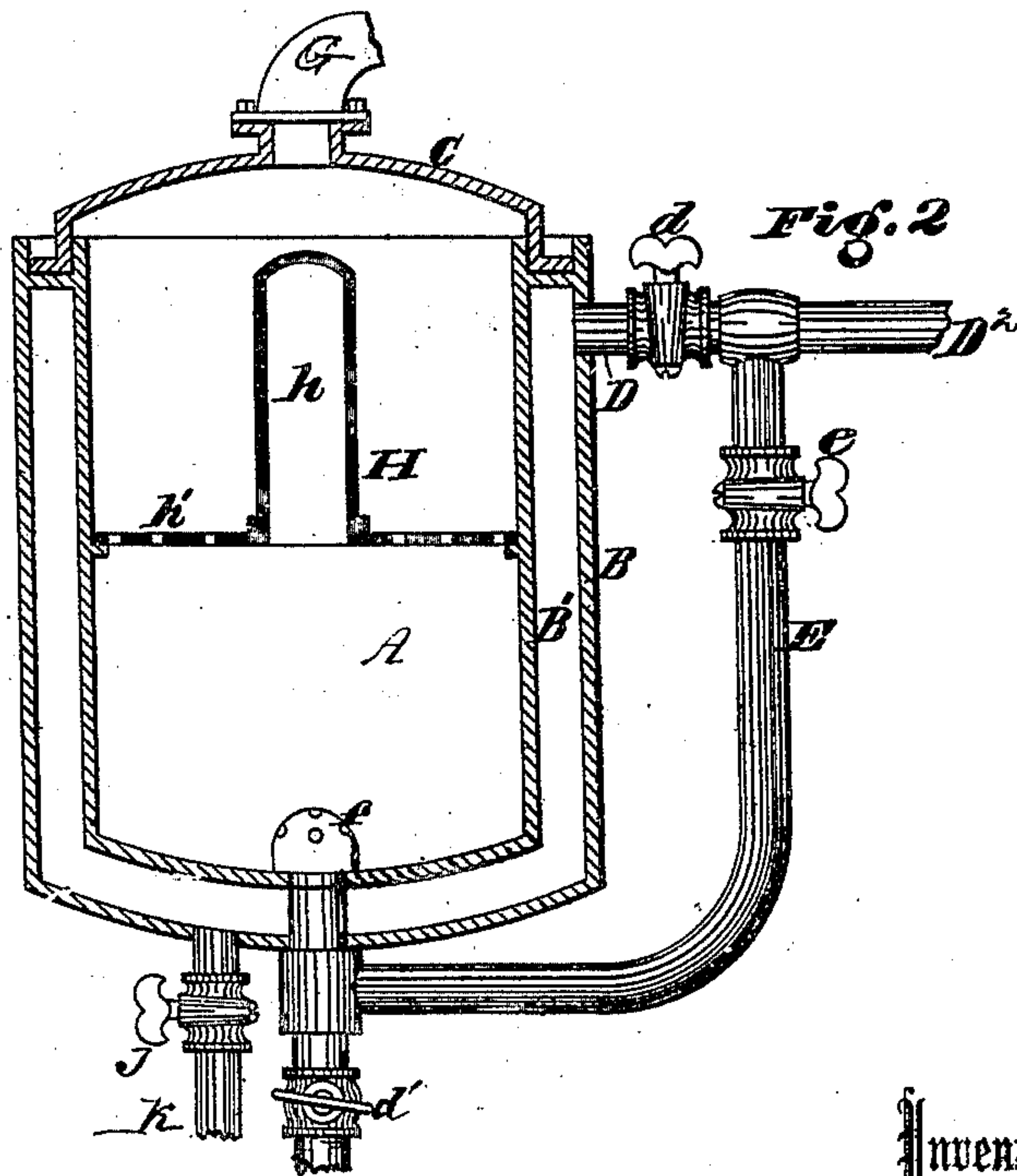
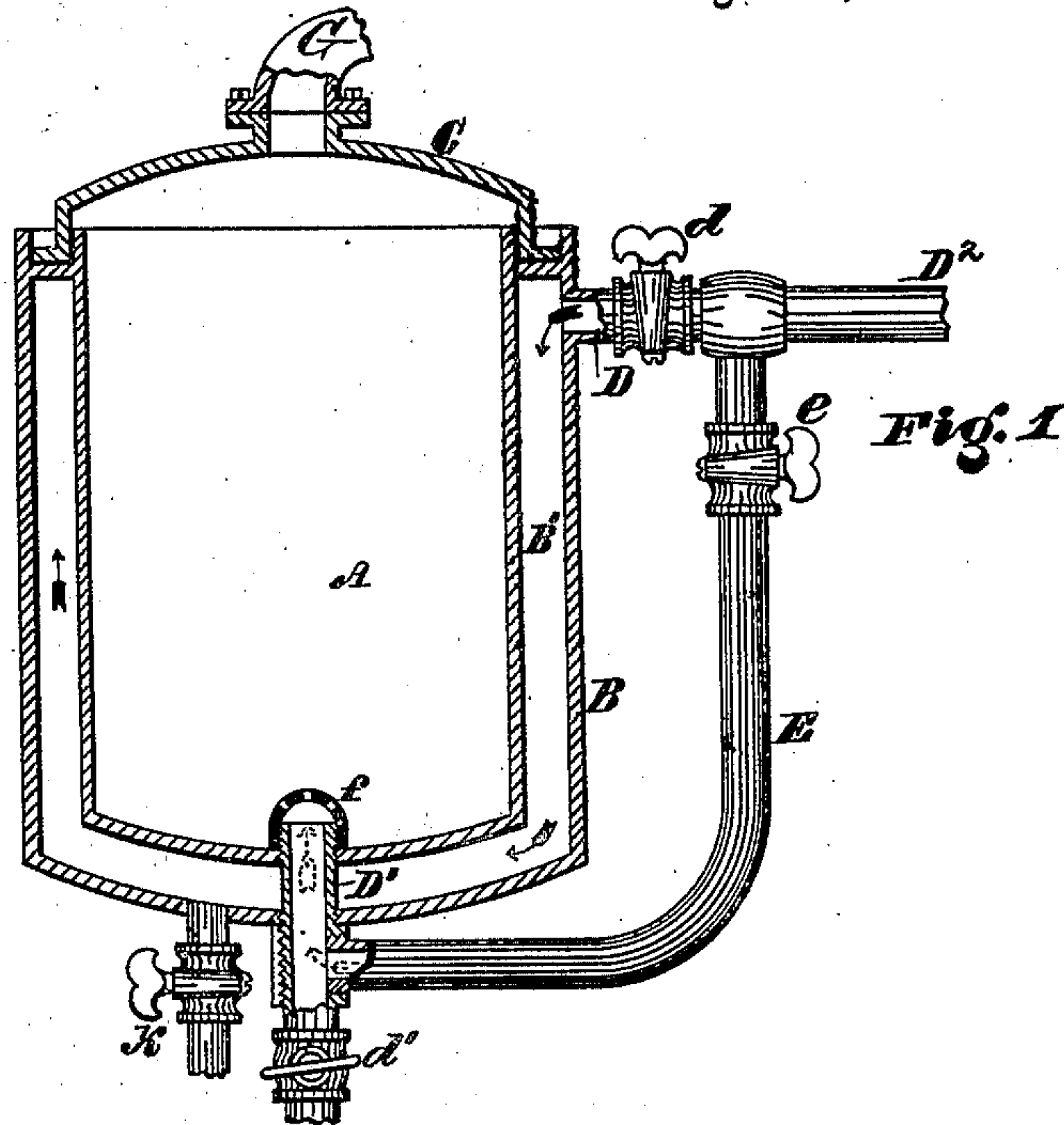


E. A. McKEEVER.
RECOVERY OF SPIRIT FROM SPENT CHARCOAL OF RECTIFYING
FILTERS.

No. 194,256.

Patented Aug. 14, 1877.



Witnesses

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EDWARD A. McKEEVER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN RECOVERY OF SPIRITS FROM SPENT CHARCOAL OF RECTIFYING-FILTERS.

Specification forming part of Letters Patent No. **194,256**, dated August 14, 1877; application filed May 5, 1877.

To all whom it may concern:

Be it known that I, EDWARD A. McKEEVER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Process and Apparatus for Extracting Spirits from Spent Coal used by Rectifiers, and for other purposes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figures 1 and 2 are longitudinal vertical sections of my invention.

In the process of rectifying alcoholic liquors the spirits are passed through a filter of charcoal, by which the fusel-oil is absorbed and the rectification effected. After the filtering material becomes "spent," and will no longer act, it is found that a considerable quantity of spirits has been taken up, which it is desirable to recover. This recovery has heretofore been accomplished by washing the filtering material, but only to a limited extent. After the most thorough washing an odor of spirit remains, indicating the presence of absorbed liquor.

The object of this invention is to recover the spirits remaining after the washing; and it consists in first thoroughly drying the unwashed or washed spent coal, and then passing live steam through it. The live steam takes up the spirit, which is in a gaseous or vaporized form, and carries it off to a condenser or still. By this process I have been able to save about one gallon of spirits to the bag of the washed spent charcoal.

In the accompanying drawing, which represents an apparatus for accomplishing this process, A designates a cylindrical vessel of suitable capacity, the bowl of which is surrounded by a steam-jacket, B, and provided with a suitable cover or cap, C.

D is a steam-pipe leading into the steam-space B', and D¹ is a similar pipe entering the bowl through the center of the bottom. Both pipes are connected by a tube, E, and all three provided with stop-cocks *d d' e*, as shown.

D² is a branch or continuation of the pipe

D, leading from the boiler and supplying the bowl and steam-jacket therefrom. The inlet to the bowl may terminate in a perforated nipple or manifold jet, *f*.

The spent material to be treated according to this process is placed in the bowl, which is then covered, and a supply of steam admitted to the jacket; or the jacket may be first heated by the steam. The coal is then allowed to become heated by the surrounding steam until all the moisture that can be so driven off is removed in the form of vapor, and the coal has become, so to speak, "dry." The steam is then shut off from the jacket and live steam admitted directly to the mass of coal, through which it rises, and takes up with it all the spirit remaining in the coal. During the whole process the vapor rising from the coal passes off through the outlet G to the still. At first the spirit is of high proof, the same being the most easily vaporized, and consequently the earliest to escape. As the process continues the strength of spirit decreases, and may even reach one-tenth of one per cent.

To facilitate the drying of the coal when the quantity is large, I sometimes employ the device marked H, which consists of a blind tube, *h*, and a perforated disk or plate, *h'*. The latter rests on lugs or on the lower half of the coal, which is both above and below the disk. The steam rising from the lower mass ascends partly through the pipe and radiates heat from the center. The steam ascending outside the pipe passes through the perforations.

K is a pipe, having a stop-cock, J, to drain the steam-jacket.

This process is applicable, under the same conditions as described, to the extraction of spirits from any kind of fruit which has been used in flavoring spirits, and which has therefore become saturated with the latter.

I am aware that the use of steam for the purpose of revivifying spent charcoal and recovering alcohol therefrom is not broadly new. In order, therefore, that I may not be understood as claiming more than the state of the art justifies, I limit myself to the specific process described, which consists in first drying the spent charcoal by external heat until all or substantially all the spirits that can be so evaporated have escaped, and then admitting

to the dried mass a current of live steam, so as to remove whatever spirit remains after evaporation.

It is essential that the drying take place before the live steam is admitted, so that condensation will not be likely to occur by the steam coming in contact with moisture in the charcoal.

Having described my invention, I claim—

1. The process for the recovery of spirits from spent charcoal or other material, consisting in heating and drying the absorbent, and

then subjecting it to the action of live steam, substantially as described.

2. The plate *h'* and tube *h*, in combination with the vessel A, as described.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of May, 1877.

EDWARD A. McKEEVER.

Witnesses:

T. A. CONNOLLY,
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