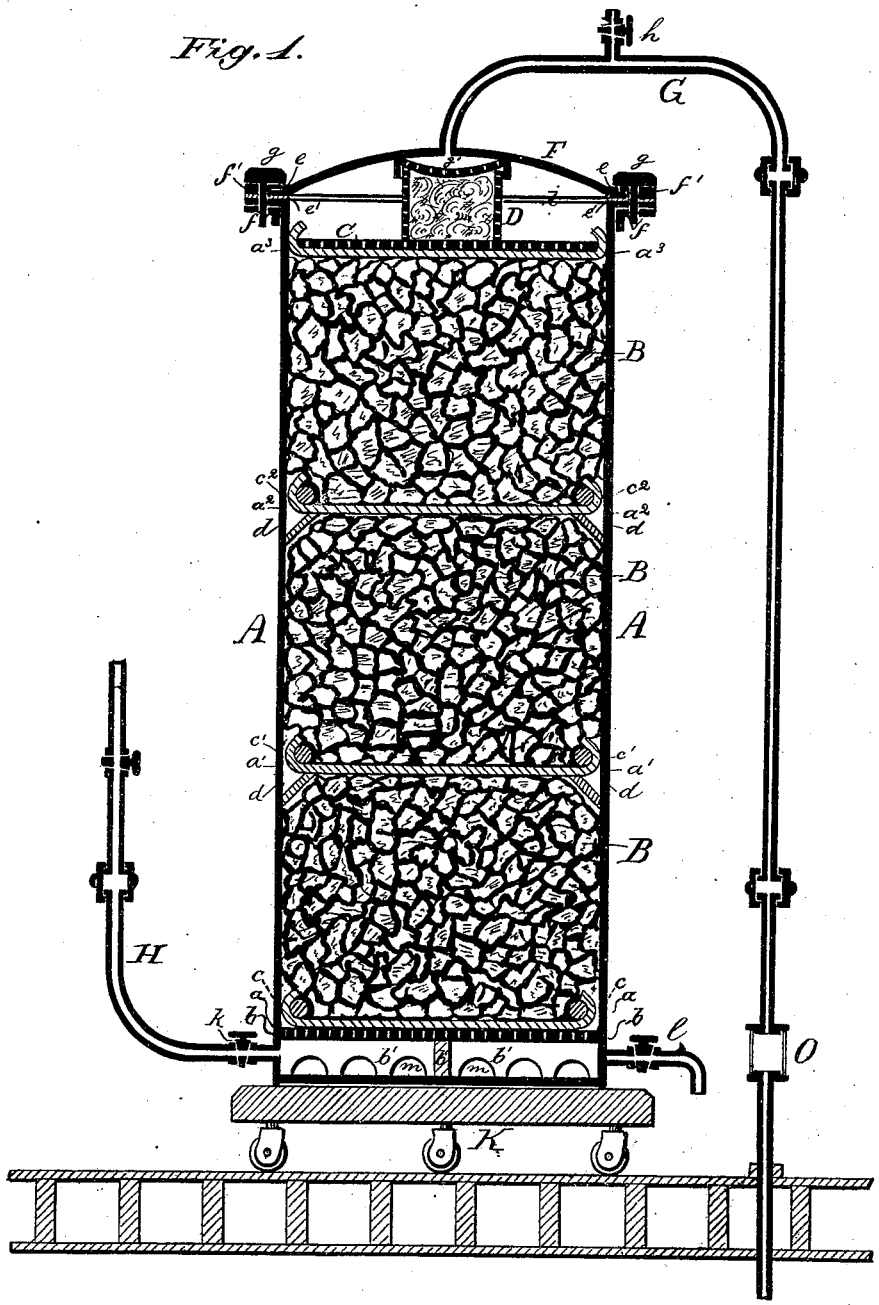
2 Sheets—Sheet 1.

J. H. THIERMAN.

Rectifying Apparatus.

No. 197,428. Patented Nov. 20, 1877.

Fig. 1.



Attest:
Jno. C. Brooks.
August Petersohn.

Inventor:
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Att'ys.

2 Sheets—Sheet 2.

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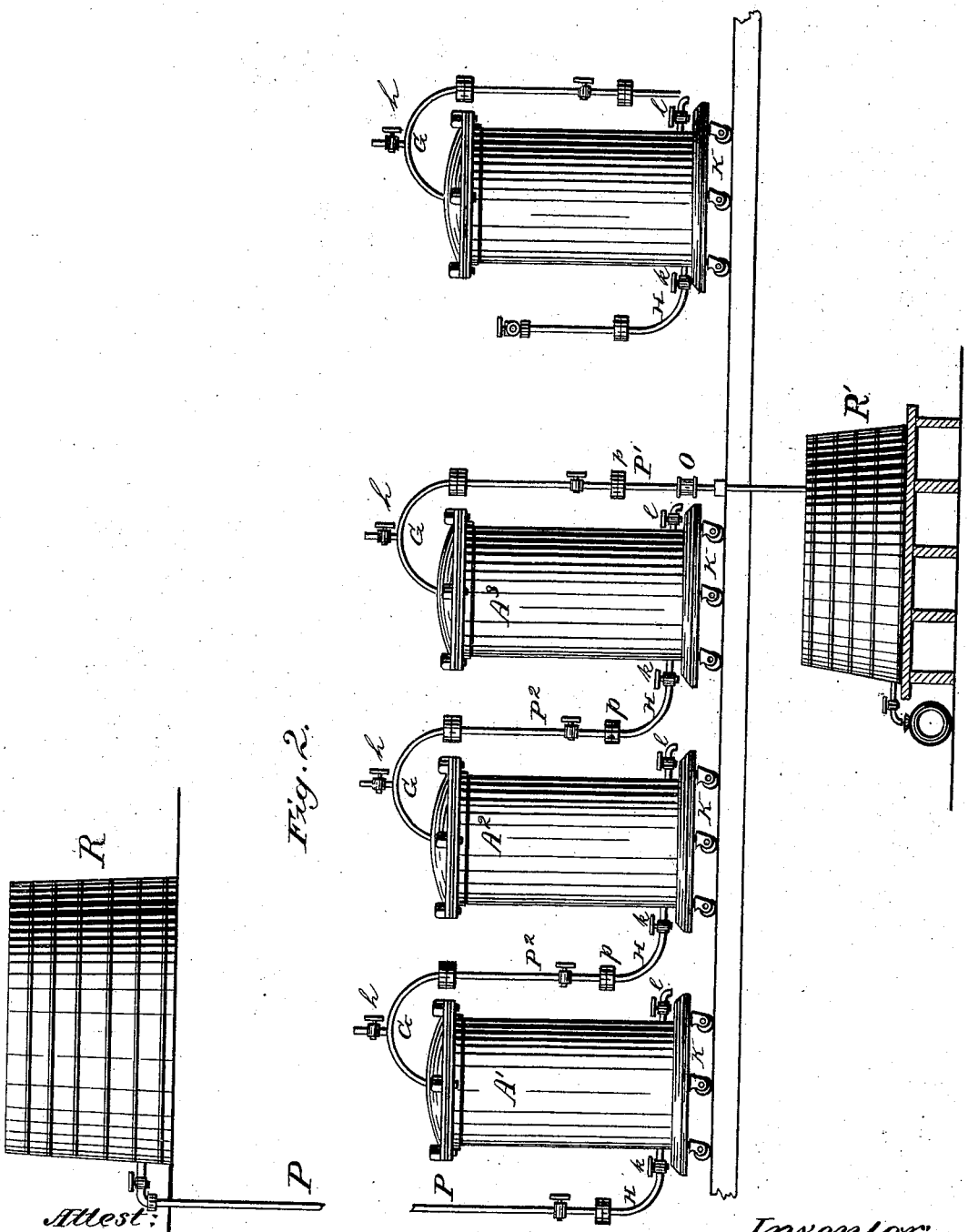

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN HENRY THIERMAN, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN RECTIFYING APPARATUS.

Specification forming part of Letters Patent No. **197,428**, dated November 20, 1877; application filed August 28, 1877.

To all whom it may concern:

Be it known that I, JOHN HENRY THIERMAN, of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Rectifying Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a vertical section of the rectifying-cylinder, and Fig. 2 is a side view of a series of cylinders in the process of rectification.

Similar letters of reference indicate corresponding parts in both figures.

My invention relates to certain improvements in the construction of cylinders used for the rectification of liquor, and in their arrangement and manipulation, as I shall now proceed more fully to describe, with reference to the drawings hereto annexed, in which—

A is a cylinder constructed of any suitable material, and provided with a perforated false bottom, *b*, raised upon supporting-bridges *b' b'*. On top of this I place a woolen blanket, *a*, stretched and pressed closely against the inner walls of the cylinder by a ring, *c*, of copper wire or other suitable material. a^1 a^2 are two other similar blankets, held by rings c^1 c^2, resting upon shoulders or brackets *d* upon the inner walls of the cylinder. This latter is thus divided into three compartments, B B B, each of which is filled with a packing of ordinary rectifying-charcoal.

Above, and resting upon a blanket, a^3, which covers the charcoal in the upper chamber B, I place a cover or partition of perforated sheet metal, C, having a central upwardly-projecting cylinder, D, forming a chamber, the sides of which are perforated, as shown. This chamber, which is filled with a packing of raw cotton, reaches to the top or head of the cylinder, which forms its cover and serves as a brace to support the partition C. The blanket a^3, which is spread on top of the charcoal in the upper chamber B, is held in place by the partition C, which is braced in its place firmly by the top or head of the cylinder, and which, together with the cotton, prevents the fine particles of charcoal from passing from the cylinder.

F is the top or head of the cylinder, having a circumferential flange, *e*, corresponding with a similar flange, *e'*, at the top of the cylinder proper. Below this flange I place a ring, *f*, of iron or other suitable metal, the edge of which projects beyond the flange. After placing the head upon the cylinder, a packing-ring, *i*, of rubber or similar material, being interposed, I adjust a ring, *f'*, similar to *f*, over the flange *e*. The rings *f f'* have perforations for bolts *g g*, by which they are united, thus securing the cover upon the cylinder. There being no perforations or bolt-holes in the flanges *e e'* the cover fits absolutely tight.

The cover F has a central perforation, from which the exit-pipe G conducts the liquor out of the cylinder. A convex screen or sieve, *g'*, covering this perforation, prevents the cotton packing in chamber D from entering and choking up the exit-pipe G. A cock, *h*, is arranged upon pipe G to permit the escape of air from the cylinder when necessary.

H is the induction-pipe. It enters the cylinder below the false bottom *b*, and is provided with a cock, *k*, for regulating the flow of liquor. *l* is a cock arranged below the false bottom *b* for drawing off the contents of the cylinder which remain after disconnecting.

In the process of rectifying I employ three cylinders, all constructed alike, and I keep a fourth cylinder as a reserve to take the place of the one to be rinsed and repacked. All the cylinders are mounted on platforms and rotating trucks K, so as to enable them to be readily shifted about.

In operation, the three cylinders A^1 A^2 A^3 are placed beside each other, as shown in the drawings, Fig. 2. The first one is connected by a pipe, P, with the reservoir R, which is located upon an upper floor. The exit-pipe of A^1 is connected with the induction-pipe of A^2, and the exit-pipe of A^2 with the induction-pipe of A^3. The exit-pipe of the latter is connected by a pipe, P^1, having an observing glass, O, with the receiving and storing tank R', located preferably on a lower floor. The connecting-pipes P^2 P^2 are provided with couplings *p p*, which enable the cylinders to be readily disconnected.

When the liquor flows from the reservoir R it first enters the space *m* below the false bottom *b* of cylinder A. The pressure of the liquor from the reservoir then forces it upward through the several compartments of the cylinders, by which rectification is effected. The woolen blankets serve to keep the charcoal in place, and the cotton in the cotton-chamber D acts as a filter to prevent fine particles of charcoal from passing off with the liquor. When the partition C at the top is reached the liquor passes into the chamber D, through the cotton, and out through the exit-pipe, from whence it is conducted to the bottom of the next cylinder, where the same process is repeated. From the third or last cylinder the liquor is conducted to the receiving-tank in a thoroughly cleansed and rectified state.

After the packings in cylinder A^1 have become impregnated with impurities the cylinder is disconnected, the liquor remaining in it drawn off through cock *l*, and the cylinder is rinsed by forcing water through it, and thus until the rinsings (which are conducted to a rinse-receiver) cease to show liquor impregnations, after which the foul packings are discarded, and fresh and clean ones supplied. The reserve cylinder is meanwhile brought into use. I change the position of cylinder A^3 to the former position of A^1, A^2 to A^3, and the reserve cylinder, being freshly packed, I place in the original position of A^2, thus preventing the liquor, when rectification is resumed, from carrying with it from the newly-packed cylinder immediately to the receiving-tank R′ any fine particles of charcoal which might injure its color or gloss. When the cylinder now having the original position of A^1 has become foul, cylinder A^1 having been rinsed, emptied, and repacked, the same relative changes of positions are effected as described, the newly-packed cylinder being thus always placed in the original position of A^2.

The pipe-couplings *p p* are so constructed as to render the cylinders easy of connection or disconnection, and, the cylinders being permanently mounted on trucks, as described, they can be easily manipulated and placed in any desired position.

I do not broadly claim the perforated diaphragms and dividing-blankets herein described, being aware that these, broadly considered, are old; but

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The cylinder A, having brackets *d d*, in combination with the blankets a^1 a^2 and wire rings c^1 c^2, by which it is divided into several compartments, B B, substantially as and for the purpose herein shown and specified.

2. The combination of the rectifying-cylinder A, having circumferential flange *e′*, perforated top partition C, having a central perforated cotton chamber, D, and top-piece F, having flanged screen or sieve *g′* fitting over the chamber D, and annular flange *e*, all constructed and combined so as to form an open annular chamber in the top of cylinder A, surrounding the cotton-chamber D, substantially as and for the purpose herein shown and specified.

3. As an improvement in rectifying apparatus, the interchangeable cylinders A^1 A^2 A^3, mounted on trucks and provided with induction-pipes H, and exit-pipes G, provided with couplings *p p p*, substantially as and for the purpose herein shown and specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN HENRY THIERMAN.

Witnesses:
HENRY A. THIERMAN,
JOHN H. WELLS.