

E. Brazelton,

Centrifugal Pump,

N^o 38,553.

Patented May 19, 1863.

Fig. 1

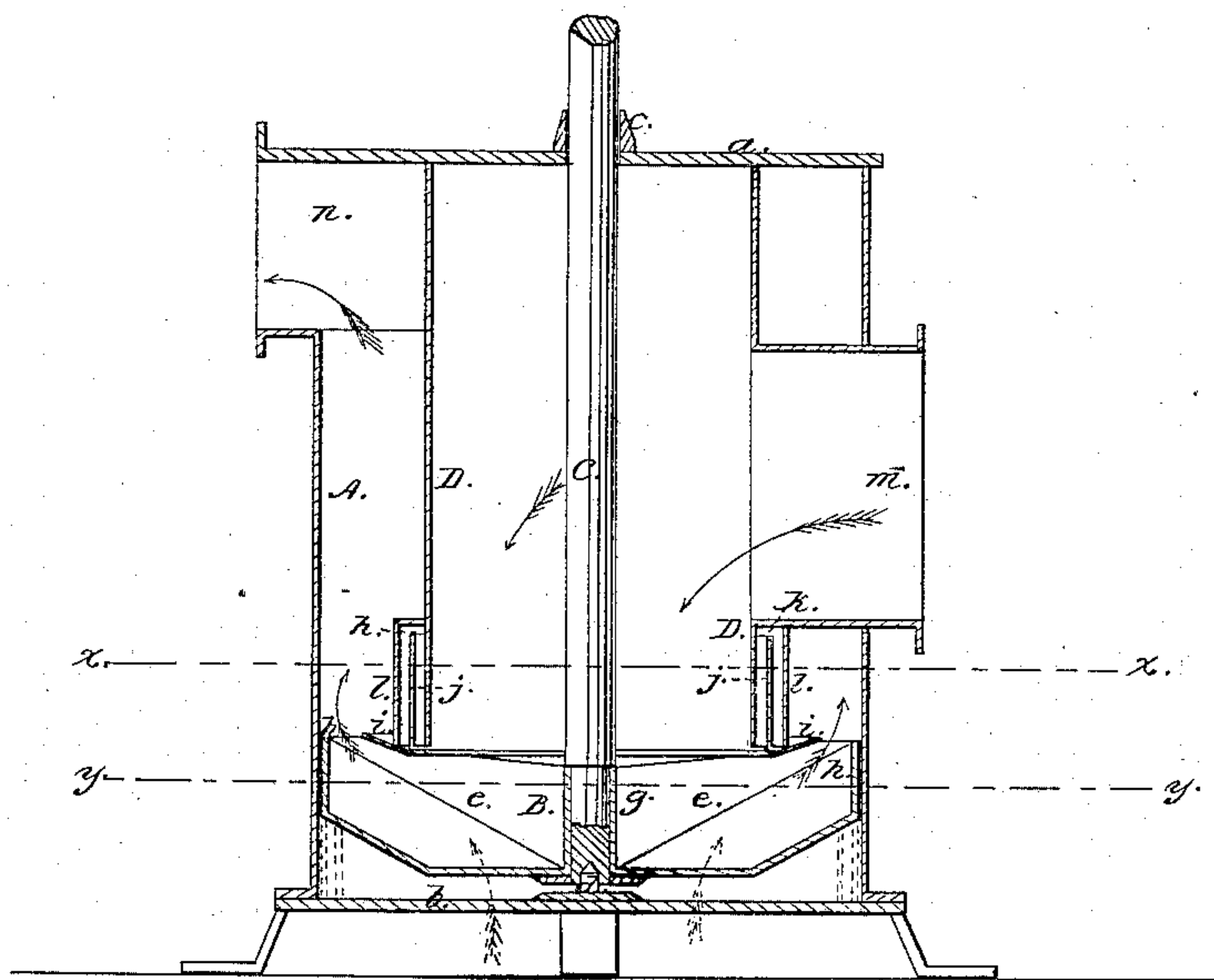
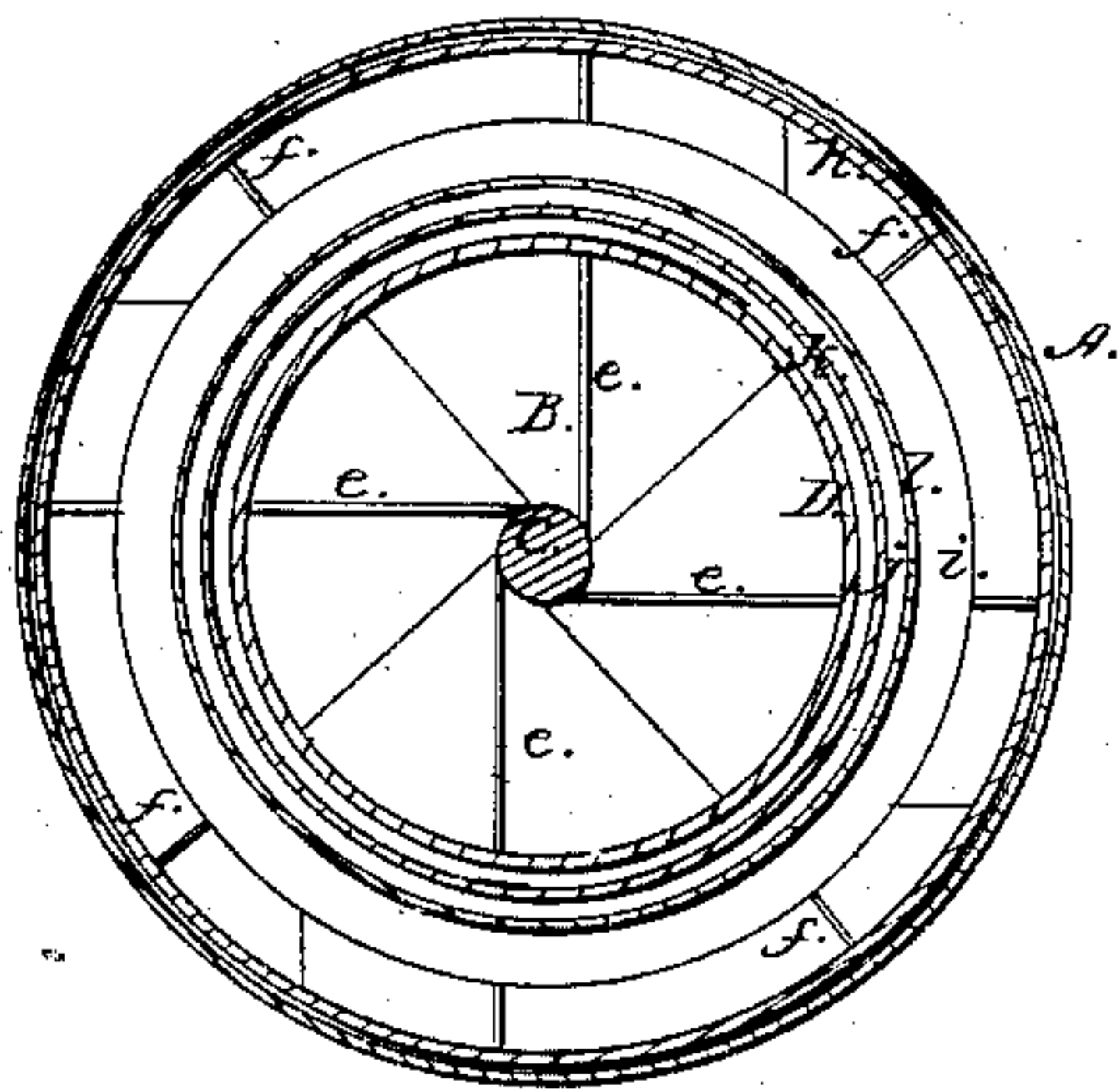


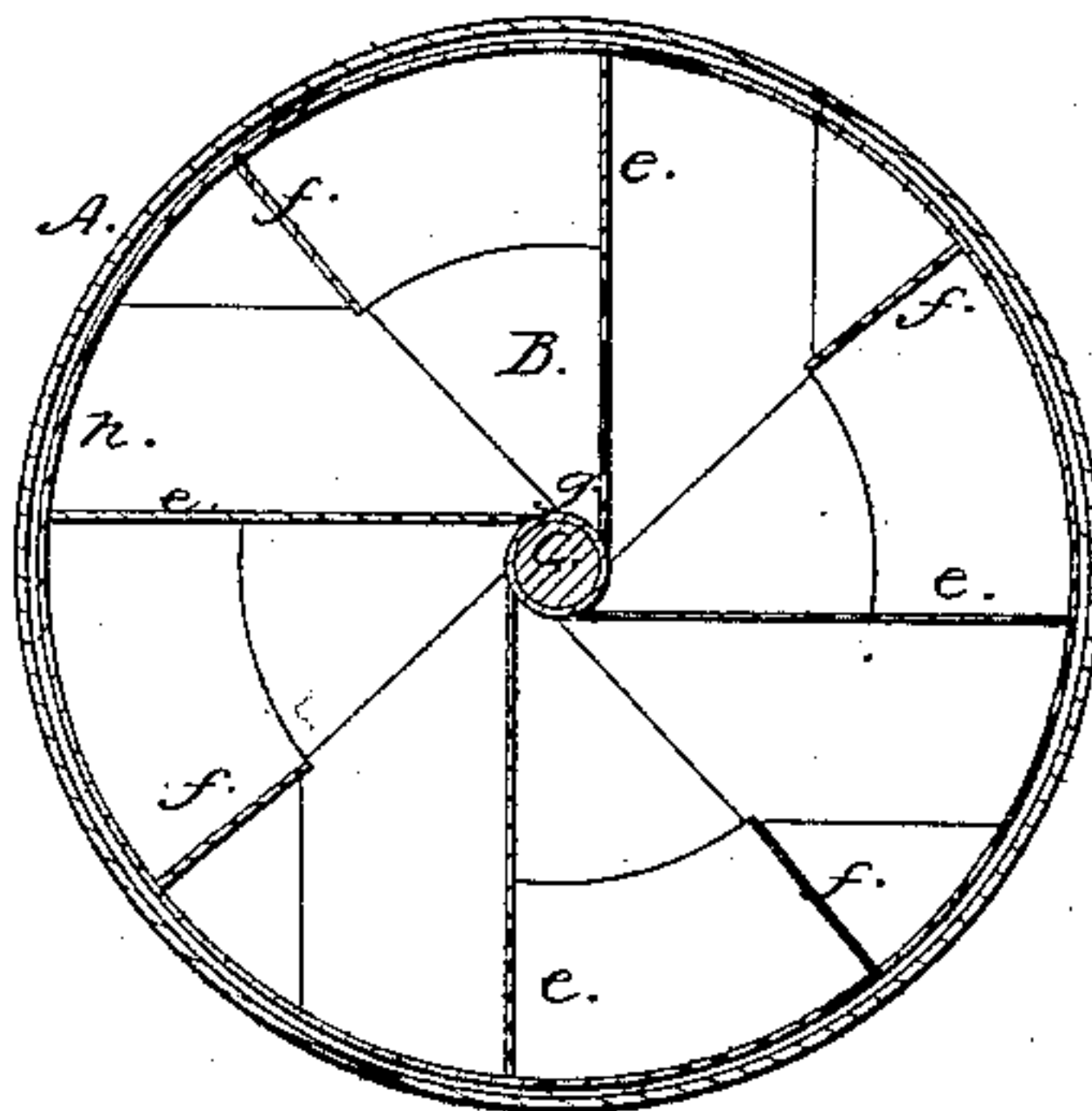
Fig. 2



Witnesses:

J. W. Coombs.
G. W. Reed

Fig. 3.



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UNITED STATES PATENT OFFICE.

ELI BRAZELTON, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN CENTRIFUGAL PUMPS.

Specification forming part of Letters Patent No. 38,553, dated May 19, 1863.

To all whom it may concern:

Be it known that I, ELI BRAZELTON, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and Improved Centrifugal Pump; 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 a part of this specification, in which—

Figure 1 represents a vertical central section of my invention. Fig. 2 is a horizontal section of the same, taken in the plane indicated by the line *x x*, Fig. 1. Fig. 3 is a similar section to the previous figure, the plane of section being indicated by the line *y y*, Fig. 1.

Similar letters of reference in the three views indicate corresponding parts.

The object of this invention is to construct a pump capable of raising the largest volume of water possible in proportion to the power expended, and particularly applicable for a wrecking-pump or for the purpose of raising sunken vessels.

The invention consists in the arrangement of a water-lock or air-packing, in combination with the revolving disk of a centrifugal pump and with the supply and discharge pipes in such a manner that by said air-packing the backlash or the passage of the water from the discharge-pipe back to the supply-pipe during the operation of the pump is prevented; also, in the peculiar arrangement of the inner and outer cylinders and of the propeller-wheel, as hereinafter described.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the drawings.

A represents the outer cylinder or case, which is made of sheet metal or other suitable material, and which incloses the working parts of the pump. This case is provided with a top plate, *a*, and with a bottom plate, *b*, and the top plate is provided with a stuffing-box, *c*, to admit the vertical central shaft, C, of the revolving disk B. The shaft C is stepped on a pin, *d*, which projects from the center of the bottom plate, and the disk B is firmly keyed to its lower end. The disk B is provided with a series of fans, *e f*, the fans *e* being made to extend at angles of ninety degrees toward each other from the central hub, *g*, and the intermediate fans, *f*, being placed between the

fans *e* and extending about half-way from the circumference toward the hub, as clearly shown in Fig. 3 of the drawings. The fans are surrounded by a circular rim, *h*. It must be remarked, however, that the fans and the disks may be arranged in different ways to suit different occasions.

To the top edges of the fans *e f* a ring, *i*, is firmly secured, and from this ring an annular flange, *j*, rises, which projects into a circular cavity, *k*, formed between the lower edge of the inner cylinder, D, and a cylindrical jacket, *l*, secured to the outside of said cylinder, as clearly shown in Fig. 1 of the drawings. The inner cylinder, D, is in direct communication with the supply-pipe *m*, which passes through the outer cylinder or case, as shown in Fig. 1, and the discharge-pipe *n* emanates from the outer cylinder. By imparting to the disk B a rapid rotary motion, after the pump has been first charged with water, the air in the inner cylinder is rarefied and the water rises through the supply-pipe into the inner, and on coming in contact with the fans of the disk the water is expelled toward the circumference of the outer cylinder and up through said cylinder to the discharge-pipe *n*. During this operation the cavity *k*, which at the beginning of the operation is filled with air, partially fills with water, the air contained therein being compressed, and thereby the passage of any water around the edge of the inner cylinder or from the discharge-pipe back toward the supply-pipe is prevented.

It is obvious that this water-lock has to be altered according to the position of the disk in relation to the supply and discharge pipes. In some cases, for instance, it may be desirable to draw the water through the under surface of the disk, and in this case it would, of course, be indispensable to leave the cylinder A open at the bottom. The water-lock in this case would be arranged as indicated in red dotted lines in Fig. 1, the inner cylinder would be dispensed with, and the water would flow through the disk directly up to the discharge-pipe, as indicated by red dotted arrows in Fig. 1. The course of the water, when the inner cylinder is used, is indicated by black arrows in the same figure.

With this pump a very large quantity of water can be raised in proportion to the power expended in working the pump, and my pump

is, therefore, of particular advantage for wrecking operations, for raising sunken vessels, or for all purposes where a large stream of water is to be raised.

What I claim as new, and desire to secure by Letters Patent, is—

1. The water-lock *j k*, in combination with the revolving disk B of a centrifugal pump, constructed and operating substantially in the manner and for the purpose herein shown and described.

2. The arrangement of the outer casing, A, and inner cylinder, D, with respect to each other, so that the inner casing forms a part of

the water-way, being connected with the supply-pipe through the outer casing, as shown and described.

3. The arrangement of a vertical propeller-wheel, B, having an annular opening extending all around on the periphery of the top side of the wheel for the upward or vertical discharge of the water through a water-way in the outer casing, as specified.

ELI BRAZELTON.

Witnesses:

JOHN C. H. CUNNINGHAM,
G. W. DAVIS.