

A. R. McVair

Preserving Wood.

N^o. 94,626.

Patented Sept. 7, 1869.

Fig. 1.

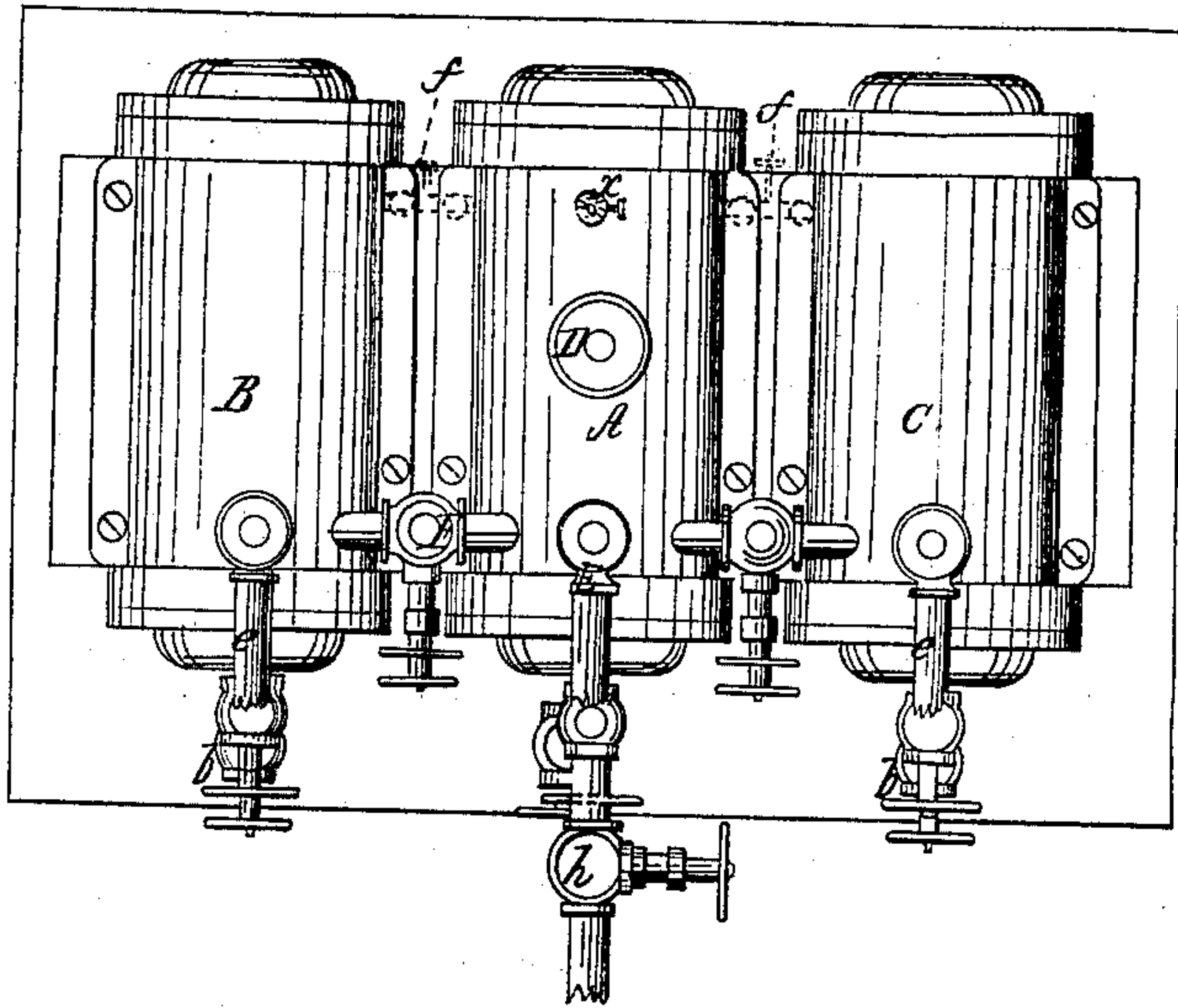


Fig. 2.

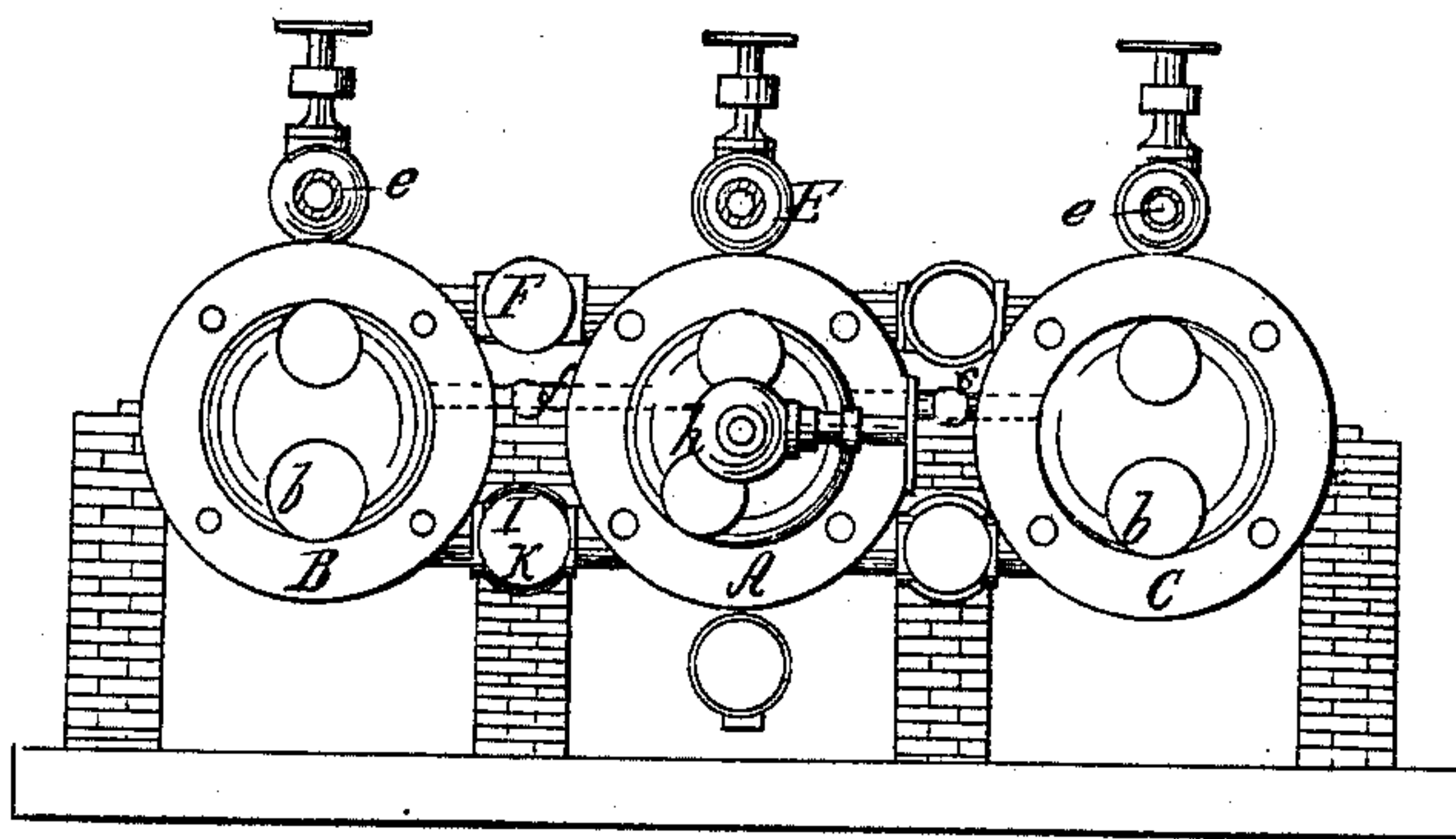
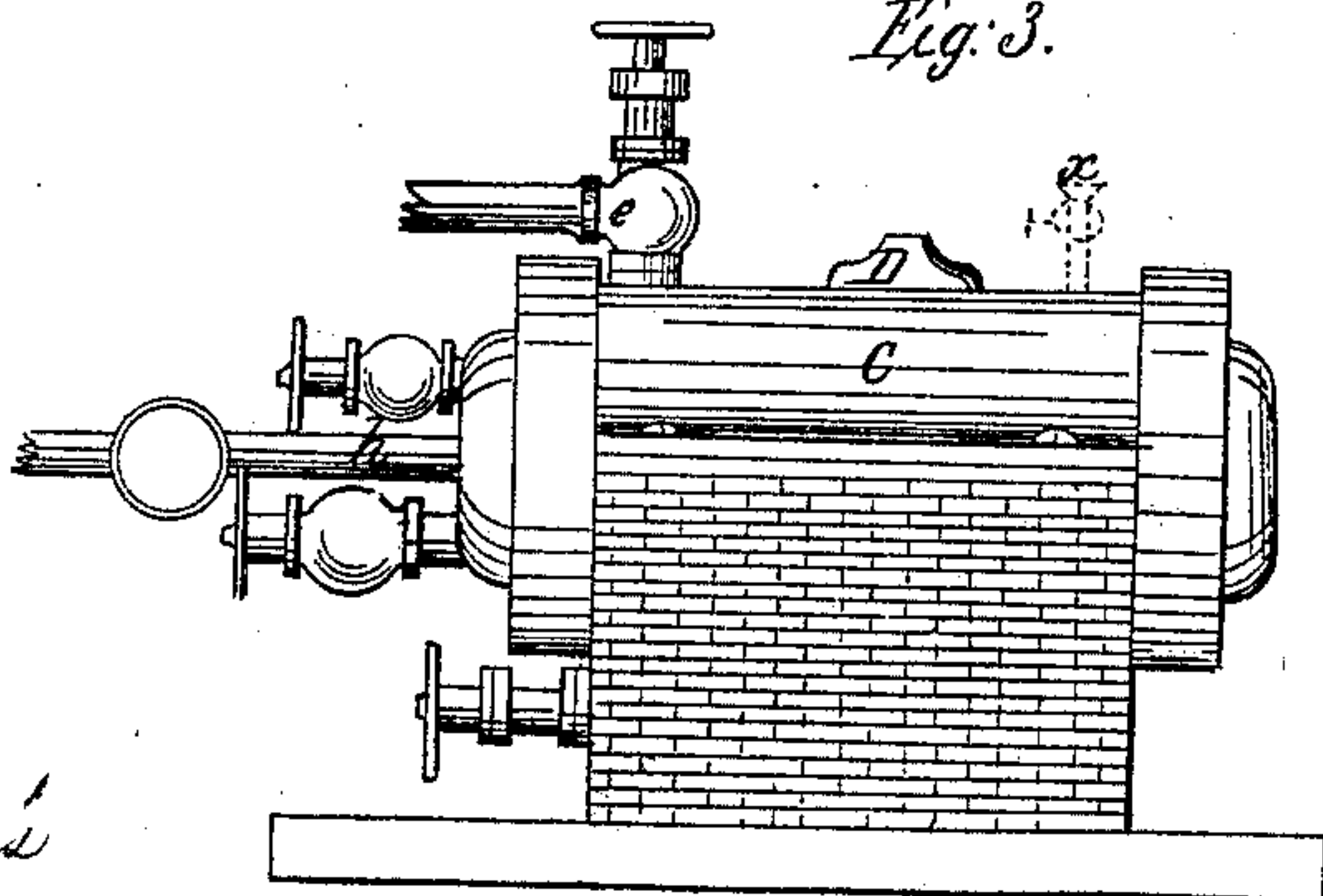


Fig. 3.



Witnesses;
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Arthur B. Williams

Inventor;
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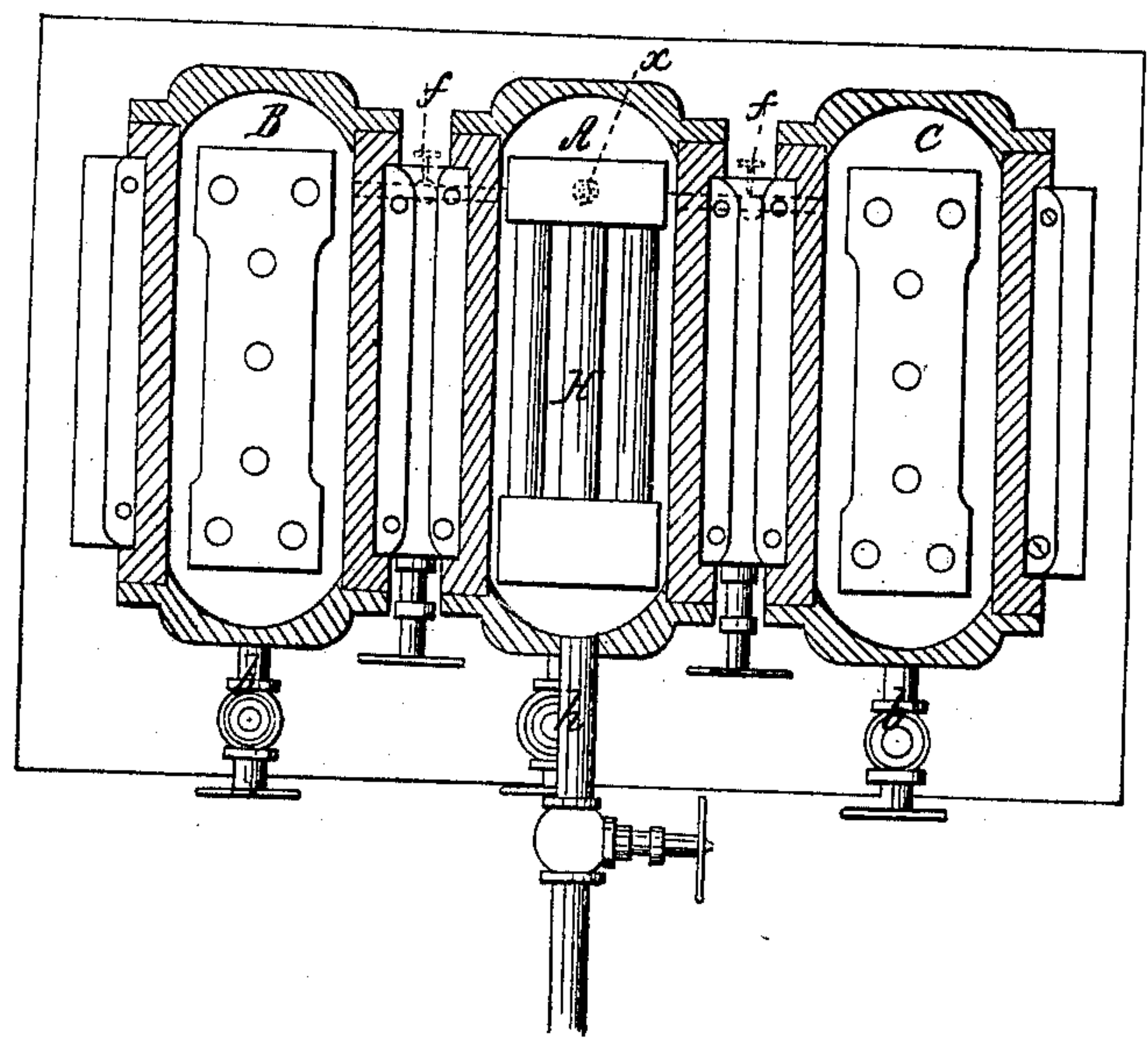


Fig. 5.

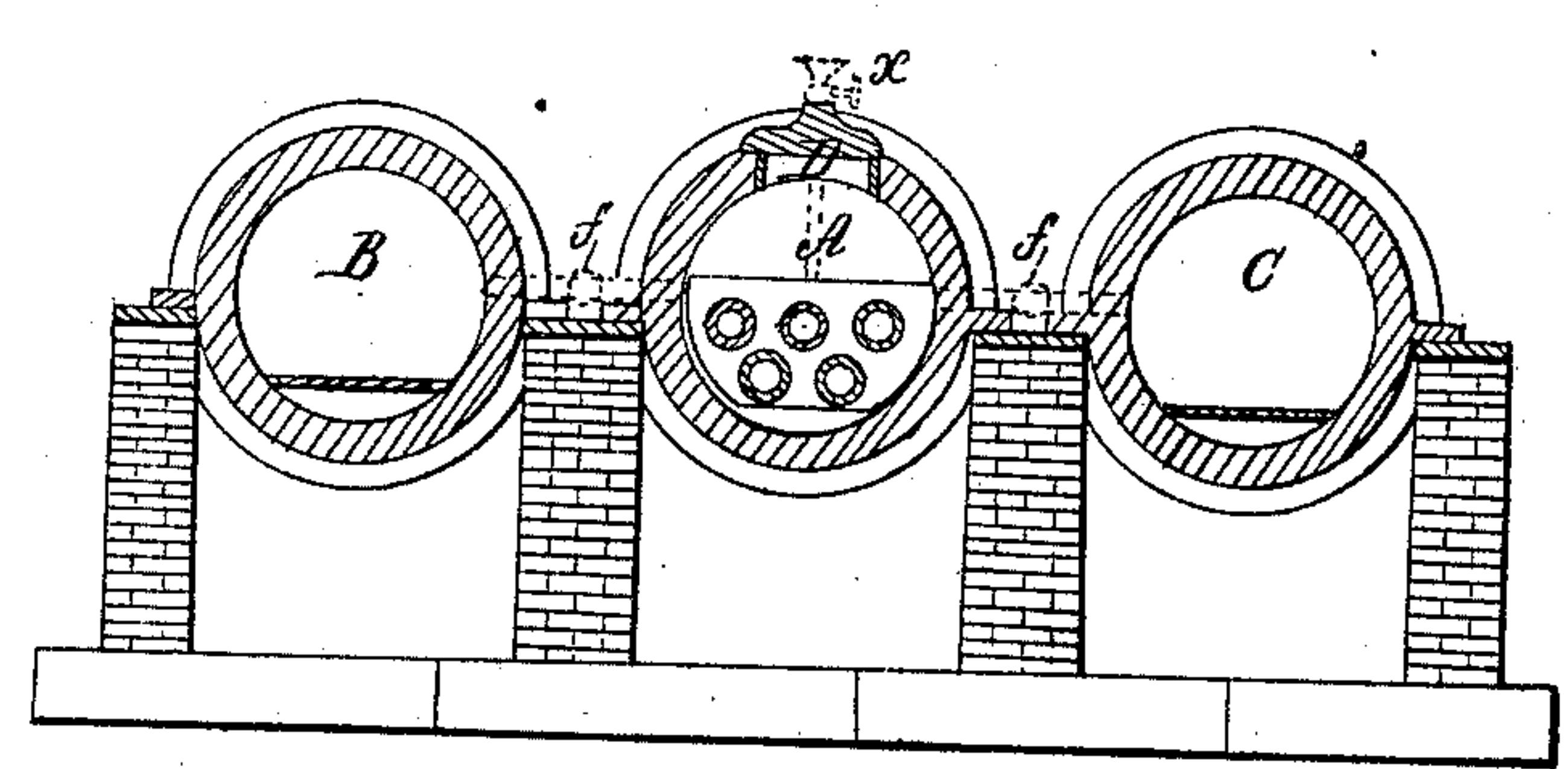
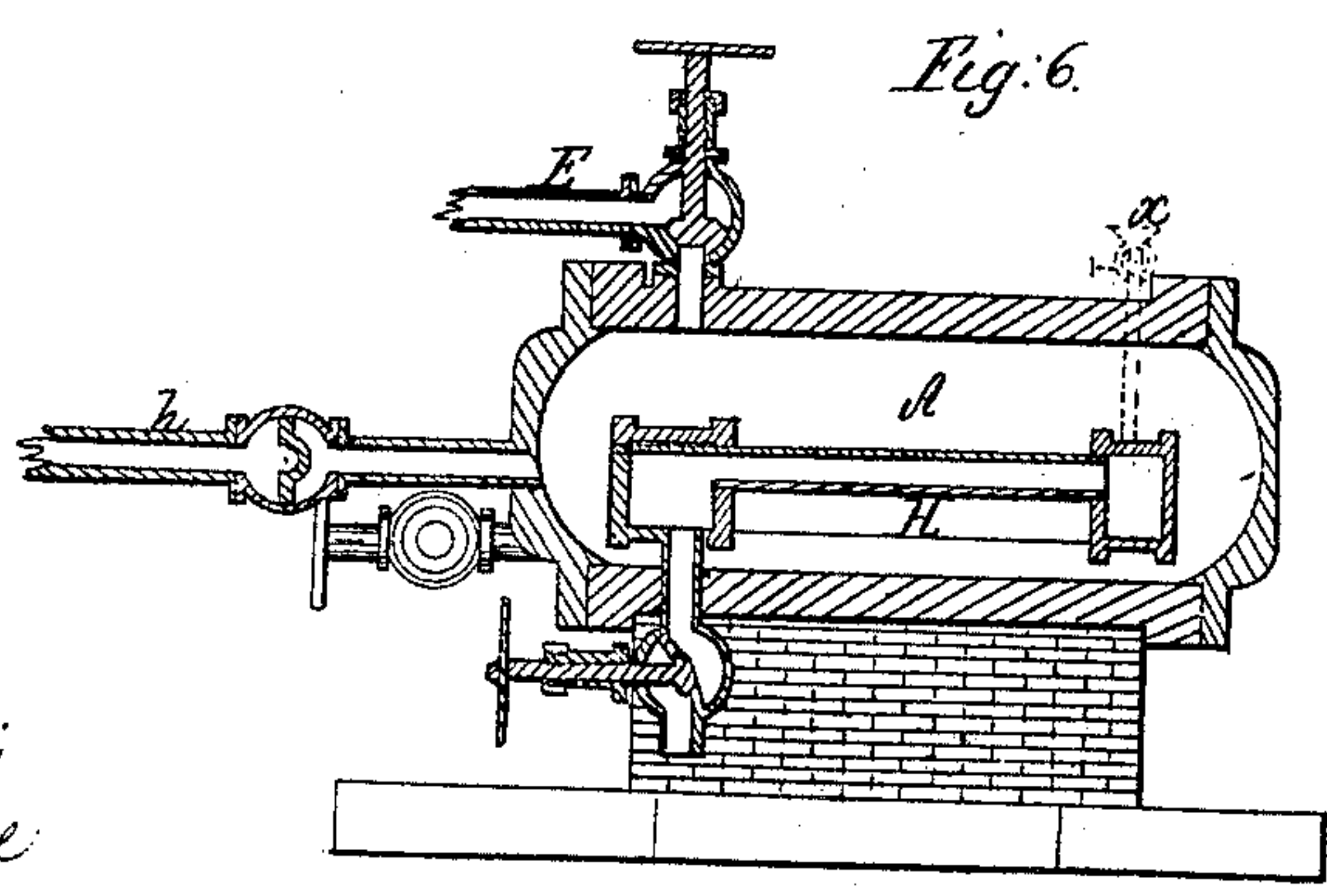


Fig. 6.



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Arthur R. Williams

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United States Patent Office.

ANTOINE R. MCNAIR, OF NEW YORK, N. Y.

Letters Patent No. 94,626, dated September 7, 1869.

IMPROVEMENT IN PRESERVING WOOD FROM DECAY AND MILDEW.

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, ANTOINE R. MCNAIR, of the city, county, and State of New York, have invented a new and improved Process of Preserving Wood from Mould or Decay; and I do hereby declare that the following is a general description thereof, which will enable others skilled in the art to perform and use the same, reference being had to the accompanying drawings, making part of this specification, of which—

Figure 1 is a top view of the apparatus in which I conduct my process;

Figure 2, a front elevation;

Figure 3, an end elevation;

Figure 4, a horizontal section, showing retort;

Figure 5, a transverse section; and

Figure 6, a central and vertical section of same.

It is well known that when wood is cut down and exposed to the changes of heat and moisture, it becomes affected by its antiseptics being partially lost, and the sap of the wood decayed or putrified, and consequent mould or decay of the wood ensues; and, to prevent this decay of the wood is, therefore, the object of the present invention, which, from repeated experiments, I am confident I have accomplished by my new process, which consists in conducting the process in a peculiar apparatus, so constructed and arranged that the preservative materials are transferred from one vessel to another, and the surplus returned, without exposure to the atmosphere; and in the process therein conducted, first, of heating wood and timber with steam, to coagulate its albuminous matter and extract deleterious substances therefrom, and the subsequent condensation of the steam, to produce a vacuum, and the withdrawal of the extracted and condensed substances from the vessel; second, the impregnation of the wood with the simple vapors of creosote, or carbolic acid, and the subsequent partial condensation of the same therein; third, the sealing of the pores with a liquid resinous preservative substance, while the temperature is still kept comparatively high, and the antiseptic vapors still partially occupy the interior pores of the wood.

I will further explain my process by reference to the drawings, in which A, B, and C, indicate three cylinders, in which I conduct my wood-preserving process.

In the middle cylinder A, fig. 4, are pipes, H, into which I insert, through a faucet at one side of the man-hole D, my preservative compound, which consists of creosote, or carbolic acid, and I close the faucet *x* to the pipes, and put rosin into cylinder A outside the pipes H, and close the man-hole D. I next put the timber to be treated into cylinder B, and close said cylinder, and turn on steam at 212° Fahrenheit, or upward, through pipes *h* into cylinder A, and through

pipe *e* into cylinder B, the connection F K between cylinders A and B being closed, and I allow the steam into both vessels separately for about two hours, until the wood is perfectly heated, and the albumen of the sap coagulated; and, after the temperature is sufficiently great to generate steam from water, the pipe *x*, which connects pipes H with the outside, is opened to allow steam from water in pipes H (if any) to escape, and thus leave the vapor, generated from creosote or carbolic acid, unadulterated, or prevent them from being driven from the wood by the greater force of the steam generated from water.

When the steam is turned off from cylinder B, and a vacuum obtained by condensation of the steam in cylinder B, (the air having been previously blown out of cylinder B, through *b*,) into which vacuum the deleterious matters contained in the wood find their way, and leave the pores open for the reception of the preservative compound, said deleterious matters and water of condensation being driven from cylinder B, through cock *b* at the bottom of said cylinder, by pressure of vapor of creosote or carbolic acid from pipes H, through upper pipe *f*, into cylinder B, at various temperatures to about 392° Fahrenheit, and the condensed water drawn out by an air-pump, if necessary.

In addition to the steam used in cylinder A to melt the rosin and generate vapor from the creosote or carbolic acid, I use fire under cylinder A, which serves, after its use here, to generate steam in a boiler connected therewith.

The preservative compounds in pipes H, I now force into the vacuum in cylinder B, and into the open pores of the wood, and so continue to impregnate the wood for about one or two hours, when the connection *f*, between H and B, is closed, and cock I, in the lower connection-pipe K, opened between cylinders A and B, and I allow the whole force of the steam to enter cylinder A, at E, by means of which I force the fluid-robin portion of the compound from A, through the lower connection-pipe K, into cylinder B, and into the pores of the wood, thus sealing the vapor of creosote, or carbolic acid, or both, as the case may be, which were previously forced into the pores of the wood, thereby rendering the wood impervious to air or water. After the resinous portion of the compound is forced from A to B, I close the connection K between these cylinders, and allow sufficient time for the fluid to enter the wood, say two to four hours; at the same time, the compound is kept hot by the creosote or carbolic-acid vapor, lowered to a temperature of about 300°, so as to produce a partial condensation, and allow the liquid rosin to sufficiently enter the pores of the wood. I next shut off steam from cylinder A, and obtain a vacuum in A by condensation of the steam, and I open the cock I in pipe K, when the steam in cylinder B

will force the unused or residue of the preservative compound, after impregnating the wood, into the vacuum in cylinder A, for re-use, without exposing it to the atmosphere, by means of which a saving of labor is effected, and the purity of the compound preserved.

The steam is allowed to pass over the wood in cylinder B, until it is entirely cleansed of the surplus rosin, which would otherwise adhere to it. After cooling, I remove the wood from cylinder B, it being now perfectly cured and ready for use, and I put into cylinder B a fresh supply of wood to be treated, and repeat the process in cylinders B and C alternately.

I do not use coal or wood-tar, unless the water and naphtha are extracted therefrom, for the reason that, when subjected to distillation, water is produced before either creosote or carbolic acid, and, generating into steam, would enter the vessel containing the wood before or simultaneously with the vapor generated from either of these antiseptics, and, at the same temperature, the force of the steam from water would be much greater than the force of the vapor generated from the antiseptics, and therefore, would enter the pores of the wood, and prevent the vapor of creosote or carbolic acid from entering, or measurably so. The vapors from the antiseptics would condense at a much higher temperature than steam from water, and therefore, the vapors from the antiseptics, if they had sufficient force to enter the wood, would be expelled, and leave the wood but partially coated.

For these reasons, I use creosote or carbolic acid, and the reason I use pipes H is to prevent the vapor from creosote or carbolic acid from coming in contact with the steam generated from water.

From the above description, it will be seen that I am enabled to completely saturate the wood with the preservative compounds, by the means employed to extract the deleterious matters from the wood, and permeate the pores and fibres of the wood with the preservative compound; and, if desired, the wood may be colored to any required shade (which can be made from vegetable or other coloring-matter) for use in furniture, wainscoting, or other purposes in which ornamental wood may be required, by adding the coloring-matter to the preservative compound.

I do not confine myself to any particular form of apparatus to conduct my process in, provided the principles specified are retained.

I disclaim the process of first removing the surface-moisture of wood, and then saturating the wood with hot oleaginous vapors, as described in L. S. Robbins' patent, of April 4, 1865; but

What I claim as my invention, and desire to secure by Letters Patent, is—

Conducting the process in two or more cylinders or vessels, so constructed and arranged that the antiseptic and preservative materials are transferred from the containing to the treating-cylinder or vessel, and the surplus returned to the containing-cylinder or vessel, without exposure to the atmosphere, substantially as herein specified.

Also, a containing-vessel or vessels, in which the antiseptic material, to be applied in the form of vapor, is kept separate from the preservative material, to be applied in the liquid form, and from the steam employed, as herein set forth.

Also, applying the antiseptic vapors free, as far as practicable, from steam, and the vapor of naphtha, and of other substances which vaporize at a much lower temperature than the antiseptic used, for the purpose herein set forth.

Also, the process herein described, as a whole, for treating wood and timber, to preserve the same from mould and decay, when conducted in transferring-vessels, without exposure to the atmosphere, and in the order as specified, namely, first, coagulating the vegetable albumen of the wood, and extracting the deleterious substances therefrom by steam, and the subsequent condensation of the steam to produce a vacuum, and the removal of the extracted and condensed substances from the vessel; second, impregnating the wood with the simple antiseptic vapors of creosote or carbolic acid, and the subsequent lowering of the temperature of the same, to produce a partial condensation thereof in the wood; third, sealing the pores of the wood by a resinous preservative substance while in a liquid state, and while retained at a high temperature, substantially as set forth.

In testimony whereof, I have hereunto set my signature, this 20th day of April, A. D. 1869.

A. R. McNAIR.

Witnesses:

A. NEILL,
ARTHUR B. WILLIAMS.

