

W. Farmer,
Fan Blower,

N^o 44,715.

Patented Oct. 18, 1864

Fig. 5.

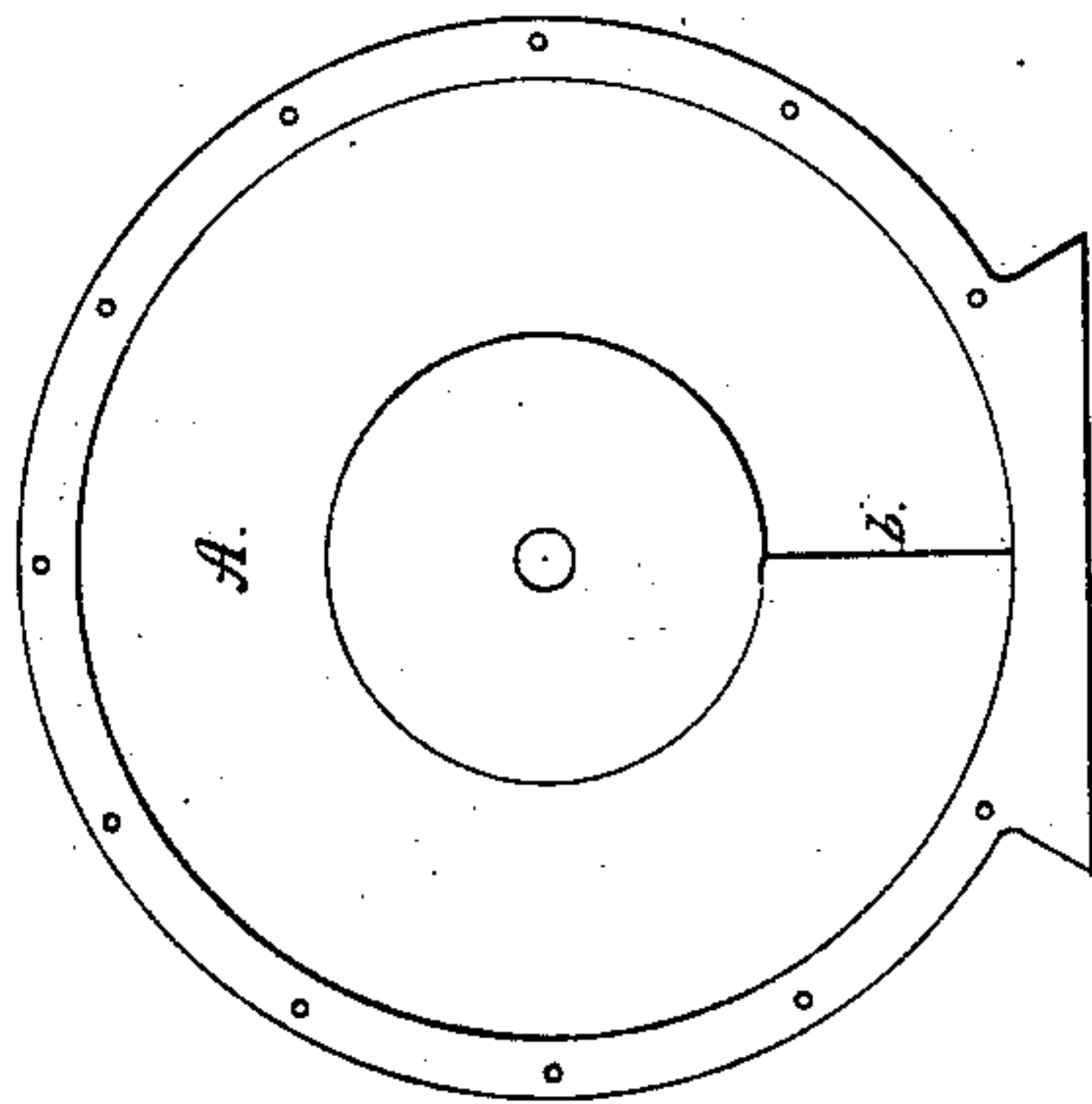


Fig. 2.

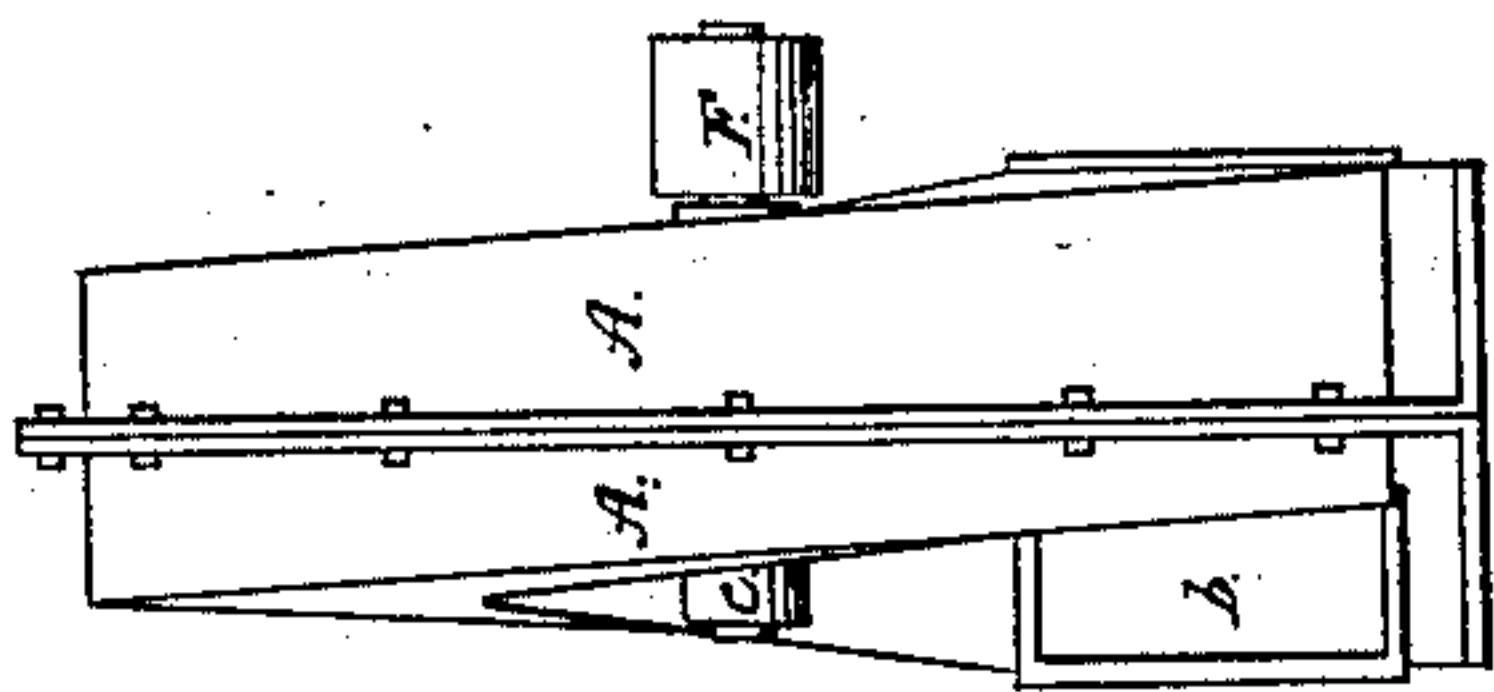


Fig. 4.

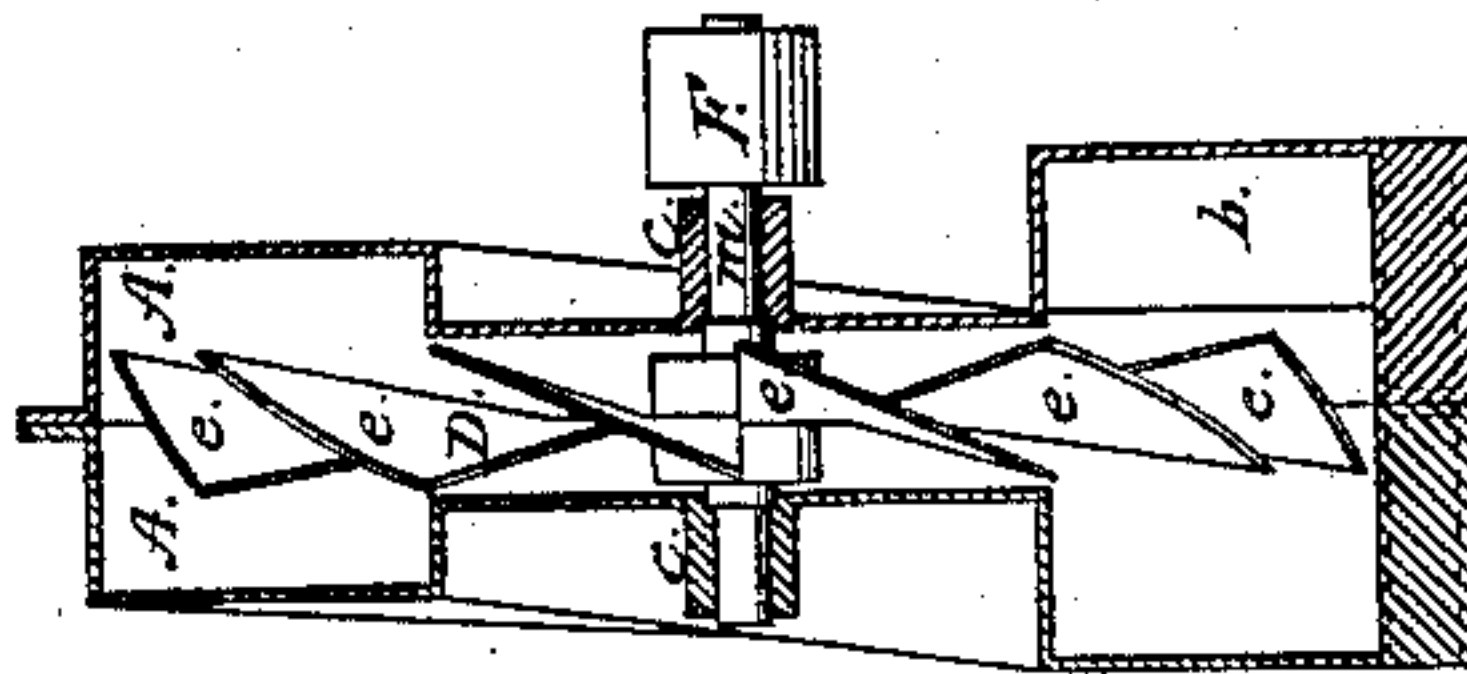


Fig. 1.

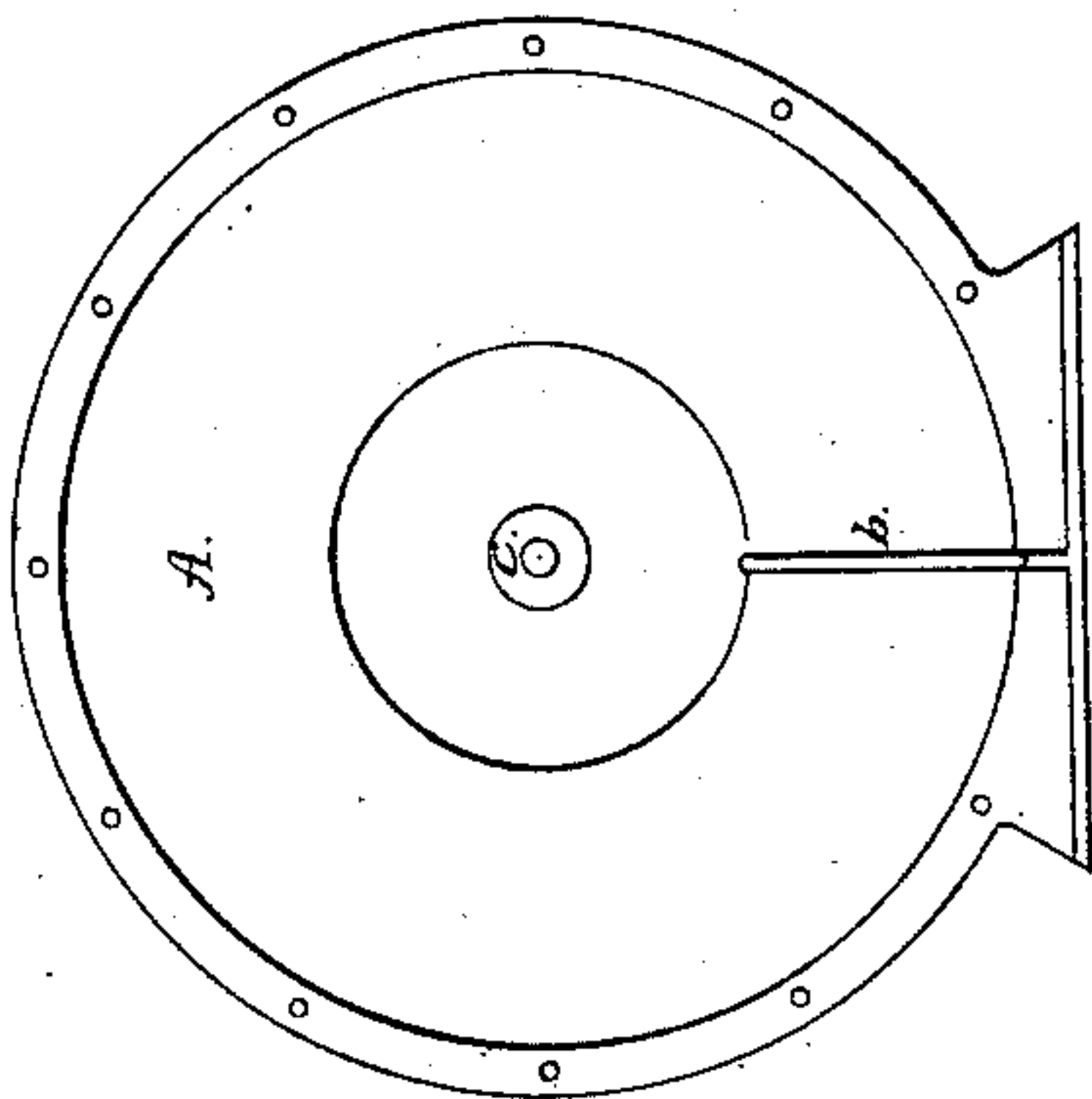
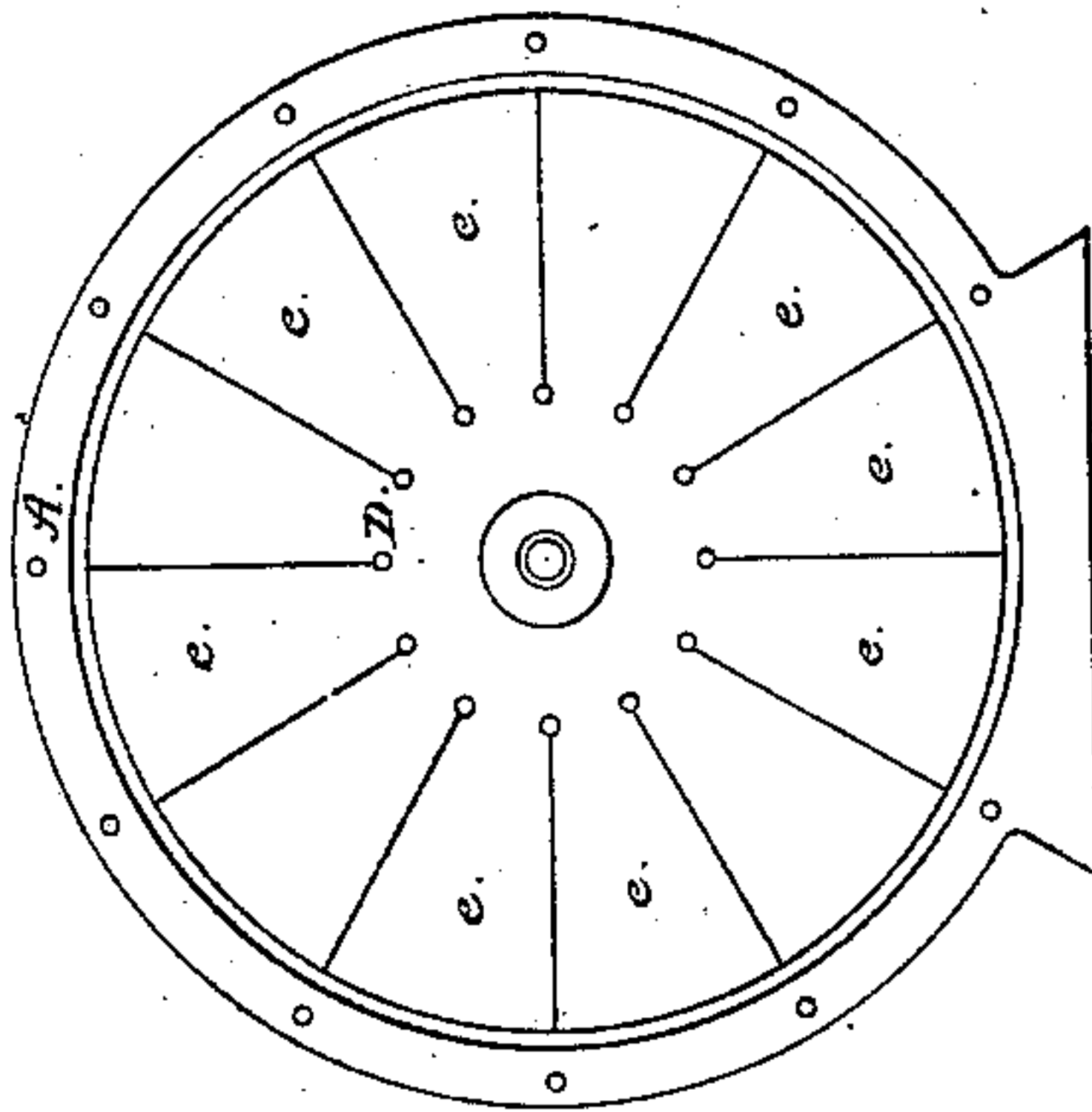


Fig. 3.



Witnesses,
Melville Biggs
W. L. Bennett

Inventor,
William Farmer
by his attorney
C. J. Kenrick

UNITED STATES PATENT OFFICE.

WILLIAM FARMER, OF NEW YORK, N. Y.

IMPROVEMENT IN FAN-BLOWERS.

Specification forming part of Letters Patent No. 44,715, dated October 18, 1864.

To all whom it may concern:

Be it known that I, WILLIAM FARMER, of the city, county, and State of New York, have invented a new and useful Improvement in Blowers and Exhausters; 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, in which—

Figure 1 represents a side elevation of a gas-exhauster constructed according to my invention. Fig. 2 represents an elevation of the same edgewise. Fig. 3 represents a side view of the same with one-half of the case removed. Fig. 4 represents a transverse section of the case with the wings within it, and Fig. 5 represents an inside view of half of the case with the wings removed.

My invention has reference to that class of blowers and exhausters in which the fluid is put in motion by the revolution of an impeller having screw-formed wings, and its object is to improve the operation of such apparatus.

The invention consists of the combination of a screw-formed impeller with a volute case, by whose action the fluid is conducted to or from the wings of the impeller in a whirl.

The apparatus represented in the accompanying drawings is of suitable form to be used as a gas-exhauster for facilitating the passage of illuminating-gas from the retorts in which it is generated. Its case is formed of two halves, A A, which are connected at the center of the apparatus by flanges and bolts. Each half has the form of a volute scroll whose face diverges progressively from the central plane of the apparatus and terminates at a port, b. The two halves are by preference made symmetrical, so that they may be cast from one pattern. Each has a hub, c, at its center, through which the shaft *m* of the impeller *D* passes. The impeller is composed of a series of wings, *e e e*, formed in this instance out of a disk of sheet metal and secured to the shaft

m. These wings are inclined to the plane of rotation of the impeller, so that the wings are sections of screw-threads. The shaft passes through one of the hubs of the case and projects beyond it, the projecting extremity being fitted with a belt-pulley, F, to which the driving-belt is applied.

When the machine is used as a gas-exhauster, the receiving-port of the case is connected with the pipe leading from the retorts and the other port with a pipe leading to the member of the gas apparatus to which the gas is to be delivered, and the gas entering the case at one port is impelled and discharged at the other port. As the case is a volute scroll on the receiving side of the impeller, the fluid is delivered to all parts of it, the area of the delivery-passage decreasing as it recedes from the receiving-port, and as the case is also a volute scroll on the delivery side of the impeller the fluid is received simultaneously from all parts of it, the area of the receiving-passage increasing as it approaches the delivery-port.

The use of the apparatus is not confined to gas-exhausting, as it may be used for blowing air or as a rotary pump for moving water. Neither is it essential that both halves of the case should be symmetrical, but one of them must be of volute form. The impeller also need not be constructed of one piece of sheet metal, but may be composed of helical or screw-formed wings secured to a central hub.

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

The combination of a screw-formed impeller with a volute case, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WM. FARMER.

Witnesses:

E. S. RENWICK,
W. L. BENNEM.