(No Model.)

J. B. CLARK.

MEANS FOR CONVERTING WAVE MOTION INTO POWER.

No. 571,511. Patented Nov. 17, 1896.

Fig. 1.

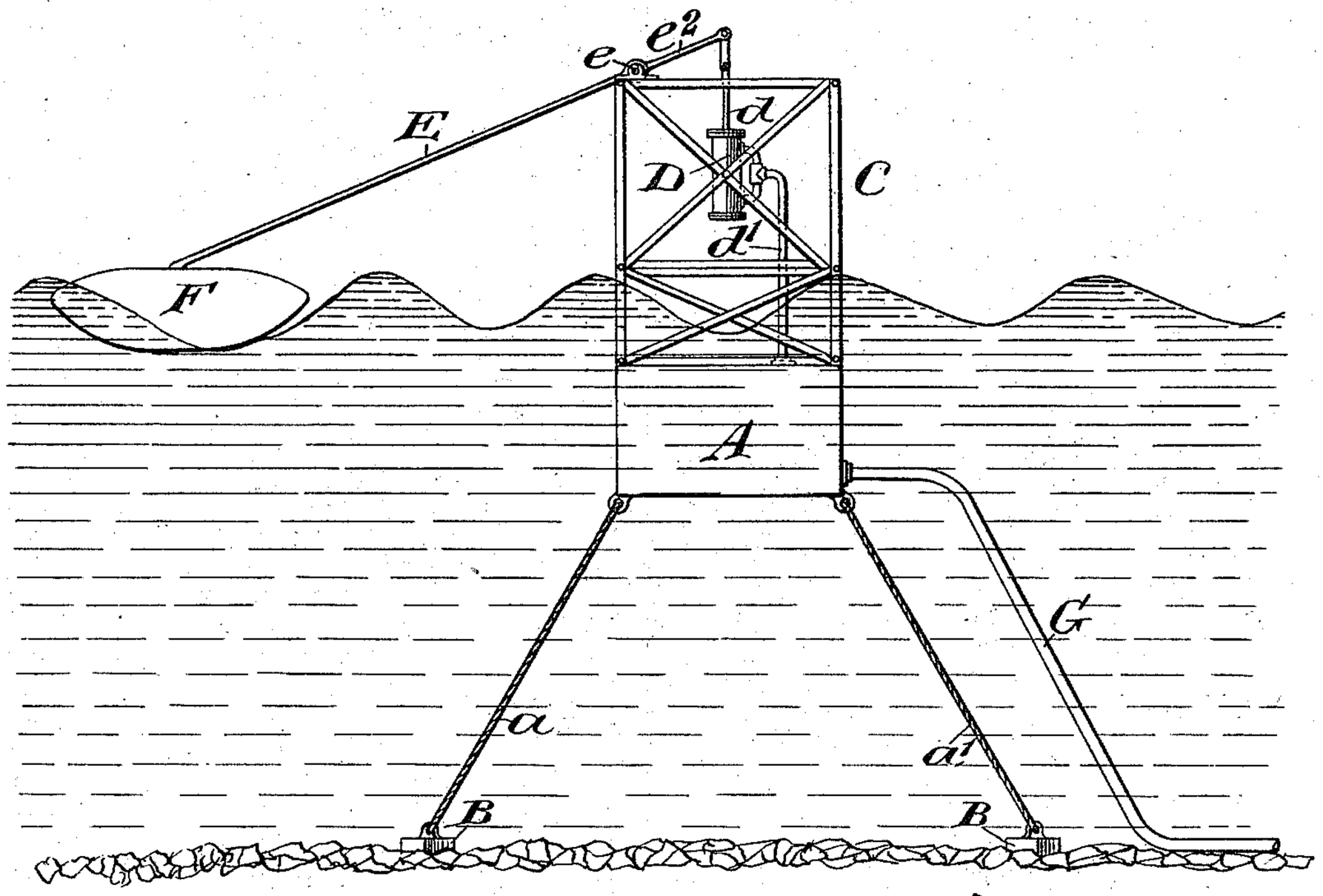


Fig. 2.

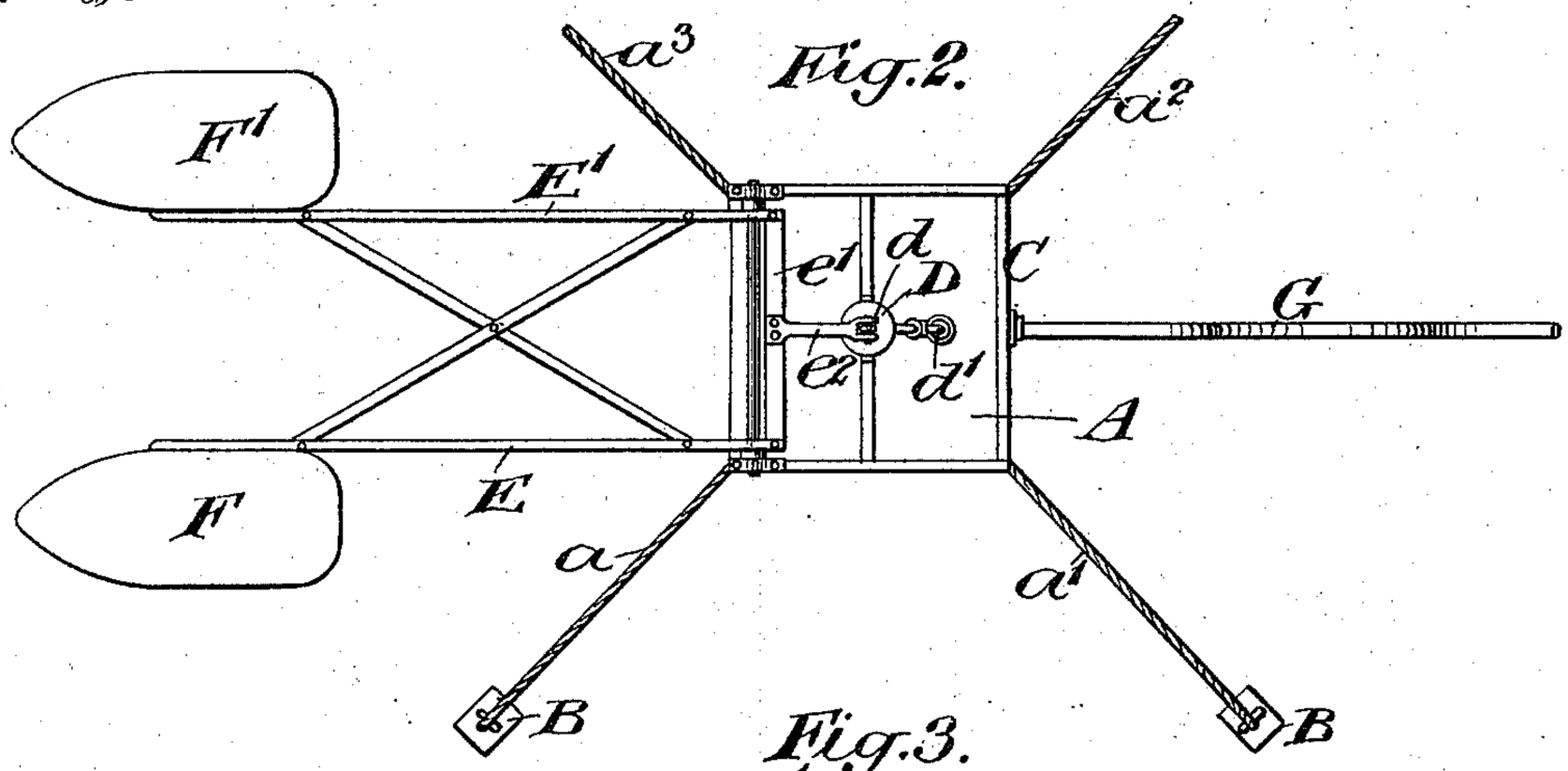
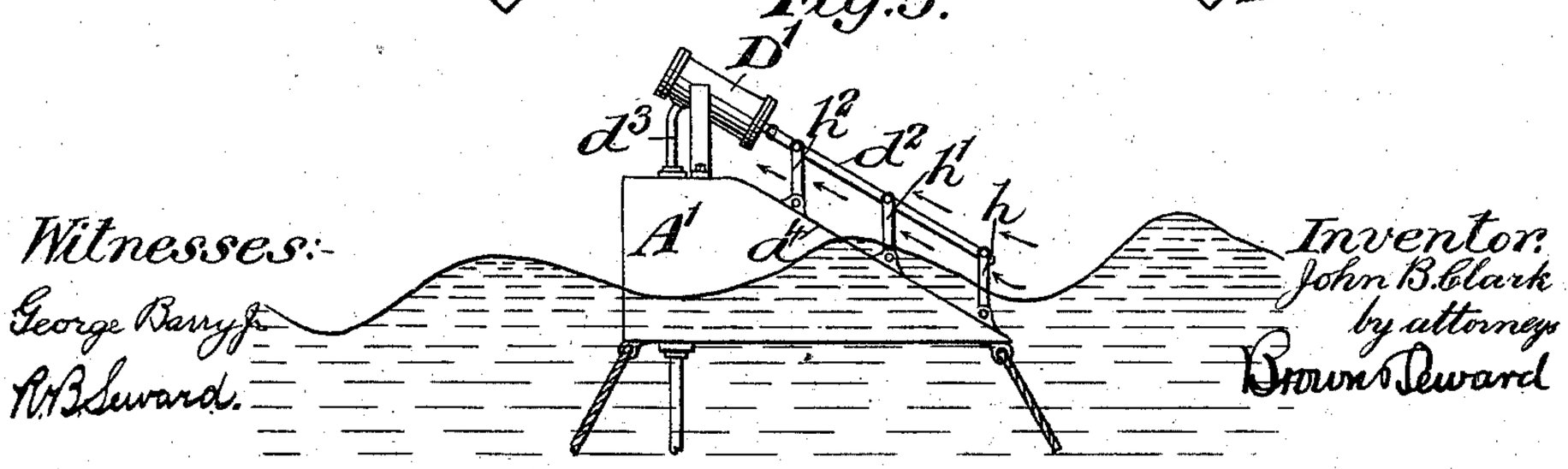


Fig. 3.



Witnesses:-
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R. B. Seward.

Inventor:
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UNITED STATES PATENT OFFICE.

JOHN B. CLARK, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO FREDERICK W. LYMAN, OF MINNEAPOLIS, MINNESOTA.

MEANS FOR CONVERTING WAVE MOTION INTO POWER.

SPECIFICATION forming part of Letters Patent No. 571,511, dated November 17, 1896.

Application filed December 20, 1895. Serial No. 572,740. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CLARK, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Means for Converting Wave Motion into Power, of which the following is a specification.

My invention relates to an improvement in means for converting wave motion into power, in which a float subject to rise and fall with the waves is arranged to compress air within a receiver, the compressed air to be transmitted to any desired point where it is found feasible to employ it as a power for operating some suitable motor.

My invention contemplates a hollow receiver anchored beneath the surface of the water below the wave-line, which receiver forms at the same time a support for a pump operated by a float subject to the waves and also as a receptacle for the compressed air forced into it by the pump to be led away for use, as may be found desirable.

In the accompanying drawings, Figures 1 and 2 represent, respectively in side elevation and top plan, an apparatus embodying my invention, where, as is preferred, the compressed-air receiver is located wholly below the wave-line; and Fig. 3 represents a modified form of apparatus in which the receiver is located only partially below the wave-line.

Referring to Figs. 1 and 2, A represents a hollow air-tight receiver of such size and buoyancy as to readily tend to rise to the surface. The receiver A is held at the desired depth below the surface of the water, in the present instance a short distance below the extreme depth of the wave-line, by means of cables a a' a^2 a^3, leading, respectively, from each of its four lower corners downwardly and outwardly to suitable anchors B at the bottom of the sea or other body of water where the apparatus is located.

The receiver A is surmounted by a skeleton framework C of any well-known or approved form, which extends from the receiver A upwardly to a point above the extreme wave-line and has supported thereon a double-acting air-pump of any well-known construction. (Represented conventionally by D.)

A lever E having connected with its long arm one or more floats, in the present instance two floats F F', is fulcrumed at e on the framework C and has its short arm connected with the piston d of the air-pump. The air-pump has an air-discharge pipe d' leading from it to the receiver A.

I have shown two floats F F' as preferable, for the reason that when made with their ends pointed, as shown, they serve to contract the wave between them and gain a little additional rise thereby, a matter of some consequence when the waves are running very low. The long arm of the lever is in this instance formed in two sections E E', as clearly shown in Fig. 2, firmly braced together, forming a rigid framework connected by a cross-bar e' at their ends near the fulcrum, the short arm e^2 of the lever being continued in a single section to its connection with the pump-piston.

It is desirable that the float or floats F F' be located at such a distance from the shore as to find a depth of water sufficient to prevent the waves from grounding and breaking, and the compressed air may be led by a simple conduit G from the receiver A to a point on the shore where it is desired to utilize it for operating a motor.

In the form shown in Fig. 3 the receiver A has its base below the wave-line and is anchored to the bottom in a manner quite similar to that hereinbefore described with respect to the receiver A. It, however, in this instance extends from a point below the wave-line to a point above the wave-line and is provided with a slanting side a^4, facing toward the direction from which the waves more commonly approach it, and the piston-operating rod d^2 of the pump D' is loosely connected with one or more (in the present instance three) upright wings h h' h^2, which wings are in turn loosely pivoted along the inclined face a^4 of the receiver, so that a wave rushing against the inclined face of the receiver as it follows along up the inclined face will impinge against the wings and force the piston in a direction to compress the air through the pipe d^3 in the receiver A, the return of the wave assisted by gravity serving to return the piston to the opposite end of the cylinder ready for a new stroke at the approach of the next succeeding wave.

What I claim is—

1. A hollow air-tight receiver, means for anchoring it in a body of water exposed to the wind, a support uprising from the receiver, an air-pump fixed to said support and communicating with the interior of the receiver, and a lever pivoted to the receiver having its free end subject to the direct impact of the waves for operating the air-pump to compress air within the receiver, substantially as set forth.

2. A hollow air-tight receiver, means for anchoring the receiver in a body of water below the wave-line, a support uprising from the receiver, an air-pump communicating with the receiver and fixed to said support, a lever fulcrumed on said support and connected with the piston of the air-pump and a float connected with the opposite end of said lever and subject to the action of the waves to operate the lever, substantially as set forth.

3. In combination, a hollow air-tight receiver, means for anchoring the receiver in a body of water below the wave-line, a skeleton frame surmounting the receiver, an air-pump fixed to the frame and communicating with the receiver, a lever fulcrumed on the frame and having one of its arms connected with the piston of the air-pump, and a pair of floats connected with the opposite arm of the lever and subject to the action of the waves to operate the lever, substantially as set forth.

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Witnesses:
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