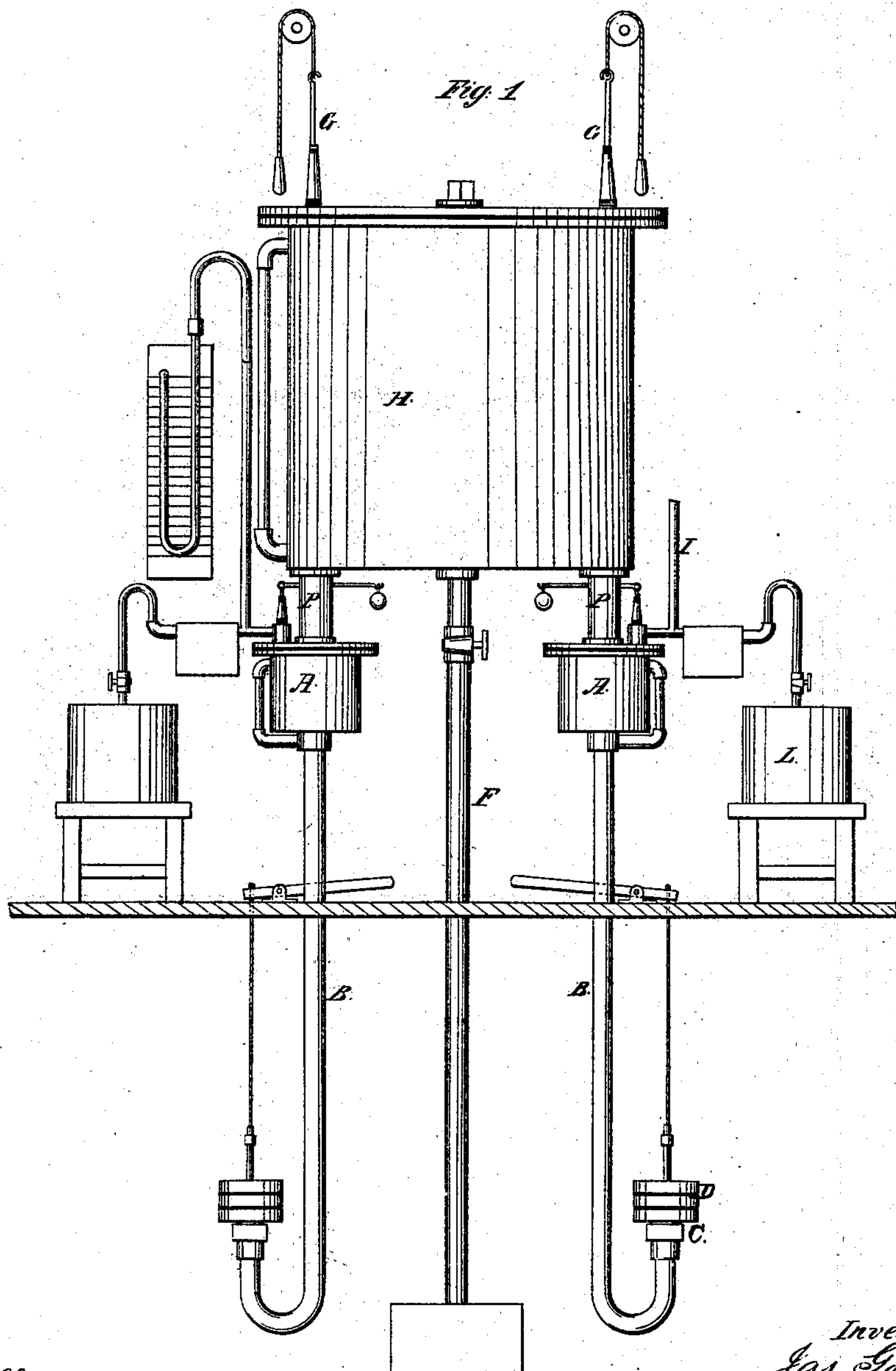


*Gordon & Archbald,*

*Compressing Air.*

*N<sup>o</sup> 68,979.*

*Patented Sep. 17, 1867.*



*Witnesses.*  
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# United States Patent Office.

JAMES GORDON AND JOHN ARCHBALD, OF SAN FRANCISCO, CALIFORNIA.

*Letters Patent No. 68,979, dated September 17, 1867.*

## IMPROVED BAROMETRIC VACUUM-EXHAUSTER.

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

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, JAMES GORDON and JOHN ARCHBALD, of San Francisco, in the State of California, have invented a new and improved Barometric Vacuum-Producing Apparatus; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, which constitutes a portion of this specification.

It is well known to all who are familiar with the subject, that the proportion of air held by absorption in water has heretofore prevented the formation of perfect vacuums by the use of water in what is known as the Torricellian process. This we have remedied in our apparatus by so proportioning and arranging certain of the parts thereof as enables us to first entirely separate the air from a large body of water preliminary to its being afterwards used for producing vacuums in other portions of said apparatus.

In the accompanying drawings, H is a water-purifying and supply-cistern. This cistern is constructed in such a manner that it can be readily closed air-tight, and may be supplied with a properly proportioned exhausting-tube, F, whose lower extremity may be either curved and turned upwards or may pass directly into a pool or vessel of water. A number of air-exhausting chambers, A A, of the desired sizes and proportions, are connected with the receiving-cistern H by means of suitable valved supply tubes P P. Each of these chambers A is furnished with an exhausting tube, B, whose lower extremity may be either curved and turned upwards or may terminate in a pool or vessel of water. The eduction open end of each tube B must have a suitable valve fitted to it, and this valve must be connected with a handle or lever located in convenient proximity to the party or parties who may be operating the apparatus. The length of each tube B from the bottom of its respective chamber A to the point of its outlet must be such that the weight of a column of water in said tube will exceed the atmospheric pressure at said outlet. G G are rods, working through suitably protected apertures in the head of the cistern H, and connecting with the valves that close or open communication between the said cistern and the exhaust-chambers A A. Each chamber A has a valved nozzle, or the equivalent thereof, for facilitating the connection therewith of any chamber or vessel from which the air is to be exhausted for preserving, manufacturing, or other purpose.

Our improved barometric vacuum-producing apparatus is operated in the following manner:

First. Close the valved outlets of the exhausting-tubes B, B, and F, and open the valved connections between the cistern H and the air-exhausting chambers A A.

Second. Entirely fill the apparatus with water.

Third. Close perfectly air-tight all the openings to the apparatus.

Fourth. Open the valved outlet of the tube F or of one of the tubes B, and allow the water to flow through the same until a vacuum has been thereby produced in the cistern H of sufficient capacity to receive all the air that will rise into the same from the water in the apparatus, as soon as the formation of the vacuum in the cistern H has relieved said water of all atmospheric pressure.

Fifth. Close the connection between the cistern H and the chambers A A.

Sixth. Open the valved outlets of the tubes B B, and allow the water to flow through the same until vacuums shall be formed in the chambers A A. The air can then be exhausted from any chamber or vessel which may be connected with the chambers A A, and thus the operation of the apparatus may be repeated and continued.

In constructing our improved barometric vacuum-producing apparatus we wish it to be distinctly understood that we do not intend to limit ourselves to any particular number of chambers, nor to any particular shape, proportion, or number of the respective parts of said apparatus, whilst we produce vacuum therein in substantially the manner herein set forth.

Having thus fully described the construction and operation of our improved barometric vacuum-producing apparatus, what we claim therein as our invention, and desire to secure by Letters Patent, is—

The combination of the closed water-purifying and supply-cistern H with one or more air-exhausting chambers A A, which are combined with one or more tubes or barometric columns B B, all substantially in the manner herein represented and described.

The above specification of our invention signed by us this eighteenth day of January, 1867.

JAMES GORDON,  
JOHN ARCHBALD.

Witnesses:

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DAN. B. CHISHOLM.