W. ADAMSON.

Extracting Hydro-Carbons from Fatty Matters

No. 203,980. Patented May 21, 1878.

Fig. 1.

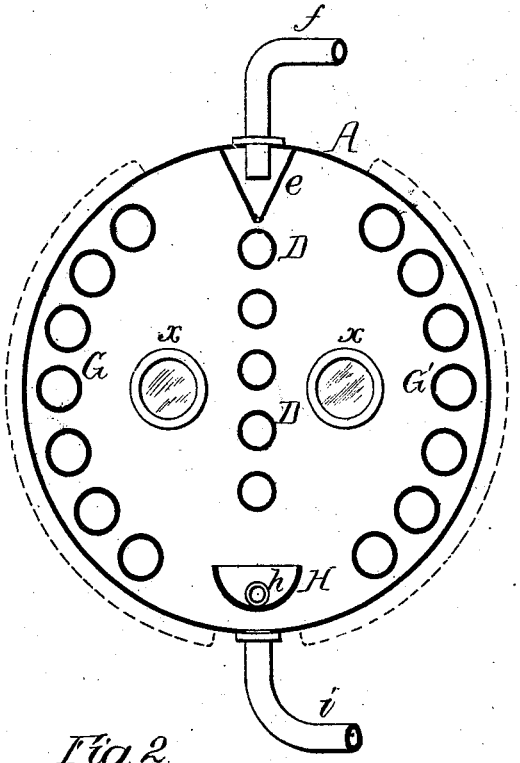
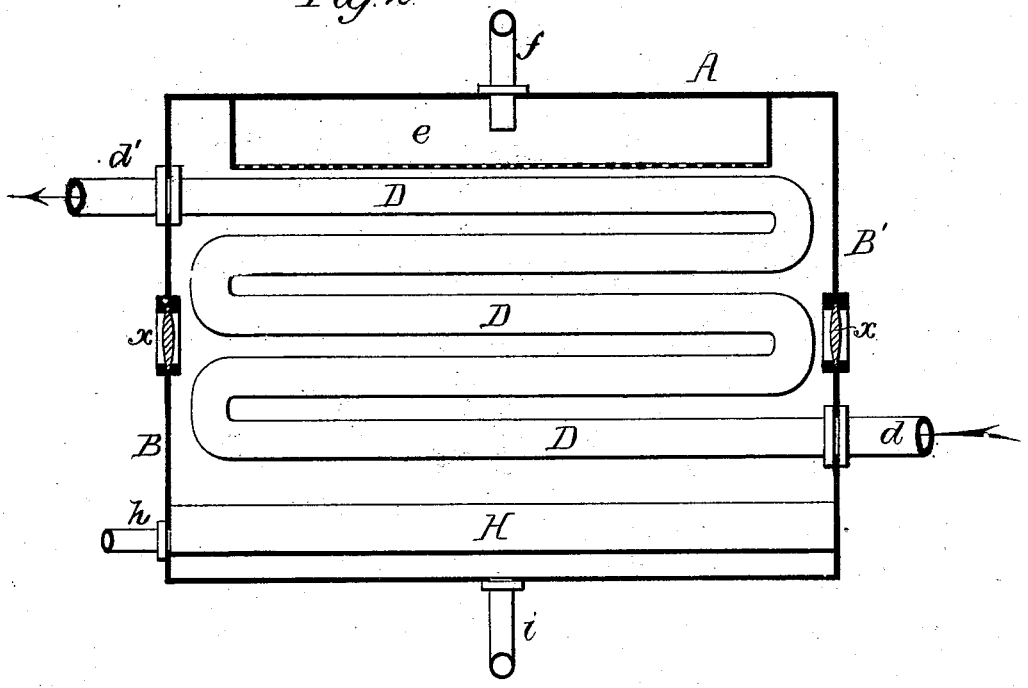


Fig. 2.



Witnesses,
Henry Howson Jr.
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UNITED STATES PATENT OFFICE.

WILLIAM ADAMSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN EXTRACTING HYDROCARBONS FROM FATTY MATTERS.

Specification forming part of Letters Patent No. **203,980,** dated May 21, 1878; application filed March 28, 1878.

To all whom it may concern:

Be it known that I, WILLIAM ADAMSON, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Separating Oily and Fatty Matters from Hydrocarbons, of which the following is a specification:

My invention relates to the treatment of such oily and fatty matters as have been extracted from animal and vegetable substances by hydrocarbons; and the object of my invention is to deprive the said matter of the hydrocarbon with which it has been impregnated, by causing it to trickle in thin filmy streams over and in contact with heated tubular surfaces in a closed vessel, which is also provided with cooling-surfaces, so that the hydrocarbon vapors given off by contact with the said heated surfaces shall be condensed and flow from the vessel in a liquid condition through one pipe or passage, while the purified oily and fatty matter is discharged from the same vessel through another channel.

In the accompanying drawing, Figure 1 is a transverse section, and Fig. 2 a longitudinal section, of the vessel whereby my invention may be carried into effect.

The body of the vessel is preferably cylindrical, with opposite flat ends B B′, and contains a zigzag pipe, D, to which steam is admitted at the lower end *d*, and from which it escapes at the upper end *d′*. Immediately above the highest length of steam-pipe there is a distributing-trough, *e*, communicating with the vessel through a series of narrow slits or perforations.

Cold water is caused to circulate through a series of pipes, G, arranged near one side of the vessel, and through a similar series of pipes, G′, near the opposite side of the vessel.

The matter to be treated is introduced through a pipe, *f*, into the distributing-trough *e*, from which it trickles over the highest length of the zigzag steam-pipe, and passes in a thin film downward and in contact therewith, and it thus passes from length to length of pipe until the oily and fatty matter falls into a trough, H, whence it is drawn off from time to time through a pipe, *h*.

During the trickling of the material in thin films over and in contact with the series of steam-pipes the volatile hydrocarbon with which oil or fat has been impregnated is so diffused over the heated surfaces that it is vaporized, and the vapor, coming in contact with the cold surfaces of the pipes G G′, is condensed, and passes in a liquid form to the space in the vessel beneath the trough H, and is drawn off from time to time from this space through a pipe, *i*.

The lowest of the lengths of steam-pipes is, of course, the hottest, and the highest is the coolest. Hence the material, as it trickles down in contact with the surface of the pipes, is subjected to a gradually-increasing heat, and this prevents that sudden charring of the oily or fatty matter which might discolor and otherwise injure it.

Thick glass windows *x x* may be secured in opposite ends of the vessel, for the purpose of enabling the attendants to note the progress of the operation.

It is not essential in carrying my invention into effect to adhere to the precise construction of vessel or zigzag pipes herein described. For instance, the pipes G G′ might be dispensed with, and cooling-surfaces arranged by forming, on opposite sides of the vessel, jackets, as shown by dotted lines in Fig. 1, cold water being caused to circulate within the spaces formed by the said jackets.

Without confining myself, therefore, to any specific apparatus for carrying my invention into effect, I claim and desire to secure by Letters Patent—

1. The mode described of separating from oily and fatty matter the hydrocarbons used in extracting the same—that is to say, causing the matter to trickle in thin films over heated tubular surfaces, and thereby evaporating the hydrocarbons contained in the matter, condensing the vapors by cooling-surfaces, and effecting the desired separation, all in the same vessel, substantially as set forth.

2. The combination, in a vessel, A, of a distributing-trough, *e*, with which the inlet-pipe *f* communicates, a system of steam-heated pipes, D, the trough H, and its outlet *h*, the cooling-pipes G G′ or other cooling-surfaces, and the outlet-pipe *i*, all substantially as specified.

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

WM. ADAMSON.

Witnesses:
HARRY A. CRAWFORD,
HARRY SMITH.