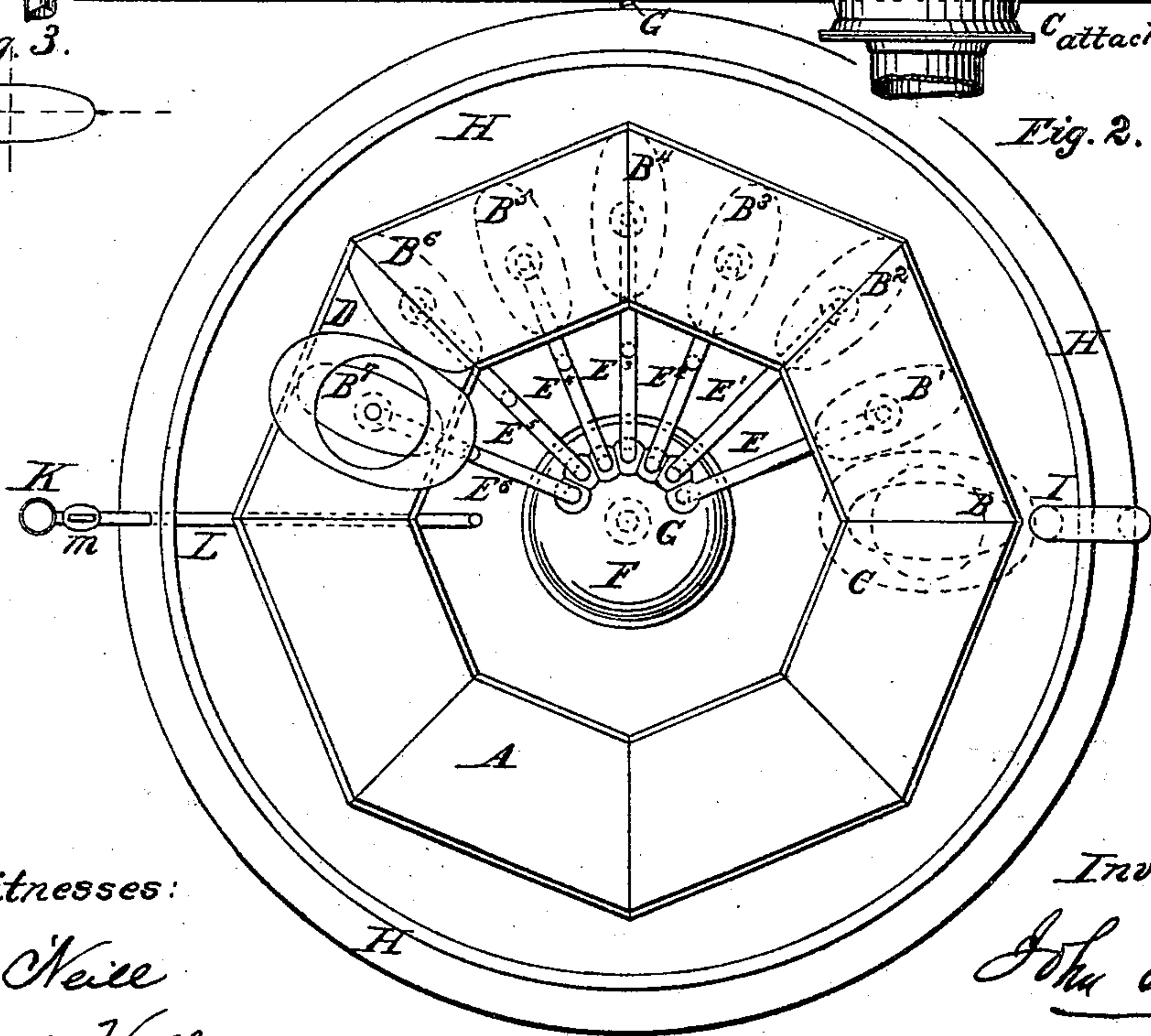
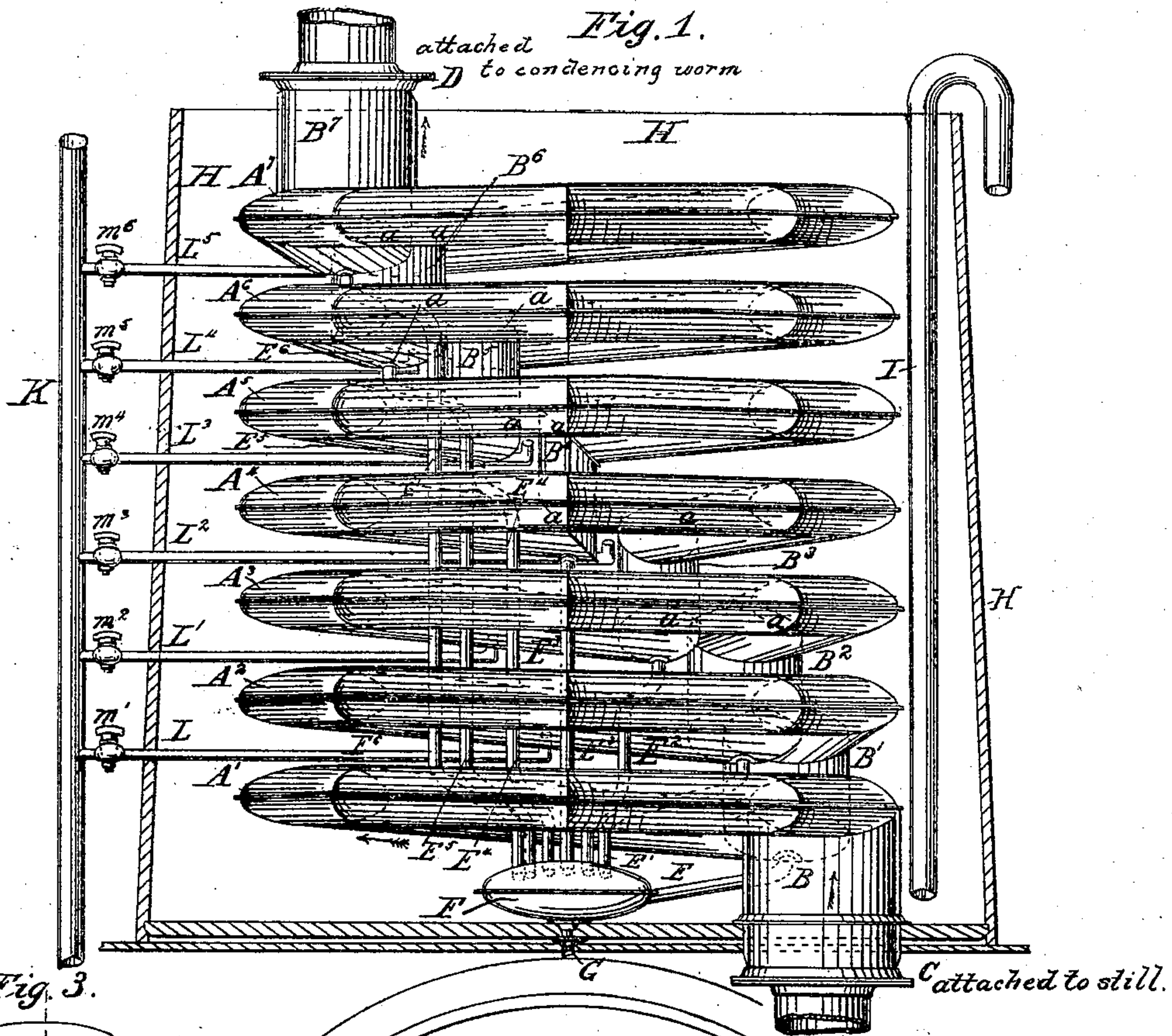


J. F. COLLINS.

RECTIFIER AND CONDENSER FOR ALCOHOLIC SPIRITS.

No. 73,579

Patented Jan. 21, 1868.



Witnesses:

A. Keill
Louis Volber

Inventor:

John F. Collins

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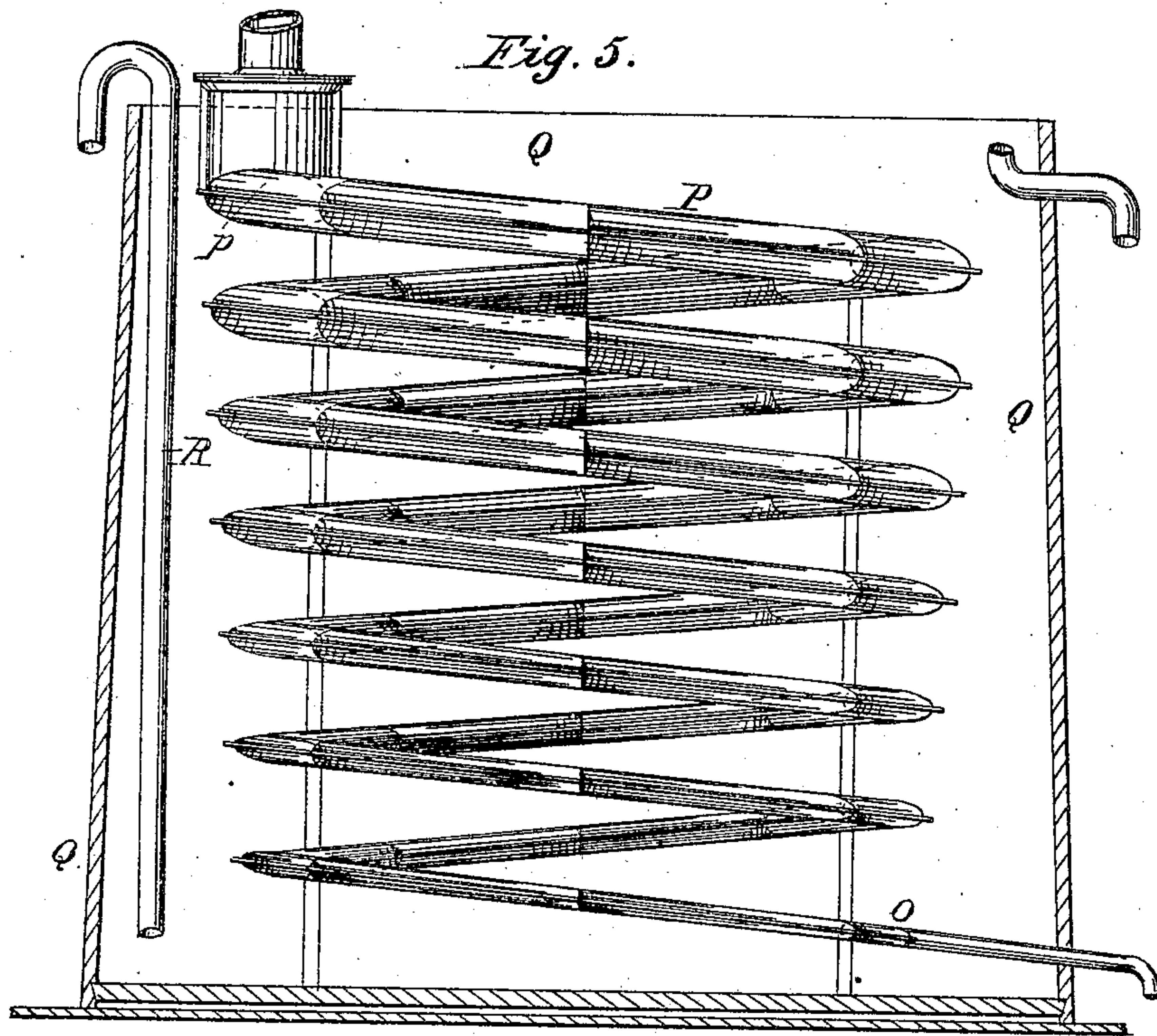


Fig. 4.

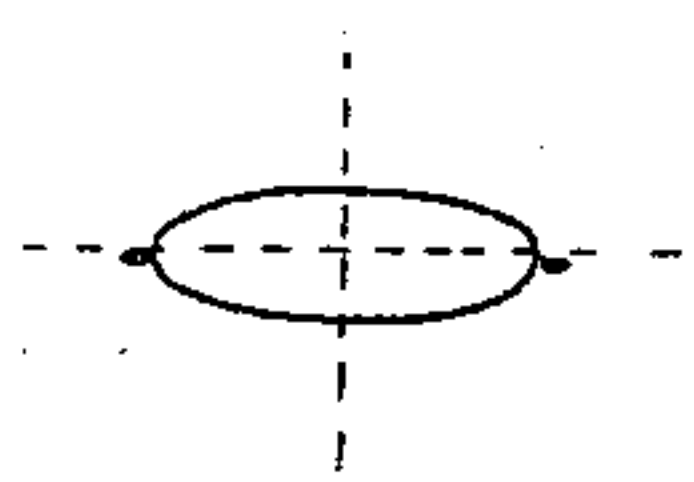
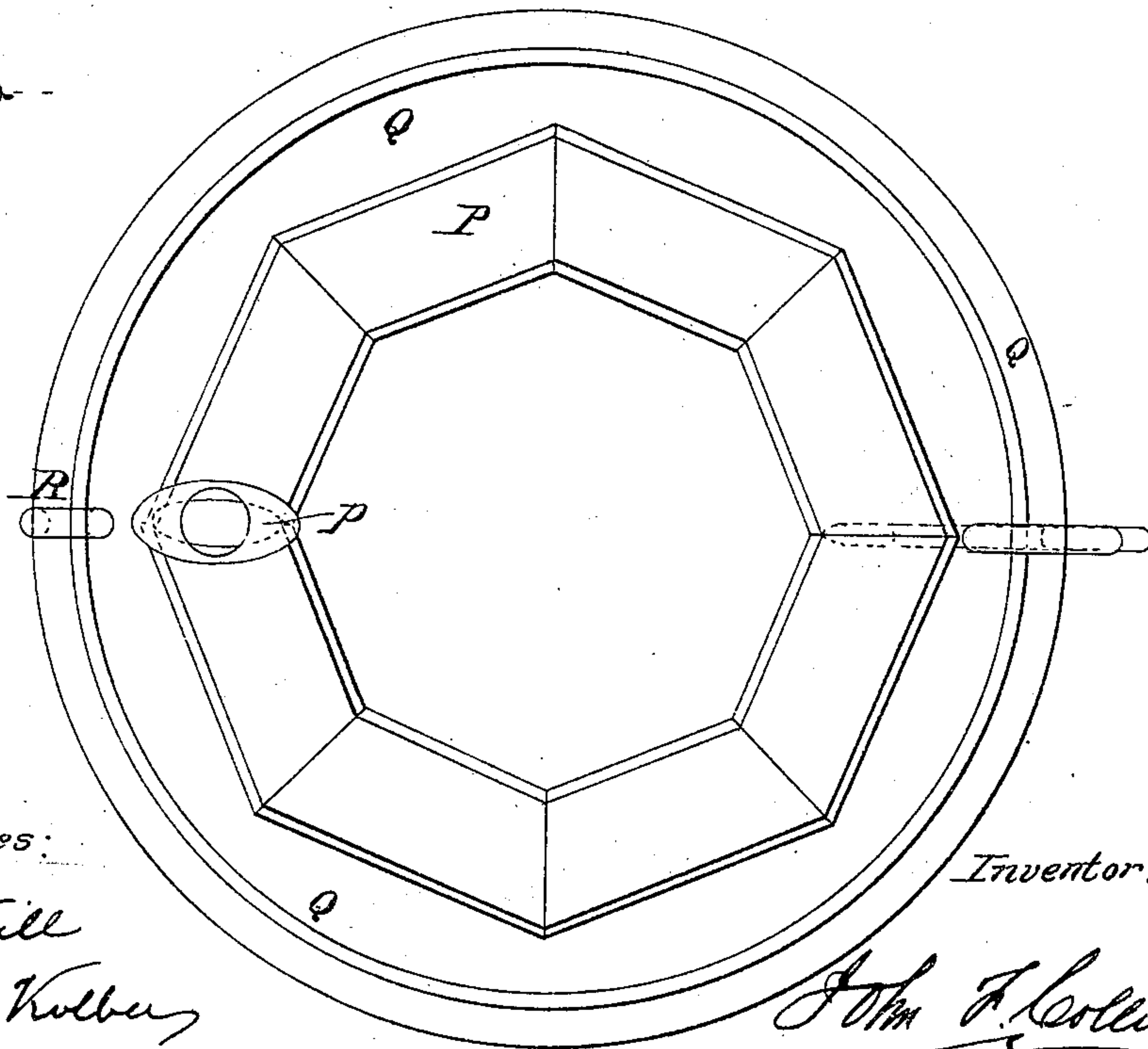


Fig. 6.



Witnesses:

A. O'Keill
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Inventor:

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United States Patent Office.

JOHN F. COLLINS, OF NEW YORK, N. Y.

Letters Patent No. 73,579, dated January 21, 1868.

IMPROVED RECTIFIER AND CONDENSER FOR ALCOHOLIC SPIRITS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN F. COLLINS, of the city, county, and State of New York, have invented a new and useful Improvement in Rectifiers and Condensers for Treating Alcoholic or other Volatile Spirits; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is an elevation of the rectifier.

Figure 2, a plan or top view of same.

Figures 3 and 4, transverse sections of the polygonal pipes; and

Figures 5 and 6, a plan and elevation of my invention, as applied to a worm for condensation.

This invention relates to a novel form and construction of an apparatus for rectifying or condensing alcoholic or spirituous vapors, and consists of a series of pipes polygonal, in horizontal form, and elliptical in transverse section, placed one above the other, and united by vertical and similarly-formed connections, so as to form a continuous pipe, for the purpose of agitating or breaking up the vapors, by contact in their ascent or descent with the angularities of the apparatus, whereby a separation of the lighter from the heavier vapors is effected, and a perfect or nearly perfect rectification or condensation of the vapors acquired, and with a smaller amount of water for condensation than is ordinarily employed for the purpose, as will be hereinafter explained.

In the drawings, figs. 1 and 2, $A A^1 A^2$, &c., represent the series of horizontal, polygonally, and elliptical-shaped pipes, placed one above the other, and united together (so as to form a continuous pipe) by means of vertical connections, $B B^1 B^2$, &c., which are elliptical in form, the lower vertical connection B having a flange, C , for the purpose of connecting the series of horizontal pipes with the still, while the upper vertical pipe B^2 connects the upper end of the series with the goose-neck leading to the worm P , by means of the flange D .

These horizontal pipes $A A^1$, &c., are not complete polygons, but represent broken rings, the ends $a a$ of which unite with the rings next adjacent or above and below them, said ends being inclined or dipped below the level of the body of the ring, (see fig. 1,) for the purpose of directing the course of the condensed vapors into pipes, $E E^1 E^2$, &c., attached to said ends, which in turn conduct the same into the receiver, F , and thence by a leader or conducting-pipe, G , returned to the still, or to a separate receiver, as may be desired. H is the tank, in which the rectifier is placed. I is the supply-pipe, also placed within the same, and through which the water of condensation is admitted to the tank. K is a waste-pipe, placed outside of the tank for discharging the water of condensation. This pipe K communicates with the water in the tank by means of branch-pipes $L L^1 L^2$, &c., placed at intervals of its height, and which intervene between the horizontal pipes $A A^1 A^2$, &c., each pipe, $L L^1 L^2$, &c., being provided with a stop-cock, m , by means of which the height of the water of condensation in the tank is adapted to the required density of the vapors, or to the producing of high or low-proof spirits, as desired. I would remark that I find from experience the elliptical form of pipe, herein referred to, to be more effective when the transverse diameter is about three times greater than the conjugate, the area of its cross-section being about the same as the area of a cross-section of the column or connection with the still. The worm or condenser, P , (see figs. 5 and 6,) is a continuous pipe, of spiral form in elevation, and in top view polygonal, while in transverse section the said pipe is elliptical, (see fig. 4.) It (the pipe) gradually tapers from the head, p , which is larger, to the tail, O , which is smaller than the head. This condenser is placed in a tank, Q , which is furnished with a pipe, R , through which the water of condensation is supplied. In this condenser, the current of the vapors being downward instead of upward, as in the rectifier, the vertical connections B and pipes E are dispensed with, thus making the circuit from head to tail continuous, while the elliptical and angular form of construction is preserved. Both rectifier and condenser may be made in any other form than circular.

Having described the nature and construction of my invention, I will now describe its operation.

The rectifier, being attached to the still by means of the flange C , and again united with the condenser through the goose-neck attached to the flange D of the rectifier, now, as the vapors are eliminated from the still, they will pass into the lower ring A of the series, making the circuit of the rectifier to the top ring A^2 , and the ends $a a$, dipping below the main body of the rings, (as already explained,) the condensed vapors will be directed to these points, and be readily conducted by the pipes E to the receiver F , and thence through the leader G , returned to the still or to a separate receiver, while the rectified vapors pass through the goose-neck into the worm or condenser, from which the finished spirit is delivered to the receiver. The rectification of the

spirituous vapors, being nearly perfected while making the circuit of the rectifier, (A A¹, &c.,) by means of the water of condensation, supplied through the pipe I, it remains only to control the proof of the finished spirit. This is done by regulating the height of water in the tank H by means of the pipes L L¹ L², &c. Thus, if it be desired to produce spirits of very high proof, all the stop-cocks are closed except m⁶, or, in other words, water is maintained in the tank at that height of discharge. But when spirits of low proof are desired, this height of water is reduced by opening the discharge at either of the pipes m, below m⁶.

The operation of condensing by means of this improved worm is the same as in all other appliances for a similar purpose, its advantage over others being that the elliptical and angular form of construction secures perfect condensation, and with much less water than ordinarily required for the purpose.

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

The construction and use of a rectifier for alcoholic or other spirituous vapors, in the manner and form substantially as described and set forth; and

I also claim the construction and use of a condenser or worm, in the manner and form and for the purposes substantially as described and set forth.

In testimony whereof, I have hereunto set my signature, this 14th day of December, A. D. 1867.

JOHN F. COLLINS.

Witnesses:

A. NEILL,
LEWIS KOLBER.