

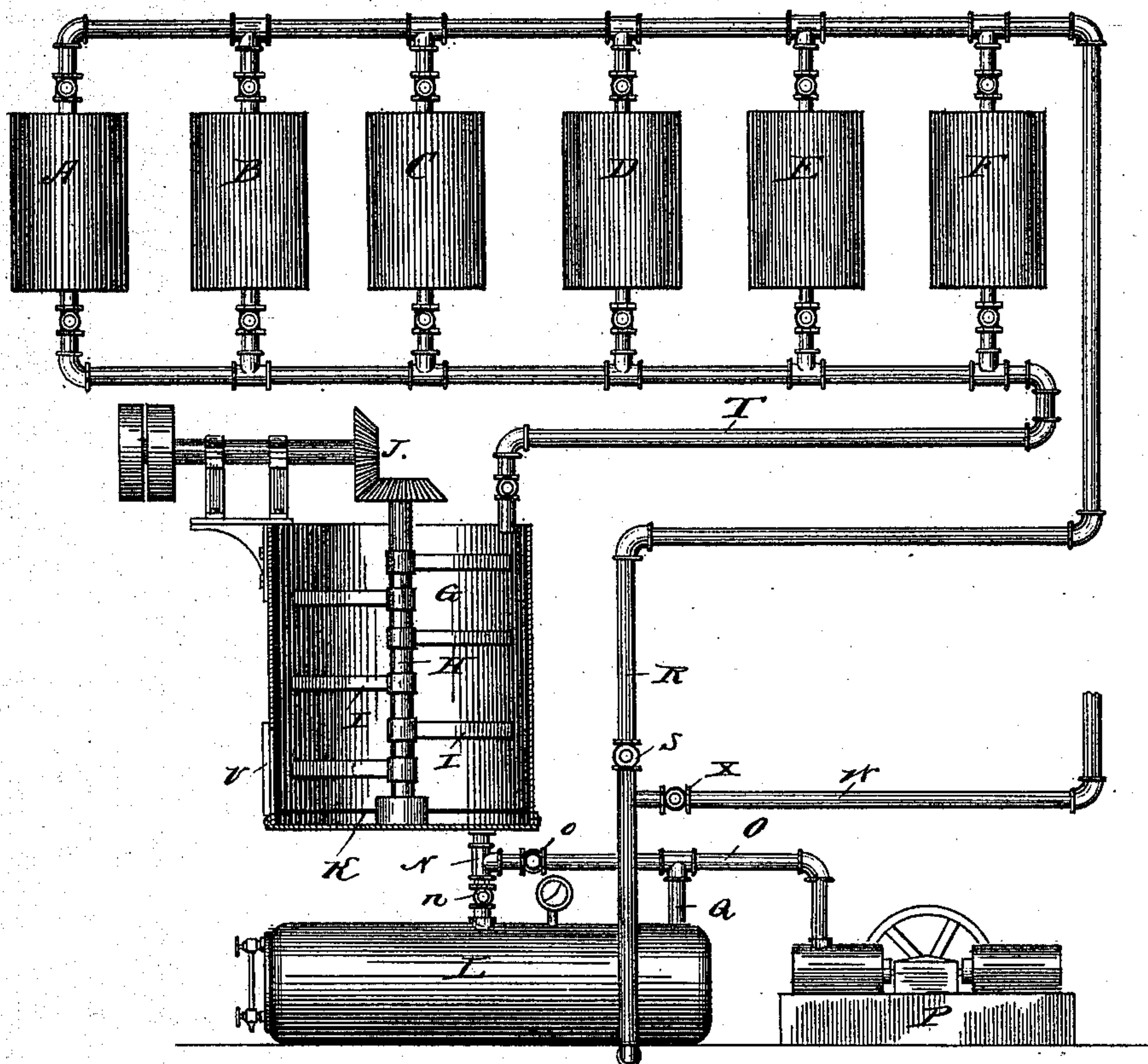
(No Model.)

A. DOMEIER & O. C. HAGEMANN.

APPARATUS FOR TREATING SOAP LYE.

No. 413,617.

Patented Oct. 22, 1889.



Witnesses,

J. F. Mann,  
Frederick Goodwin

Inventors,

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# UNITED STATES PATENT OFFICE.

ALBERT DOMEIER AND OTTO CHRISTIAN HAGEMANN, OF LONDON, ENGLAND,  
ASSIGNORS TO JAMES S. KIRK & CO., OF CHICAGO, ILLINOIS.

## APPARATUS FOR TREATING SOAP-LYES.

SPECIFICATION forming part of Letters Patent No. 413,617, dated October 22, 1889.

Application filed December 21, 1888. Serial No. 294,308. (No model.)

*To all whom it may concern:*

Be it known that we, ALBERT DOMEIER, merchant, and OTTO CHRISTIAN HAGEMANN, mechanical engineer, both of London, England, have invented a new and useful apparatus for washing or purifying the salt recovered from spent soap-lye during the manufacture of crude glycerine therefrom, of which the following is a specification.

The salt which is thrown out of solution during the concentration of soap-lye for the manufacture of crude glycerine and in the distillation of such crude glycerine is contaminated with the lye or crude glycerine as an impurity; and our object is to recover such lye or glycerine from said salt, and at the same time free the salt from these impurities and render it clean and merchantable and fit for use again in the manufacture of soap. To this end we subject the salt to a treatment or process which forms the subject-matter of a companion application for Letters Patent of the United States, Serial No. 294,307, filed of even date herewith.

In carrying out our process we make use of the improved apparatus shown in the accompanying drawings, which process we will describe in connection with the description of said apparatus; but said process forms no part of the subject-matter of this application.

The accompanying drawing is a view in side elevation showing the general arrangement of parts, the salt-receiving cylinder being shown in vertical section.

A B C D E F are small tanks or tubs placed at a higher elevation than cylinder G, within which latter is journaled a vertical rotatable shaft H, having blades or mixers I I. The shaft H is revolved by means of gearing J, driven by suitable belts passed over pulleys J', in order to mix the contents of cylinder G.

K is a false bottom of the nature of a sieve, composed of a perforated metal plate covered with wire-gauze or canvas, or both. A second perforated plate may be placed on top of the gauze or cloth for protection of same from abrasion. Below the level of the sieve is placed a closed cylinder or vessel L, which communicates with cylinder G by a pipe N, fitted with a valve *n*, and a branch pipe O therefrom, also fitted with a valve *o*, leads to

an air-pump P, capable, by reason of its being both a suction and compression pump, of producing air pressure or vacuum in cylinder L. The exhaustion of cylinder L and the compression of air within the same take place through the pipes O and L when the valves *o* and *n* are closed. Another branch pipe Q communicates also with cylinder L. A pipe R, fitted with valve S, leads from the bottom of cylinder L to top of tanks A F, with a valve over each tank, as shown. Cylinders A F communicate with the main pipe T, leading to top of cylinder G.

V is a door to cylinder G, for the purpose of taking out the purified salt. A branch pipe W, fitted with a valve X, as shown, leads to a store-tank, referred to hereinafter.

The operation of this apparatus is as follows: The mixture of salt and lye or glycerine is placed in the cylinder G and the mixer revolved to mix the mass thoroughly, and this may be assisted by forcing in air by means of pump P through the pipe O. The cylinder L is then exhausted by the air-pump P, and at the same time valve *n* is opened (the other valves being closed) and the glycerine or lye adhering to the salt for the most part drawn through pipe N into cylinder L. Valve *n* is then closed and valve X opened and the glycerine or lye forced to store-tank through pipe W by means of air-pressure from pump P. The vessels A F are charged with a saturated aqueous solution of common salt, which solution, unlike pure water, is incapable of dissolving any more salt, but which will dissolve and remove glycerine therefrom. The lower valve of tank A is opened and the solution allowed to flow into the salt in cylinder G. The whole is then mixed together by mixers I. Valve *n* is then opened and the liquor drawn into cylinder L by means of the air-pump P. Valve *n* is then closed and valve X opened and the liquor forced by means of the pump P through pipe W to the store-tank. The liquor from B is now allowed to flow down to the salt in cylinder G and mixed with the salt therein. The valve *n* is again opened and the liquor drawn into cylinder L by the pump. The valve S is then opened and the liquor in L forced up into cylinder or vessel A. The liquor from C is now allowed to flow down



into the salt in cylinder G, the shaft again re-  
 volved to mix the mass, the valve *n* again  
 opened, and the liquor drawn into cylinder L  
 by the pump. The valve S is then opened  
 5 and the liquor forced up into cylinder B. The  
 same operation is repeated with the liquor in  
 each of the cylinders D, E, and F, finally leav-  
 ing cylinder F empty. This is recharged with  
 more of the solution of salt, which is allowed  
 10 to flow down into the salt in cylinder G, mixed  
 therewith, drawn into cylinder L, and forced  
 therefrom into cylinder F. Air is now drawn  
 through the salt in cylinder G until it is dry,  
 or nearly so, when door V is opened and the  
 15 purified salt removed.

We claim—

1. In an apparatus for washing and purify-  
 ing the salt recovered from spent soap-lye, the  
 combination of a cylinder to contain said salt,  
 20 a series of tanks to contain an aqueous solu-  
 tion of salt and communicating with said cyl-  
 inder, an exhaust chamber or vessel connected  
 to said cylinder, and a pump connected with  
 said exhaust-chamber, substantially as and  
 25 for the purpose described.

2. In an apparatus for washing and purify-  
 ing the salt recovered from spent soap-lye, the  
 combination of a cylinder to contain the salt  
 under treatment, having mechanical mixers  
 30 mounted therein, a series of tanks commu-  
 nicating by suitable pipes and valves with  
 said cylinder, an exhaust-chamber connected

with the salt-cylinder, and a pump connected  
 with said chamber whereby liquids contained  
 in the cylinder may be drawn off and the salt 35  
 dried, substantially as described.

3. In an apparatus for washing and purify-  
 ing the salt recovered from spent soap-lye, the  
 combination of a cylinder to contain the salt  
 undergoing treatment, said cylinder having a 40  
 perforate bottom, a series of tanks commu-  
 nicating with the cylinder, an exhaust-cham-  
 ber connected with the cylinder, and an air-  
 pump connected with said exhaust-chamber,  
 substantially as described, and for the pur- 45  
 pose set forth.

4. In an apparatus for washing and purify-  
 ing salt recovered from spent soap-lye, the  
 combination of a cylinder to contain said  
 salt, a series of tanks to contain an aqueous 50  
 solution of salt and communicating with said  
 cylinder, an exhaust chamber or vessel con-  
 nected to said cylinder, a pump connected  
 with said exhaust-chamber, and a pipe to con-  
 duct the liquor from said exhaust-chamber to 55  
 a storage-tank or other suitable receptacle,  
 substantially as described.

ALBERT DOMEIER.

OTTO CHRISTIAN HAGEMANN.

Witnesses:

MARTIN B. WALLER,

*U. S. Vice-Consul-General, London.*

A. G. MOSSARD.

It is hereby certified that Letters Patent No. 413,617, granted October 22, 1889, upon the application of Albert Domeier and Otto Christian Hagemann, of London, England, for an improvement in "Apparatus for Treating Soap-Lyes," were erroneously issued to James S. Kirk & Co. as sole owners of the invention; that said Letters Patent should have been issued to said *Albert Domeier and James S. Kirk & Co., jointly*, each being owner of one-half interest, as shown by the record of assignments in this Office; and that said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 5th day of November, A. D. 1889.

[SEAL.]

CYRUS BUSSEY,

*Assistant Secretary of the Interior.*

Countersigned:

C. E. MITCHELL,

*Commissioner of Patents.*