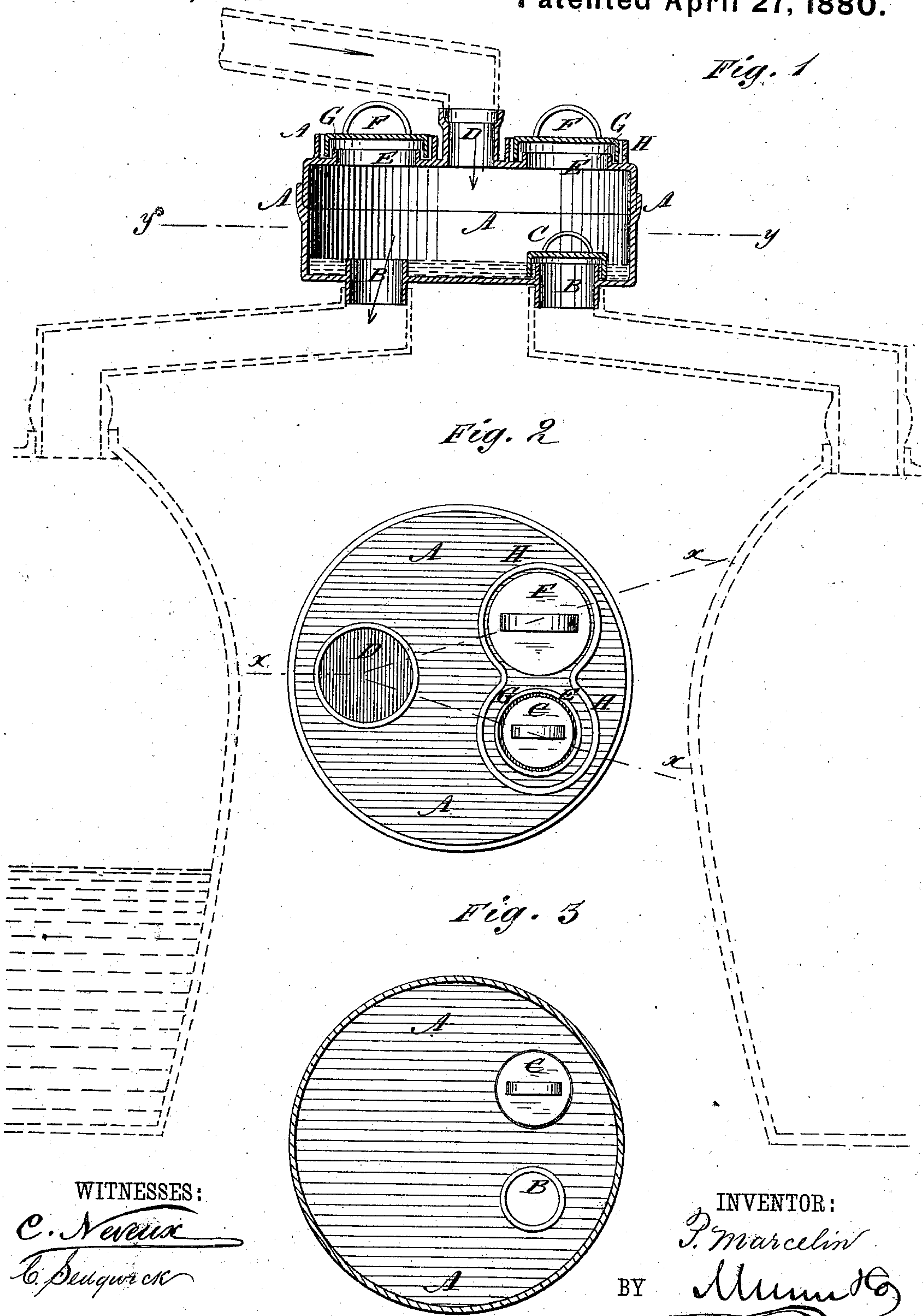


P. MARCELIN.  
 Apparatus for the Manufacture of Nitric Acid.  
 No. 227,027. Patented April 27, 1880.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

PAUL MARCELIN, OF BLACK ROCK, CONNECTICUT.

## APPARATUS FOR THE MANUFACTURE OF NITRIC ACID.

SPECIFICATION forming part of Letters Patent No. 227,027, dated April 27, 1880.

Application filed December 29, 1879.

*To all whom it may concern:*

Be it known that I, PAUL MARCELIN, of Black Rock, in the county of Fairfield and State of Connecticut, have invented a new and  
5 useful Improvement in Apparatus for Manufacturing Nitric Acid, of which the following is a specification.

Figure 1 is a sectional elevation of the improvement taken through the line *x x x*, Fig. 10 2. Fig. 2 is a plan view. Fig. 3 is a sectional plan view taken through the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish apparatus for manufacturing nitric acid so constructed that the stronger acid may be separated from the weaker acid as the acid passes from the retort to the receiving-bottles, to obtain a strong acid suitable for use in manufacturing nitro-glycerine.  
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The invention consists in a vessel provided with two openings in its bottom, to be connected with two sets of receiving-bottles, an opening in its top, to be connected with the retort, and two  
25 other openings in its top, directly over the bottom openings, and having removable covers placed upon its pairs of bottom and top openings, so that when the device is interposed between the retort and receiving-bottles the  
30 weaker acid may be passed into one set of receiving-bottles and the stronger acid into another set of receiving-bottles, as will be hereinafter fully described.

A is a vessel, of cylindrical or other convenient shape, to be interposed between the retort and the Woulfe's bottles or other receiving-vessels. In the bottom of the vessel A are formed two holes, in which are secured two short pipes, B, projecting above and below the  
40 said bottom.

The lower ends of the pipes B are designed to receive the ends of two pipes leading to two sets of Woulfe's bottles. The upper ends of the pipes B are designed to receive flanged  
45 covers C, the flanges of which project into the liquid upon the bottom of the vessel, and thus seal the outlet-openings.

In the top of the vessel A are formed three openings, D E E. The opening D is designed  
50 to receive the end of a pipe leading from the

retort. The openings E E are designed to give access to the interior of the vessel A, for convenience in adjusting the covers C, and have double flanges G H around them, to form grooves to receive the flanges of the covers F, so that  
55 the said covers can be conveniently luted on.

The hand holes or openings E are made of such a size that the operator can readily pass his hand or a suitable implement through them to remove and put on the covers C.  
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If desired, the covers C may be made with stems passing up through holes in the top of the vessel A, and provided with holding-catches, so that they may be raised from and lowered over the openings B without opening  
65 the vessel A.

In using the apparatus one of the pipes B is uncovered, and the weaker acid is allowed to pass into one set of the receiving-bottles. When a stronger acid is passing over the operator removes the cover F over the open pipe B, places the cover C upon the said pipe B, and replaces the cover F. He then removes the other cover F, removes the cover C of the other pipe B, and replaces the cover F, so as to  
70 allow the stronger acid to pass into the other set of receiving-bottles. When a weaker acid begins to pass over the covers are again changed, so that the weaker acid will always be passed into one set of receiving-bottles and  
75 the stronger acid into the other set of bottles.  
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I am aware that three-way cocks and branched pipes have been interposed between the retort and receiving-bottles for separating the white and colored acids; but this is objectionable, from the fact that the heat from the acid expands the plug of the cock and prevents it from working, so that the separation of the acids cannot be properly controlled. This difficulty is entirely removed by my invention.  
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Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an apparatus for manufacturing nitric  
95 acid, the vessel A, having an inlet-opening, D, and two or more outlet-openings, B, provided with removable covers C, substantially as herein shown and described, whereby the weaker and stronger acids may be separated  
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by alternately removing and applying the covers C, as set forth.

2. In an apparatus for manufacturing nitric acid, the combination, with the vessel A, provided with the inlet-opening D, the outlet-openings B, and the removable covers C, of the hand-holes E, having double flanges G H

formed around them, and the removable flanged covers F, substantially as herein shown and described, for the purposes set forth.

PAUL MARCELIN.

Witnesses:

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