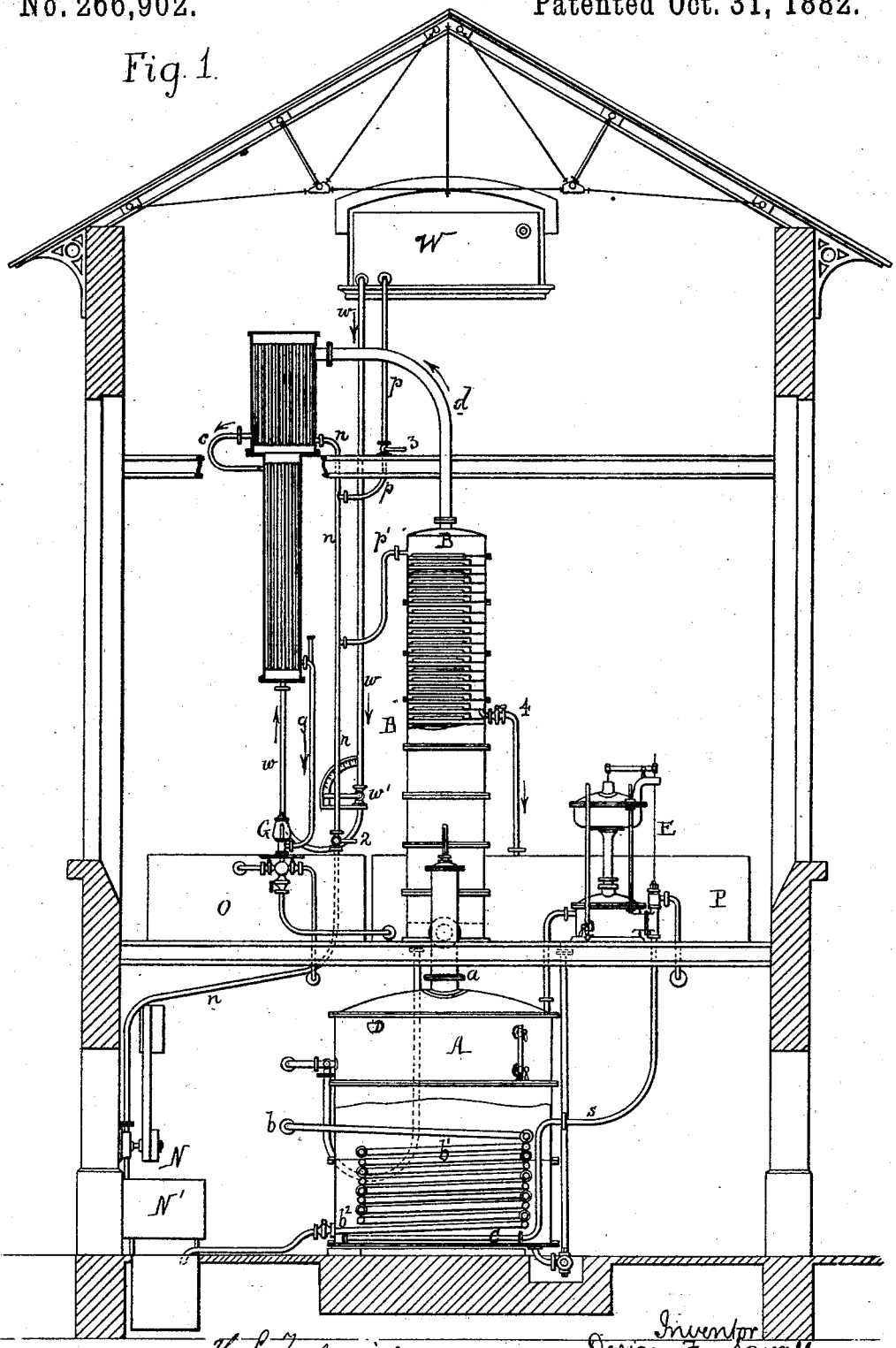
(No Model.) 3 Sheets—Sheet 1.

D. F. SAVALLE.

APPARATUS FOR RECTIFYING ALCOHOL.

No. 266,902. Patented Oct. 31, 1882.

Fig. 1.



Witnesses
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Fig. 2.

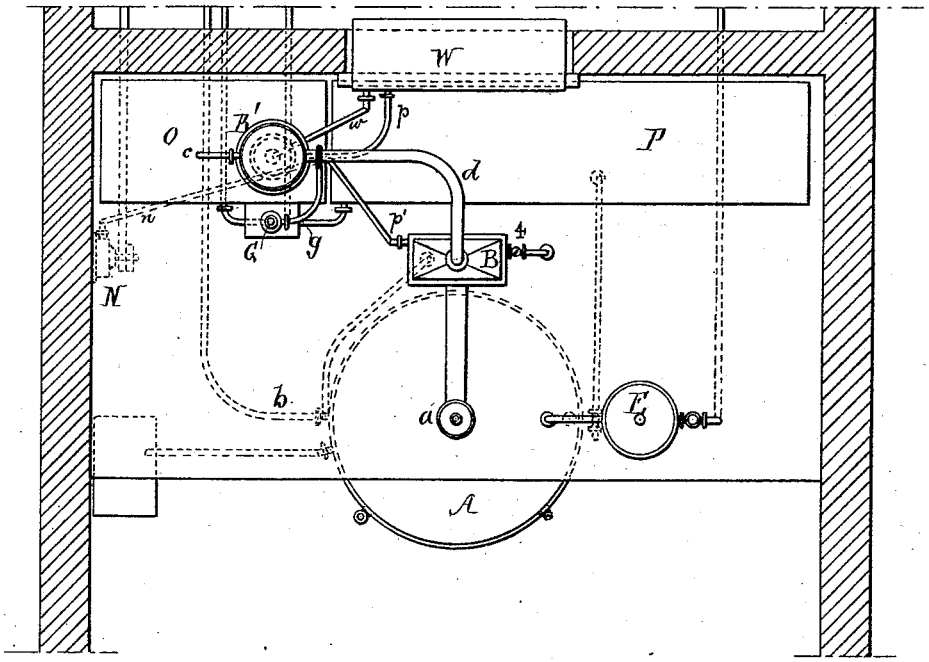

Fig. 3.

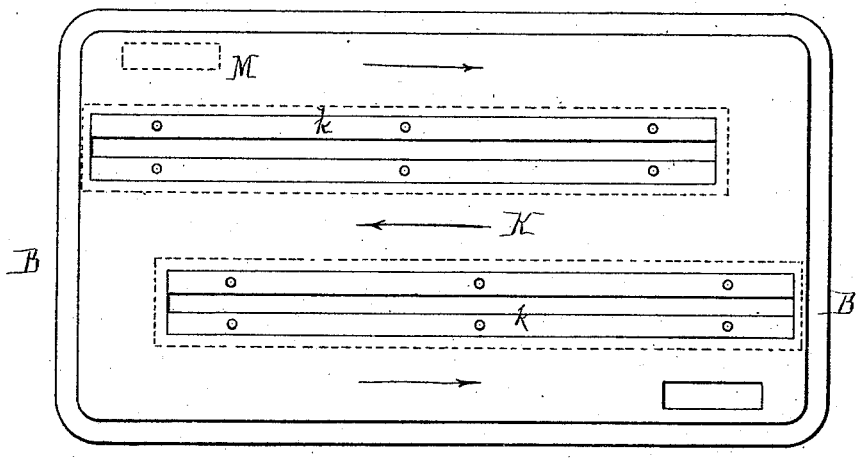

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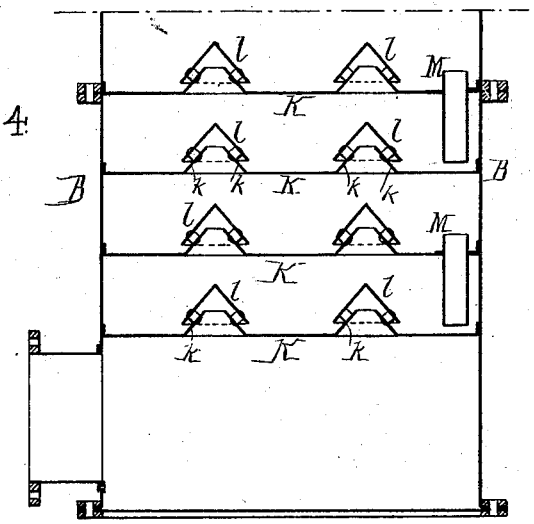
Fig. 4



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UNITED STATES PATENT OFFICE.

DÉSIRÉ F. SAVALLE, OF PARIS, FRANCE.

APPARATUS FOR RECTIFYING ALCOHOL.

SPECIFICATION forming part of Letters Patent No. 266,902, dated October 31, 1882.

Application filed July 5, 1881. (No model.) Patented in France September 14, 1880, No. 138,688.

To all whom it may concern:

Be it known that I, DÉSIRÉ FRANÇOIS SAVALLE, a citizen of the Republic of France, and a resident of Paris, France, have invented certain Improvements in Apparatus for Rectifying Alcohol, (for which I have obtained French Letters Patent September 14, 1880,) of which the following is a specification.

The object of my invention is to facilitate and economize the process of rectifying alcohols, and to improve and simplify the construction of the rectifying-columns.

In the accompanying drawings, Figure 1, Sheet 1, is a vertical section of a distillery embodying my improvements; Fig. 2, Sheet 2, a plan view of the apparatus; Fig. 3, a sectional plan of the rectifying-column, drawn to an enlarged scale, with the hoods removed; and Fig. 4, a vertical transverse section of a portion of the column.

In the drawings I have shown my improvements in connection with the Savalle system of distillery, examples of which are found in the Letters Patent of the United States No. 79,260, granted to me June 23, 1868, and No. 245,226, granted to me August 2, 1881.

A is the still proper, provided with the usual heating-coil, and communicating at its upper end, through the pipe *a*, with the bottom of the rectifying-column B, built up, as usual, of a number of sections containing a number of division-plates, the construction of which forms one feature of my present invention, and will be hereinafter described. The rectifying-column is in communication at the top, through the pipe *d*, with the upper end of the condenser B′, which in turn communicates with the refrigerator C through the pipe *c*, both condenser and refrigerator being of any ordinary construction—such, for instance, as illustrated in my aforesaid patent of August 2, 1881, the cooling-fluid in the present instance being water supplied from the elevated water-tank W through the pipe *w*, provided with a suitable cock, *w′*. A pipe, *g*, forms a communication between the refrigerator C and the test-gage G, and thence with the reservoir O for the alcohol. A pipe, *n*, leading from a pump, N, to the condenser B′, is provided with a cock, 2, and has two branches, one, *p′*, leading to the upper plates of the rectifying column, and the other, *p*, also provided with a cock, 3, communicating with the water-supply tank W in the upper part of the building.

I prefer to heat the main coil *b′* of the still A with the exhaust-steam from the engine, the water of condensation being let off through the cock b^2, Fig. 1. In addition, steam from the regulator E is admitted through the pipe S to a tube, C, within the still, the steam being allowed to bubble up through openings in the tube C, or, if preferred, to be passed through a coil similar to the coil *b′*. Each section of the rectifying-column is provided with a number of plates, which are so arranged in close proximity to each other that the liquid will have a long extent of surface to travel over, so that the different qualities of alcohol in the different parts of the column will be less liable to get mixed. The construction of these division-plates is illustrated more fully in Figs. 3 and 4, in which it will be seen that the walls *k* of the slots in the partition-plates are formed in one piece with the plates K themselves, instead of being riveted thereto, as usual. These walls may be formed either by beating up the copper of the plate or by splitting the flat plate and turning up the two longitudinal edges, and then connecting the extremities by means of pieces riveted or soldered thereto and to the plates K. The caps *l* are each formed of two flat pieces set at an angle, and are held in the proper position by short bolts between the parallel plates forming the baffles. Each division-plate K is provided with the usual vertical tube, M, and the tubes of adjoining plates are arranged at diagonally-opposite corners, and each plate K is provided with two baffles, arranged as shown in Fig. 3, one abutting against one end and the other against the other end wall of the column, so that the secondary alcohol which flows back into the column from the condenser has, in passing down through the column, to take the circuitous and extended course pointed out by the arrows.

The method of operation is as follows: When about to begin distilling the plates are emptied of the impurities from the preceding operation, and the plates cleansed by first closing the cock 2 and opening the cock 3, supplying water from the cistern W through the pipes *p* and *p′*, and the small quantities of impure alcohol and essential oils remaining on the upper plates

are drawn off through the valved pipe 4 into the tank P. Then the cock 3 being closed and the cock 2 opened, fresh alcohol is introduced onto these upper plates through the pipe *n* and branch *p'* from a pump, N, or other suitable device drawing its supply from an alcohol-reservoir, N', this alcohol taking the place of the water and charging the plates, in readiness for the distilling operation. The steam is then turned on from the exhaust, and also from the regulator, if desired, and the vapors ascending through the column pass to the condenser, whence the poorer alcohol passes back through the pipe *n* and branch *p'* (the cock 2 being closed) onto the upper plates of the condenser, while the richer vapors, which do not condense so readily, pass to the refrigerator, and thence flow in a liquid form to the test-gage G.

I claim as my invention—

1. The combination of a rectifying-column, water-tank W, pump N, and alcohol-supply tank with pipe *p'* and valved pipes *n* and *p*, substantially as and for the purpose set forth.

2. A rectifying-column having a series of horizontal division-plates, each provided with two slots, one adjoining one end plate and the other adjoining the other end plate of the column, and each having walls and a cap, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DÉSIRÉ FRANÇOIS SAVALLE.

Witnesses:
JOSEPH DELAGE,
ROBT. M. HOOPER.