

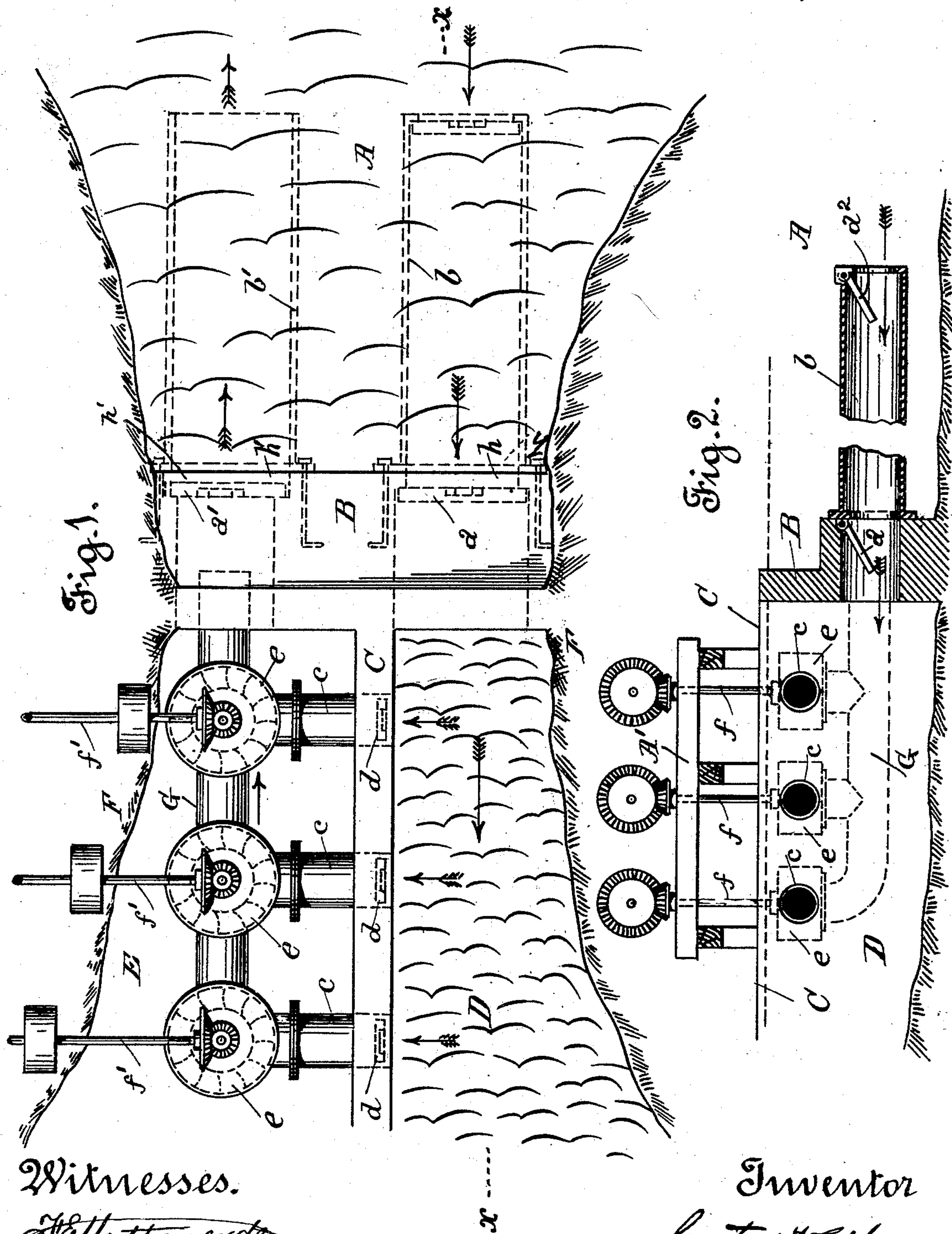
(No Model.)

G. H. CARLSON.

MEANS FOR UTILIZING TIDE WATER AS MOTIVE POWER.

No. 509,997.

Patented Dec. 5, 1893.



Witnesses.

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UNITED STATES PATENT OFFICE.

GUSTAVE H. CARLSON, OF HOQUIAM, WASHINGTON.

MEANS FOR UTILIZING TIDE-WATER AS MOTIVE POWER.

SPECIFICATION forming part of Letters Patent No. 509,997, dated December 5, 1893.

Application filed June 26, 1893. Serial No. 478,906. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE H. CARLSON, a subject of the King of Sweden and Norway, residing at Hoquiam, in the county of Chehalia and State of Washington, have invented certain new and useful Improvements and Devices for the Securing of and the Use and Application of Tide-Water as a Motive Power, of which the following is a specification.

My invention relates to improvements in the means of securing, using and application of tide water as a motive power, by placing a dam or dams across the mouth of inlets of the sea, where the tide water, at high tide flows in upon and covers large areas of land; said dam, or dams being so constructed with a division wall extending from about the center of the same to the rear, until it juts up against high ground, or against another wall in such way, that said high ground, or wall, forms with said extension rear wall, a second inclosure of the area of ground flooded by the tide water; said dam or dams having two or more automatic gateways, one or more opening inward upon the area to be flooded, and one or more opening outward from the area of inclosure, shut off from the area to be flooded by the tidewater.

The objects of my invention are to utilize the tide-water of the sea or ocean in propelling machinery, by the methods and devices herein described, viz: by taking advantage of the in-flow of the tide water of the ocean in all places, where the tides rise to a sufficient height to be available, so as to get the necessary fall or pressure for furnishing power for the propulsion of wheels, and for the operation of machinery. I do this by the construction of a dam or dams across the inlet or place of entrance of the tidewater, dividing off the area of land subject to flood by the tide-water, where large areas are flooded by it, to a considerable depth, by extending a high wall from near the center of the dam to the rear of the same, so as to meet high ground, or another high wall that may be constructed for the purpose, and form thereby a second inclosure, from which the tide water at high tide, is excluded; said dams having automatic gateways, so that when the tide begins to flow in, it pushes open the gateway of the area to be flooded, and flows in upon and covers said

area until it begins to recede, when, the tide beginning to ebb closes the gateway of the flooded area, retaining all the water that has come in upon said area. The gateway in the dam opening outward from the inclosure not flooded, is closed when the tide sets in, and is left closed by the pressure of the inflowing tide water until its ebb. In the wall extending to the rear of said dam or dams, dividing off the area of ground, there are water-ways or conduits to convey the water thus dammed up, and shut in over said flooded area, through said wall to the other side, to the inclosed area not flooded, upon wheels arranged to receive the same, in numbers as may be needed for the purposes of driving machinery, the water passing from the wheels over the area, and flowing out through the gateway of said inclosure, when the tide begins to ebb, the pressure of the water on the inside of said inclosure opening the same, allowing the water to flow out, and off with the ebbing tide. Where it is not possible to build the dam, or dams at the line of low tide, they may be built a little more inland, and waterways or conduits of metal or other material may be used, extending from the dam, or dams into the water's edge, with gateways or valves opening in and out, as in the dam or dams. I attain these objects by the mechanism illustrated in the following drawings, in which—

Figure 1— is a plan of device and arrangement to utilize tidewater as a motive power; Fig. 2— horizontal sectional elevation of the same through line *x. x.* on Fig. 1.

A. represents tide-water flowing in upon land through culverts or water-ways in dam, B constructed across the mouth of the inlet to retain the tide-water, and forms with the rear extension wall or dam C, and embankment F. F. or wall, a division of the land in the rear of dam into two inclosures.

D. is the area of land inclosed to be flooded by the tide water.

h and *h'* are culverts or waterways in the dam.

a. is an automatic gate or valve in the dam opening inward upon said inclosure by the force of the incoming tide water, allowing the water to flow freely in, so as to cover said area to the depth of high tide water, the said gate or valve closing when the tide begins to ebb;

E. inclosure from which the incoming tide is shut off; *a'*, gate or valve opening outward to allow the water coming into said inclosure E. to escape with the ebbing tide; *c. c. c.* pipes or water conduits, through which the water is conducted upon wheels for propelling machinery; *a²* valve in the outer inlet end of conduit *b.*; *d. d. d.* port inlets to pipes *c. c. c.*; *e. e. e.* water wheels upon which the water flows through said pipes; *f. f. f.* shafting connecting wheels with machinery; G. drainage water pipe conducting water from the wheels; F. embankment; *b.* inlet, and *b'* outlet pipes or conduits from the gateways in the dam, when said dam is constructed a little back or elevated from the lowest tide-water; A' frame work supporting the shafting of the wheels.

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

A tide water dam and construction, for utilizing tide water, consisting of the dam B, built of strong masonry or other suitable material, across the mouth of an inlet where the tide waters of the ocean flow in upon the land, each end of which juts into and against the high ground on either side, the rear extension wall and dam C. extending back from near the center of the dam to the rear, until meeting an elevation of land or a rear wall construction, that surrounds the outside of the low area from where the end of said dam terminates, thus forming two inclosures on each side of said extension wall and dam; the

inclosure D. flooded with tide water when the tide flows inland; the inclosure E. from which the tide water is shut out, the culvert or water-way *h.* in said dam through which the tide-water flows, and the culvert *h'* in said dam, where the water flows out when the tide ebbs; the automatic gate or valve *a.* in said culvert, opening inward by the force of the inflowing tide, and allowing the water to come in and overflow said inclosure to the depth of high tide water, and closing when the tide ebbs, retaining the water within said inclosure D., the gate or valve *a'* opening outward to allow the water in said inclosure E. to escape with the ebbing tide; the pipes or conduits *c. c. c.* through which the water is conducted upon wheels for propelling machinery; the valve *a²* in the outer inlet end of conduit *b.*; the port inlets *d. d. d.* to the pipes or conduits in wall or dam C., the water wheels *e. e. e.* upon which the water forces itself, the shafting *f. f. f.* connecting the wheels with machinery, the drainage pipes G, conducting water from the wheels, the embankment F., the inlet pipe or conduit *b.* and outlet pipe or conduit *b'*, extending from the gateways in the culverts of the dam to low-tide water, and frame-work A' for supporting shafting for wheels, substantially as herein described and set forth.

GUSTAVE H. CARLSON.

Witnesses:

SIDNEY MOOR HEATH,

HARRY WELLINGTON SMITH.