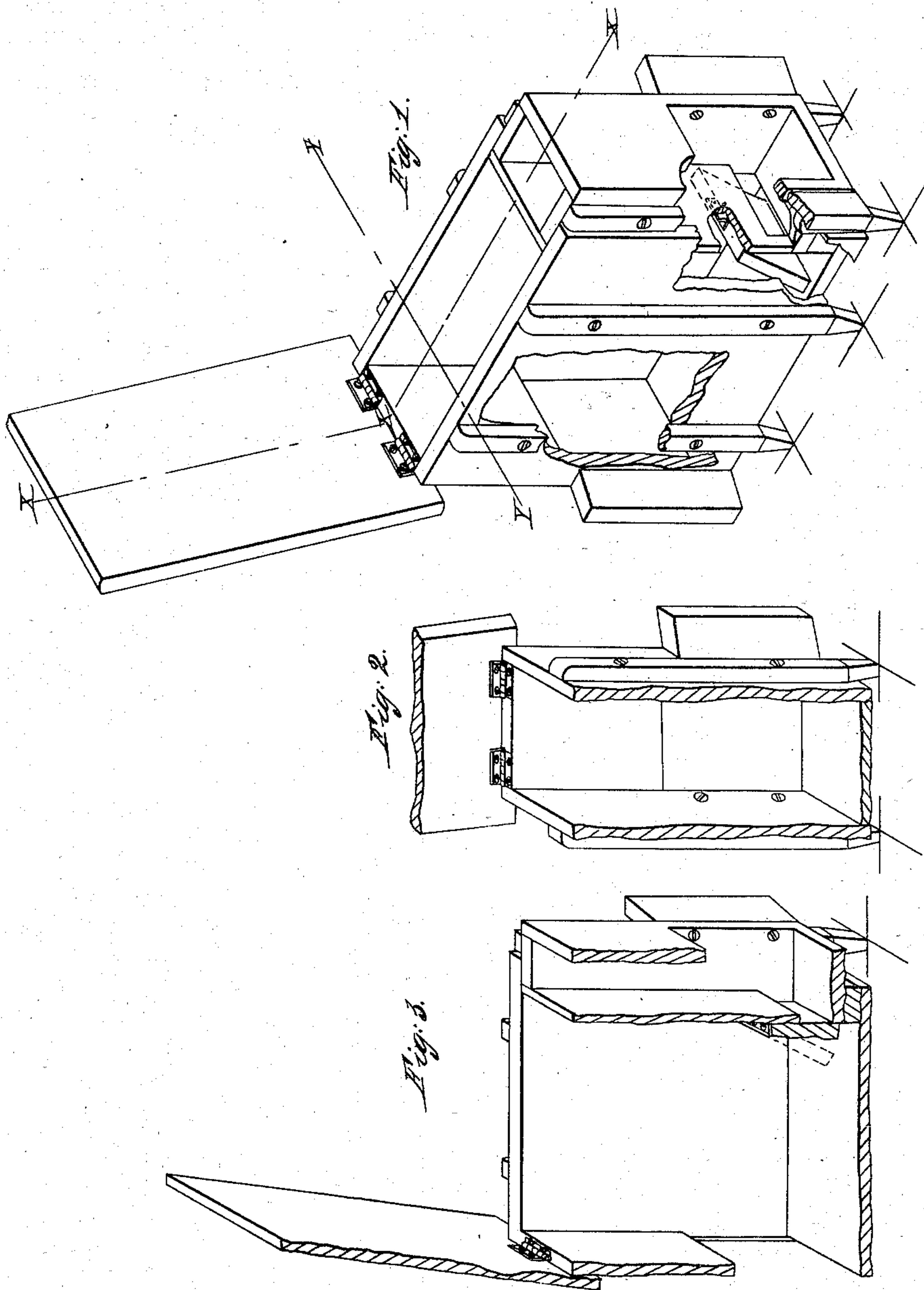


E. T. Bainbridge.

Drain.

N^o 39,624.

Patented Aug. 25, 1863.



Witnesses:
Alfred Jones
Geo. Johnson

Inventor:
E. T. Bainbridge
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UNITED STATES PATENT OFFICE.

E. T. BAINBRIDGE, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN TIDAL-VALVES FOR DRAINING LANDS.

Specification forming part of Letters Patent No. 39,624, dated August 25, 1893.

To all whom it may concern:

Be it known that I, E. T. BAINBRIDGE, of the city of Louisville, county of Jefferson, and State of Kentucky, have invented certain new and useful Improvements in Tidal-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, and in which—

Figure 1 represents an isometric view of the tidal-valve and seat embracing my invention; Fig. 2, an isometric cross-section at a plane through the line *y y* of Fig. 1, and Fig. 3 an isometric longitudinal section at a plane through *x x x* of Fig. 1.

The growing value and vast importance of the marsh-lands on a portion of our seaboard—especially those near large cities—as well as the swamp-lands upon our numerous rivers, render a perfect system of drainage one of the most to be desired achievements of the present day. Those modes of drainage now used on tide-waters all require more manual toil or the employment of more expensive machinery than can be made remunerative to individual enterprise by the land redeemed, in consequence of which such lands are waste or they are only effectively redeemed by government or by joint-stock associations.

Now, it is the object of my invention to bring the redemption of salt marshes situated on tide-waters or swamp-lands situated on the rivers within the reach of all individuals by the use of my simple, cheap, and automatic valve and its seat; and to this end my invention consists in the combination of a flume with a vertical valve hinged at the top, and both so arranged that water shall be perfectly excluded from entrance upon the land when the tide is flowing, and the water from the land shall always have a free exit when the tide ebbs.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct my flume in the form of a box of the length required, to reach from side to side of the dike on the water-front of the land to be drained. At each end of the flume, and on both sides, I place and fasten securely wings, extending about one-half the height of the flume, and flared at a suitable angle from its sides to render it steady and anchor it securely in position. To the sides of the flume,

and as near each other as desired for strength to resist the pressure of the walls of the dike, I place perpendicularly and fasten securely braces, reaching from the top of the flume to a sufficient length below its bottom to form stakes or piles, pointed, so that when the flume is in place these stakes will, together with the angularly-arranged wings, render it immovable by the action of the tides or waves. The top of the flume may be strengthened by cross-beams or it may be entirely covered, and thus constitute a roadway on a level with the top of the dike. The bottom of the flume may be of plank suitably fastened to constitute a water-tight joint. I now construct a box of the exact dimensions on its outside of the internal dimensions of the flume, so that when fixed in its place in the end of the flume exposed to the land it shall fit so neatly as to constitute, if possible, a perfectly water-tight joint over the bottom and sides of the flume. This internal frame or box may extend into the flume about one-fourth of the length of the latter. I cut a rectangular opening in the back of the interior box, about six inches from its bottom, leaving a flange of two or more inches at each side of the opening, as shown in the drawings, beneath that portion of the isometric view broken away. This opening leaves a clear space through the flume to permit the flow of the drainage-water from the land; and, as the valve is hinged to the back of the box over the opening, the flange around the opening constitutes a seat for the valve, and makes a water-tight joint when the valve is pressed against its seat by the tide-water. The valve is hinged vertically to the back of the box, above the top of the opening, so that the tide-water will close it, and so that it will vibrate in the direction of the greatest pressure. Of course, when the tide ebbs, the drainage-water will open the valve and escape through the flume. At times it may be necessary to place a flume in a position where the currents may tend to carry the drift into the flume and choke or obstruct the valve from working. This inconvenience may in my improved flume easily be obviated by simply fastening a suitable grating over each end of the flume; or slats or racks, suitably secured, will effect the same result—that is to say, they will arrest the drift, but permit the water to flow.

The operation is apparent. When the land

to be reclaimed is surrounded with a dike of suitable height and strength to exclude the tide-water, place as many of my flumes, with their valves arranged as described, in the dike, at suitable distances apart to apportion the area of the openings to the quantity of water to be drawn off at ebb-tide. Now, when the tide flows in a volume larger than the drainage-water, its greater pressure will close the valve and wholly exclude the tide-water; but when the tide ebbs to a point where the drainage-water gives the strongest pressure the valve will open and the drainage-water flow continuously until the return of the tide, and thus the land surrounded by the dike will be automatically reclaimed.

I am aware that flumes have been used with

a valve projecting from the front, to be floated by the tide, as in the patent of E. W. Vandozen of January 27, 1863; but this I do not claim.

What I do claim as my invention, and desire to have secured by Letters Patent of the United States, is—

The combination of the flume with the valve, constructed, arranged, and operating substantially in the manner described, for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

E. T. BAINBRIDGE.

Witnesses:

T. C. CHAUDOIN,

T. R. MATTHEWS.