

(No Model.)

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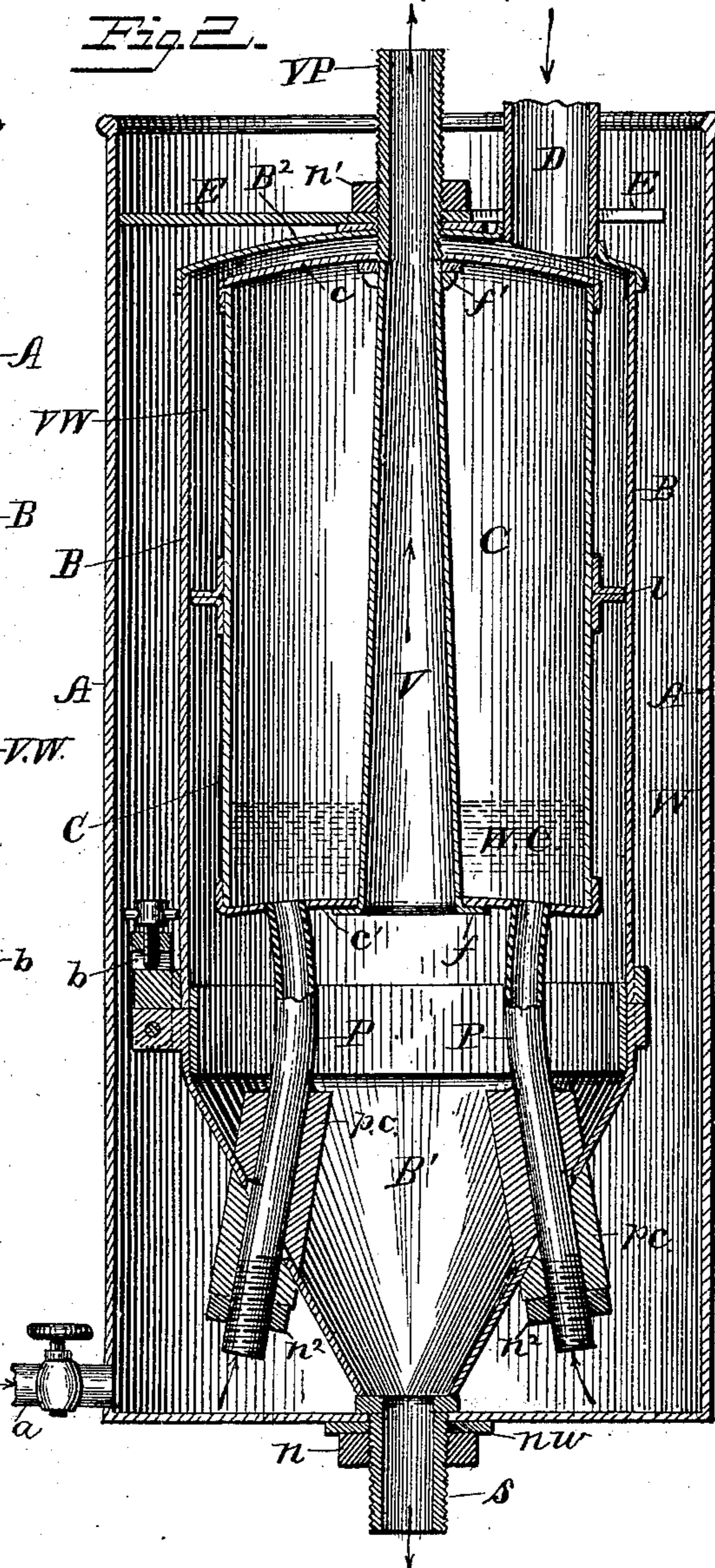
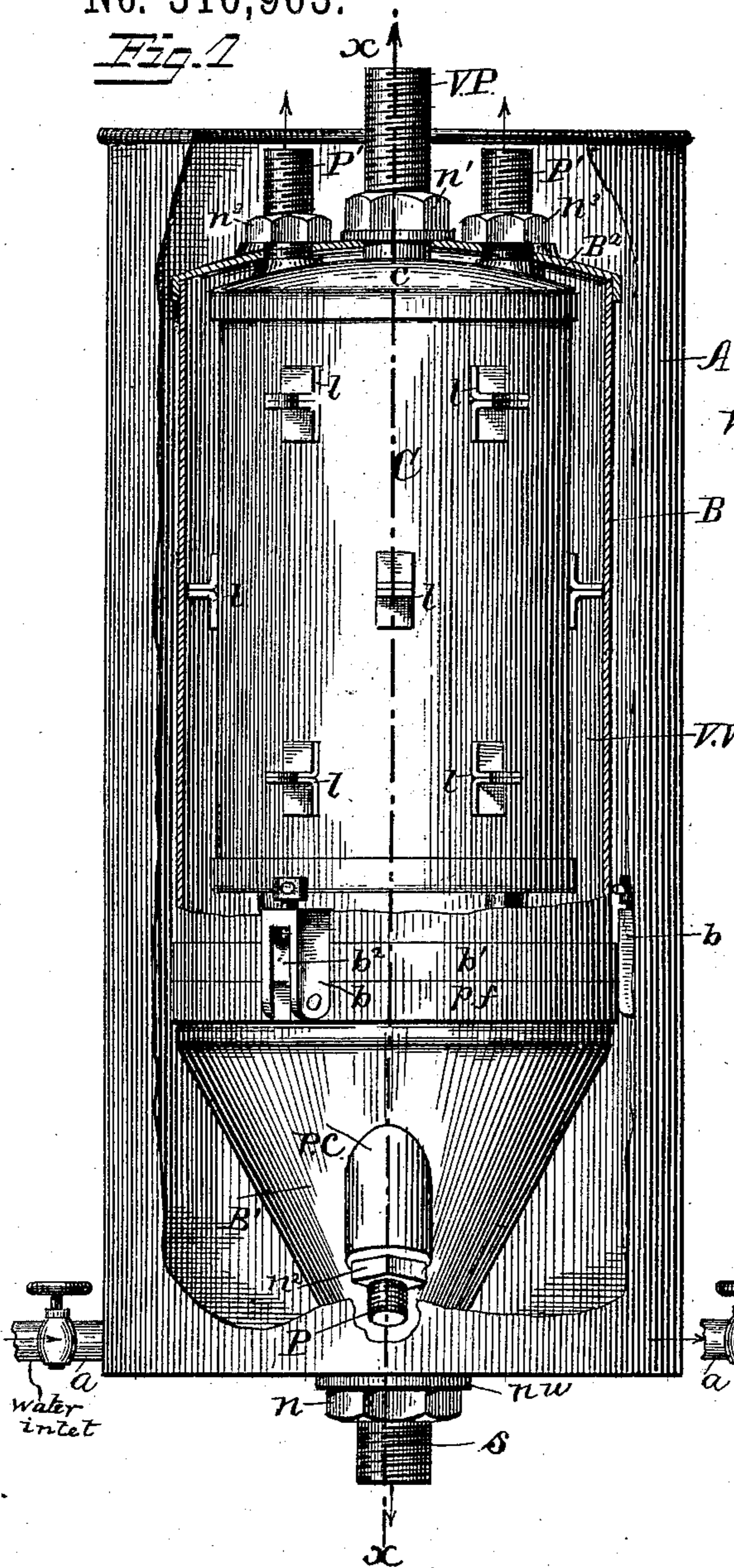
F. SONIER.
SPIRIT CONDENSER.

No. 310,963.

Patented Jan. 20, 1885.

Fig. 1

Fig. 2



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Inventor:
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(No Model.)

2 Sheets—Sheet 2.

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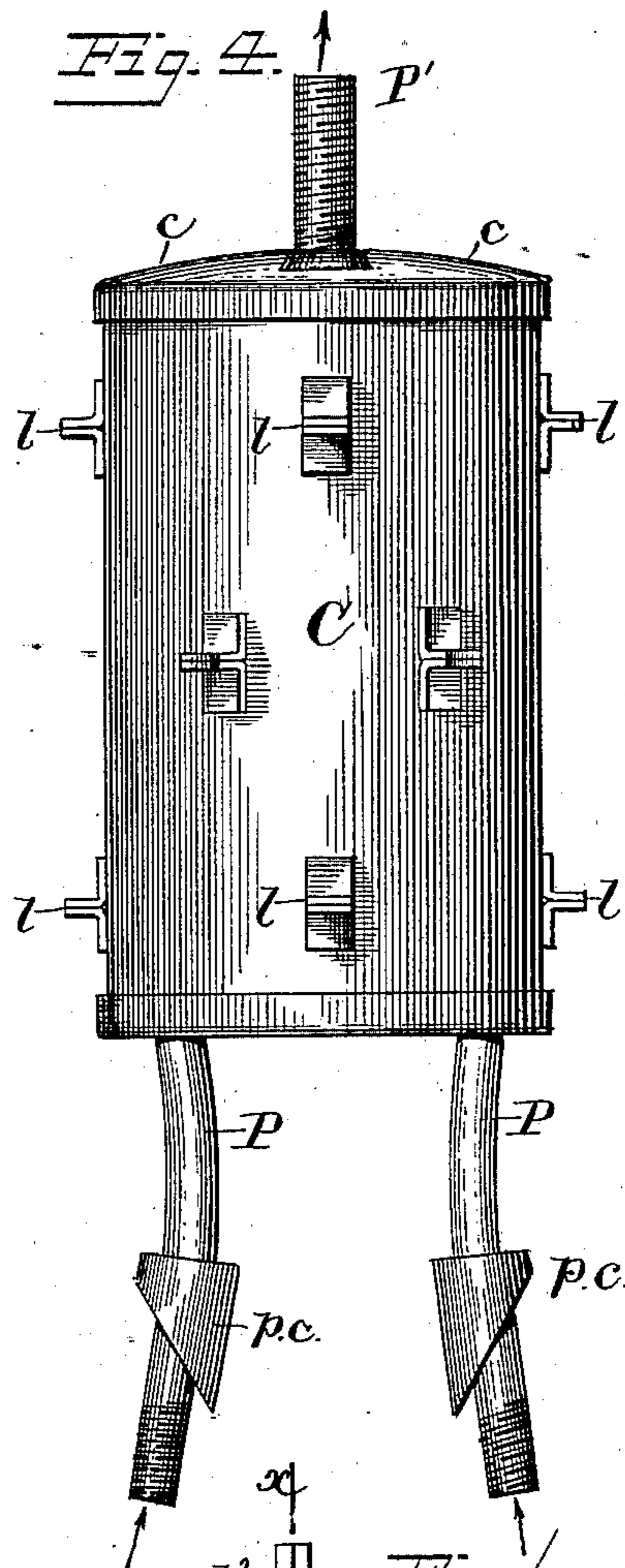
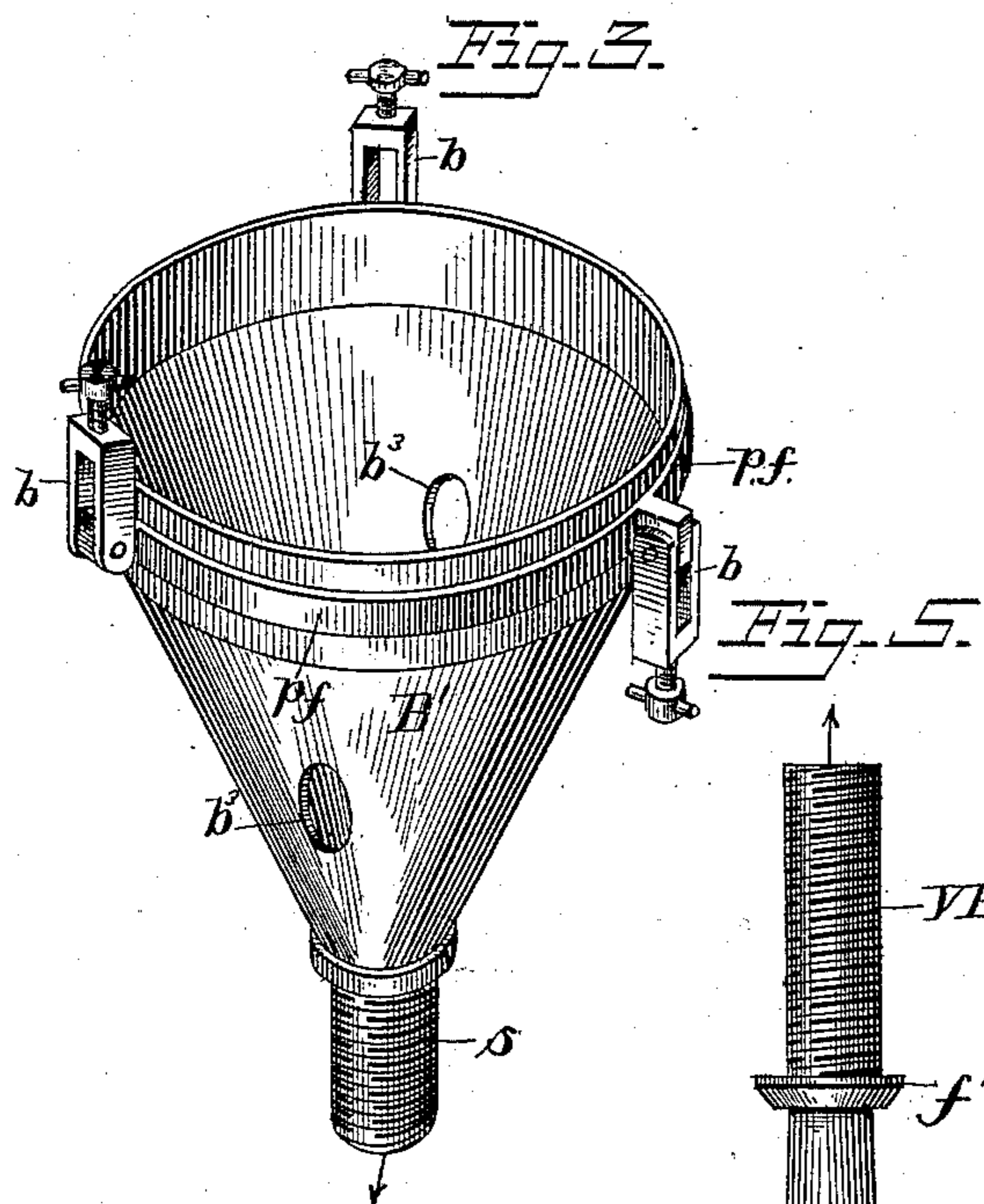
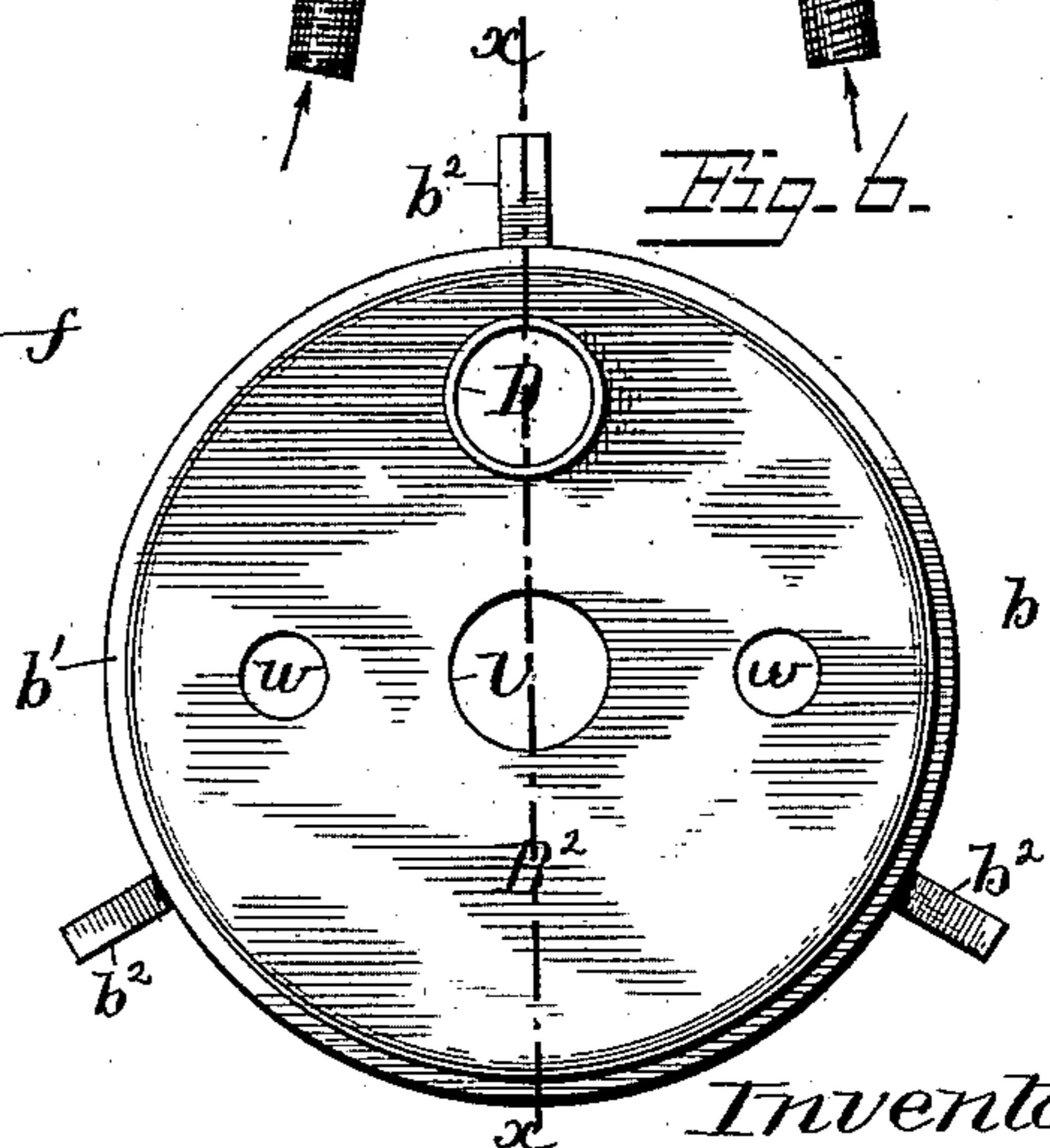
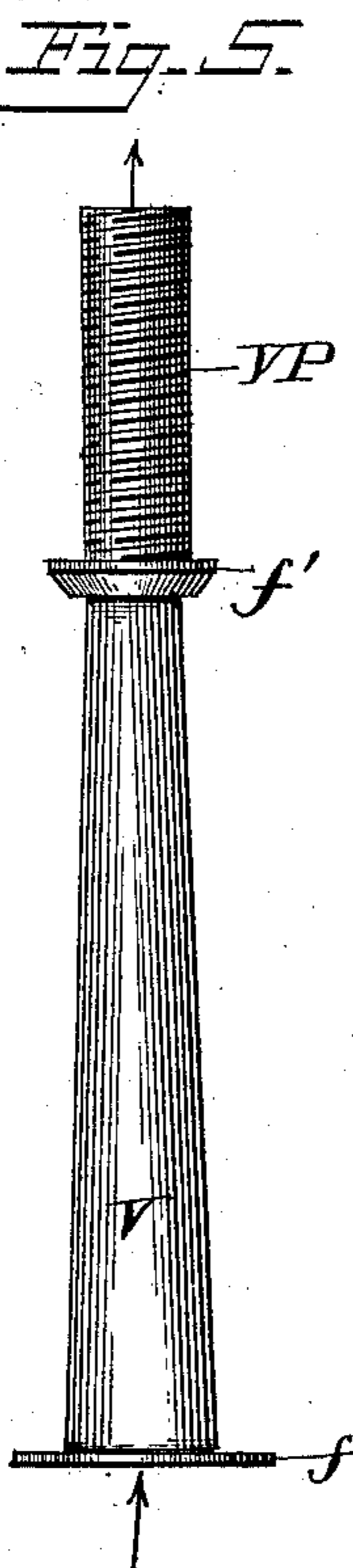
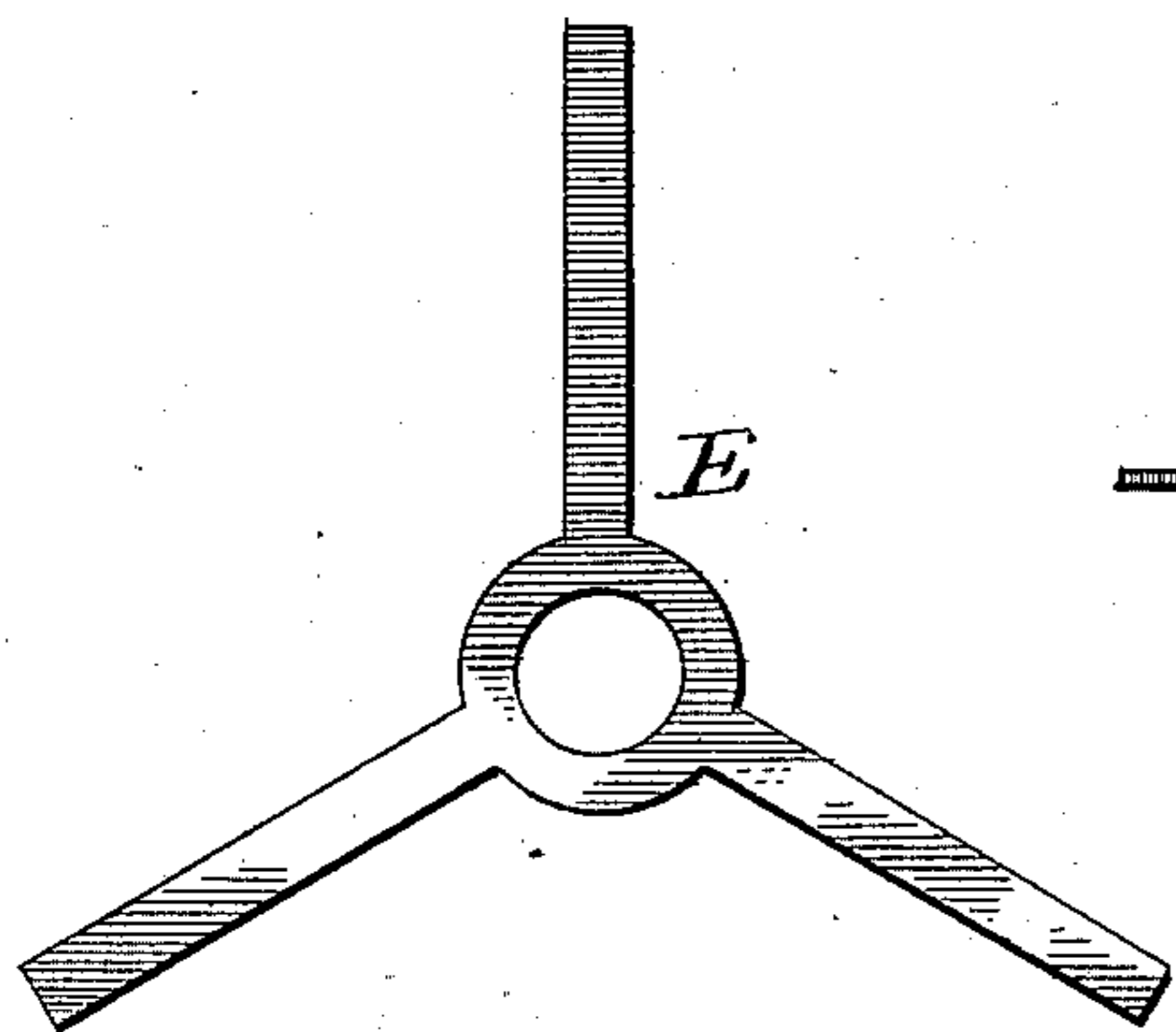


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK SONIER, OF PEORIA, ILLINOIS.

SPIRIT-CONDENSER.

SPECIFICATION forming part of Letters Patent No. 310,963, dated January 20, 1885.

Application filed October 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANK SONIER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented a new and useful Improvement in Spirit-Condensers, of which the following is a specification.

My invention relates to a spirit-condenser, and has for its object the provision of means whereby neutral spirits can be produced of high proof and of superior quality; and my improvement has the further object of so forming the condenser that its several parts and connections can all be readily unshipped and taken apart for the purpose of cleansing and repairing, all as hereinafter described, and specifically set forth in the claims.

Referring to the accompanying drawings, in which similar letters indicate like parts on each figure, Figure 1 is an outside view of my invention, parts being broken away to show the interior construction. Fig. 2 is a section on the line $x x$, Figs. 1 and 6. Fig. 3 is a perspective view of the separator. Fig. 4 is a side view of the inner cylinder. Fig. 5 is a detail view of the vapor-pipe. Fig. 6 is a top view of the main cylinder. Fig. 7 represents a brace.

In the drawings, A is the tank, having an opening for a water-supply pipe, a , and an orifice in its bottom for the stem of the separator.

B is a cylinder, smaller in diameter than A, and in practice inclosed within said tank, leaving an intermediate space or water-wall, W.

C is another cylinder, smaller in diameter than B, designed to be placed within the cylinder B, and provided with exterior lugs, l , for a purpose to be hereinafter explained. The interior space occasioned by the diametrical difference of the cylinders B C forms the vapor-chamber V W.

D is an inlet-pipe, through which the vapors enter within the cylinder B from the spirit-column, to which it is connected. The cylinder B has a separable bottom, funnel-shaped, as shown, which constitutes the separator B', and has a peripheral flange, $p f$, furnished with bolts b , or the like, which engage with the coincident ring or peripheral annular flange b' and

lugs b^2 upon the lower edge of the cylinder B, and comprises a device for hermetically locking together the separator B' to the main part of the cylinder B, as plainly shown in the drawings. Said locking device admits the two parts being disconnected, as will be readily understood. The separator B' has orifices $b^3 b^3$, for passage of the inlet water-pipes P P, which extend through said separator, and has a hollow stem or pipe, s , screw-threaded on its outside, through which the low-wines flow back to the column when separated from the condensed vaporized spirits. The dome or cap B² of the cylinder B has a central orifice, v , for the passage of the vapor-pipe V, and two other orifices, $w w$, through which pass the outlet water-pipes P' P', led from the inner cylinder, C, and attached to its dome c , as shown. The cylinder C is provided with a cap or dome, c , and a bottom, c' , each of which has a coincident orifice for reception of the vapor-pipe V. Said pipe V has a lower outwardly-extending flange, f , which serves the purpose of making it fit upwardly, firmly seated against the bottom c' . From its lower end the pipe V tapers upwardly to the shoulder or flange f' , the distance between the lower flange, f , and the upper one, f' , being the length of the cylinder C. Above the flange f' is a continuation forming a pipe, V P, screw-threaded exteriorly, as shown, for obvious purposes. When in position the space between the inner surface of the wall of the cylinder C and the outer surface of the vapor-pipe V forms a chamber, W C, which, when the device is in operation, is supplied with water through the inlet-pipes P P, the hot or waste water from said chamber W C being drawn off through the eduction-pipes P' P'. The inlet-pipes P P are provided with collars $p c$, divided diagonally in opposite oblique inclines. The upper part of each of said collars is permanently attached to a respective pipe. The lower section of said collars forms a loose sleeve, and it will be seen from the drawings that the permanently-attached portions of the collars rest snugly against the inner surface of the separator, the loose sections being adjusted around the pipes P P on the outside of the separator after they have passed through the orifices $b^3 b^3$. The

induction and eduction pipes P P' are screw-threaded to receive nuts or couplers *n*. The projecting lugs *l* upon the outer wall of the cylinder C extend outwardly, and in practice
 5 rest against or nearly against the interior of the cylinder B within the vapor-wall V W, and their function is to prevent collapse in case of a tendency to vacuum when the device is in operation.

10 *n n' n² n³* are respectively screw-threaded nuts or couplers for attachment to the respective screw-threaded pipes, serving the purpose of bolting the cylinder C within the cylinder B, and for coupling the vapor-pipe V
 15 to the pipe leading to the worm, and for coupling the outflow-stem of the separator to a return-pipe, these latter connections not being shown in the drawings. Said nuts or couplers may be supplied with washers—as, for instance, *n w*—where required.

E is a brace which serves the purpose of holding down the cylinder B within the tank A.

Operation: The device being firmly connected together, as shown in Figs. 1 and 2, the
 25 main supply cock is opened and water flows into the tank A through the pipe *a*, filling said tank. At the same time water is caused to flow through the inlet-pipes P P, which in turn fills all the space within the cylinder C, forming therein a complete water-jacket, W
 30 C. Spirit-vapor is then caused to enter from the still or column through the pipe D, and passes into the space V W between the two cylinders B and C, and downward into the separator B'. In its passage said vapor becomes cooled and condensed, so that the aqueous or heavier portion thereof forming the low-
 35 wines will pass outwardly through the pipe *s* of the separator, while the lighter or volatile portion will enter the vapor-pipe V and pass therein upward. While in transit upwardly through said vapor-pipe further condensation will take place by reason of the water led with-
 40 in the cylinder C through the inlet-pipes P P, and any low-wines thus formed will pass downwardly, and thence be returned for redistillation through the separator-stem *s*.

Attempts have heretofore been made to condense spirits at low temperature by admitting
 50 said vapor into a chamber provided with a group of water-pipes, and to such I lay no claim, the gist of my invention being that the vapor shall be first led into a vapor-chamber, as V W, said chamber surrounded by an exterior water-wall, as W, and an interior water-
 55 chamber, as W C, and that the final outflow of the doubly-condensed vapor shall be through a conduit, as V, placed within such interior water-chamber, as W C, by which means a
 60 large body of water continuously surrounds all the vapor during its passage from its induction to its eduction, whereby double condensation is effected, as fully described, and illustrated in the drawings.

65 What I claim is—

1. A spirit-condensing apparatus having an

outer tank provided with suitable water-supply pipe, within which is a cylinder, B, having a removable funnel-shaped bottom, B', in combination with an interior cylinder, C, provided with water induction and eduction
 70 pipes P P' and vapor-pipe V, all arranged as described, as and for the purpose intended, substantially as described.

2. In a spirit-condensing apparatus, the cylinder B, having dome B², provided with orifices *v w w* and vapor-inlet pipe D, and further provided with a removable funnel-shaped
 75 bottom, B', having hollow stem *s* and orifices *b³ b³*, as and for the purpose intended, substantially as described. 80

3. In a spirit-condensing apparatus, the removable vapor-pipe V, tapering in form from its lower part, having a lower outwardly-extending flange, *f*, and an upper outwardly-extending flange, *f'*, and having a straight tubular upper extension, V P, outwardly screw-threaded, adapted to receive a nut, *n'*, in combination with cylinders B and C, substantially
 85 as described. 90

4. In a spirit-condensing apparatus, the cylinder C, having a cap or dome, *c*, provided with outlet-pipes P' P', and a central opening for pipe V P, and a bottom provided with central opening for reception of vapor-pipe V
 95 and water-inlet pipes P P, substantially as described. 100

5. In a spirit-condensing apparatus, the inner cylinder, C, having downwardly-extending water-inlet pipes P P, provided with sectional collars *p c*, divided obliquely at or near the middle, the upper sections of which are permanently attached to said pipes, the lower sections of which are adaptable to embrace the ends of said pipes after passing through
 105 the orifices *b³ b³* of the separator B', in combination with said separator, substantially as described. 110

6. A spirit-condensing apparatus consisting of the separable tanks and cylinders, with attachments, as described, provided with obliquely-divided collar *p c*, and nuts *n²*, for connecting pipes P P to separator B', and nuts *n*, for connecting said separator to tank A, and nuts *n³*, for connecting pipes P' to dome B², and nut *n'*, for connecting pipe V P to said dome, all in combination with a suitable brace, as E, for securely fastening the several connected parts within a tank, A, substantially as described. 115 120

7. A spirit-condensing apparatus consisting of the following elements: an exterior casing or tank, A, having a water-supply pipe, *a*, within which is a cylinder, B, having dome B², carrying spirit-induction pipe D, and central opening for passage of vapor-pipe V P, and having a removable funnel-shaped bottom, B', with a low-wine return-pipe, *s*, the two parts provided with coincident peripheral flanges *p f b'* and locking devices *b b²*, the space between said cylinder B and tank A forming a water-jacket, W, the inner smaller
 125 130

cylinder, C, with bottom c' , having central opening for reception of vapor-pipe V and downwardly-extending water-inlet pipes P P, and having dome or cap c , with opening for
5 passage of extension V P of vapor-pipe V, the space between the cylinders B C constituting vapor-jacket V W, the vapor-pipe V with lower and upper flanges, $f f'$, the space out-
10 side of said vapor-pipe, when in place within the cylinder C, forming water-chamber W C,

the brace E, all arranged as set forth and shown, and adapted to be connected and disconnected by adjustment of the nuts $n n' n^2 n^3$, and sectionally-divided collar $p c$, as and for the purpose intended, substantially as de- 15 scribed.

FRANK SONIER.

Witnesses:

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