H. W. FAUCETT & T. McGOWAN.

Apparatus for Distilling Hydrocarbons.

No. 133,425. Patented Nov. 26, 1872.

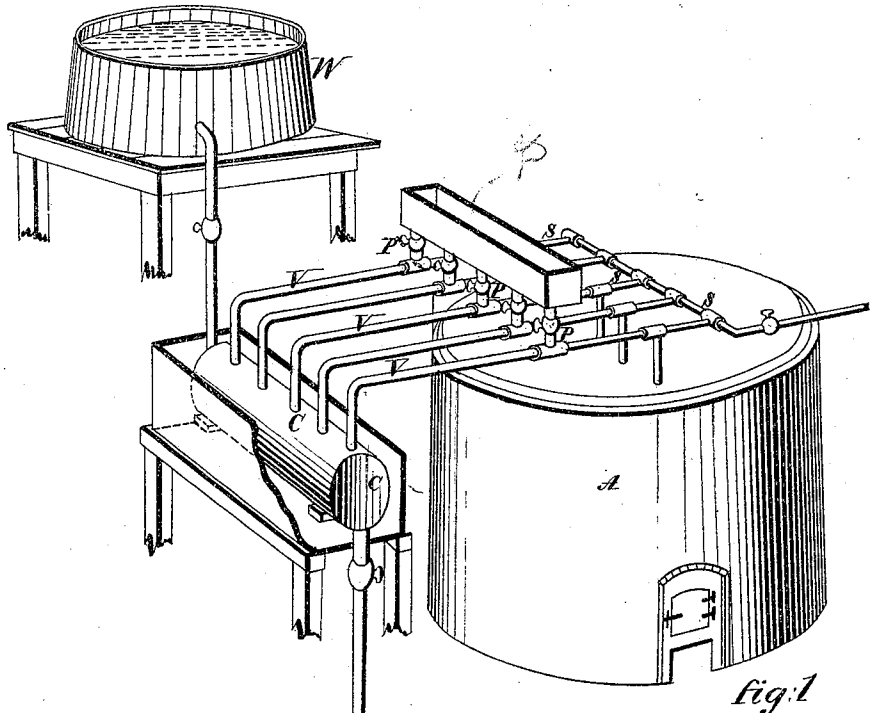
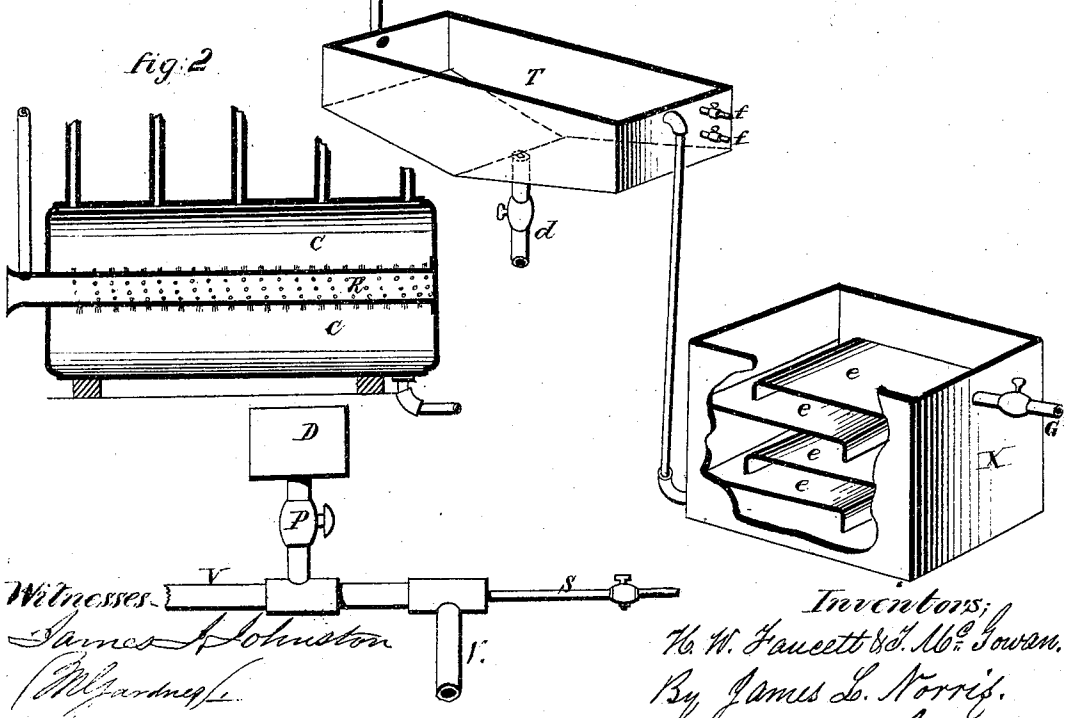



fig. 1

fig. 2




Witnesses.
James A. Johnston
[illegible]

Inventors;
H. W. Faucett & T. McGowan.
By James L. Norris.
Atty.

# UNITED STATES PATENT OFFICE.

HIRAM W. FAUCETT, OF TITUSVILLE, AND THOMSON McGOWAN, OF MEREDITH, PENNSYLVANIA.

## IMPROVEMENT IN APPARATUS FOR DISTILLING HYDROCARBONS.

Specification forming part of Letters Patent No. **133,425**, dated November 26, 1872.

*To all whom it may concern:*

Be it known that we, HIRAM W. FAUCETT, of Titusville, Crawford county, Pennsylvania, and THOMSON McGOWAN, of Meredith, Venango county, Pennsylvania, have jointly invented an Improved Apparatus for the Distillation and Purification of Hydrocarbons, of which the following is a full and complete description, reference being had to the accompanying drawing, in which—

Figure 1 is a general perspective view of the entire process; Fig. 2, a longitudinal section of the condensing-cylinder with its connections; and Fig. 3, a section showing the operation of the dripping and injection pipes.

The object of our improvement is that of simplifying the process of refining and making it, at the same time, more effective. For this purpose the vapors from the still A are passed over into the condensing-cylinder C by the vapor-pipes V V V. At the first bend of the vapor-pipes are inserted into each vapor-pipe the injection-pipes S S, and from the trough or box D the dripping-pipes P P. The condensing-cylinder C is provided with the inside perforated water-cylinder R, fed by the water-tank W, in the manner described in Letters Patent No. 117,873, granted to Hiram W. Faucett and Thomson McGowan, dated August 8, 1871. The separating-tank T is provided with a sloping bottom, a discharge-pipe, *d*, the try-cocks *f f*, for the purpose of testing the position of the water and acid, and the receiving and overflow pipes, on a level with each other. The bleacher X is furnished with the alternating shelves *e e*, in the manner shown, with the receiving-pipe at the bottom and overflow-pipe G at the top. The trough or box D is for the reception of sulphuric acid, for the purpose of dripping it upon the vapor. The injection-pipes S S terminate underneath the intersection of the dripping-pipes P P with the vapor-pipes V V, in the manner shown. When the vapor from the still A rises in the vapor-pipes V V it is met by the injection of steam, sulphurous-acid gas or chlorine gas, from the injection-pipes S S. The vacuum caused by this injection hastens the passing of the vapor. At the termination of the injection-pipes S S it is met by the dripping sulphuric acid, which is sprayed by the force of the steam or gas from the injection-pipes S S. The reacting properties of the sulphuric acid are largely increased by the intimate connection with the vapor, caused by the action of the injection-pipes. If sulphuric acid is used from box D, then steam must be used from the injection-pipe S. If sulphurous-acid gas or chlorine gas is injected through the pipe S, then sulphuric acid need not be used through the pipes P P, although both or all may be used at once, if desired.

The steam, acid, and vapor, reacting on each other, pass uncondensed into the cylinder C, having the inside perforated cylinder R, all fully described in Letters Patent No. 117,873, hereinbefore referred to. The vapors here are condensed and the acid thoroughly washed from the oil. From this cylinder the oil and acid-water pass out into the separating-tank T, which is placed perfectly horizontal. The acid-water, falling to the bottom, is drawn off by the discharge-pipe *d*, and the oil, passing out at the same level at which it entered, goes into the bleacher X. By means of the try-cocks *f f* the relative positions of the oil and acid-water can at any time be ascertained. The bleacher X is filled with a solution of caustic soda or ammonia, and the shelves *e e*, running out alternately from each side, in the manner shown, compel the oil entering at the bottom to take a long and circuitous route through this solution while rising to the top, where it is drawn off.

We claim—

1. The chemical box D and dripping-pipes P P, in combination with the vapor-pipes V, substantially as described, for the purpose set forth.

2. The combination of the chemical box D, dripping-pipes P, and vapor-pipes V V with the condensing-cylinder C and perforated cylinder R, all arranged and operating substantially as set forth.

3. The bleacher X with the alternating shelves *e e*, and having receiving-pipe at bot-

tom and discharge-pipe at top, as above described.

4. The combination of the injection-pipes S S with the acid-box D, the dripping-pipes and cocks P P, the condensing-cylinder C with its interior cylinder R, as hereinbefore referred to, the separating-tank T with its discharge-cock *d* and try-cocks *f f*, the bleacher X and its alternating shelves *e e*, all in the manner shown, and for the purposes above set forth.

HIRAM W. FAUCETT.
THOMSON McGOWAN.

Witnesses:
ARCHIE R. GRAY,
C. W. GRASS.