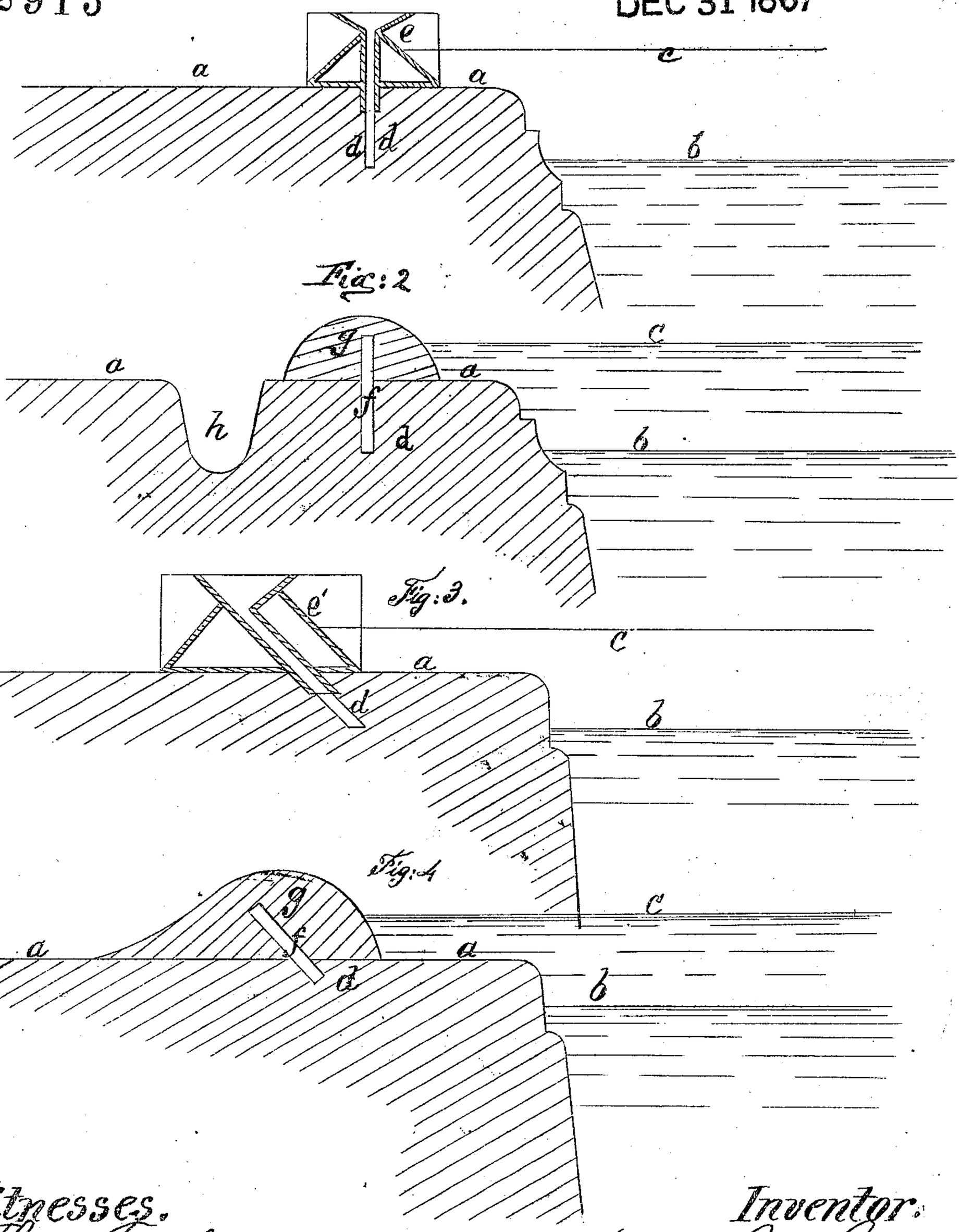

Fig: 2

Fig: 3.

Fig: 4

Witnesses.
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JOHN C. SCHOOLEY, OF NEW YORK, N. Y.

Letters Patent No. 72,913, *dated December* 31, 1867.

IMPROVEMENT IN CONSTRUCTION OF DIKES, LEVEES, AND EMBANKMENTS.

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, JOHN C. SCHOOLEY, of the city of New York, in the county and State of New York, have invented a new and useful Improvement in the Construction of Dikes, Levees, and Artificial Embankments on the borders of oceans, seas, lakes, rivers, canals, and all kinds of water-courses; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Lands subject to overflow have been reclaimed by the ordinary dike, levee, or simple earthen embankment. Most of such lands thus reclaimed have been abandoned, principally on account of the ravages of the muskrat, crawfish, and other borers that infest marsh-lands, and the banks of rivers, canals, and all earthen embankments constructed on their border; also, in consequence of the immense cost of keeping such embankments in repair. The levees on the Mississippi river are honey-combed by the crawfish, and the banks of canals are nightly perforated by the muskrat.

It is evident, therefore, that in order to construct an embankment or levee which will be strong, permanent, and impervious to water or the ravages of borers, it must contain a core or spinal column of some solid material that will not corrode nor decay, and which cannot be perforated by animals; and to insure such a core from the danger of leakage, it should be constructed in a continuous column, without loose or open joints.

I am aware that iron plates have been proposed in the construction of dams, dikes, and levees, said plates to be forced down into the earth in sections, or riveted together before being pressed down. The objections to iron plates are, first, their immense cost, if even found practicable to have them cast in sections sufficiently large to answer the required purpose; second, the certainty of corrosion and speedy decay unless the plates are entirely and completely covered with an impervious coating, which also adds greatly to the cost.

My improvement consists in constructing a core or spinal column within an earthen dike or levee, above or below the natural surface of the earth, the said core being formed by pouring into a prepared channel any suitable liquid material which will become hardened when cooled, thus forming a continuous line of impervious wall without open joints.

A material composed of the proper proportions of powdered coal, sand, pitch, and cows' hair, or of any other suitable ingredients, and even metals will, be liquid when heated, and can be poured into a prepared channel of a suitable width. Such materials will become hard when cooled, and, being one continuous core without open joints, will be completely impervious to water, and will become almost as hard and compact as stone, and will necessarily withstand the ravages of muskrats, crawfish, and other borers.

It is also evident that such a core may be composed of ingredients which will not corrode nor be affected by the acids and gases of the decayed vegetable matter contained in marsh-soil, and the cost evidently cannot be much greater than that of ordinary roofing-material.

If a channel is excavated by means of a wheel, cutting a passage through the earth to the required depth, or by any other suitable mechanism, the liquid or mixture can be made to flow into the passage from a machine made to do the entire work as fast as the passage is excavated; or if it is found necessary to make the excavation in sections, by sinking portable moulds that can be drawn out after the material has been poured into them, and leaving the solid substance in the earth, or by sinking a solid plate into the earth, leaving a channel to receive the mixture, the joints can be flowed together by the same material.

In order that others skilled in the art may understand the nature of my invention, I will refer to the annexed drawings, in which similar letters of reference indicate corresponding parts.

Figure 1 is a vertical sectional view of a portable wooden or metal mould, *e*, fitted into the channel *d*, prepared in the natural bank, in which to pour the mixture while the same is in a heated or liquid state, thus enabling the core, when cast or moulded, to reach the required distance above the surface *a* of the marsh. *b* is the low-water and *c* the high-water mark.

Figure 2 represents a vertical sectional view of a constructed dike as applied to the reclamation of marsh-land, subject to tidal or other overflow. *a a* is the surface of the marsh; *b* is the low-water mark, and *c* the high-water mark. *h* is a ditch, made on the inside of the dike to catch the rain-fall from lateral drains, and also any water that may find its way through from the outside. *g* is the artificial embankment, made from earth

excavated in forming the ditch. *f* is the core or spinal column, inserted in the natural and artificial embankment, so as to reach from above the highest water mark to below the lowest water mark.

Figure 3 is a vertical sectional view of the mould *e'*, required for casting the core, in an inclined position for levees, being the same as described in fig. 1, only differing in form.

Figure 4 is a vertical sectional view of a levee, constructed on a natural or solid bank on the borders of waters subject to overflow. *a a* is the top of the bank; *b* is the low and *c* the high-water mark. *g* is the earthen levee after being constructed. *f* is the core, inclining from the water, and supported, if desired, by a temporary wooden brace in the rear at intervals.

If the earthen embankments are thrown up to the required height before the channel is made for the core, the moulds, as described in figs. 1 and 3, can be dispensed with, as the channel in that case will commence from a point above high-water mark.

In constructing a dike on the borders of marshy lands, I propose to commence the channel for the core at a suitable distance from the water, and after the channel is prepared to the required depth, the mixture is poured into the channel until it reaches the required height, which is regulated by the mould. If the moulds are to be used, the earth is not thrown up until the core is cast, and when cast and the mould removed, it is covered entirely with earth, thus forming a solid embankment containing a continuous impervious core.

In constructing the levees on the top of a natural bank with an inclined core, when the moulds are not used, the embankment is thrown up before the channel is prepared, but if the moulds are used, the core is supported at intervals from the rear after the moulds have been removed, and then the earth is thrown over the entire structure.

I do not claim as any part of my invention either of the described modes of preparing a channel for the core, nor do I confine myself to any particular mixture or material for forming the core, but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The construction of an impervious and continuous core for dikes or levees, formed by pouring into a prepared channel any suitable material or mixture, in a heated or liquid state, that will become hardened when cooled, substantially as and for the purpose specified.

2. I also claim the construction and arrangement of the portable metal, earthen, or wooden mould, when adapted to receive and deposit the core in its liquid state, in the prepared channel, and above it, in the manner and for the purpose specified.

JOHN C. SCHOOLEY.

Witnesses:

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ALEX. F. ROBERTS.