

No. 721,501.

PATENTED FEB. 24, 1903.

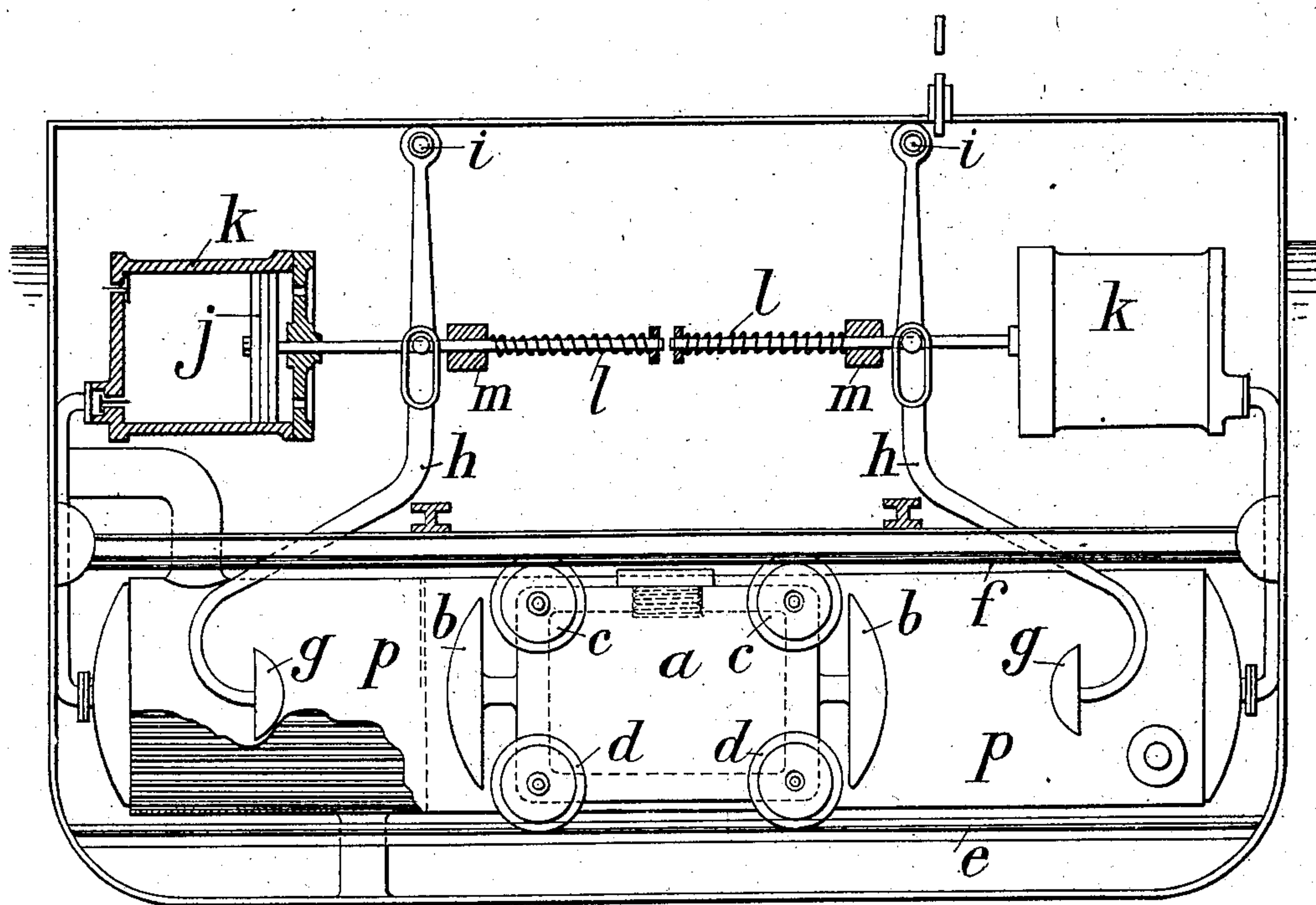
C. CAILLE.
WAVE OR TIDE MOTOR.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1



WITNESSES

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ATTORNEYS

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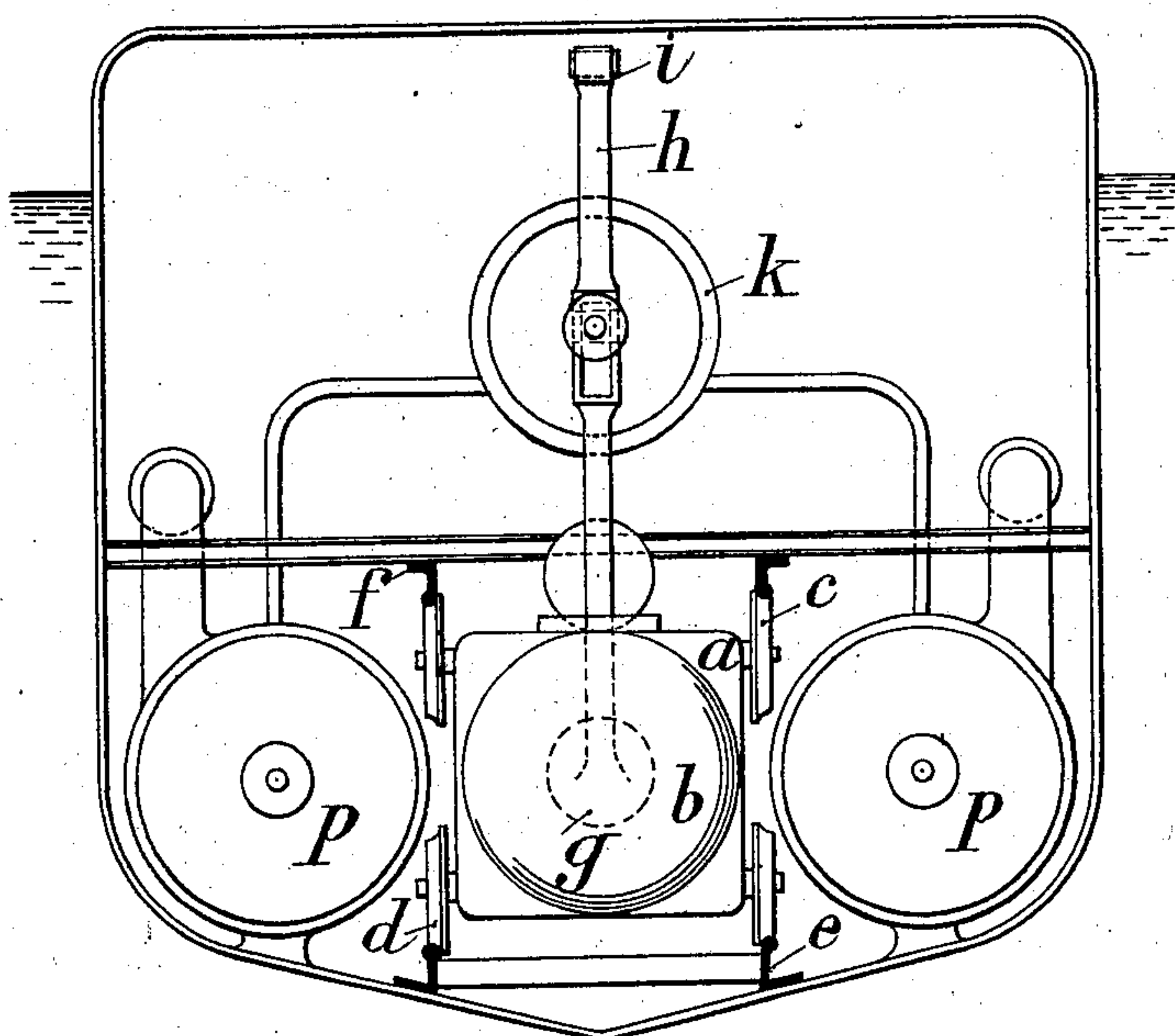
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WAVE OR TIDE MOTOR.
APPLICATION FILED DEC. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES CAILLE, OF LE PERREUX, FRANCE.

WAVE OR TIDE MOTOR.

SPECIFICATION forming part of Letters Patent No. 721,501, dated February 24, 1903.

Application filed December 8, 1902. Serial No. 134,377. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CAILLE, engineer, of No. 7 Rue des Vignes, Le Perreux, Seine, in the Republic of France, have invented a certain new and useful Wave or Tide Motor; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention which is the subject of the present application for a patent refers to an apparatus for collecting under the form of potential energy the efforts of displacement transmitted to a floating body, such as a boat, by the movements of the mass of water in which it floats.

It is known that the motion of the sea has effect on a floating body in the form of oscillations sometimes longitudinal, sometimes transverse, (heeling, pitching, rolling,) or by lateral displacements.

My object is to store up to a certain extent the natural energy which produces these displacements. For this purpose I arrange first of all on a flat surface, placed in a suitable position in the floating body, a heavy mass suitably guided and of which I limit the orbit of displacement in such a way that under the effect of the oscillations produced in the surface on which it rests it tends by its own gravity to be displaced on this surface between its two extreme positions. It can be understood that it will be sufficient to place at these extreme points two mediums movable relatively to a fixed portion of a mechanism which, receiving alternately the shock of the moving weight, stores up a portion of its energy.

I have shown as a representative example on the accompanying drawings an arrangement for the practical application of my invention.

Figure 1 is a longitudinal sectional elevation of the whole arrangement as applied in a pontoon-boat to charge one or more air-compressors. Fig. 2 is a corresponding transverse sectional elevation.

Referring to the drawings, *a* indicates a heavy body which is capable of sliding from one side of the boat to the other. This body may be of any suitable construction; but the

preferred construction is that of a metallic case full or partially filled with mercury and provided with rollers or wheels *c* and *d* above and below. Rails *e* are laid in the bottom of the boat, upon which the weight *a* is mounted by means of the wheels *d*. Directly above the rails *e* are the guide-rails *f*, engaging the wheels *c*, these rails serving to guide the weight and prevent it from tipping or leaving the rails *e*. On each end of the weight *a* are the buffers *b*, while at opposite ends of the track and in line with the buffers *b* are corresponding buffers *g*, secured to the lower ends of the levers *h*, which are pivoted to the boat at some suitable point, such as *i*. The levers *h* are loosely connected to the rods of the pistons *j* of the air-compressing cylinders *k*, which are located at opposite ends of the apparatus and are suitably connected to the storage-reservoirs *p*. A spring on the piston-rod operates against the fixed abutment *m* to return the lever *h* to place.

The operation is as follows: As the boat is rocked by the waves alternately first in one direction and then the other the track *e* becomes inclined and the weight *a* moves with considerable force from one side of the boat to the other. The buffer *b* coming in contact with the buffer *g* of the lever *h* drives it back and forces the piston through the cylinder *k*, compressing the air therein, which passes into the storage-tanks *p*, from which it may be drawn as needed.

It is clear that the energy or the movements of the mass *a*, moving on its inclined plane, can be utilized in other ways without departing from the spirit of my invention. The mass, instead of being disconnected from the mechanism on which it operates by shock, can be directly attached to this mechanism. Also with the same floating construction a series of arrangements for accumulating oscillations can be provided, some for the purpose of utilizing the longitudinal oscillations and some to turn to advantage the transverse oscillations. The appliances for guiding the mass, as well as the track for rolling or sliding, can be varied without altering the principle of the invention. Finally, the inverse disposition of the apparatus which has been described can be adopted—that is to say, instead of collecting the energy of the mass *a*

by its effect on a mobile mechanism of abutment *g* the shock against a fixed mechanism of abutment can be utilized, and this shock can be transmitted to the mobile part of a mechanism carried on the mass itself; but this method of utilization is certainly less practical and more limited in its effect.

I claim—

1. In an apparatus of the class described, the combination with the boat, of a weight adapted to be moved by gravity from one side of the boat to the other, an air-compressor, and a lever adapted to receive the impact of said weight and impart the force thereof to the piston of said air-compressor, substantially as described.

2. In an apparatus of the class described, the combination with the boat of a weight adapted to be moved by gravity from one side of the boat to the other, a part to be operated and a lever adapted to receive the impact of said weight and operate said part, substantially as described.

3. In an apparatus of the class described, the combination with the boat, the air-com-

pressor and levers for operating said air-compressors, of a weight adapted to be moved from one side of the boat to the other by gravity, said weight consisting of a metallic case containing mercury and having buffers on the opposite ends thereof, substantially as described.

4. In an apparatus of the class described, the combination with the boat, the air-compressors, levers for operating said air-compressors and springs for returning said levers to their normal position, of a weight adapted to be moved by gravity from one side of the boat to the other, rails above and below said weight and rollers on said weight adapted to engage said rails, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

CHARLES CAILLE.

Witnesses:

S. MOSTICKER,
AUGUSTUS E. INGRAM.