N. H. LEBBY.

TURBINE FOR RAISING WATER, &c.

No. 8,890. **Patented Apr. 20, 1852.**

Fig. 1.

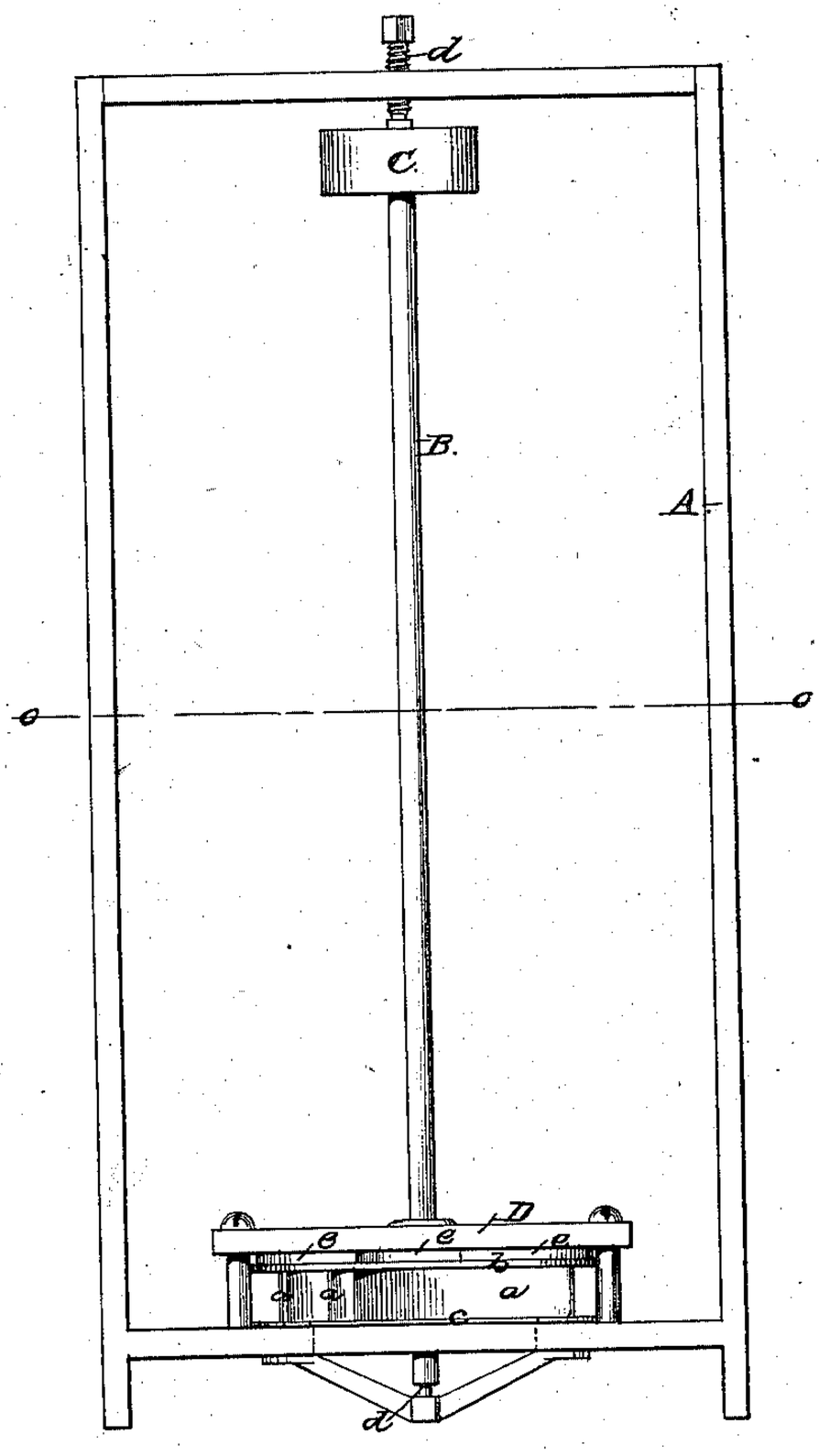


Fig. 2.

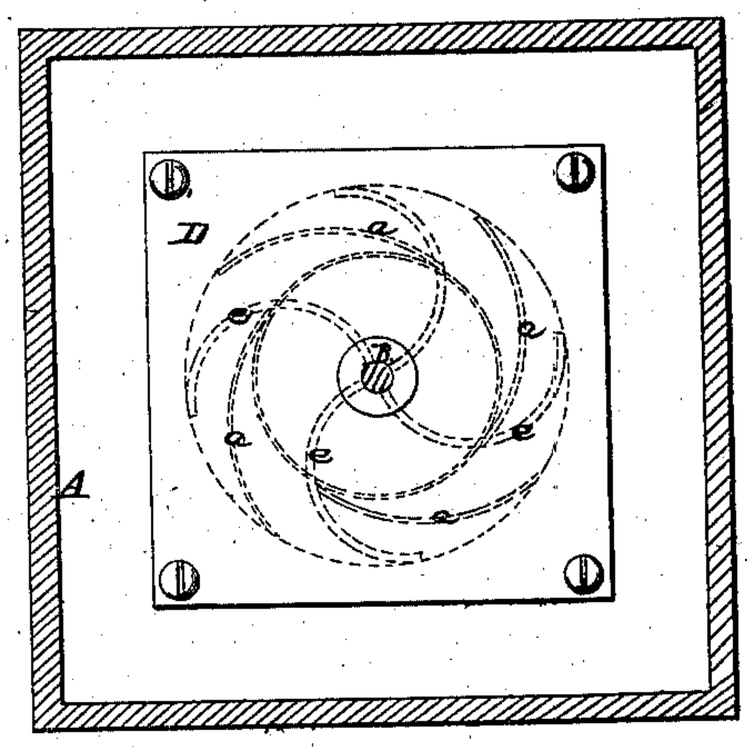
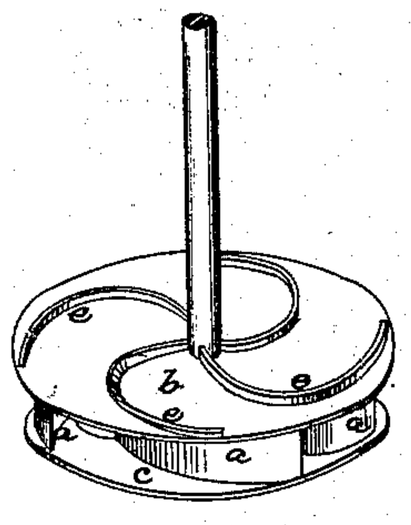


Fig. 3.



UNITED STATES PATENT OFFICE.

N. H. LEBBY, OF CHARLESTON, SOUTH CAROLINA.

APPARATUS FOR RAISING WATER.

Specification of Letters Patent No. 8,890, dated April 20, 1852.

To all whom it may concern:

Be it known that I, N. H. LEBBY, of the city and county of Charleston, in the State of South Carolina, have invented certain new and useful Improvements in Turbines Applicable to Raising Water for Draining Land and for other Purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical elevation of the turbine positioned in a pit or box for raising water. Fig. 2 is a sectional plan or top view taken through the line *o*, *o*, Fig. 1, and Fig. 3 is a detached perspective view of the turbine.

The same letters of reference denote similar parts in each of the several figures.

The nature of my invention consists in constructing the turbine with ribs on the outer face of its upper disk which ribs working under a cover to the wheel, cause, by the centrifugal effect produced while in motion, a void to be formed at or about the center the tendency of which will be to relieve the wheel of its weight and consequently reduce the running friction.

To enable others skilled in the art to make and use my invention I will proceed to minutely describe it.

a a a are the usual curved arms or buckets of an ordinary turbine wheel as applied to the purpose of raising water for draining land; *b* the upper disk or plate, and *c* the lower one made with an opening at its center for reception of the water which is discharged from the periphery in the usual manner through the centrifugal effect produced by the wheel while in motion: the wheel is positioned in a box or pit A, in which the water rises through a hole in the bottom and from whence it is discharged through the action of the turbine by spout or otherwise at the top, the vertical wheel shaft B, driven from an engine or otherwise by the pulley C, being supported by or running on center pins *d d* top and bottom.

This so far is descriptive of the present form of turbine for raising water and the object of my improvements is to reduce the running friction by relieving the wheel of its weight, which effect I produce by the employment of ribs or strips *e*, *e*, *e*, on the outer or top face of the upper disk *b* and the further use of a cover D made fast to the box or pit, the ribs *e*, *e*, *e*, attached to the wheel, working under the cover that is shown to extend somewhat beyond the periphery of the wheel or turbine; these ribs are represented of a curved form but they may be straight and any number of them used; their effect in conjunction with the cover, is, as will be evident, to create a void at or around the shaft in the center where it joins the ribs, so that the pressure from beneath the wheel or on the under face of the upper disk will serve to buoy up the wheel this effect being occasioned by the centrifugal action on the water finding its way to the ribs that in rapid motion will throw the water out from them in a similar manner to that produced by the arms or buckets of the wheel thus, as before observed, creating a void in the center, for the ribs *e*, *e*, *e* working as close to the cover D, as will only admit of sufficient rise to relieve the wheel of its weight, prevent the water from finding its way above the ribs to the center of the wheel, and the centrifugal effect, produced by the motion of the ribs with the wheel, limit the entrance of water between the ribs to only so much as will leave a sufficiently large central area or void to relieve by the under atmospheric or hydrostatic pressure, not only the wheel of its weight but also of the superincumbent weight of the water. The turbine thus having its running friction reduced (which is considerable where the speed is great and the shaft long and supported on a collar at the top) is found by practical experiment made in the drainage of rice fields, to produce important results in the way both of economizing power and reducing wear.

What I claim as my invention and desire to secure by Letters Patent is—

Constructing the wheel or turbine with exterior ribs *e e e* of any suitable number size or shape the said ribs operating in combination with a cover D or its equivalent in the manner and for the purposes substantially as set forth.

N. H. LEBBY.

Witnesses:

D. C. GIBSON,

HENRY W. SCHRODER.