

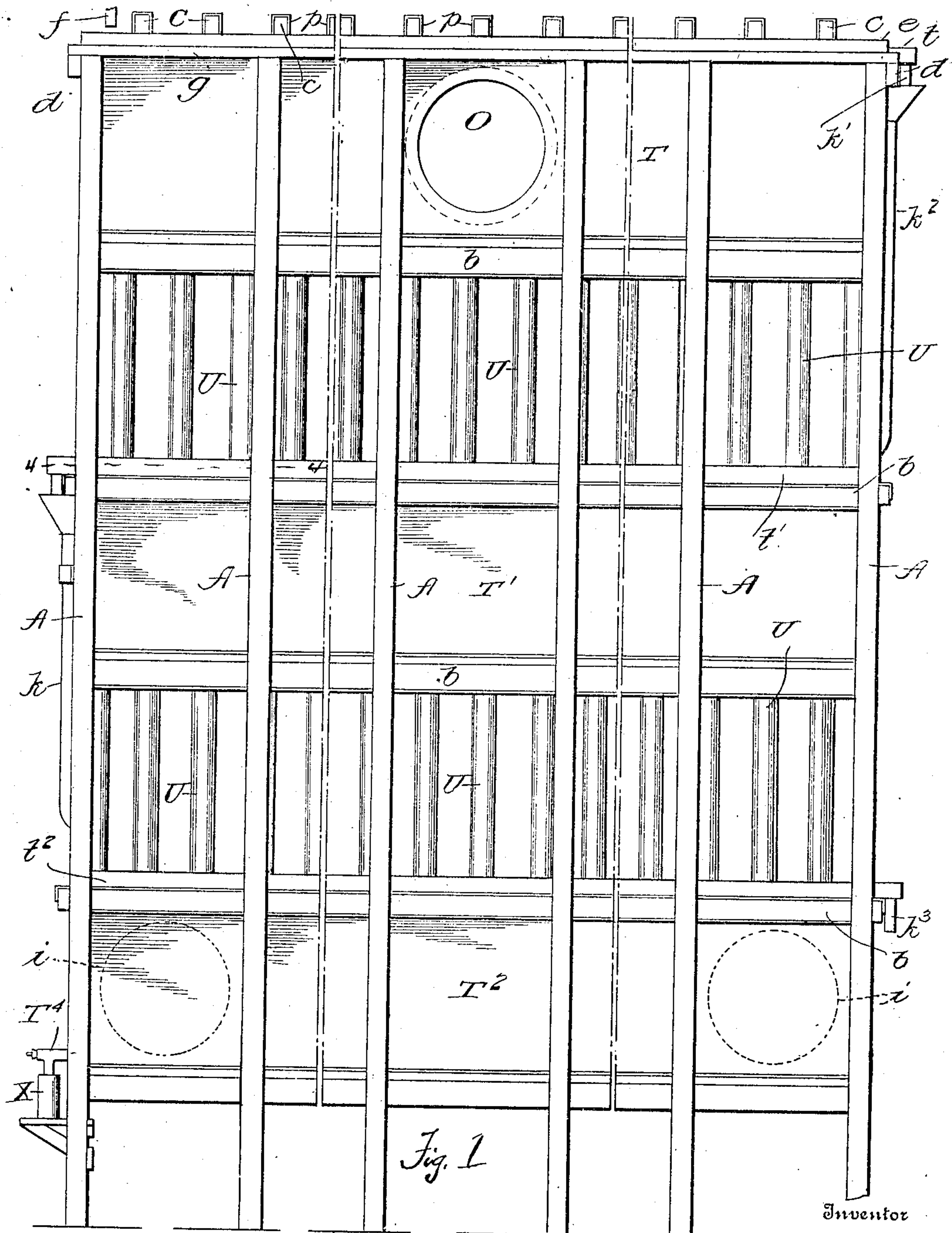
No. 882,330.

PATENTED MAR. 17, 1908.

A. A. MARLOW.
COOLING AND CONDENSING TOWER.

APPLICATION FILED NOV. 19, 1907.

2 SHEETS—SHEET 1.



Witnesses
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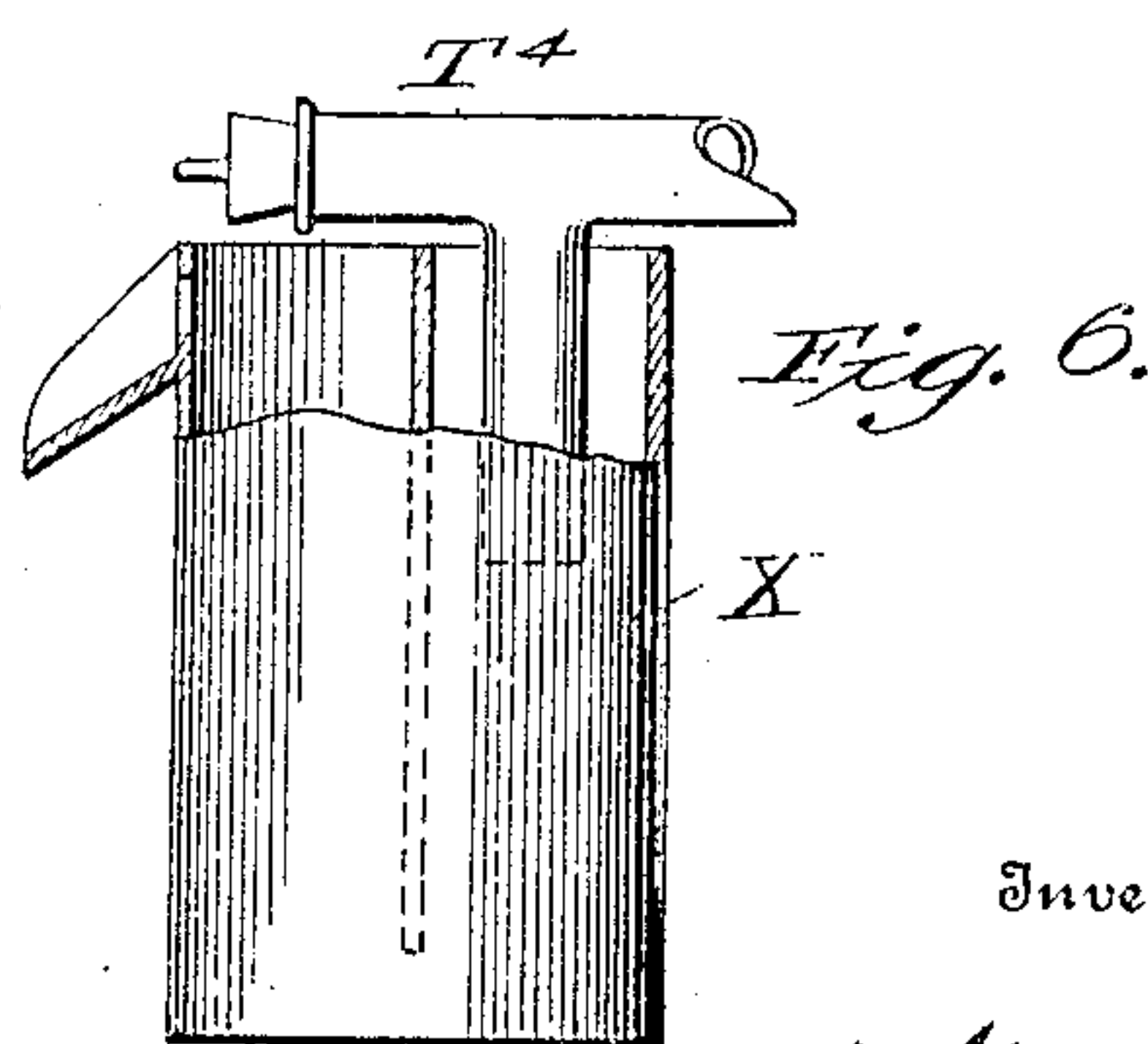
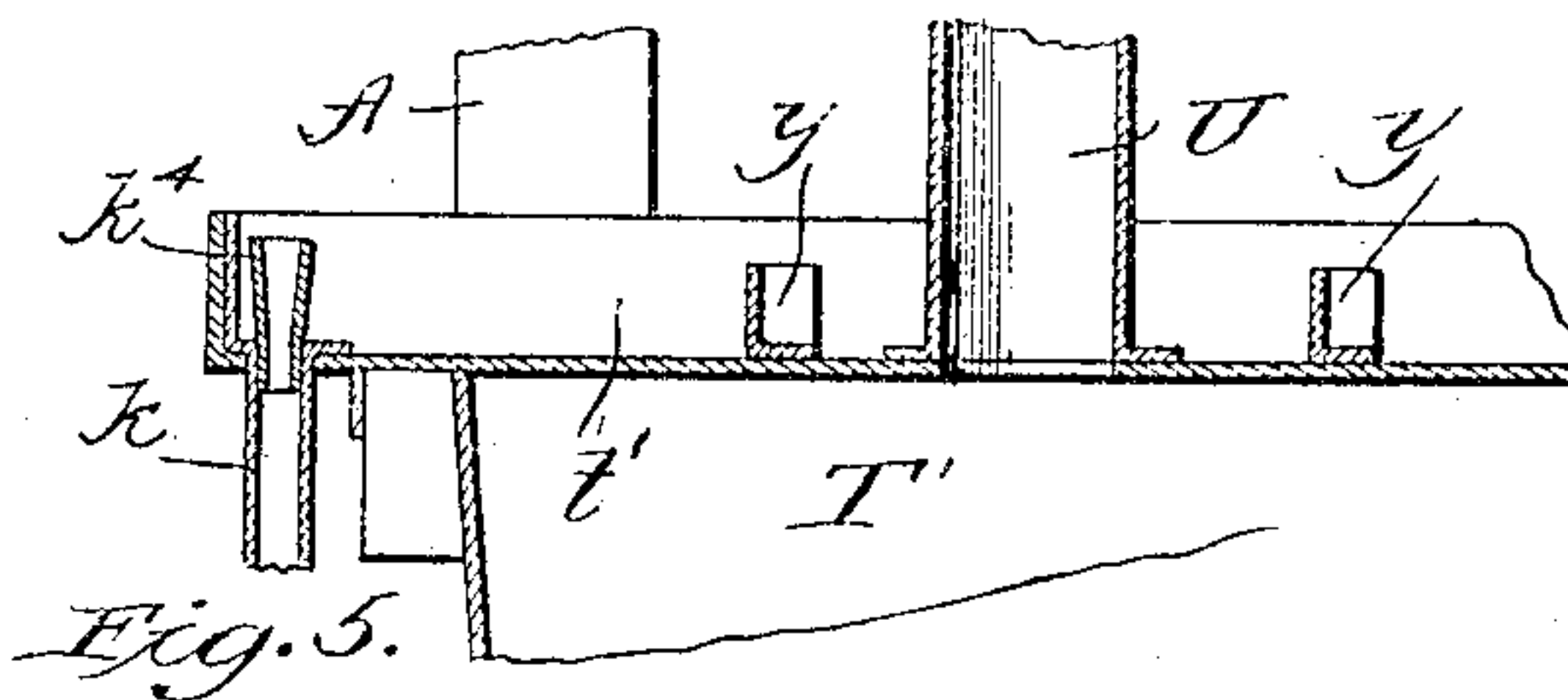
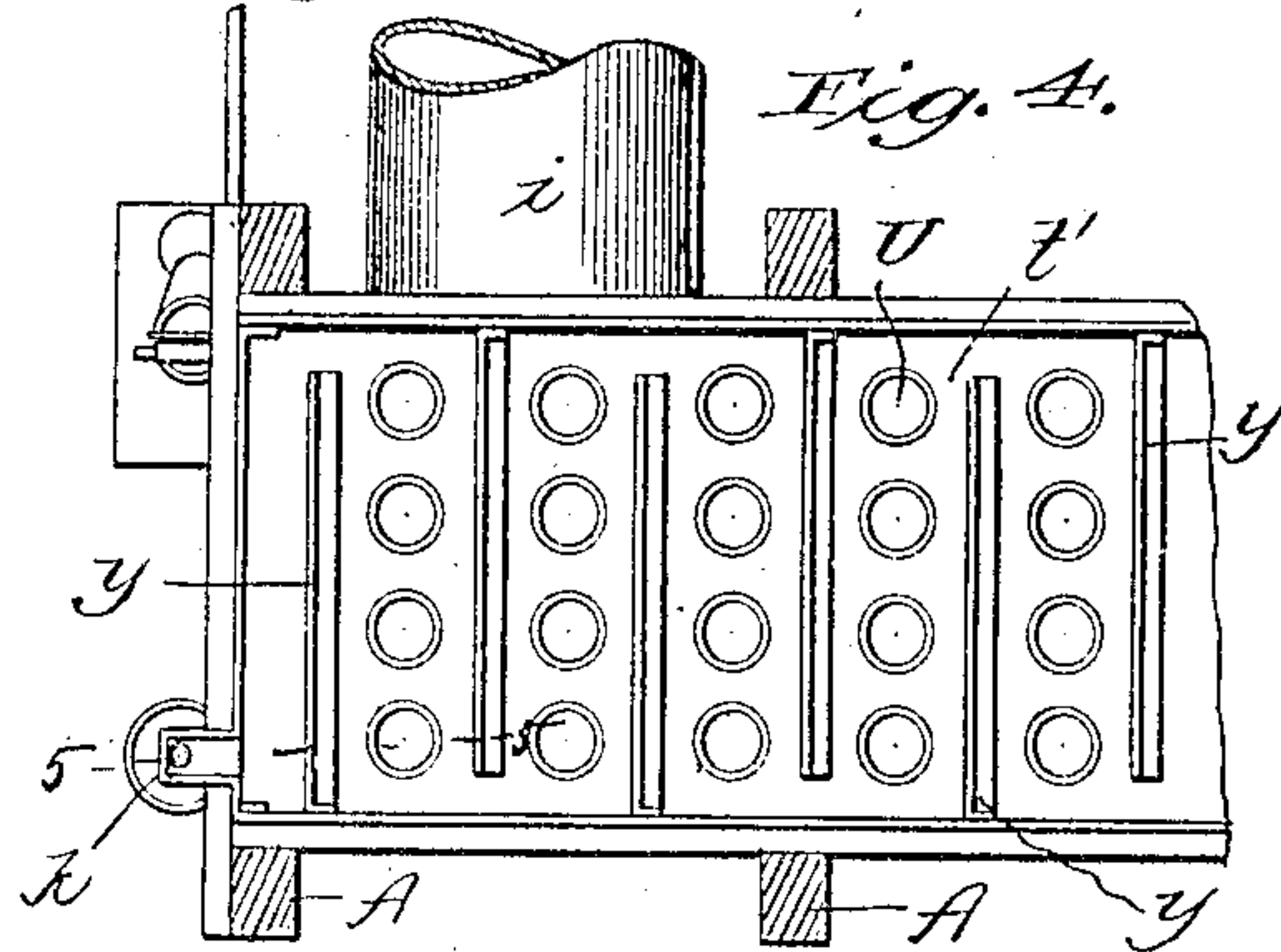
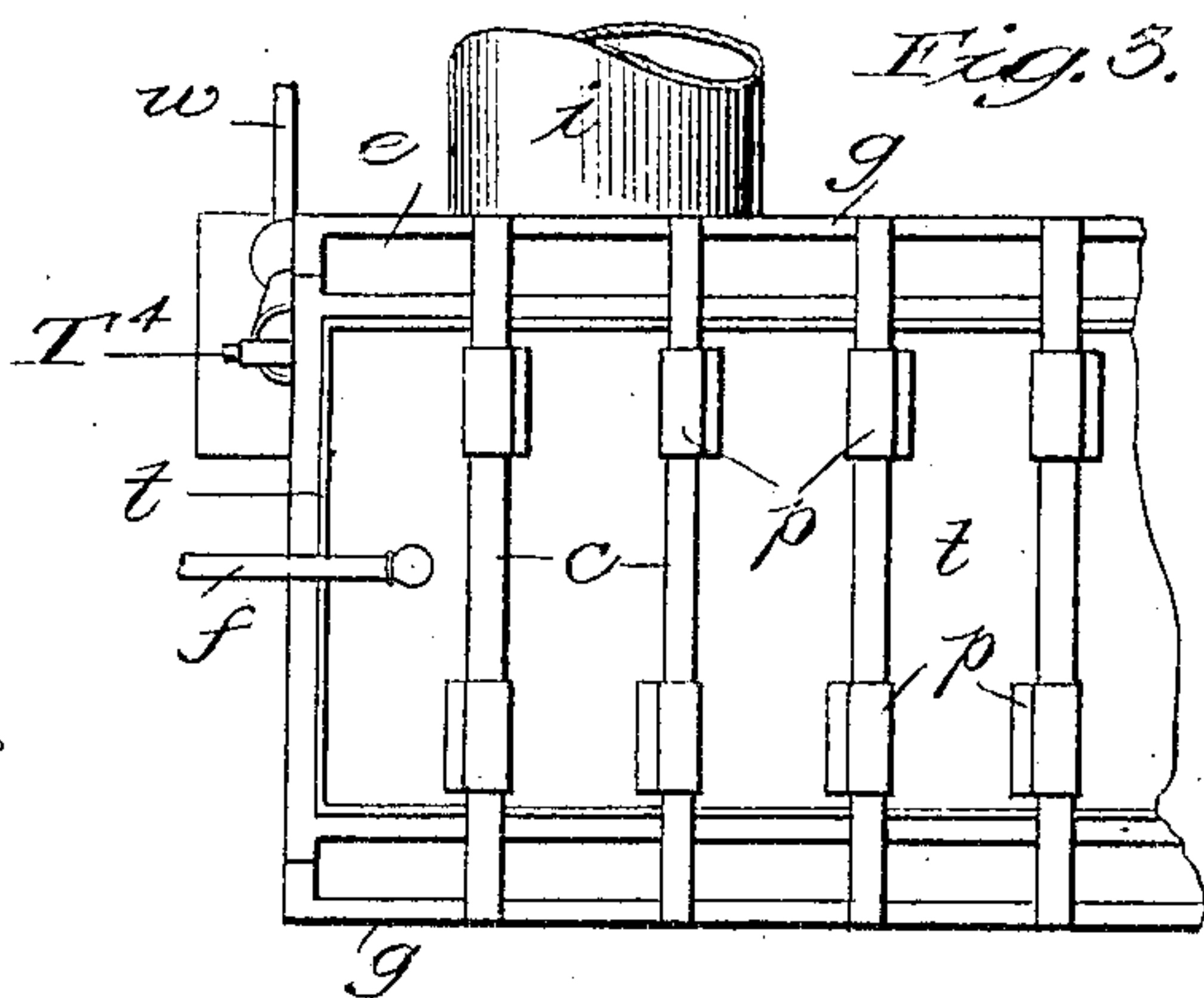
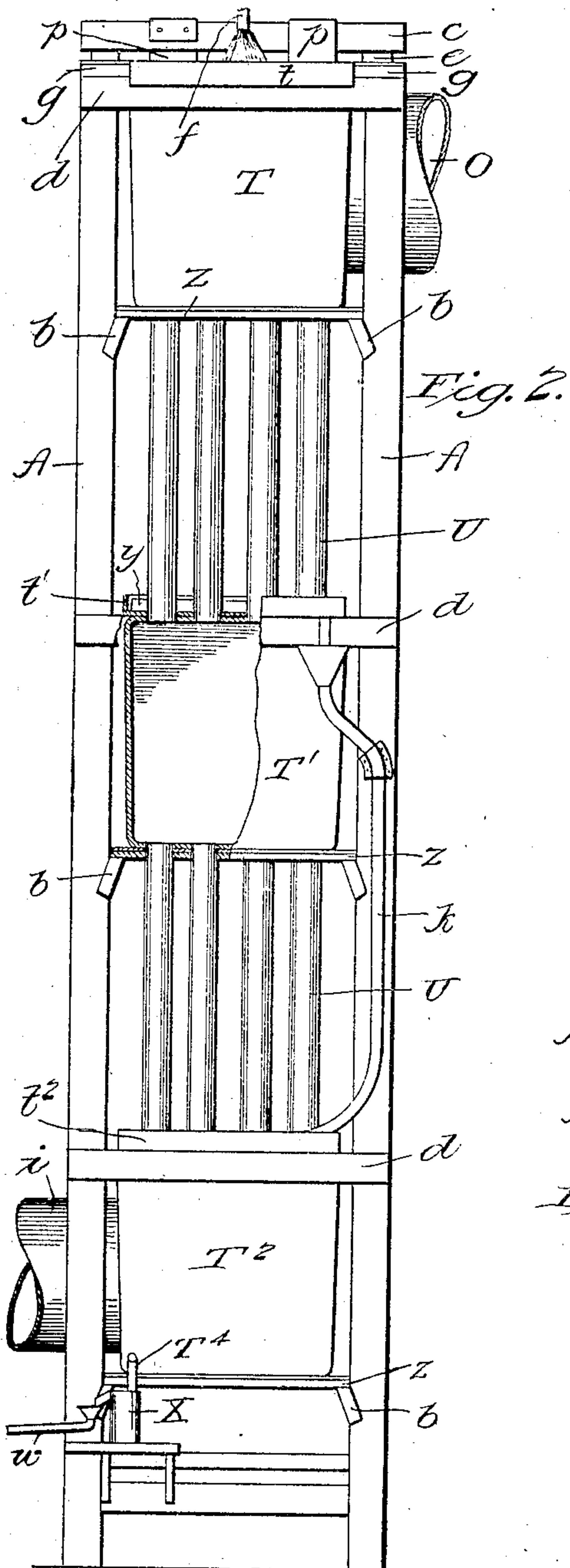
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2 SHEETS—SHEET 2.



Witnesses

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ALBERT A. MARLOW, OF BOUNDBROOK, NEW JERSEY.

COOLING AND CONDENSING TOWER.

No. 882,330.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed November 19, 1907. Serial No. 402,822.

To all whom it may concern:

Be it known that I, ALBERT A. MARLOW, a citizen of the United States, residing at Boundbrook, in the county of Somerset and State of New Jersey, have invented certain new and useful Improvements in Cooling or Condensing Towers, of which the following is a specification.

The invention relates to towers for cooling or condensing fumes or gases in the manufacture of sulfuric acid.

The objects of the invention are to provide a cooling tower in which a saving of acid will be effected by reason of a quicker and better condensing of the fumes; to protect the chambers from overheating; to effect a better mixture of the fumes and hence purer acid; to effect a saving of space; to effect a saving of the water used in cooling and to prevent its splashing over the plant and finally to provide a tower in which the parts are accessible from the outside of the framework for repairs, &c. These objects I accomplish by the construction shown in the accompanying drawings in which:

Figure 1 is a side elevation of my improved cooling or condensing tower. Fig. 2 is a sectional end elevation thereof. Fig. 3 is a fragmentary top plan view. Fig. 4 is a horizontal sectional view on line 4—4, of Fig. 1. Fig. 5 is an enlarged vertical section on line 5—5 Fig. 4, and Fig. 6 is a sectional side elevation of the acid outlet receptacle.

The framework of the tower comprises a series of uprights A connected by a series of longitudinal bars b, secured at an incline in recesses in the inner sides of the uprights so that the upper edges of the bars b will project beyond the inner faces of the uprights A and form supporting ledges. Transverse cross pieces d connect the end uprights A in the planes of certain of the side bars b. The upper ends of the uprights A, are connected by longitudinal top plates g, on which rest upper plates e, which support the transverse cross pieces c, c.

T, T', T² are three fume chambers resting one above the other on floors z, z, z, supported on the bars b and cross pieces d. These chambers are formed of lead and are connected by two series of lead tubes or flues U; the lower series of tubes connecting the top of the lower fume chamber T² with the bottom of the middle chamber T' and the upper series of flues connecting the top of the middle chamber with the bottom of the top chamber T. The

bottom chamber T², is provided with one or more inlets i, for the fumes or gases and the upper chamber T is provided with an outlet O, therefor. The top of the upper chamber T is formed or provided with an open-top water-pan or receptacle t, the side flanges of which are secured under the plates e, e, and the end flanges of which rest on the upper end cross pieces d, d. Cleats p, p, of lead connect the pan t with the cross pieces c and also serve as baffles to retard the flow of water from the supply pipe f at one end of the pan to the outlet pipe k', at the opposite end. This outlet pipe k' discharges into the funnel-like mouth of a down take pipe k², which discharges into one end of a middle pan t' on top of the middle fume chamber T', while a like down take pipe k, conducts the water to one end of the lower pan t², on top of the bottom chamber T² and the outlet k³ at the opposite end thereof leads to waste. The pans t', t², are provided with baffle plates y, which form a serpentine or zig-zag passage from the inlet to the outlet ends thereof.

The outlets of the pans t, t', t², are provided with removable tubular plugs k⁴ so as to retain the water at a suitable height in the pans, and permit of washing out any sediment.

The bottom fume chamber T² is provided with an acid outlet T⁴, trapped or sealed at its lower end in the usual receptacle X which discharges into an offtake pipe w. The fumes entering the lower chamber T² through pipes i, will pass upward through flues U, into the middle chamber, thence through the flues to the top chamber where further condensation takes place and from which they pass by the pipe O for further treatment or to waste, as may be desired. The tubes U and the fume chambers are both water and air cooled which renders them very effective in condensing the fumes, and the open framework renders all of the parts accessible for repairs &c.

The number of chambers and series of flues in a tower may increase, and any number of towers so constructed may be employed. In cold weather the circulation of cold air around the chambers and flues may be relied on without the water circulation, if desired.

What I claim is:

1. A cooling or condensing tower comprising a plurality of superposed closed chambers, having exposed flues connecting the upper side of one chamber with the lower side

of the next chamber, water pans on the upper sides of the chambers; the lower ends of the flues extending through the adjacent pan or pans but not communicating therewith, 5 and means for effecting a flow of water through the pans.

2. A cooling or condensing tower comprising an open framework, superposed closed condensing or cooling chambers mounted 10 therein, series of vertical exposed flues connecting the adjacent sides of the chambers, open top water pans on the upper sides of the chambers but having no communication therewith, and means for effecting a flow of 15 water through the pans and from one pan to the other.

3. A cooling or condensing tower comprising, an open framework, superposed chambers supported therein, vertical series of 20 flues connecting the adjacent sides of the chambers, the lower chamber having an inlet and the upper chamber an outlet, water pans on the top of the chambers, baffles in the

pans to form a zig-zag course for the water, and means for effecting a flow of water 25 through the pans and around the lower ends of said pipes.

4. A cooling or condensing tower comprising, an open work frame including uprights, longitudinal bars, floors supported on said 30 bars, chambers supported on said floors, vertical flues connecting the adjacent sides of the chambers, water pans on top of the chambers, a connection between the outlet end of one pan and the inlet end of the pan there- 35 below, baffle plates in the lower pans, cross pieces over the upper pan and baffle forming cleats connecting the cross pieces with the bottom of the upper pan.

In testimony whereof I affix my signature, 40 in presence of two witnesses.

ALBERT A. MARLOW

Witnesses:

GEO. D. PFEIFFENBERGER

ALEX A. GODFREY.