

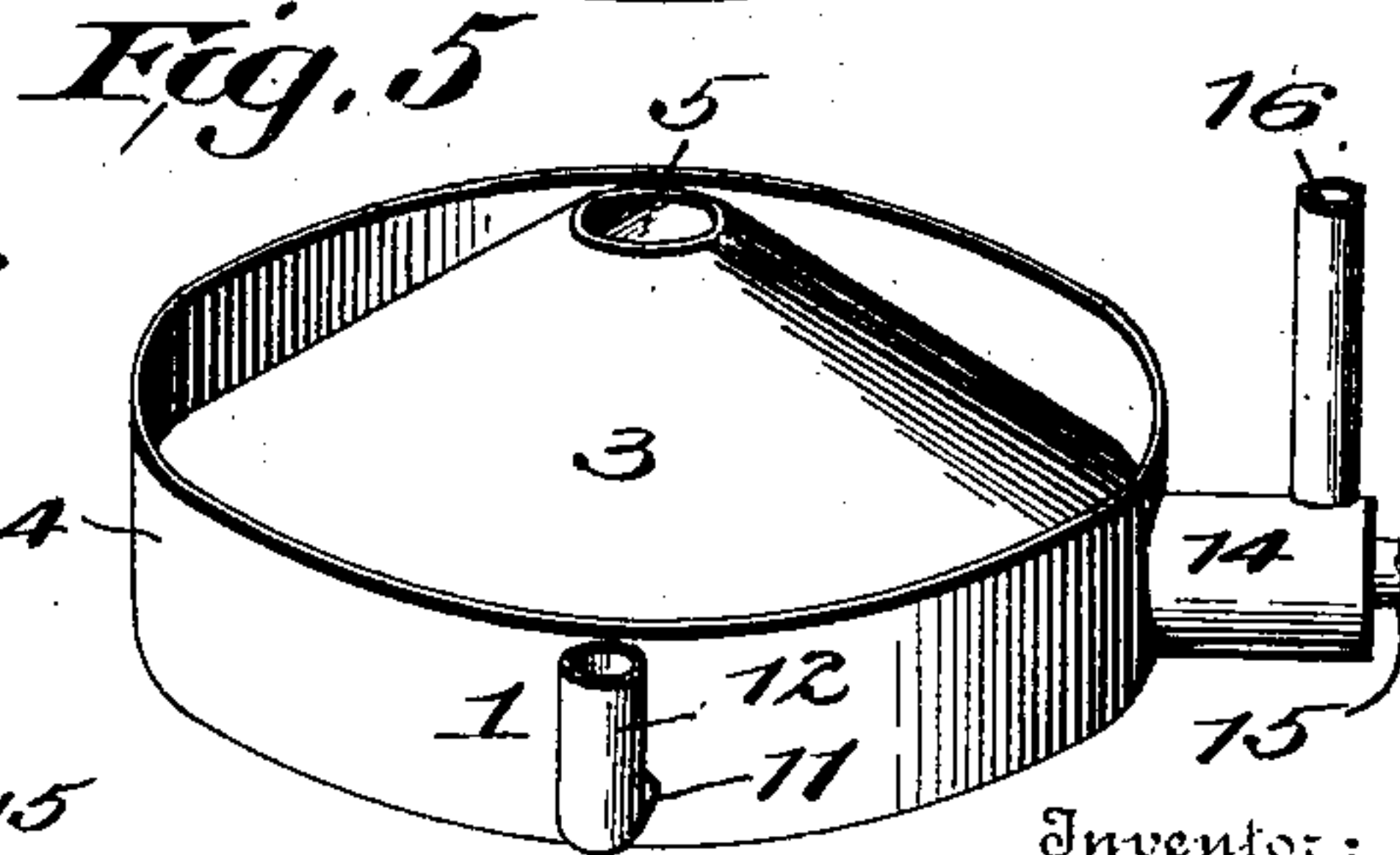
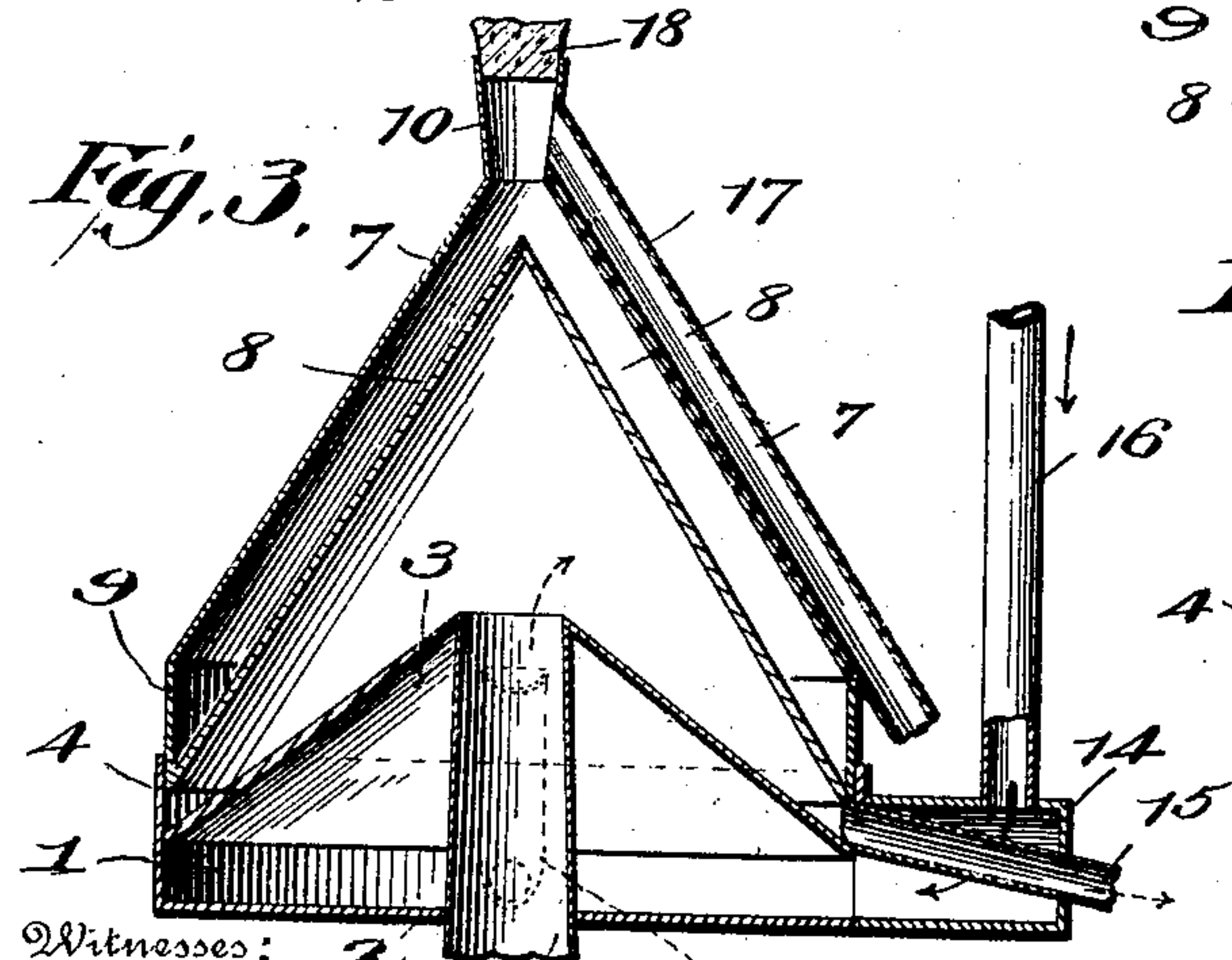
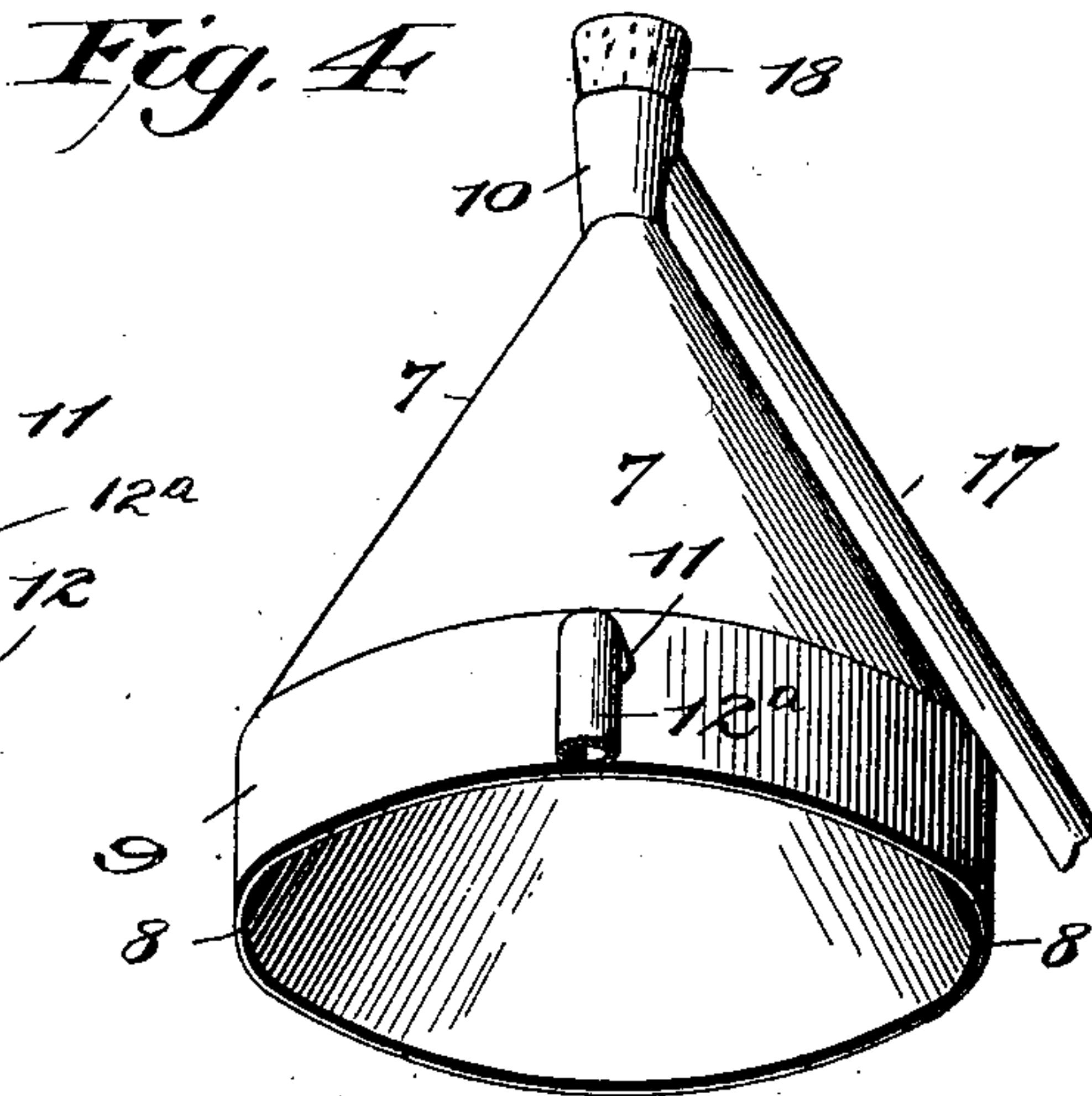
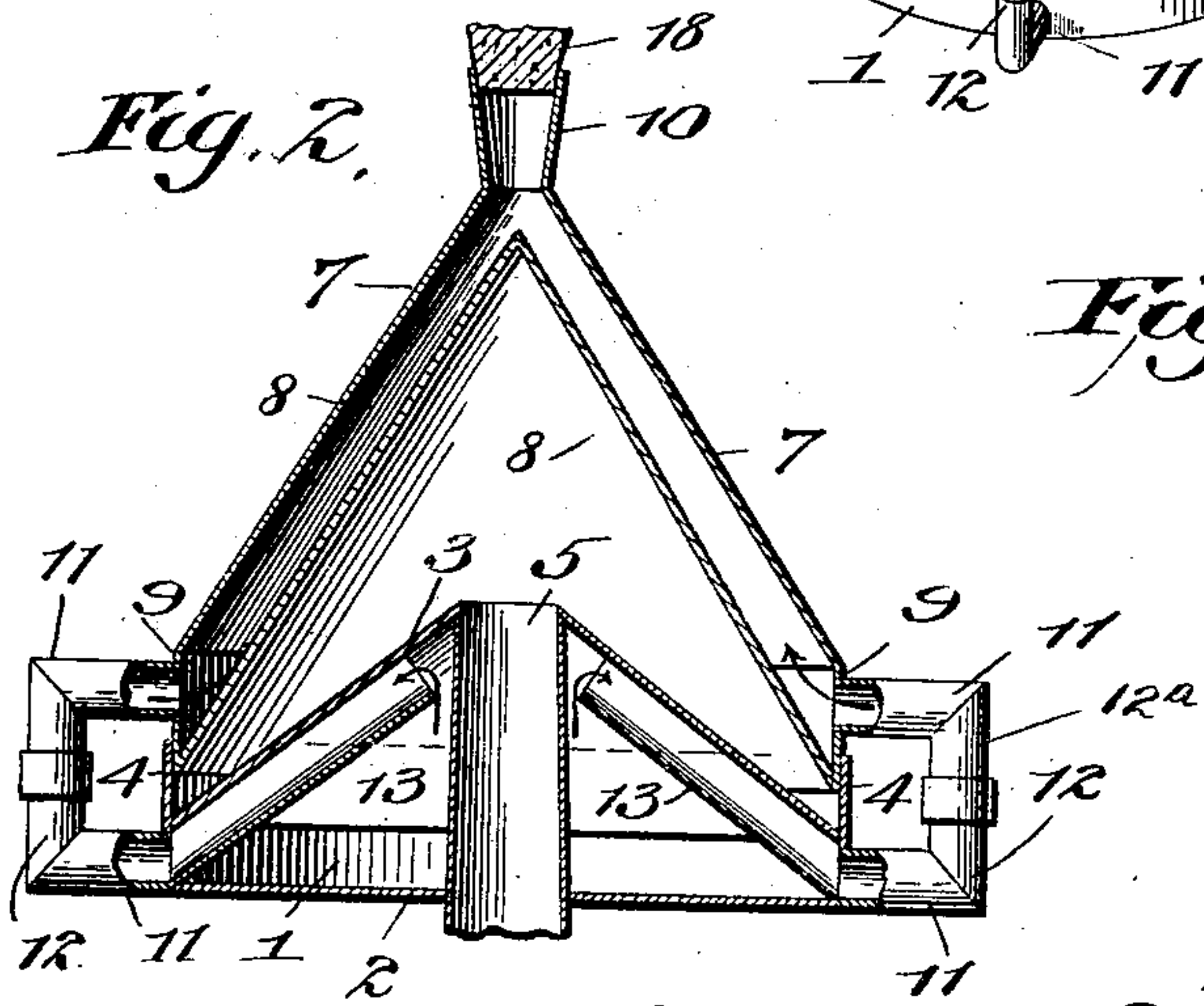
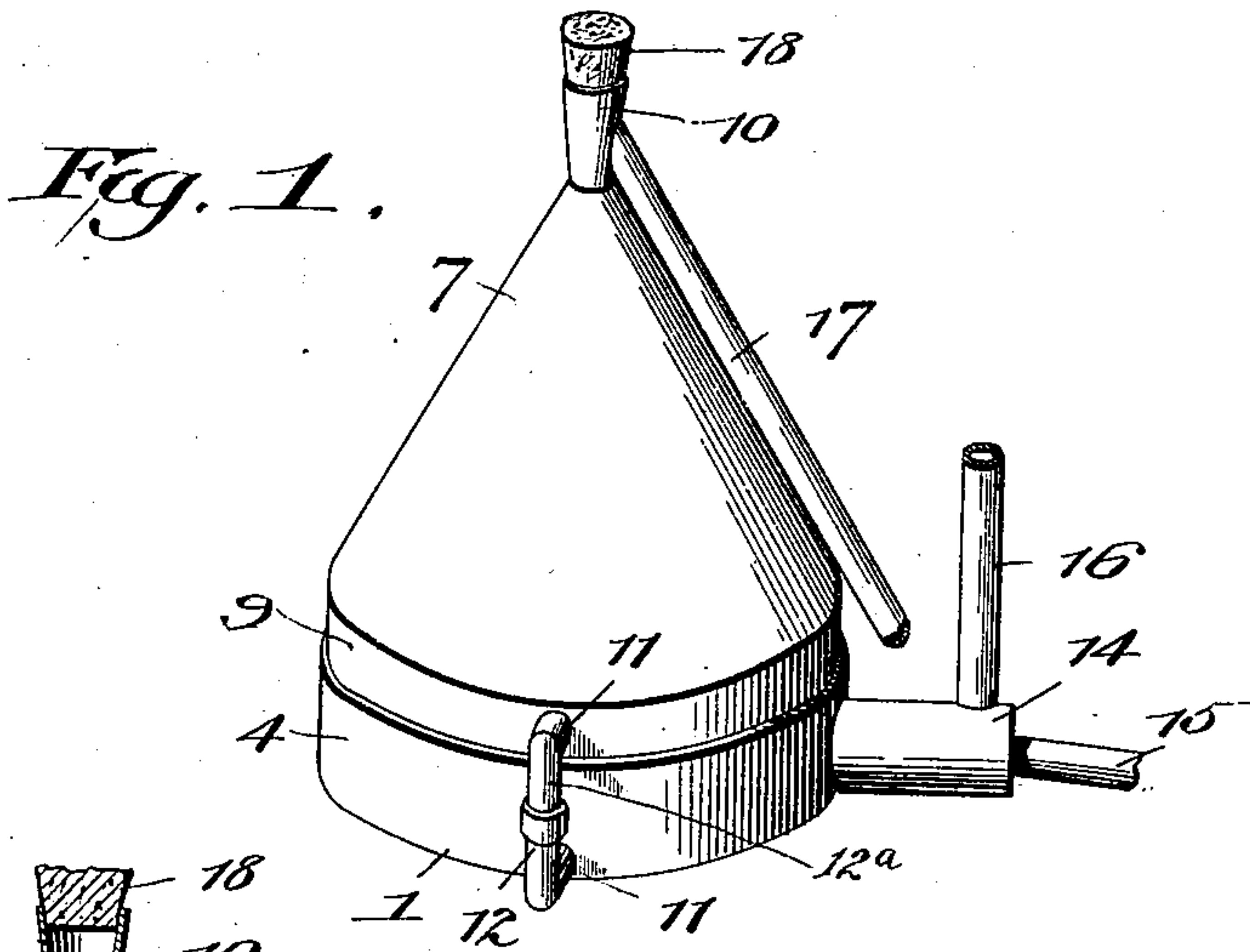
**No. 668,595.**

**Patented Feb. 19, 1901.**

**I. WANNER.  
CONDENSER.**

(Application filed June 9, 1900.)

(No Model.)



Inventor:

*Isaac Wanner,*

Imara Ho.

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Witnesses;

Wm. L. Steidau  
Charles Shaw,

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# UNITED STATES PATENT OFFICE.

ISAAC WANNER, OF VERA CRUZ, INDIANA.

## CONDENSER.

SPECIFICATION forming part of Letters Patent No. 668,595, dated February 19, 1901.

Application filed June 9, 1900. Serial No. 19,757. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC WANNER, a citizen of the United States, residing at Vera Cruz, in the county of Wells and State of Indiana, have invented a new and useful Condenser, of which the following is a specification.

My invention relates to condensers, and more particularly to that class of such devices used upon stills for making spirituous liquors, although it can be used for distilling any kind of liquids and can be used to great advantage with condensing steam-engines.

The object of my invention is to produce a device which is simple, cheap, and compact and which is separable, so that access may be readily had to different parts for the purpose of cleansing it or for repair.

With this object in view my invention consists in the improved construction and novel arrangement of parts of a condenser, as will be hereinafter more fully set forth.

In the accompanying drawings, in which the same reference-numerals indicate corresponding parts in each of the views in which they occur, Figure 1 is a perspective view of my condenser. Figs. 2 and 3 are vertical sectional views of the same, taken at substantially right angles to each other; and Figs. 4 and 5 are perspective views of the parts separated, the upper part being shown partially inverted in Fig. 4.

Referring more particularly to the drawings, 1 indicates the bottom or base of my improved condenser, which is preferably circular, and consists of a flat bottom 2, a conical top 3, and a wall 4, which extends a short distance above the base of the top. The top and bottom of the base are perforated at their centers, and a pipe or tube 5 is secured therein, the top of which is even with the top of the cone, and the lower end extends below the bottom a suitable distance for being connected with the still or retort. (Not shown.)

The upper portion or tap 6 of the condenser is substantially conical and comprises an outer wall 7, an inner wall 8, a cylindrical wall 9, and a tubular extension 10 at the top or apex of the outer wall 7. The walls 7 and 8 are secured to the top and bottom, respectively, of the cylindrical wall 9 and extend upward substantially parallel with each other,

thereby forming a substantially conical chamber between them.

The cylindrical portion of the cap is of such a size as to fit snugly down into the projecting portion of the flange or upper end of the wall 4 and is secured steam-tight therein in any suitable manner—as, for instance, by the ordinary paste or packing used for such purposes. The two cylindrical walls are provided with hollow tubes or projections 11, arranged one above the other, which may be connected by tubes or pipes 12 and 12' and ordinary couplings or unions in the usual manner. Any suitable number of these communicating tubes may be employed, although I have only shown two in the drawings. The tubes 12 upon the lower portion of the condenser communicate with conduits 12, which extend upwardly nearly to the top upon the inner side of the conical wall 3 and may be formed by securing semicircular or tube-like troughs upon the inner side of said wall.

Two tubes 14 and 15 project from the base at one side one within the other, the inner one of which may be slightly inclined and communicates at its inner end with the condensing-chamber formed between the top and bottom of the condenser. The point of communication with said chamber is preferably formed directly at the base of the conical wall 3, whereby any liquid which may be condensed within the chamber will eventually find its way into said inner pipe 15 and from thence be conducted to any desired point through its outer end, which projects beyond the closed end of the tube 14. The tube 14 communicates with the chamber formed between the top and bottom walls 2 and 3 and has its outer end provided with an upwardly-extending tube or pipe 16, which may be connected with a water-supply (not shown) in any suitable manner.

The projecting portion at the apex of the cap is provided with an opening with which an overflow-pipe 17 communicates, and its upper end may be closed by any suitable means—as, for instance, a plug or cork 18.

In using my improved condenser it is preferably located at the top of the still, where it will be out of the way, and connected therewith in such a manner as to cause the steam and vapor from the still to pass up through



the entrance-tube through the base into the condensing-chamber. Communication with any suitable cold-water supply is established through the larger pipe projecting from the side of the base, and water is permitted to enter the substantially conical chamber formed between the top, bottom, and side walls of the base. As the water rises within said chamber it comes in contact with and cools the top wall of the base to such an extent as to cause any steam or vapor in contact therewith to be condensed. As soon as the water reaches the level of the upper ends of the conduits it passes down through the conduits out through the pipes and tubing, and up into the conical chamber formed between the outer and inner walls of the cap and escapes through the overflow-pipe. As it rises within this chamber it will cool the inner wall of the cap to such an extent as to cause any steam or vapor which may be in contact therewith to be condensed and precipitated down into the channel formed by the flange around the base. As soon as said chamber becomes filled the water rises in the extension at the top of the condenser and passes into the exit-pipe, and from there it is permitted to escape. As the steam enters the condensing-chamber it immediately expands and comes in contact with the entire area of the cooled walls of the chamber and is rapidly condensed and caused to run down the inclined or sloping sides of the chamber into the channel around the bottom thereof, and from there it passes through the discharge-pipe into a receptacle prepared for its reception.

By arranging the parts of the condenser as above described it will be seen that the cold water is admitted to the lowest point of the condenser, and as it becomes heated it passes up through and is discharged at the top of the condenser, thereby utilizing the principle that warm water will rise to the top, although it is evident that the water, which is preferably under pressure, is permitted to enter fast enough to cool the walls of the condenser sufficiently to condense the steam as rapidly as it enters, and thereby avoid any possibility of back pressure in the retort. By forming the condenser of two parts—the base and the cap—and making them separable the cap can be removed at any time, which will give free access to every part of the condensing-chamber, thereby permitting of the walls of the chamber being kept perfectly clean at all times, so as to avoid the possibility of the liquid coming in contact with poisonous substances which are liable to be formed thereon, thereby enabling the condenser to produce a pure and superior article. It also permits of any leaks or defects in the walls of the condenser being discovered and quickly repaired, thereby avoiding any possibility of leakage of the material being condensed or of the cooling liquid gaining access thereto.

The apparatus is so simple that it can be easily manufactured by the ordinary tin-

smith, and it is so simple in its operations that any person of ordinary intelligence can operate it. It is so compact that it takes up much less room than the ordinary worm and is so tight that all leakage and slopping of water around the same is avoided. Owing to the extended area of the condensing-walls the steam is condensed so quickly that a less amount of water is required to operate the condenser than with the worm, and the escape of the warm water at the top permits of a rapid circulation, which will render the condenser capable of disposing of a large amount of steam and vapor from the retort.

Although I have described my invention as being particularly applicable to the manufacture of spirituous liquors, it is evident that it could be used with equal advantage for the manufacture of other liquids and oils, or it could be used for condensing the exhaust-steam from an engine, which would thereby furnish pure water for the boiler, besides saving the lubricating-oil which would otherwise be wasted. It is also evident that different kinds of material could be used in the construction of the condenser, according to the purpose for which the condenser is to be used, copper being preferably in use in manufacturing distilled spirits.

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

1. In a condenser, the combination, with a separable hollow base and hollow cap forming a condensing-chamber therebetween, of means for introducing steam into said chamber and a cooling liquid within the hollow portions of said base and cap, substantially as described.

2. In a condenser, the combination, with a hollow separable base and hollow cap, forming a conical condensing-chamber therebetween, of separable pipes for establishing communication between the base and cap, and means for introducing steam into said condensing-chamber and for passing a cooling substance through the hollow portions of the base and cap, substantially as described.

3. In a condenser, the combination, with a hollow base provided with a flange on top and a tube extending through its central portion, of a substantially conical hollow cap, said cap fitting within the flange of the base to form a condensing-chamber therebetween, separable pipes for establishing communication between the base and the cap, and means for introducing a cooling liquid to the base and permitting the distilled liquid to escape from said condensing-chamber, substantially as described.

4. In a condenser, the combination, with a flanged hollow base, the top of which is conical and provided with conduits upon the inner side extending nearly to the apex, of a pipe extending through the base at said apex, a substantially conical hollow cap secured within the flange of the base and forming a



condensing-chamber therebetween, separable pipes communicating with the conduits within the base and with the space between the walls of the cap at their lower ends, an  
5 exit-pipe leading from the apex of the cap, an inlet-pipe communicating with the base, and an outlet-pipe leading from the condensing-chamber, substantially as described.

10 5. In a condenser, the combination, with a hollow base comprising a flat bottom, of a cylindrical wall and a conical top secured to said wall at a distance from its upper edge, a tube projecting through said walls and extending below the bottom thereof, a substantially  
15 conical hollow cap, the lower end of which

fits within the projecting portion of the wall of the base and forms a condensing-chamber therebetween, pipes for establishing communication between the hollow of the base with the hollow of the cap, an exit-pipe leading 20 from the apex of the cap, an inlet-pipe communicating with the base, and a discharge-pipe communicating with the condensing-chamber and extending out through the inlet-pipe, substantially as described.

ISAAC WANNER.

Witnesses:

JOHN MOCK,  
LEVI MOCK.