JOHN BELL.

Improvement in the Manufacture of Acetate of Lime from Pyroligneous Acids.

No. 114,517. Patented May 9, 1871.

Fig: I

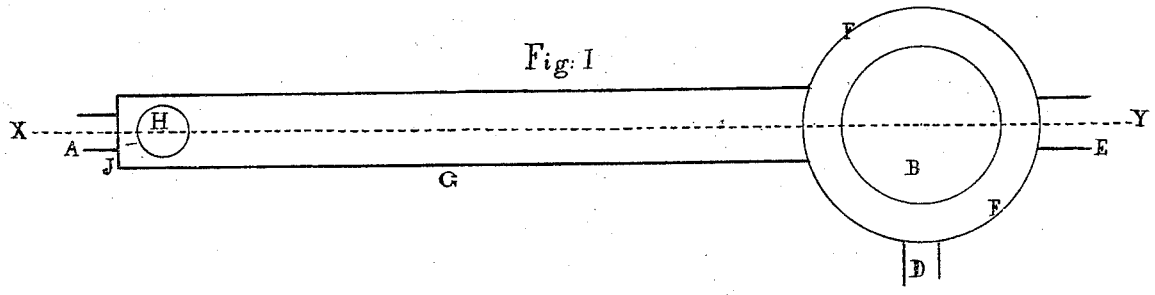


Fig: II

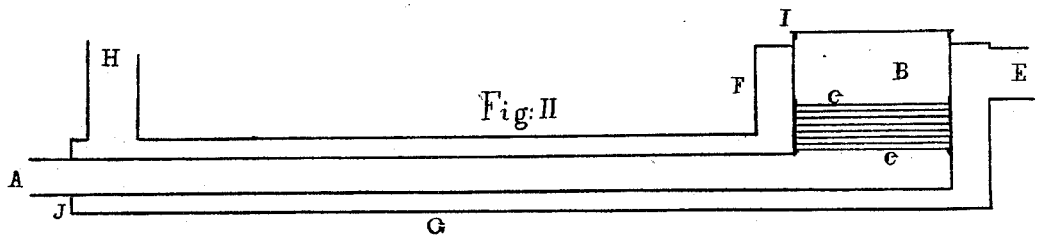


Fig: III

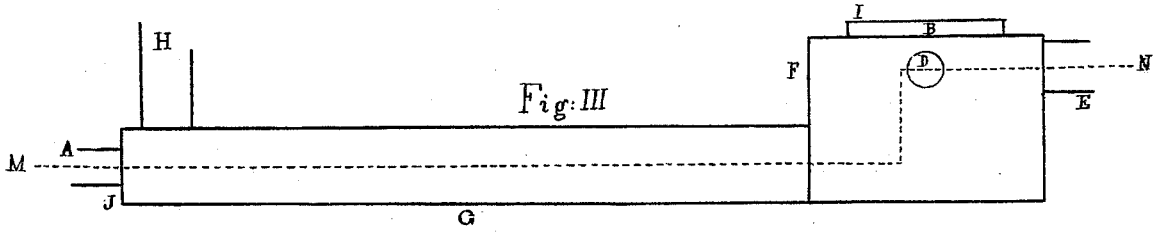
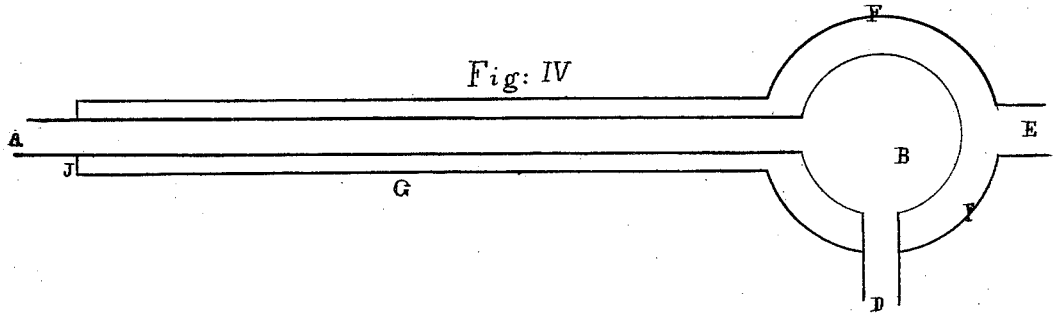


Fig: IV



Witnesses:
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JOHN BELL, OF DOVER, NEW HAMPSHIRE.

Letters Patent No. 114,517, dated May 9, 1871; antedated April 27, 1871.

IMPROVEMENT IN THE MANUFACTURE OF ACETATE OF LIME FROM PYROLIGNEOUS ACID.

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

I, JOHN BELL, of Dover, the in county of Stratford and State of New Hampshire, have invented certain Improvements in the Manufacture of Acetate of Lime from Pyroligneous Acid, of which the following is a specification.

Object of the Invention.

The object is to obtain this acetate freer from empyrumatic contamination, and with less labor and expense than by the processes heretofore in use.

Description of Accompanying Drawing.

The drawing is on a scale of 1 to 24 for an apparatus intended to use six hundred gallons of pyroligneous acid in twenty-four hours.

Figure I is a view from above of the apparatus invented.

Figure II is a vertical section of Fig. I along the dotted line X Y.

Figure III is a side view of the apparatus.

Figure IV is a horizontal section of Fig. III along the dotted line M N.

General Description.

A is a pipe for bringing the vapor of the pyroligneous acid from a boiler (not shown in the figure) into the cylindrical vessel B.

B is permanently closed at the bottom, and at the top has a tight cover, I.

In B, above the inlet of the pipe A, are from four to eight trays fitting tight in the cylinder, and having copper wire-gauze bottoms. In an apparatus for using six hundred gallons of acid in twenty-four hours eight trays is the number that I prefer. The lower tray rests upon a ledge passing around the inside of B; the others merely rest upon the lower one. Above the upper tray is the outlet of the pipe D, for carrying off the vapor. The cylinder B is inclosed in another cylinder, F, leaving a space between the two and below B.

F extends above the outlet of the pipe D, but allows the top of B to project above the top of F. The space between the cylinders is closed at the top of the outer one. The bottom of the latter is also closed.

A pipe, E, from a furnace, (not shown in the figure,) leads into the space between the cylinders, close to the top of the outer one.

The pipe A is surrounded by a larger pipe, G, which leads from the space between the cylinders. The space between these two pipes is closed at J, the end of the outer one.

H is a pipe leading from the space between A and G to a chimney.

The cylinder B, with its cover and the trays, are best made of copper.

The rest of the apparatus may as well be of iron.

The Working of the Apparatus.

Crude pyroligneous acid is placed in the boiler and a fire made beneath it. A fire is also made in the furnace connected with E. Lime or carbonate of lime is heated, by any convenient means, to a temperature between 212° and 400° of Fahrenheit, (I prefer that it should be from 230° to 250°,) and is then spread on the trays. It may be spread to a thickness of about half an inch. It ought to be coarsely ground, so that the greater part of it may be in lumps of from one-fourth to one-half an inch diameter.

As the vapor of the acid rises in the boiler it passes along the pipe A, and up through the base on the trays, where the acetate is formed. The residue of the vapor passes off by the pipe D.

The heat from the furnace passes through E into the space between the two cylinders, then into the space between the pipes A and G, and finally by the pipe H into the chimney. The heat from the furnace must be such that the acid vapor in the inner cylinder shall be at such a temperature as to deposit no liquid, and but little empyrumatic matter in or upon the salt formed. This temperature of the vapor may be between 212° and 400° Fahrenheit. I prefer that it should be between 230° and 250°.

Care is to be taken that the metallic surfaces in contact with the acid vapor do not become red hot.

The vapor is to be passed through the base until a considerable part of the latter is changed to acetate of lime. A loss of pyroligneous acid will occur if it is attempted to change all the base to acetate. In general, if there are eight trays, an hour will be as long as it is advisable to pass the vapor through the base before it is changed and fresh base used. The acetate may then be dissolved out from the lime, or carbonate of lime, by water, and evaporated to dryness.

I do not claim as new passing the vapor of the acid through the base; nor do I claim the apparatus here used simply for that purpose, viz., the pipe A, the cylinder B, with the trays for holding the base, and the pipe D.

I claim as my invention—

The outside cylinder F and the pipes H, G, and E, essentially as described and for the described purpose, viz., keeping the acid vapor at a temperature of from 212° to 400° by means of the heat from a furnace.

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