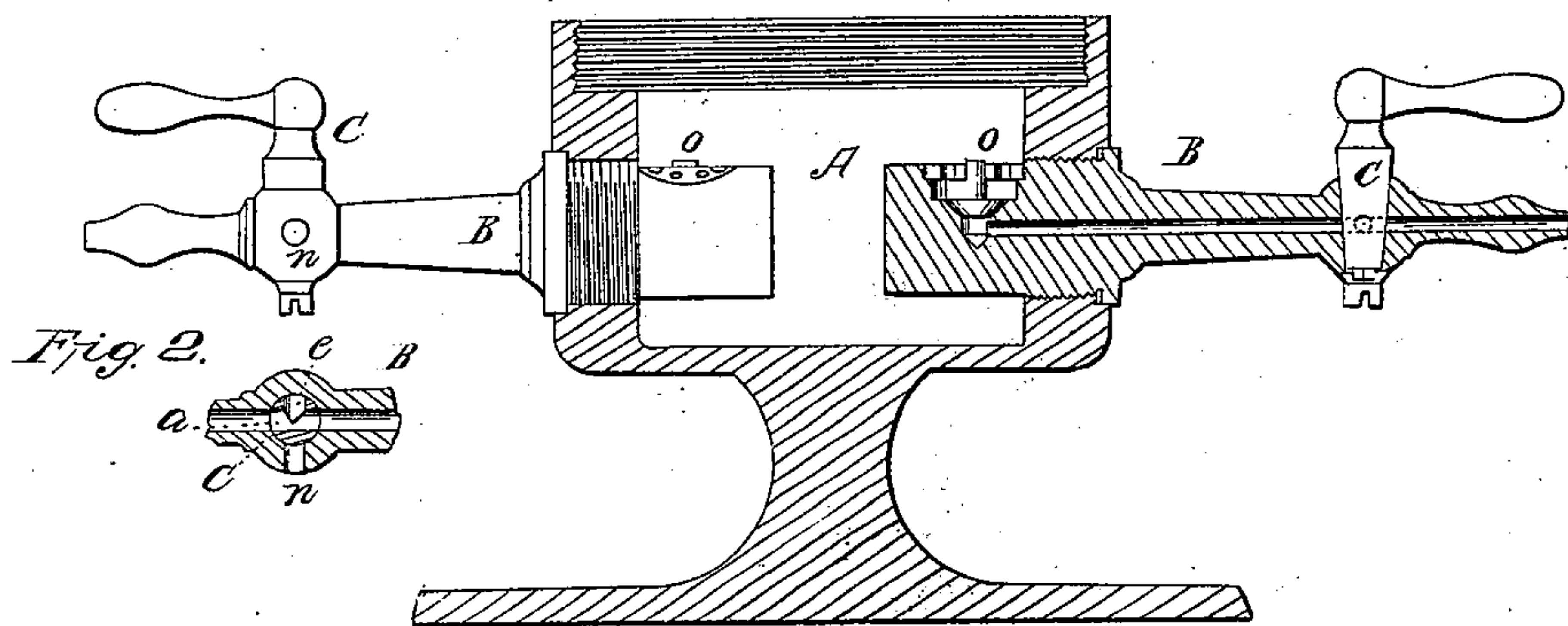


*J. G. Hadfield,*  
*Depurator,*

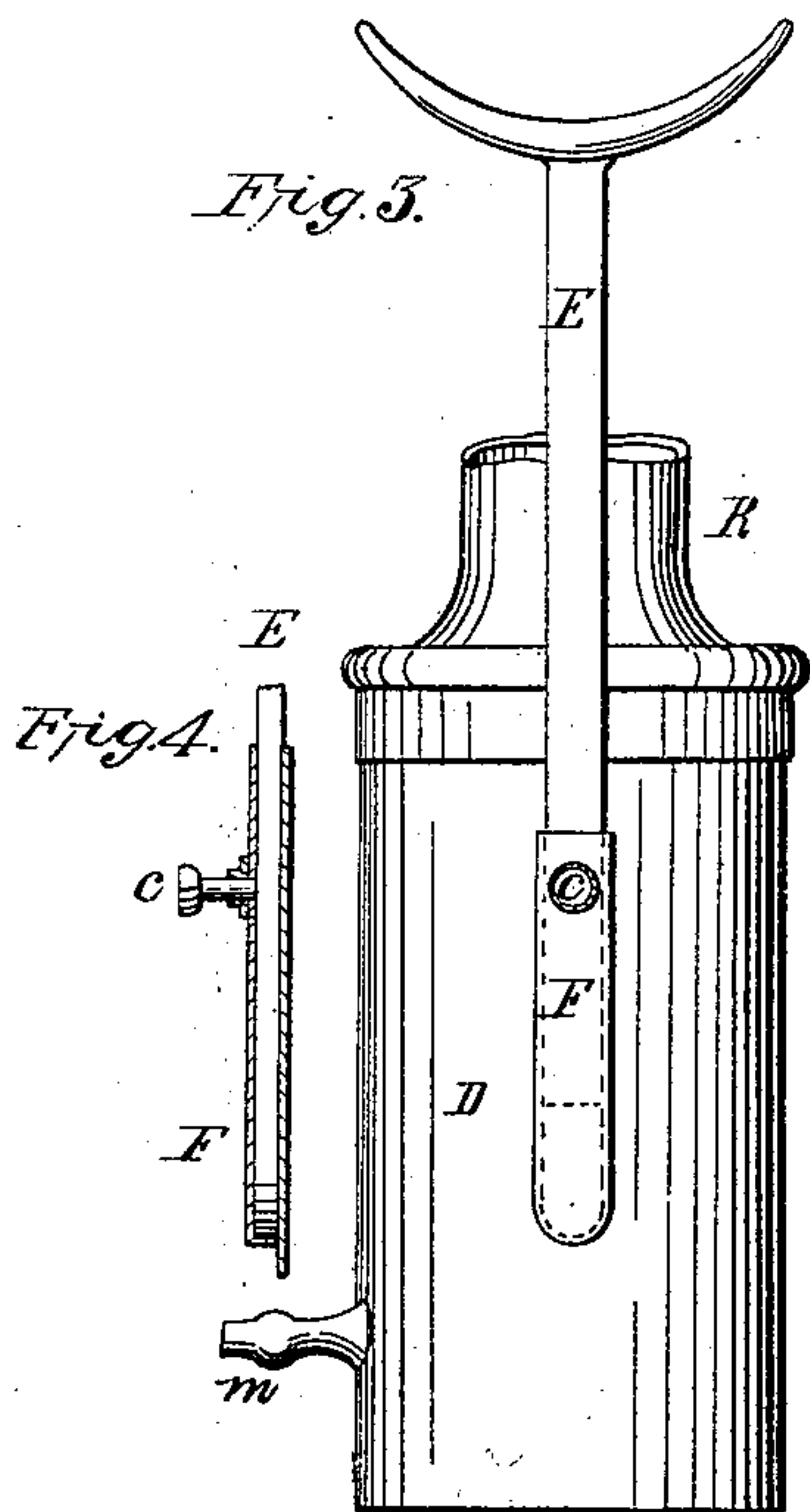
*No 85,303,*

*Patented Dec. 29, 1868.*

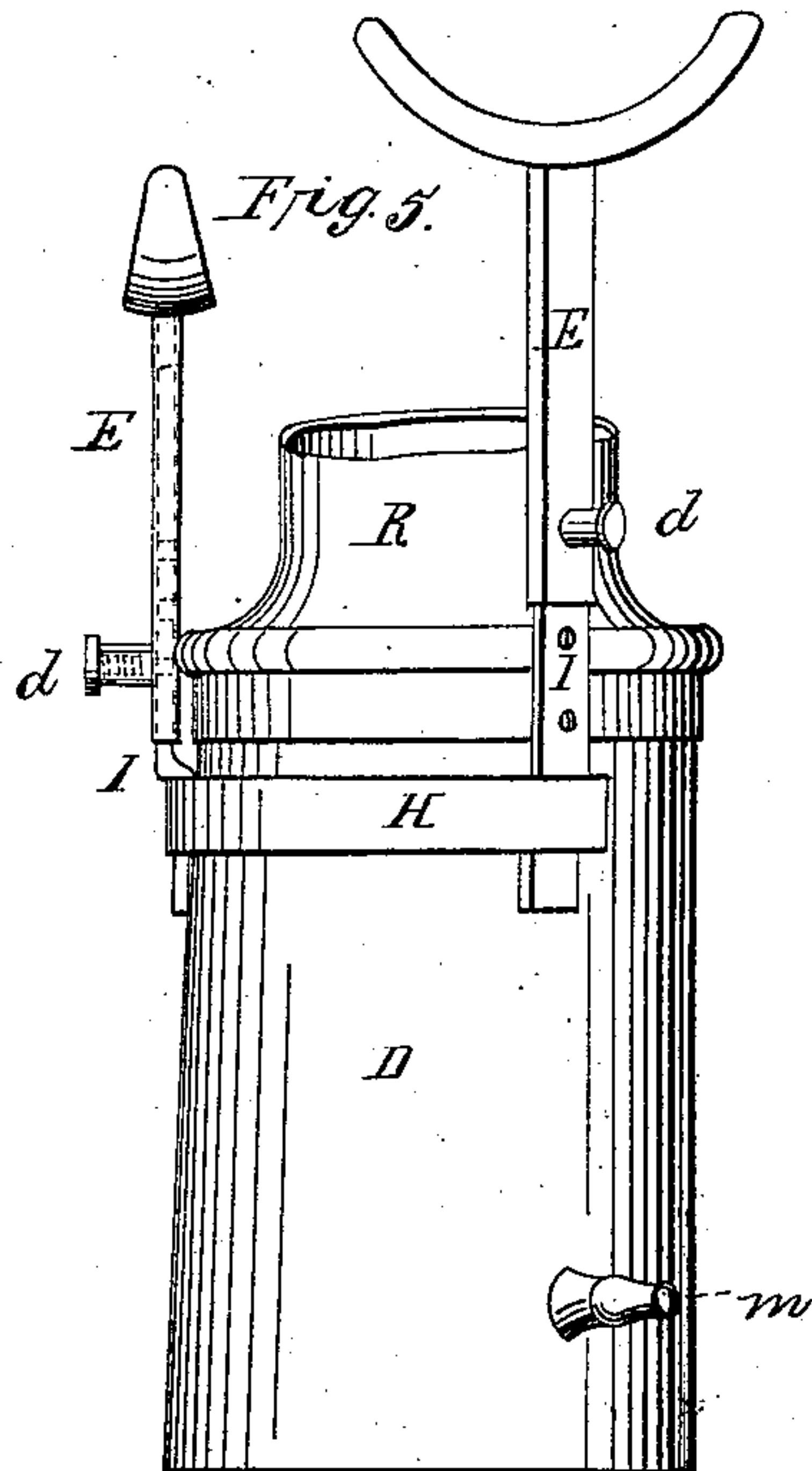
*Fig. 1.*



*Fig. 3.*



*Fig. 5.*



*Witnesses:*  
*P. F. Dodge*  
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*J. G. Hadfield*  
*By Dodge & Munro*  
*his attys.*



# United States Patent Office.

JOHN G. HADFIELD, M. D., OF CINCINNATI, OHIO.

Letters Patent No. 85,303, dated December 29, 1868; antedated December 15, 1868.

## IMPROVED MODE OF TREATING DISEASES BY VACUUM.

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

To all whom it may concern:

Be it known that I, JOHN G. HADFIELD, M. D., of Cincinnati, in the county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Vacuum-Apparatus for Treating Diseases; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention consists in certain improvements in the apparatus used in the treatment of diseases by vacuum, as heretofore patented to myself.

Figure 1 is vertical section of the lower portion of air-pump to be used with the apparatus.

Figures 3 and 5 are side elevations of the vacuum-vessels for the treatment of limbs.

Figures 2 and 4 are views of portions shown in section.

In the treatment of persons having diseased limbs, by the vacuum-process, it is necessary to have a rest to support the limb, while in the vessel; and it is desirable to have the means of adjusting this rest from the outside.

In figs. 3 and 5, D represents the vessel in which the limb is inserted for treatment, R representing the rubber, or other flexible material, used for securing it, air-tight, to the limb.

I construct, a rest, E, as shown, and secure it to the outside of the vessel D, by inserting its stem into a socket, F, and securing it at any desired height, by means of a set-screw, c, as represented in figs. 3 and 4.

In order to render the rest adjustable laterally as well as vertically, I also sometimes attach the rests E, by means of a band, H, which is secured rigidly to the vessel D, at suitable points, with a sufficient space between it and the vessel to permit the insertion of the stem I between them, the stems I being bent or formed with a shoulder, to rest upon the upper edge of the band H, as shown in fig. 5.

In this case the stem E is made hollow, to fit over the stem I, and is adjusted thereon, and held in position by a spring-bolt, d, fitted in a socket, and having its inner end engaging with holes in the stem I.

By these means I provide the apparatus with rests that can be adjusted so as to adapt them to the supporting of the limbs in any required position; and by arranging the rests upon the outside of the vessels, their position or adjustment can be altered at any time during the process, without removing the limb or admitting the air.

In constructing my improved air-pump, to be used with the apparatus, I make the base in the form shown in fig. 1, and screw the body of the pump into it; A representing the lower portion of the chamber of the pump.

Into this base, on opposite sides, I screw a tube, B, the inner end extending into the chamber A, and being there provided with a check-valve, o, which permits the air to be drawn inward through the tubes B, but preventing it from passing outward through them.

Each of these tubes B, I provide with a two-way cock, C, the passages in the cocks being arranged as shown in fig. 2; that is to say, they have a passage, a, extending entirely through them, while another passage, e, extends from one side, at right angles to and intersecting the passage a.

By this means, it will be seen that the cock C, when turned, as represented in fig. 2, opens the passage direct through tube B, but that when given a quarter turn, so as to bring the passage e in line with the passage in tube B, the latter will be closed.

By turning the cock C, so as to bring the passage e upon the opposite side, as indicated in red, in the left-hand tube of fig. 1, the passage e will then be brought opposite a hole, n, made in the side of tube B, thereby opening a communication from the passage in the tube B, from both sides of the cock, with the outside.

The advantages of this arrangement are, that the pump can be connected with and used to exhaust two vessels at once; or, by adjusting the cocks, the air can be exhausted from one vessel, while it is at the same time permitted to flow into the other, through the outside passage n, and thus two parties can be operated upon at once.

It is obvious that by adding to size of the pump, the number of tubes may be increased, and thus the capacity of the apparatus be still further increased.

By these improvements, the apparatus is rendered much more convenient than as heretofore constructed.

Having thus described my invention,

What I claim, is—

1. The combination, with the chamber of an air-pump, of the tube or tubes B, with the passage or hole n, and the cock C, having the passages a and e, arranged substantially as described.

2. The combination of the external adjustable rests E with the vacuum-vessels D, substantially as described.

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Witnesses:

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