

Improvement in Combined Tidal Motors and Air Compressors.
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IMPROVEMENT IN COMBINED TIDAL-MOTORS AND AIR-CONDENSERS.

Specification forming part of Letters Patent No. 122,930, dated January 23, 1872.

To all whom it may concern:

Be it known that I, JOHN B. ATWATER, of Geneva, in the county of Kane and State of Illinois, have invented a new and Improved Tidal or Current Motor; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a vertical sectional view of my improved apparatus as arranged for operation. Fig. 2 is a view of the device on which the water acts.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists: First, in the tidal-motor having horizontal and vertical movements, as hereinafter described, combined with the pumping devices and the condensed air reservoir, for the purpose set forth. Second, in an engine with piston-rod, which has a vertical and horizontal motion, interposed between a wheel-screw or spoon and condensed air-reservoir. Third, in the combination of a condensed air-cylinder, a condensing-engine, a turn-table, and a tidal-wheel, screw, spoon, or other equivalent device, acted upon by the tide or current.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawing, A represents a strong air-tight reservoir, which is provided with a cock, *a*, for allowing the escape of air to be used for driving machinery, or for any other desired object. C is a pipe, which communicates with a condensing-engine, D, in which pipe is a valve, *b*, for allowing air to enter the reservoir A from engine D, but which will prevent its return into the engine. In the engine-cylinder is a tightly-fitting piston, *c*, which is provided with a valve, *e*, opening upward for allowing air which enters the lower perforated head of the cylinder to pass into this cylinder above the piston at every descent thereof. The piston is secured to a rod, E, which extends through the lower cylinder-head, and is secured rigidly to a coupling block, *f*. This block *f* is perforated to

receive very loosely through it a pitman-rod, G, which is connected to a crank, *h*, on the shaft *j* of a twisted spoon-shaped screw, J. The shaft *j* has its bearings in boxes on standards *i i*, which latter rise from a turn-table, P. This table P is mounted on wheels *n n n* on a circular track, *o*, which track is sustained upon a submerged wall or pier, S. The turn-table is kept in place by means of a central shaft, *s*, shown in dotted lines, Fig. 1, which is sustained by a step embedded into the masonry of the pier S.

The axis of the shaft *s* coincides with the axis of revolution of the screw J and turn-table P, so that the revolution of the latter will not in any manner interfere with the rotation of the screw by the currents of water acting against its surfaces. Consequently, the screw will always be free to turn, and its rotation will impart to the piston *c* a reciprocating motion whatever may be the changes which take place in the currents.

It will be seen from the above description that I have combined with an air-reservoir, for receiving condensed air, and with an air-condensing engine which communicates with said reservoir, a water-wheel or screw, which will swing around freely like the vane of a windmill and accommodate itself to the different directions which the currents in which it is submerged may take.

Having described my invention what I claim as new, is—

1. The tidal-motor, the pumping devices, and the condensed-air reservoir, constructed, combined, and operating substantially in the manner and for the purpose herein set forth.

2. The loose connection *f*, in combination with the pumping and condensing contrivances, and with the tidal-motor, substantially in the manner and for the purpose herein set forth.

3. The turn-table support for the wheel or screw J, in combination with the air-condensing engine D and condensed-air reservoir A, substantially as described.

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Witnesses:

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