D. R. SMITH.
Wind-Engine.

No. 206,631. Patented July 30, 1878.

Fig. 1.

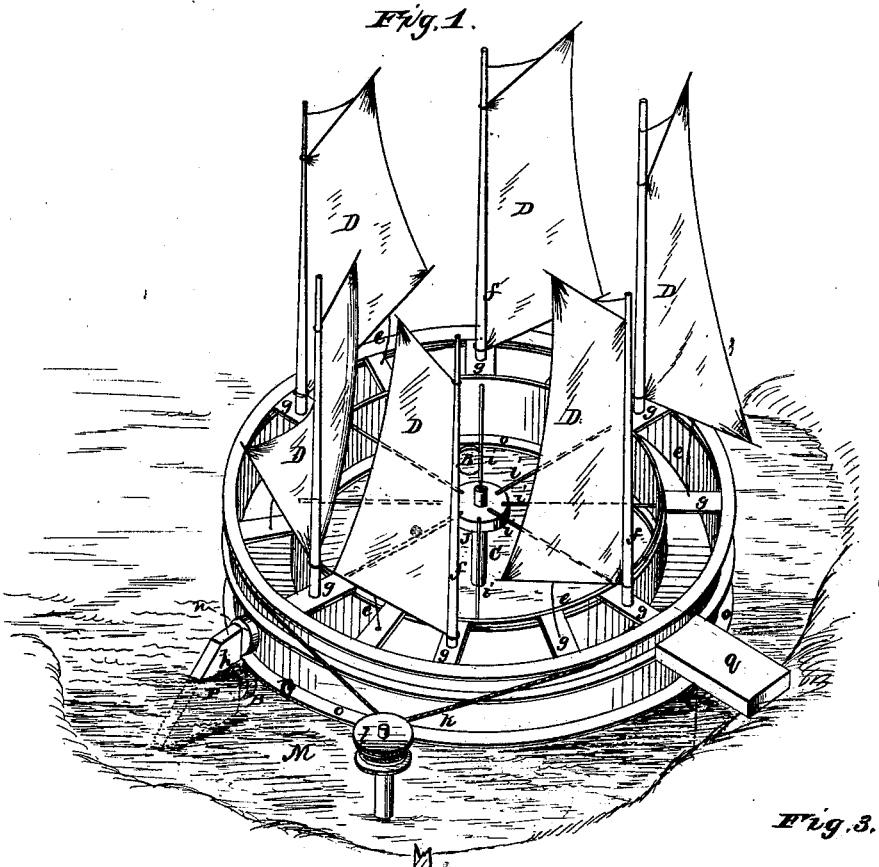


Fig. 3.

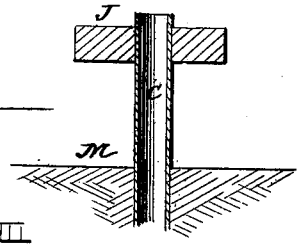
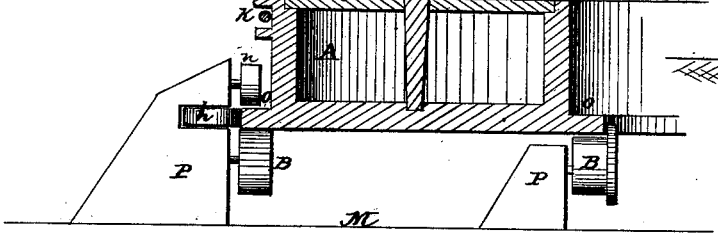


Fig. 2.



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UNITED STATES PATENT OFFICE.

DAVID R. SMITH, OF NEW YORK, N. Y.

IMPROVEMENT IN WIND-ENGINES.

Specification forming part of Letters Patent No. **206,631**, dated July 30, 1878; application filed May 24, 1878.

To all whom it may concern:

Be it known that I, DAVID R. SMITH, of the city, county, and State of New York, have invented certain new and useful Improvements in the Method of Utilizing the Force of Wind, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a revolving sail-frame embodying my invention. Fig. 2 is a transverse vertical section of same. Fig. 3 is a vertical section of central guide and disk or float.

Similar letters of reference denote corresponding parts.

The object of this invention is, first, to provide a horizontal windmill of greater power than those in ordinary use; second, to utilize the force of wind to propel a circular boat, platform, or vehicle, or an endless float, around a fixed center; third, to propel an endless chain of boats or floats in routes other than circular; fourth, to propel an endless train of cars or vehicles along or around an endless route or track other than circular over even or uneven ground; fifth, to adorn a fountain with a circle of sails propelled by the air-currents or wind produced by the jets of water, giving the appearance of little boats sailing in every direction.

The invention consists of the combination of a suitable sail or sails with a suitable sail frame or frames moving in an endless track or route, the weight of said frame or frames being supported in a manner hereinafter described; and it further consists of certain details of construction, as hereinafter set forth.

A sail-frame, A, is guided around or along an endless track or route by suitable guiding devices.

In windmills heretofore constructed the frame-work supporting the sails has been rigidly attached to, and its weight sustained wholly or in part by, a revolving axle, from which the power is communicated directly or indirectly to pumps or other machinery. With this defective construction the weight of the material necessarily employed and the cost of a windmill increase so rapidly with its diameter that a maximum of only three or four horse power is considered practicable, and this defect is greater in the horizontal than in the vertical windmills having the said defective construction.

By my invention the weight of the sail-frame A is supported in such a manner that no part of said weight is necessarily carried by a central axle; but the said weight is carried or supported by water in which the frame may float or by skates or runners attached to the frame A and running on ice or snow. The said frame A may be simply an arm, which revolves freely around a central guide, *c*, to one end of which arm a sail, D, is secured, and through the other end of which the guide-post *c* loosely passes; or the frame A may have the form of a boat or platform, or of a vehicle-body, or any other form suitable for carrying the sail or sails D, and be guided in any suitable manner; and any suitable number of frames A may be connected together by ropes, chains, or links, forming an endless chain of boats or floats, or train of cars or vehicles, extending completely around the endless track or route.

The endless route of frame A may be along the surface of a pond or other body of water, in which the frame A may float or move upon its frozen surface. The said route may be circular, or of a regular or irregular form. If a number of frames A are employed, forming an endless train or chain of cars or vehicles moving over an irregular path or route, the ground over which the route or path lies need not be leveled off, because the movement of the vehicle downhill would be accelerated by gravity as much as the movement uphill would be retarded.

If only one sail, D, is employed, the momentum of the frame or frames A must be depended on for propelling the frame or frames around that part of the route in which the sail is not filled by the wind. Therefore I prefer to use more than one sail; but any convenient number may be employed. The sails D may have the forms of hollow cones, or any other form suitable for horizontal windmills; but I prefer to employ sails similar to the sails of fore-and-aft-rigged sailing vessels, with the sheets *e* made fast in the wake of the masts and to the frame A in such a manner that the sails act automatically to propel the frames A always in the same direction around the track, whatever may be the direction of the wind.

Access may be had to the upper side of said frame through a hollow or revolving center from below, or from the outside, or from above, as construction for special purposes may require.

In the example of my invention shown in the drawings the sail-frame A is a circular ring, of suitable form and construction to float and revolve in water, or on the ice. It is provided with seats *g*, suitable for persons to sit upon. It supports the masts *f*, upon which the sails D are rigged. It moves upon wheels or rollers B, which may be removed in winter and skates or runners substituted. If floating or revolving in water, the rollers B are useful to sustain any side that may become overloaded. It is guided by flanges on the wheels B, by guide-pulleys *h*, and light radial rods *i*, connecting the inner circumference with a central disk or float, J, said disk or float fitting loosely around a central guide, *c*. All three of these guiding devices are not required at the same time. In the winter, on the ice, the radial rods will be employed and the wheels will not be used. When the wheels are used the radial rods can be dispensed with.

The central guide *c* may be a tube, through which a jet of water may project upward, causing air-currents that will turn a miniature wheel.

The endless rope or belt K conveys power or motion from frame A to pulley *l*, or the said pulley *l* and rope K may be used as a brake to regulate the speed of or to stop and start the machine.

M represents an artificial pond or tank that may be filled with water to float the frame A. To prevent frame A from being tilted or tipped by a high wind, rollers *n* are provided, acting on the upper side of suitable flanges O.

P are suitable pulley-standards or fixed frames for the pulleys or rollers employed. *q* is an approach or wharf, from which persons may step on and off of frame A.

When the rope is not required, I employ a brake, operated by a lever on the landing, that will rub against the sail-frame and stop it or regulate its speed.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A boat, float, or vehicle adapted to be propelled over an endless track, in combination with a sail or sails for propelling the same.

2. The herein-described combination of a suitable sail or sails, D, with a suitable sail frame or frames, A, and an endless track for guiding said frame, the weight of said frame or frames A being supported by water, in which the said frame floats.

3. The combination of a circular floating sail-frame, A, and sails D, as described.

4. The combination of a circular floating sail-frame A, sails D, and hollow guide *c*, as described.

5. The combination of a circular floating sail-frame, A, and sails D, said sails D being cut, rigged, and set like the fore-and-aft sails of sailing-vessels.

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