C. W. DURANT & J. GRIFFITH.

Improvement in Condensers for Vacuum Pans, &c.

No. 132,263. Patented Oct. 15, 1872.

Fig. 1.

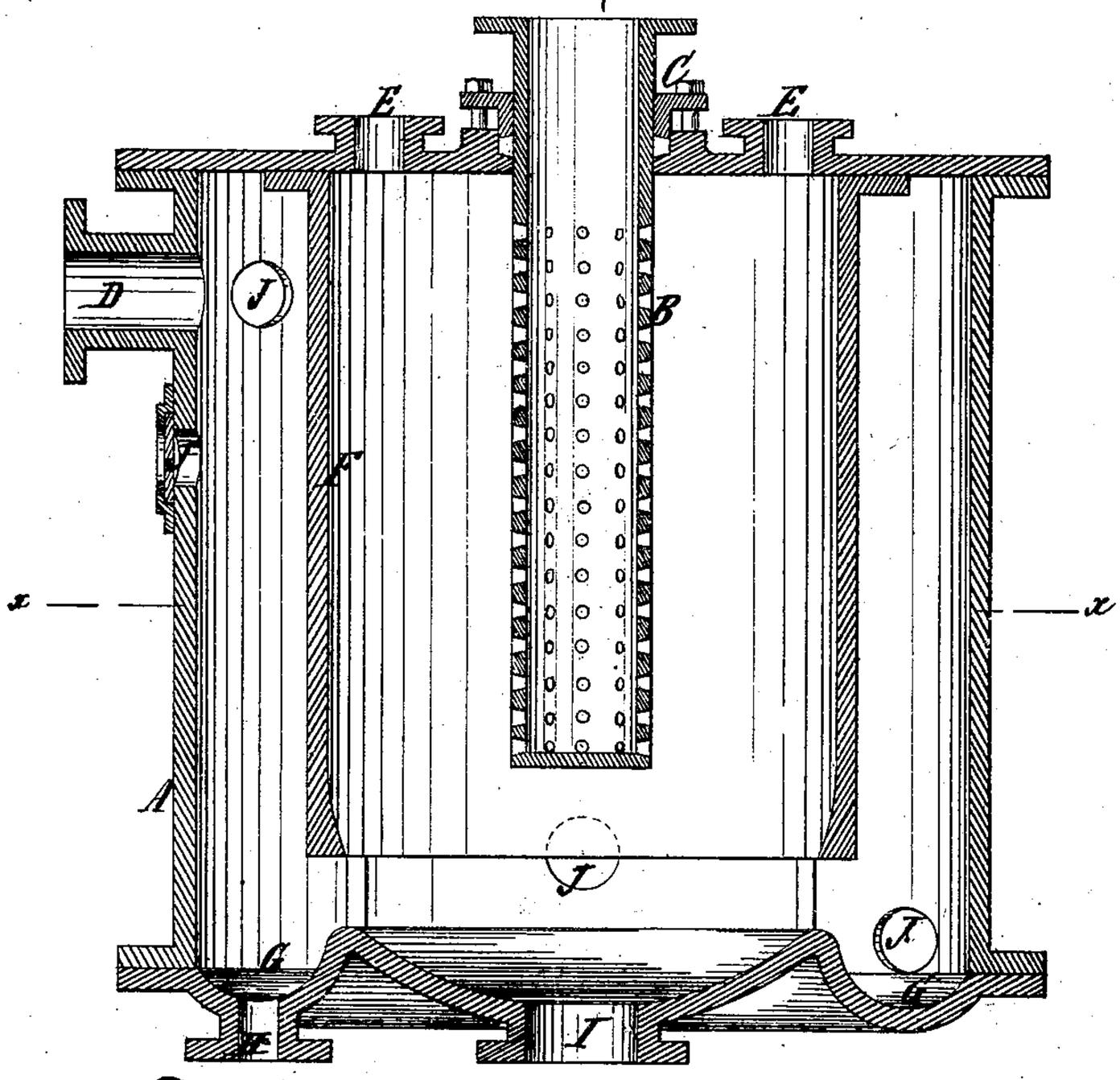
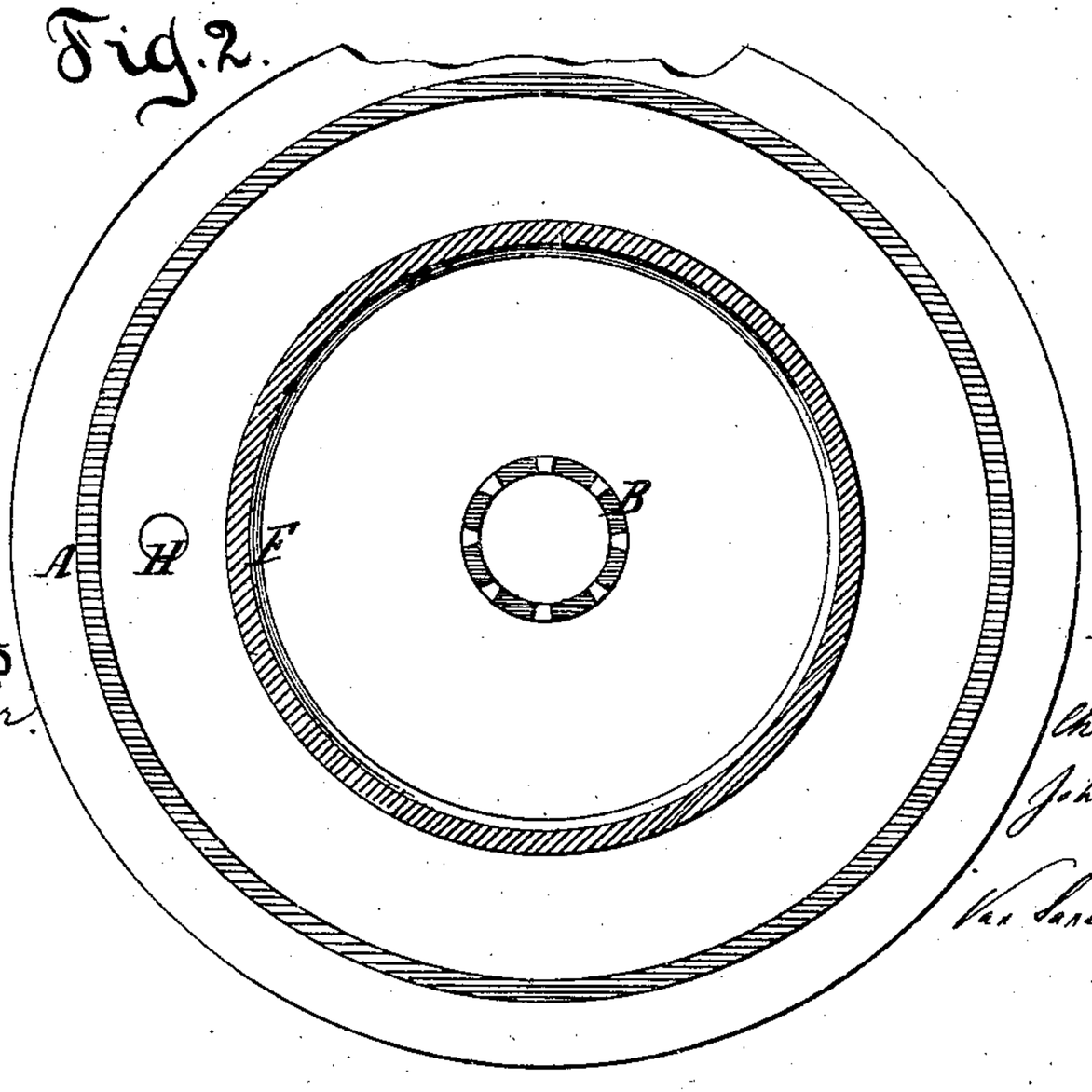


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES W. DURANT AND JOHN GRIFFITH, OF NEW YORK, N. Y.

IMPROVEMENT IN CONDENSERS FOR VACUUM-PANS, &c.

Specification forming part of Letters Patent No. **132,263**, dated October 15, 1872.

To all whom it may concern:

Be it known that we, CHARLES W. DURANT and JOHN GRIFFITH, both of the city, county, and State of New York, have invented a new and useful Improvement in Condensers for the Vapors of Vacuum-Pans; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a vertical central section of our condenser, and Fig. 2 is a horizontal section of the same in the plane *x x*, Fig. 1.

Similar letters indicate corresponding parts.

This invention consists in the arrangement of a cooling jacket or apron in the interior of the condenser, said cooling-jacket being situated between the supply and the discharge pipes, in such a manner that the vapors passing from the vacuum-pan to the condenser through the supply-pipe are compelled to pass up through the water contained in said condenser, and then up to the discharge-pipe which connects with the air-pump, and by these means the condensible parts mixed with said vapors are effectually prevented from passing off to the pump, and a correct action of the pump and of the condenser is insured. The saccharine particles contained in the vapors which pass into the condenser are collected in a depression in the bottom of the condenser, whence they can be drawn off at suitable intervals. The water is injected into the condenser through a perforated pipe, which is inserted through a stuffing-box so that it can be readily taken out for the purpose of cleaning.

In the drawing, the letter A designates a condenser, which is made of cast-iron or any other suitable material, by preference in the form of a cylinder. Through the top of this condenser extends the water-supply or injection-pipe B, which is perforated, as shown, and which is made to pass through a stuffing-box, C, so that a tight joint is produced between it and the top of the condenser; and furthermore, said water-supply pipe can be adjusted up or down as may be desired, and it can be readily taken out whenever it becomes necessary to clean it. The condenser A connects, by a pipe, D, with the vacuum-pan, and by pipes E E with the air-pump, and when the air-pump is in motion the vapors passing off from the vacuum-pan are made to pass into the condenser through the pipe D, and the non-condensed portion of said vapors pass off through the pipes E E. Between the vapor-supply pipe D and the injection-pipe B is situated a jacket or apron, F, which is made to conform in shape to the outside wall of the condenser, and which is secured to the top of said condenser, and extends down within a certain distance from its bottom, and below the water-injection pipe contained in the condenser, as shown in Fig. 1.

As the cooling water discharges through the perforations of the injection-pipe B it comes in contact with the jacket F and keeps the same cool, and the vapors admitted through the pipe D, on coming in contact with the jacket F, are cooled off and compelled to pass down through the air-chamber and then up through the water before being able to reach the discharge-pipes E E. By these means the condensible parts of said vapors are condensed and the particles of sugar which are mixed with said vapors are deposited in a recess, G, formed in the bottom of the condenser, whence they can be drawn off through a pipe, H. The water passes off from the condenser through a pipe, I. In the sides of the condenser we have inserted several eye-glasses, J, through which the interior of said condenser can be inspected and the operation can be watched.

By our condenser all condensible parts mixed with the vapors which pass off from the vacuum-pan are retained, the saccharine particles mixed with said vapors are saved, and the correct operation of the air-pump is preserved.

By referring to Fig. 1 of the drawing it will be seen that the cooling-jacket extends below the bottom edge of the injection-pipe, and as the water discharges from the holes in the injection-pipe it strikes the inner wall of the cooling-jacket in an unbroken sheet, whereby said jacket is constantly kept cool and its effect is materially improved.

What we claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of a cooling jacket or apron between the vapor-supply pipe of a con-

denser and the injection-pipe, said jacket or apron being made to dip beneath the bottom end of the injection-pipe in the condenser, substantially in the manner herein shown and described.

2. In combination with the cooling-jacket, we claim a recess formed in the bottom of the condenser, for the purpose of collecting saccharine particles mixed with the vapors which pass over from the vacuum-pan, substantially as set forth.

3. The arrangement of the injection-pipe B, being connected to the head of the condenser by means of a stuffing-box, which allows of adjusting the same and of removing it whenever it may be required.

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