A. JAMES.

Improvement in Water-Supported Horse-Powers.

No. 129,734. Patented July 23, 1872.

Fig 1

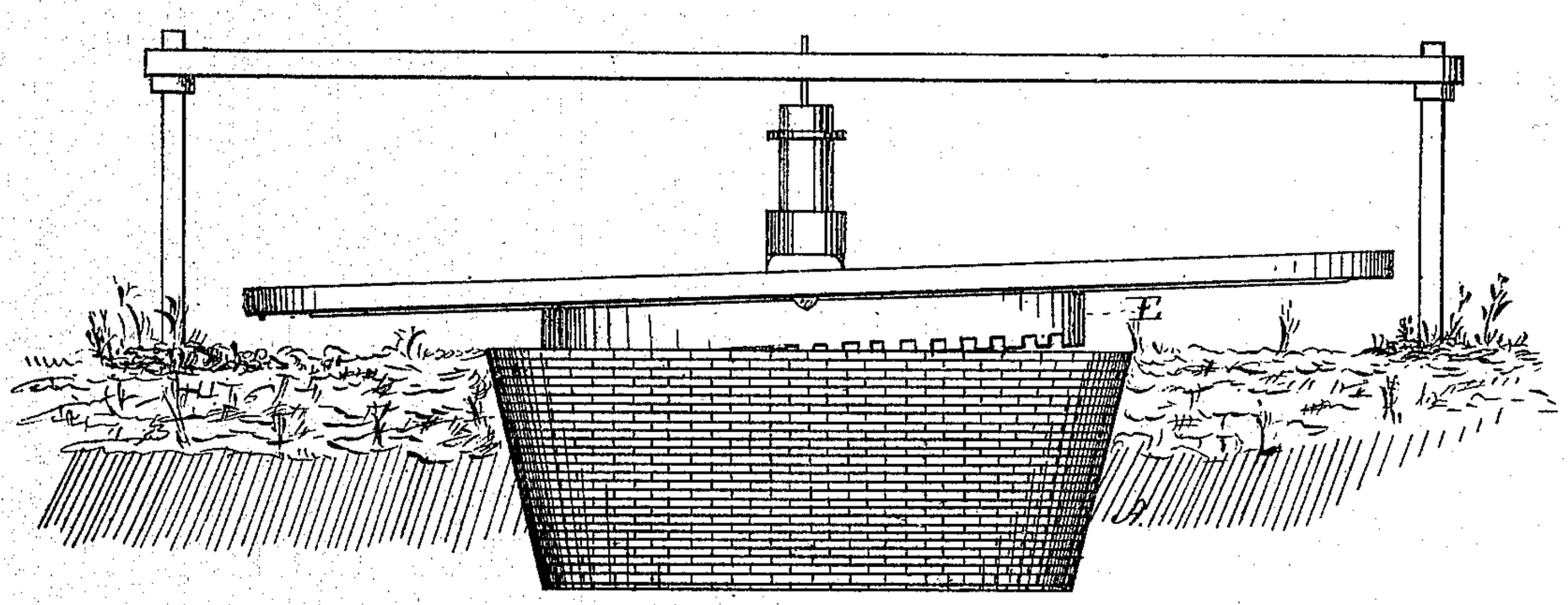
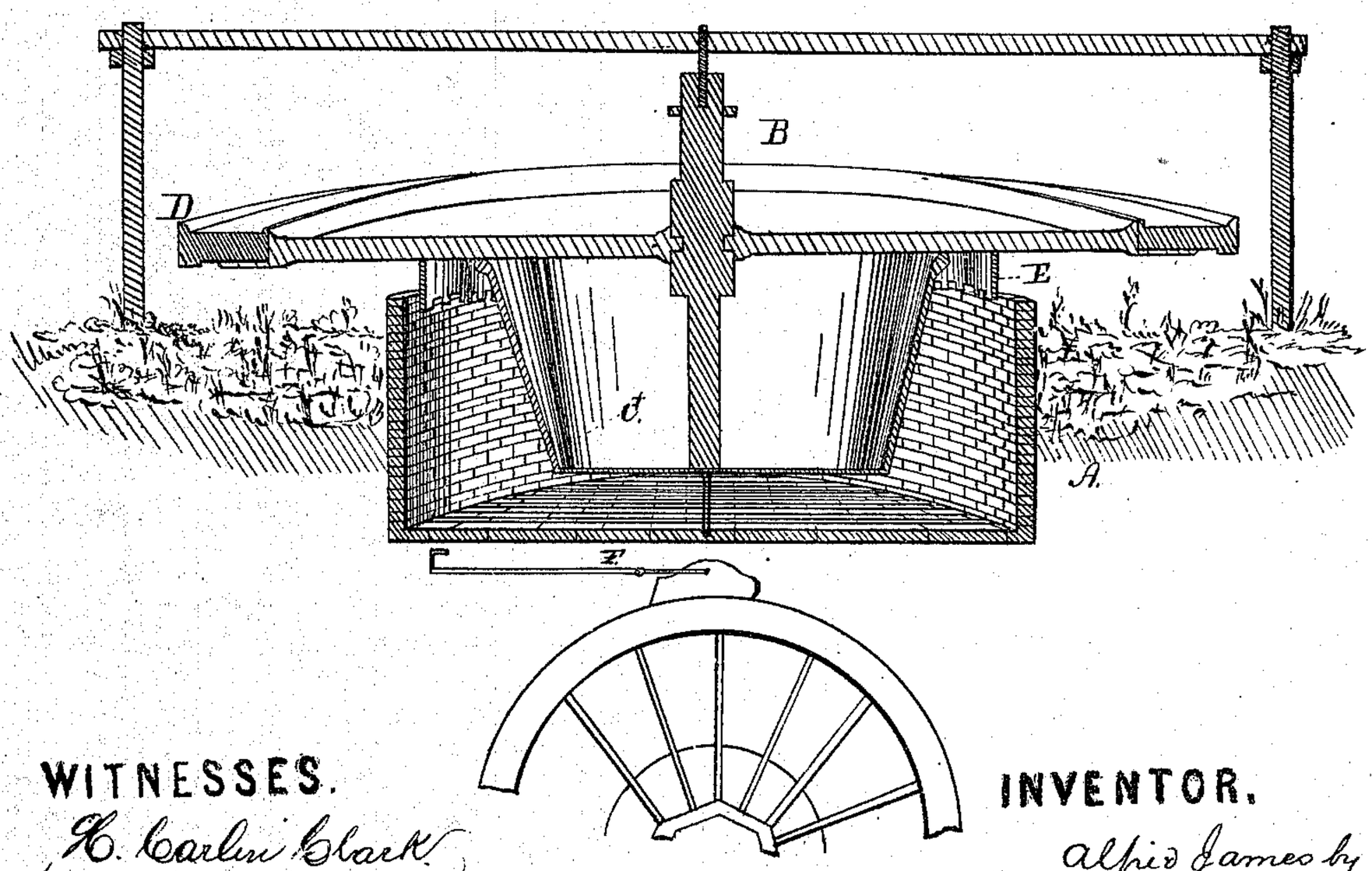


Fig 2



WITNESSES.

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UNITED STATES PATENT OFFICE.

ALFRED JAMES, OF VINTON, OHIO.

IMPROVEMENT IN WATER-SUPPORTED HORSE-POWERS.

Specification forming part of Letters Patent No. **129,734**, dated July 23, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ALFRED JAMES, of Vinton, in the county of Gallia and State of Ohio, have invented a new and useful Improvement in Horse-Powers; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention consists, broadly, in constructing a horse-power wheel in such manner, or in providing it with such means, that it is adapted to float upon water, and be thus sustained, by which means the friction incidental to its operation is much reduced, and consequently the power applied is used in a more advantageous manner. The means employed for carrying my invention practically into effect will be fully described hereinafter.

In the drawing, Figure 1 represents a side elevation of my improved horse-power, and Fig. 2 a sectional elevation of the same.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

My invention may be generally described as follows: A suitable cistern or tank is provided, in the center of which is located a bearing for the lower end of the main shaft of the horse-power wheel. The wheel is attached to the shaft in any suitable manner, and has attached to it upon its lower side a hull or tub of sufficient capacity to support, when resting in the water in the cistern, the wheel and the horse which walks upon it. It has also attached to itself about the tub or tank a circle of gearing by means of which its movement is communicated to other proper mechanisms. The upper end of the main shaft rests in proper bearings, as shown. The wheel itself is set at an angle, being depressed upon one side.

A represents the cistern, which may be constructed in any suitable manner and of proper material. It is preferably, however, sunk in the ground to the depth of about five feet, with a top portion extending above the ground about the distance of two feet. Its diameter should be about twenty-four feet, and the whole may be made of brick or stone united by hydraulic cement. In the bottom of the cistern is located a bridge-tree or horizontal beam, securely fastened in the walls of the cistern, which is provided near its center with a bearing for the lower end of the main shaft. B represents the main shaft, which may be constructed, of course, of any suitable material and proper size, but which is, preferably, made of pine or other light wood about thirteen feet in length and twelve inches in diameter, the ends being provided with proper journals about five inches long and two and a half inches in diameter. C represents the hull or tub, which floats in the water and supports the wheel. The dimensions preferably given to it are about as follows: Diameter at bottom, twelve feet; at top, thirteen feet; height, seven feet. It is, preferably, constructed of staves, which are secured to three rims or hoops—one located at each end and one in the middle. Centrally located in this tub is a vertical tube inclosing the main shaft, which tube is fastened at the bottom to a wheel or rim three feet in diameter, resting upon an arm passing through the main shaft, which arm is bedded into the rim for the purpose of making a secure connection between the two. By means of the tube leakage is prevented where the main shaft is attached to the hull. The outside of the latter is made water-tight by calking, care being taken to leave it perfectly smooth, so that no friction is created by its passage through the water. D represents the track or rim of the wheel, which is, preferably, constructed of one-and-a-half-inch oak plank, about three feet wide, the plank being secured by rims upon each edge, which are bolted down to the arms which unite it to the main shaft. These arms are, preferably, eight in number, and in addition to these eight additional arms are employed, which are connected to the short beams *d*, as shown. The whole structure is secured in such manner as to give ample strength for the purposes for which it is designed. E represents a band or cog wheel, preferably eighteen feet in diameter and twelve inches in width, which is made fast between the arms uniting the main shaft to the back of the wheel. Suitable gear-wheels take power from this wheel, communicating it to any desired point. F represents a brake, by means of which the movements of the wheel may be controlled. The wheel itself is set upon an

inclined plane with sufficient elevation to start as quick as the pressure of the brake is removed. By means of this arrangement the weight of the animal operates to move the wheel more readily than if it were set in a horizontal plane. The animal employed to actuate the wheel is kept in place by means of a hanging stall supported in any suitable manner, in which is placed a beam so located that the animal can be attached to it by any suitable harness. After the wheel has been constructed and is ready for use, water should be let into the cistern until the wheel with the horse's weight added thereto is borne up by it sufficiently to relieve the lower step from weight. It is not designed to float the lower journal out of its bearings, but simply to support the weight of the wheel. The journals at each end serve to guide the wheel and keep it in proper position. When the necessary quantity of water is ascertained its height may be marked for convenience in filling at other times.

The operation of the wheel is like the ordinary tramp-wheel, with the exception that the friction is very largely reduced. Practical tests indicate that the friction of a wheel running in water, as described, is but one-third as much as a wheel running upon a naked pivot in the old way.

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

A horse-power wheel supported by water, and combining the cistern, the hull, the main shaft, the main wheel, and the gear-wheel, as described.

This specification signed and witnessed this 23d day of April, A. D. 1872.

ALFRED JAMES.

Witnesses:

R. B. CARTER,

ELLEN CARTER.