D. R. ALLARD.

AIR COMPRESSOR.

APPLICATION FILED MAY 6, 1909.

960,478. **Patented June 7, 1910.**

Fig. 1.

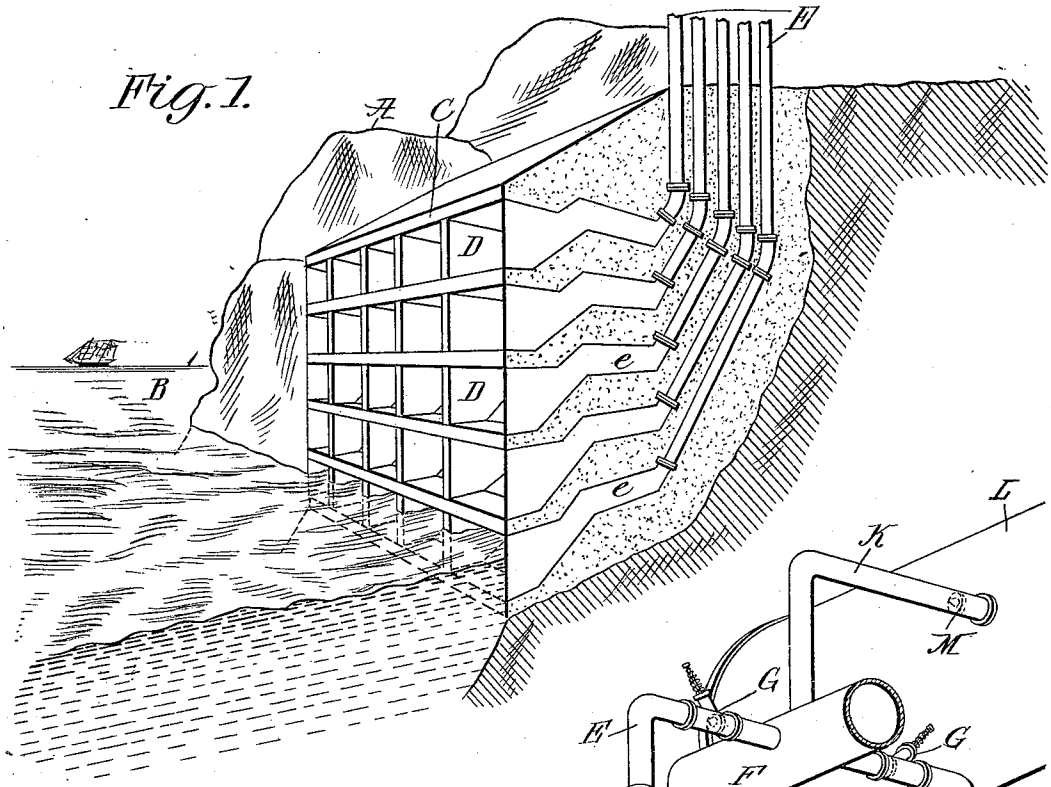

Fig. 2.

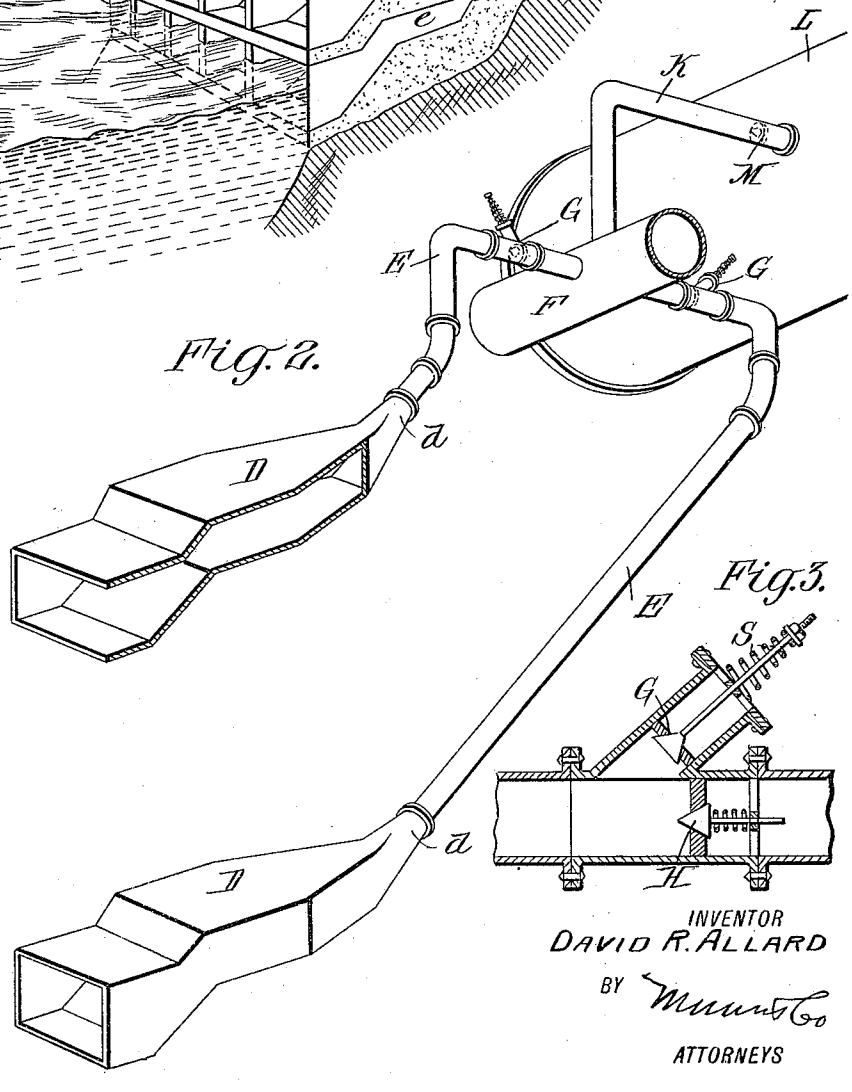

Fig. 3.

WITNESSES

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AIR-COMPRESSOR.

960,478. Specification of Letters Patent. Patented June 7, 1910.

Application filed May 6, 1909. Serial No. 494,407.

To all whom it may concern:

Be it known that I, DAVID R. ALLARD, a citizen of the United States, and a resident of Arleta, in the county of Multnomah and State of Oregon, have made certain new and useful Improvements in Air-Compressors, of which the following is a specification.

My invention relates to devices for compressing air by water power and it consists in the constructions, combinations and arrangements herein described and claimed.

The main object of my invention is to provide means by which the force of the waves of the sea or other body of water may be used to best advantage for compressing air.

A further object of my invention is to provide a comparatively simple form of apparatus for accomplishing the above named object.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claim.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a perspective view partly in section showing one embodiment of my invention. Fig. 2 is a perspective view showing the detail construction of the operating parts and Fig. 3 is a detail view showing the construction of the valves.

In carrying out my invention I select a site for the location of the apparatus which is preferably a cliff such as that shown at A, on the shore of the ocean B or other body of water in which there is a considerable wave motion. At a convenient place near the water's edge, I construct a frame C in which are located a series of cells D such as those shown in Fig. 2. These cells may be made of any material and are preferably of the shape shown in the figure. The cells are arranged in tiers in order to take advantage of the rise and fall of the tide as will be hereinafter explained.

From the rear end *d* of each cell, there extends a pipe E having a reduced diameter. All of the pipes E communicate with a common header F as shown in Fig. 2. Located in the pipes E are the air inlet valves G. While these may be of any approved form, the form shown in Fig. 3 is preferable. In this figure the valve G is controlled by a spring S and is normally seated, being open only when the air pressure on the outside of the valve becomes greater than that on the inside. The pipe E between the valve G and the header F is also provided with a valve H which opens only toward the header when the pressure in the pipe E is greater than in the pipe F. A pipe K leads from the header directly into the air storage tank L and is provided with a valve M similar to the valves H in the pipes E.

From the foregoing description of the various parts, the operation may be readily understood. The device is placed where the waves will rush into the mouths of the cells D. The tremendous force of the oncoming wave traps the air of the cells and drives it upward through the pipes E. As the pressure in these pipes increases, the valve H will open allowing this increased pressure to be communicated to the header F. When the pressure in this header becomes high enough, the valve M will be unseated and the pressure will be transmitted to the air in the storage tank L thereby compressing the latter. Each set of cells will act in the same manner and the pressure in the air tank L will rise to a considerable degree. When the wave begins to recede the withdrawal of the water from the front part of the cells will cause a vacuum. The valves G will then open and allow the air to enter behind the water, while the valves H and M will remain closed.

The construction of the cells in different horizontal planes provides a device in which the waves at high tide or low tide may be equally effective in compressing the air.

It will be noted that the same action will take place from the rise and fall of the tide as well as from the force of waves and hence the invention contemplates a tide power device as well as a wave power device.

The compressed air in the tank L may be used for any purpose to which compressed air is applicable.

I am aware that other forms of the device based upon the same general principle, might be made, but I consider as my own all such modifications as fairly fall within the spirit and the scope of the invention.

I claim:

In an air compressor, a casing provided with a series of cells, each of said cells hav-

ing an open end directly facing a body of water and being provided with a rear portion above the level of the front portion, all of said cells being arranged to be subjected to the waves of said body of water, air pipes connecting said air cells with a common air tank, valves in said pipe for retaining the air in said air tank, and other valves for permitting the entrance of air into said cells.

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Witnesses:
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