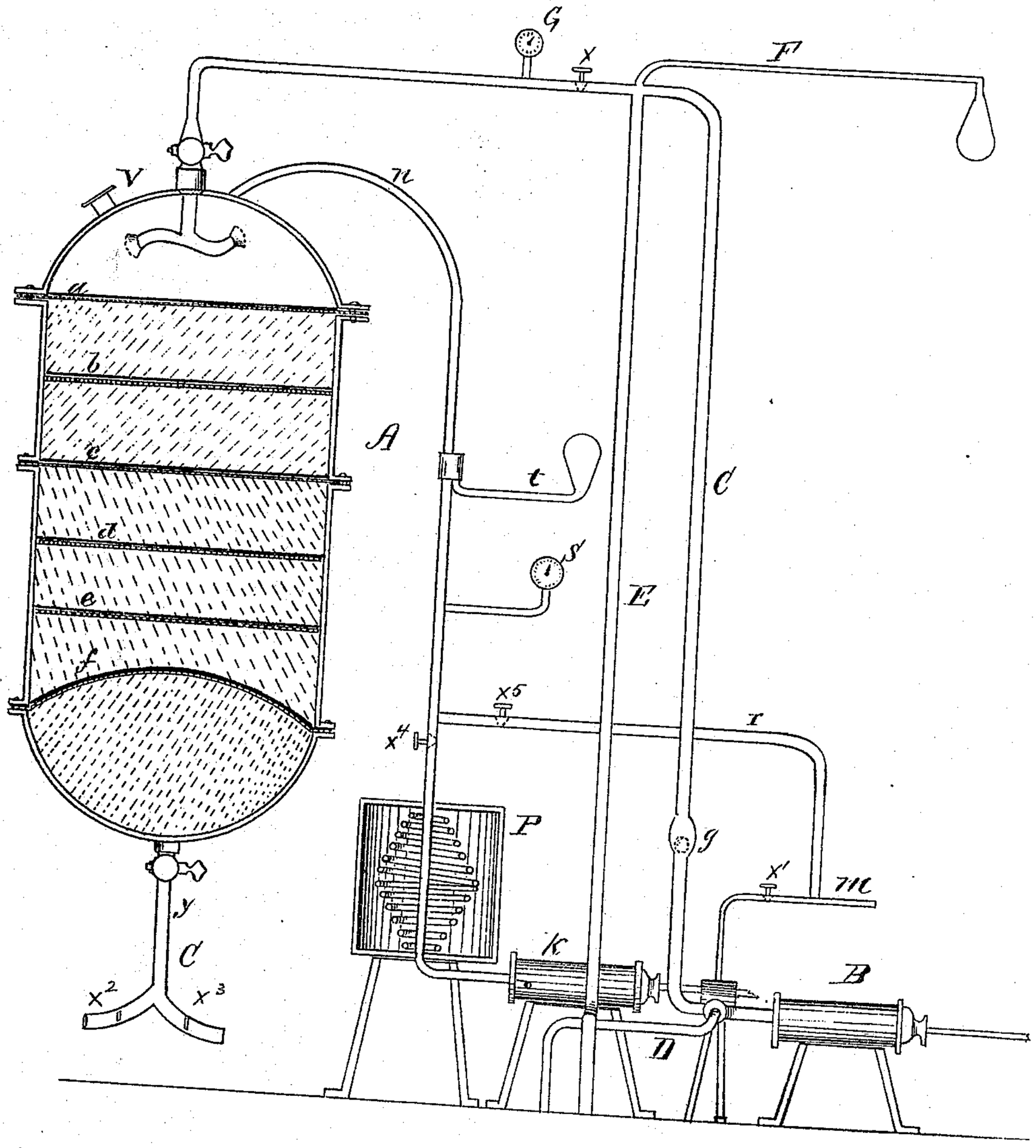
J. W. REFORD.

Purification of Filtering and Oxygenating Substances while within the Rectifying Cylinder.

No. 159,451.

Patented Feb. 2, 1875.



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JOSEPH W. REFORD, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM WATT, JR., OF SAME PLACE.

IMPROVEMENT IN THE PURIFICATION OF FILTERING AND OXYGENATING SUBSTANCES WHILE WITHIN THE RECTIFYING-CYLINDER.

Specification forming part of Letters Patent No. **159,451**, dated February 2, 1875; application filed September 25, 1874.

To all whom it may concern:

Be it known that I, JOSEPH W. REFORD, of the city, county, and State of New York, have invented certain improvements in the process of purifying and renewing the packing or absorbing material in a liquor filtering and oxygenating apparatus; and I declare the following to be a full, true, and exact description and specification thereof, reference being had to the accompanying drawing, which is a side elevation of the apparatus used in my process.

Similar letters of reference indicate the same parts.

This invention consists in an improved mode or process of purifying and renewing the packing or absorbing material without removing the same from the cylinder, all substantially as I will now proceed to describe.

In the drawings, A is the cylinder in which the liquors are treated. B is the pump by which the liquors are forced into the cylinder. C is the supply-pipe through which the liquor is forced. D is the feed-pipe through which the liquor is drawn by the pump B. E is the waste-pipe through which the surplus liquor is allowed to escape into the receptacle from whence it was drawn. F represents a safety-valve in the supply-pipe C, and G is a pressure-gage in the same. *a b c d e f* represent the screens with which the cylinder is provided. *g* is a check-valve in the supply-pipe C.

In my improvements *k* is the separate air-pump. *m* is the steam-pipe connecting the same with the boiler, and is provided with a cock, x^1. *n* is the pipe for conducting air or steam into the cylinder. P is the superheater connected with the pipe *n*. *r* is a pipe connecting the steam-pipe *m* with the pipe *n*. *s* is the pressure-gage; *t*, safety-valve. *v* is the charging-screw in the cylinder. *y* is the double or T-shaped discharge-pipe at the bottom of the cylinder, each branch of which is provided with a cock, x^2 x^3.

To enable those skilled in the art to fully understand and use my invention, I will proceed to describe its operation.

After the packing has been used until it becomes foul, I force all of the liquor out of the cylinder, by means of a jet of steam introduced through the pipe *m* and the pipes *r* and *n*, first closing the cocks x^1 and x^4 and opening x^5. I then remove the charging-screw *v* in the cylinder, and introduce certain chemicals in a liquid form—which may be sugar and starch—which unite with and take up the fusel-oil and other impurities left by the liquor in its passage through the several different clarifying substances. These impurities are then, with the chemicals, expelled from the cylinder by ordinary steam pressure through the pipe *y* into a separate receptacle from that into which the rectified liquor is discharged, the cock x^2 in the discharge-pipe being first closed and x^3 opened for the purpose. By this means the fusel-oil and other impure substances extracted from the liquor are saved, and may be utilized for other purposes. I then open the cocks x^1 and x^4 and close x^5 in the pipe *r*, and introduce into the cylinder, through the pipes *m* and *n*, a jet of steam, which passes through the superheater P, and is thereby raised to 300° Farenheit, more or less, as is found necessary. This steam in its passage through the cylinder thoroughly carbonizes and renews the clarifying material without the necessity of its removal from the cylinder, and the apparatus is again ready to continue the rectifying operation, thus economizing much time and material.

I have mentioned as chemicals, to be introduced at the charging-screw *v*, sugar and starch, but any other substances which will readily combine with and carry off the fusel-oil and other impurities, without leaving any deleterious residuum or destroying the character of the packing, may be used. These chemicals are adapted to the purification of the packing, after spirits have been clarified. Other suitable substances may be used after the clarification of sirups or oils. The superheater P may be heated with either charcoal or gas, and is only intended to be used during the cleaning process.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is as follows:

The improved process of renewing or purifying the packing or absorbing material without removing the same from the cylinder, to wit., by first introducing suitable chemicals into the cylinder A, upon the packing or absorbing material that is to be renewed, and forcing the same through by steam pressure, whereby the grosser and valuable deposits are removed, and by them introducing superheated steam into the top of the cylinder, and forcing it through the packing or absorbing material, whereby the finer impurities are removed, substantially as described, and for the purpose specified.

JOSEPH WM. REFORD.

Witnesses:
WM. WATT, Jr.,
W. W. SMITH.