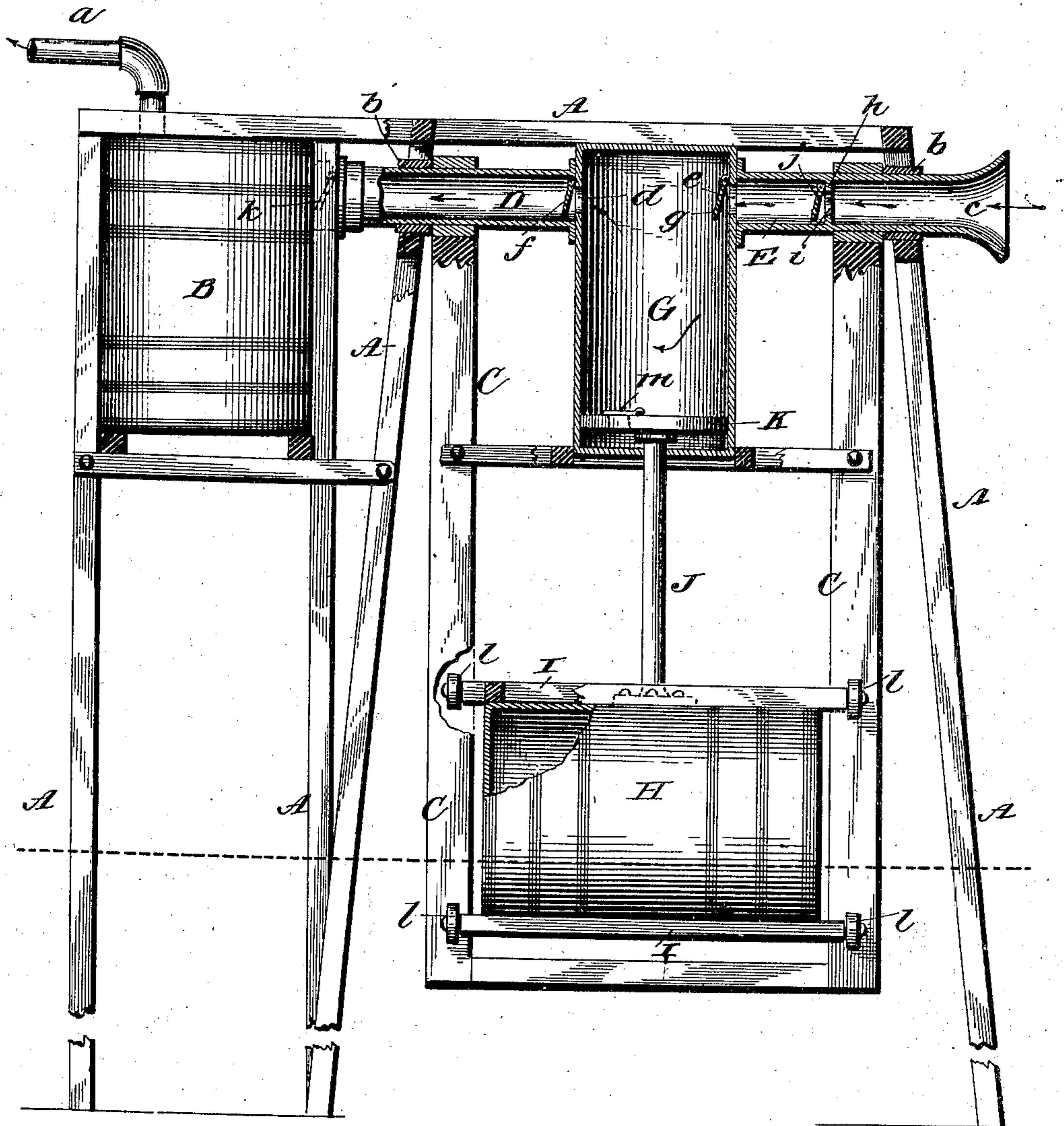


(No Model.)

J. W. ELOHEIMO.
AUTOMATIC AIR COMPRESSOR.

No. 435,034.

Patented Aug. 26, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN W. ELOHEIMO, OF RED JACKET, MICHIGAN.

AUTOMATIC AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 435,034, dated August 26, 1890.

Application filed July 9, 1890. Serial No. 358,127. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. ELOHEIMO, a citizen of the United States, residing at Red Jacket, in the county of Houghton and State of Michigan, have invented certain new and useful Improvements in Automatic Air-Compressors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, and to the letters of reference marked thereon.

This invention relates to certain new and useful improvements in automatic air-compressors designed to be actuated by the movement of the waves; and it has for its object to provide a simple, cheap, efficient, and durable device of this character by which air may be automatically compressed and stored for any desired use.

The novelty resides in the peculiar combinations and the construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawing, and then particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawing, which, with the letters of reference marked thereon, forms a part of this specification, and in which is shown, partly in side elevation and partly in section, with other parts broken away, my device set up and ready for action.

Referring to the details of the drawing by letter, A designates suitable framing or supports for the various parts. This may be of metal, wood, or part metal and part wood, and arranged in any desired manner. That shown in the drawing has proved to be well adapted for the purpose. It is secured in position at the bottom of the sea or other body of water the force of which it is designed to utilize. This may be done in any of the ways known.

B is the storage-reservoir, supported in the framing at any desired point, and is provided with an outlet-pipe by which the compressed air may be conducted to the place of use. This pipe is shown at *a*, and may be flexible or otherwise.

C is a depending frame carried by the tubular axle D E, which is supported in suitable bearings or boxes *b* in the framing, as shown,

and free to revolve therein. The outer end of this axle is bell-shaped or flaring, as shown at *c*, and the other end communicates with the interior of the storage-reservoir by means of any well-known form of hermetical joint which will allow of the desired rotary movement thereof.

G is a cylinder carried by this depending frame and suitably held thereto. It has communication with the two parts of the tubular axle by means of the openings *d* and *e*—one upon each side of the cylinder—and these openings are closed by the flap-valves *f* and *g*, which open in the direction of the storage-reservoir, as shown. Between the mouth end of the tubular axis and the cylinder G is a diaphragm *h* in the said axis, which diaphragm is provided with an opening *i*, which is closed by a flap-valve *j*, opening in the same direction as the valves *f* and *g*, as shown. There is also a similar valve *k* at the entrance of the axis into the storage-reservoir, opening in the same direction as the other valves.

H is a cylindrical vessel carried by the framing I, the ends of which are provided with anti-friction rollers *l*, which are designed to ride upon the vertical timbers of the depending frame, as shown. This cylinder is buoyant and has connected therewith the piston-rod J, which carries the piston K, which works in the cylinder G, as shown, and is provided with a flap-valve *m*, opening in the direction of the upward movement of the piston. The parts being thus constructed and arranged, as shown, the cylinder H being so arranged as to be partially beneath the surface of the water, but not sufficient to come in contact with the bottom of the sea, the motion of the waves from any cause, either natural or artificial, causes the cylinder H to move, and its movement actuates the piston. As the piston moves upward it compresses the air in the cylinder G and drives the air in the direction of the arrows in the drawing. When the cylinder H, and consequently the piston, descends, the flap-valves will be automatically closed and the air rarefied. Continual movement of the cylinder H and piston compresses the air, fresh air being admitted through the mouth of the axis, and the compressed air is stored in the storage-reservoir, from whence it may be conducted as required. Providing

rotary movement of the cylinder H and axis guards against injury to the device which would be very likely to occur if the same were rigidly supported.

5 What I claim as new is—

1. The combination, with the storage-reservoir and supports, of the oscillating and vertically-movable cylinder, the tubular axis, and the piston actuated by the movement of said
10 cylinder and controlling the movement of air through said axis, as set forth.

2. The combination, with the oscillatory and vertically-movable cylinder, of the cylinder G, the piston therein actuated by the movement
15 of the first-mentioned cylinder, the tubular axis having communication with the cylinder G, and the flap-valves in the axis and piston, substantially as specified.

3. The combination, with the framing, the
20 depending frame, the vertically-movable cylinder, the rotary tubular axis, and the flap-valves in said axis, of the piston actuated by the vertically-movable cylinder, and the cylinder G, with which the axis communicates,

and the storage-reservoir, also having communication with the tubular axis, substantially as specified. 25

4. In a device for the purpose described, the combination, with the framing, the storage-reservoir supported thereby, the tubular
30 axis rotatably held in bearings in the framing, the cylinder G, and depending frame carried by the axis, of the connection between the axis and storage-reservoir, the flap-valves in said axis, the cylinder H, provided with a piston-rod, and anti-friction rollers vertically
35 movable on the vertical portions of the depending frame, and the piston carried by the piston-rod and working in the cylinder G and provided with a flap-valve, substantially as
40 and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

J. W. ELOHEIMO.

Witnesses:

PETER WESTERINEN,
S. SILVOLA.