2. Sheets, Sheet. 1.

F. Sonier,

Alcohol Still.

No. 95,740. Patented Oct. 12. 1869.

Fig. 1.

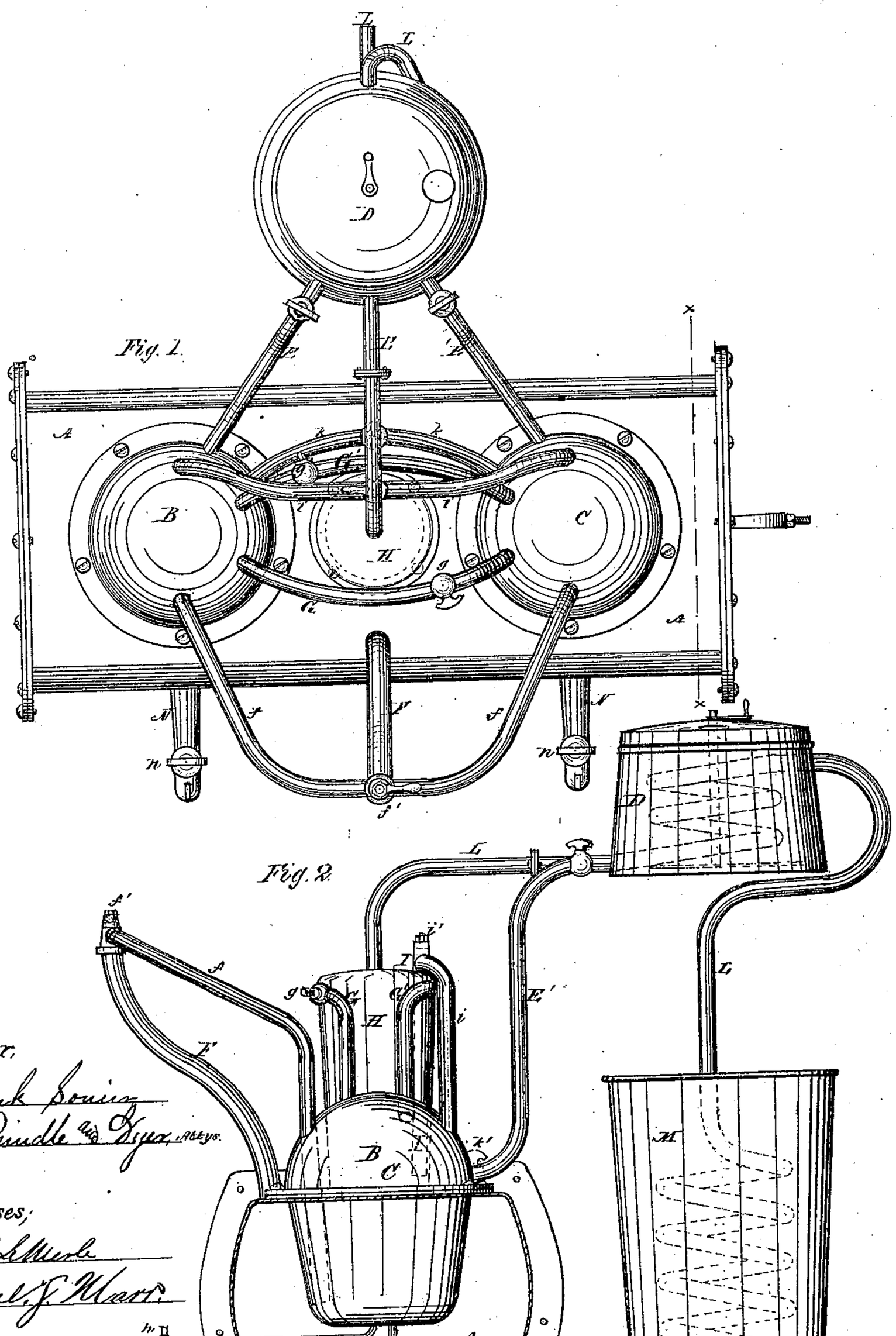

Fig. 2.

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2, Sheets, Sheet 2.

Alcohol Still.

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Fig. 3.

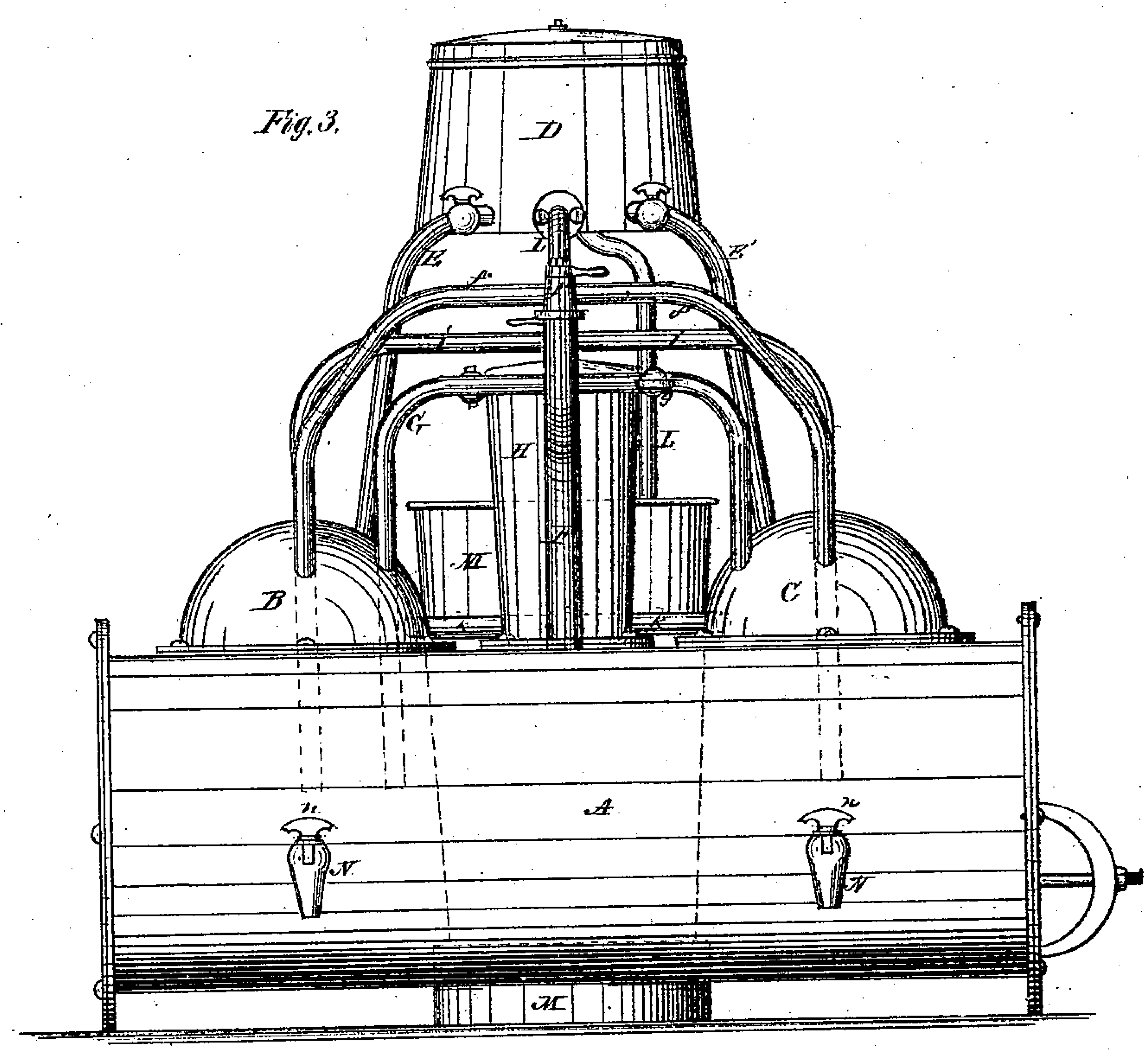


Fig. 4.

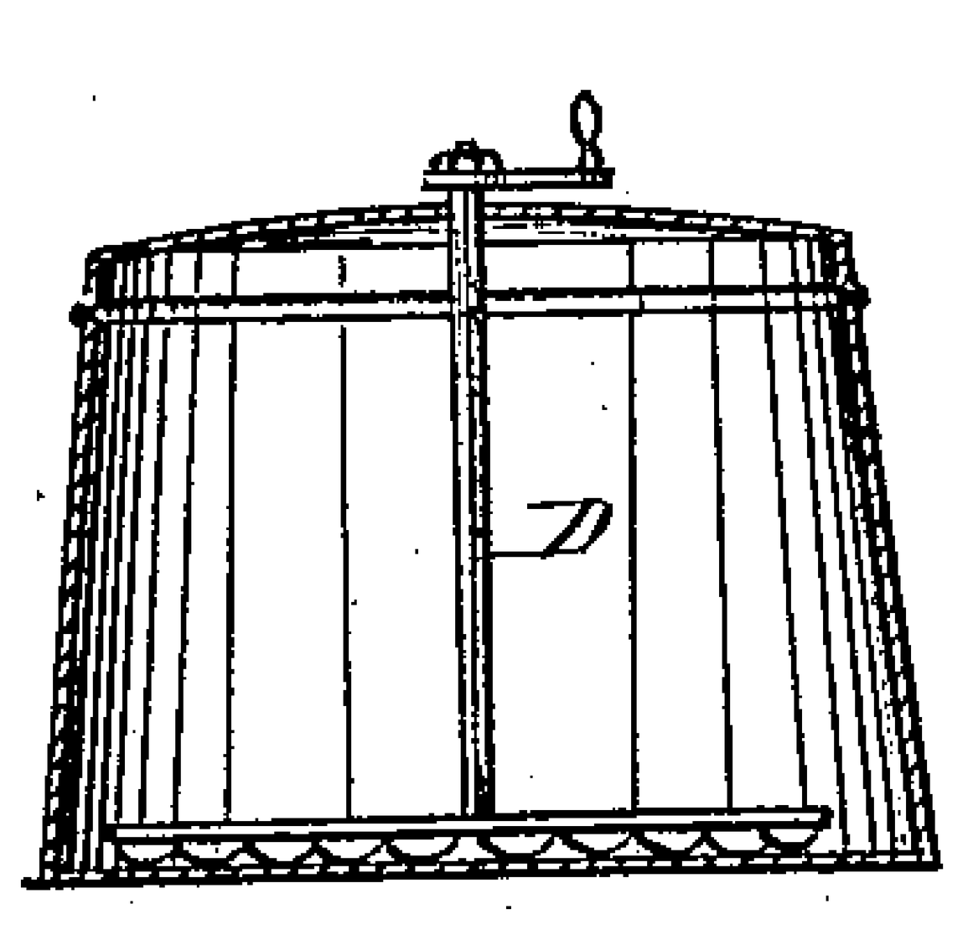
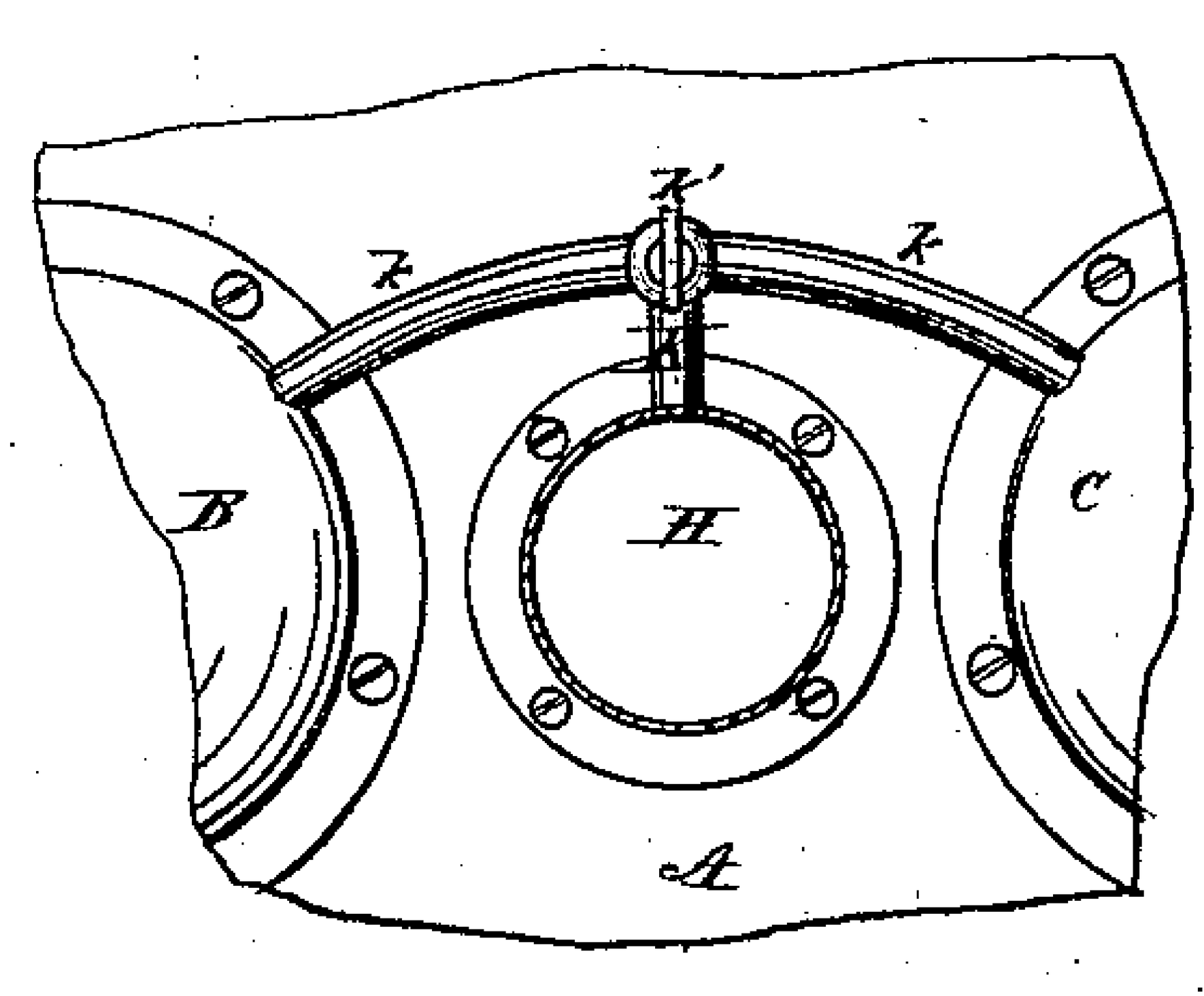


Fig. 5.



Witnesses;

[illegible]

[illegible]

Inventor:

Frank Sonier,

by Prindle and Dyer, Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

United States Patent Office.

FRANK SONIER, OF SPRINGFIELD, ILLINOIS.

Letters Patent No. 95,740, *dated October* 12, 1869.

IMPROVED DISTILLING-APPARATUS FOR SPIRITS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, FRANK SONIER, of Springfield, in the county of Sangamon, and in the State of Illinois, have invented a new and useful Improved Distillery; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a plan view of my improved apparatus;

Figure 2 is an end elevation;

Figure 3 is a front elevation;

Figure 4 is a vertical central section of the mash-reservoir and heater; and

Figure 5 is a broken plan view, showing the connection between the stills and doubler.

Letters of like name and kind refer to like parts in each of the figures.

My invention consists principally in combining two or more stills with a steam-boiler, so that the hot water and steam contained within the latter may furnish the necessary heat required by the former.

It further consists in so combining two or more stills with a doubler or mash-heater, as to enable said stills to be alternately charged and worked off through each other and through the doubler.

It further consists in combining two or more stills with a doubler and boiler, substantially as hereinafter shown.

It further consists in the combination of the boiler, one or more stills, and the mash-heater, as is hereinafter specified.

It further consists in the general combination of the various parts of the apparatus, substantially as and for the purpose set forth.

In the annexed drawing—

A represents a steam-boiler, semicircular upon its sides and bottom, and flat upon its upper side, in which are partially inserted two stills, B and C, of the form shown in the drawings.

Situated above and in rear of the boiler is a tub, D, for containing the fresh mash, which is connected with the stills by two pipes, E and E, that pass out through the side of said tub, near its bottom, and enter said stills just above the top of the boiler, and furnish a means for conveying the mash from said tub or reservoir to either still, as may be desired.

Projecting upward from the top of the boiler A, at its front centre, is a pipe, F, having its upper end connected with a branch pipe, *f* and *f*, one end of which extends downward through the upper shell or portion of each still, and terminates near its bottom, and furnishes a passage through which the steam generated within the boiler may enter said stills.

A three-way cock, *f'*, situated at the junction of the pipe F with the branch pipe, enables the steam to be directed to either still, or shut off from both, at will.

G and G' represent two siphon-shaped pipes, having each a long and a short arm, which connect the stills together, and are so arranged as that the long arm of one pipe and the short arm of the other terminate within each still, the former extending to near the bottom of the still, while the short arm only passes through the upper shell.

A suitable cock, *g* or *g'*, in each pipe, enables communication between said stills to be shut off when desired.

Secured to the top of the boiler, between the stills, is a close vessel, H, of the form shown, termed the doubler.

A pipe, I, extends from near the bottom of the doubler upward through its upper end, where it is connected with a branch pipe, *i* and *i*, one end of which passes through and terminates immediately within the upper part of each still.

Another pipe, K, passes horizontally outward from the bottom of the doubler, and is also connected with the stills by means of the branch pipe *k* and *k*, the ends of which terminate just within said stills.

Three-way cocks, *i'* and *k'*, placed at the junction of the pipes I and K respectively, with the branch pipes, permit communication to be had between the doubler and either still, through either pipe, as may be desired.

Passing upward from the upper end of the doubler H, is a pipe, L, which from thence curves to the rear, and entering the mash-tub D, near its bottom, passes upward in a spiral form to near the top of said tub, and from thence extends outward and downward until it enters the condenser M, placed immediately beneath said mash-tub, when it again assumes a spiral form, and finally passes out through the side of said condenser, near its lower end.

A pipe, N, passes downward from the bottom of each still, and from thence outward through the side of the boiler, where it is provided with a cock, *n*, furnishing an outlet through which the exhausted mash may be discharged from said still.

The device is now complete, and is operated as follows:

The reservoir or heater being supplied with fresh mash, the cocks in the pipes E and E are opened so as to allow it to pass into and nearly fill the stills B and C, after which the boiler A is nearly filled with water, and the same caused to boil, by which means the contents of said stills are suitably heated, and distillation commences.

The cock *f'*, at the junction of the steam-pipe F and branch pipes *f* and *f*, is so adjusted as to cause the steam generated within the boiler to pass into one of the stills, B, near its bottom, from whence it rises through the mash contained therein, and mingles with the steam in the upper part of said still.

One of the communicating-pipes, G, being opened, the vapor from the upper part of the still B passes through and escapes near the bottom of the second still, and from thence rises upward through its contents, and uniting with the vapor given off by said mash, passes out through the pipes *k* and K into the lower part of the doubler H, which is partially filled with low-wine, and from thence, by means of the pipe L, through the mash-heater D and condenser M.

By this arrangement, the vapor from the boiler and the first still B assists in the distillation of the mash within the second still, until the contents of the former are exhausted, when, by closing the communication between it and the second still C, and the doubler H, and opening the cock *n*, said contents will be discharged, and a fresh supply may be introduced from the heater or reservoir D, after which the connection between the boiler, stills, and doubler is to be changed so as to cause the steam to pass through the partially-exhausted still C into the freshly-charged still B, and from thence into the doubler.

The operation of alternately charging, distilling, and discharging the contents of the stills can thus be carried on for any length of time without hindrance or delay, or in the event of one of the stills becoming disabled, the other, being complete in itself, can be used alone, with nearly the same facility as though connected with and operated through the companion still.

During the process of distillation, the vapor passing off through the pipe L, within the mash-tub D, gives off a portion of its heat to the mash contained therein, and thus assists in preparing it for the stills, by which means the temperature of said vapor is sufficiently reduced to cause the low-wines contained therein to be condensed, while the high-wine passes onward through said pipe and through the condenser M, where it is also condensed, and flows out through the end of the pipe into a suitable receptacle.

The low-wine condensed within the pipe L, contained within the mash-tub or heater D, flows backward through said pipe into the doubler H, but, if desired, an additional pipe may be connected with said pipe L, immediately outside of said heater D, and from thence extend into the doubler, for the purpose of furnishing an independent channel through which the low-wines may pass into said doubler.

By means of the pipes K and *k*, the low-wines contained within the doubler may be drawn off into the stills, and redistilled as often as may be desired.

The advantages possessed by this apparatus consist principally in the application of heat to the stills by means of hot water and steam, as by it greater economy in the use of fuel is secured, a more uniform temperature maintained, and a better result obtained.

Another advantage arises from the combination of two or more stills with each other, and with the doubler and mash-heater, whereby the stills may be used independently or in combination with each other, and in the latter event, alternately charged, so that neither time nor fuel shall be wasted, and the process of distillation uninterruptedly continued.

A further advantage is obtained by the construction and arrangement of the stills and doubler, by means of which the products of one still may be passed through the contents of the second still, and assist in the distillation of the same, and, at the same time, produce a better result than would otherwise be obtainable.

In addition to the foregoing, the various parts are so combined and arranged as to occupy the least possible space, whereby an important saving is effected, not only in the size and cost of the building required, but also in the apparatus itself, as the length, and consequently cost of the connecting-pipes are much less than is required by other devices intended for a similar purpose.

Having thus fully set forth the nature and merits of my invention,

What I claim as new, and desire to secure by Letters Patent, is—

Combining two or more stills with a steam-boiler, substantially as and for the purpose specified.

Also, combining two or more stills with a doubler, H, and mash-heater D, so as to permit said stills to be alternately charged and worked off through each other and through the doubler, substantially as shown, and for the purpose specified.

Also, combining one or more stills, B or C, with the doubler H and boiler A, substantially as herein shown and described.

Also, the combination of the boiler A, one or more stills, B or C, and the mash-heater D, substantially as and for the purpose specified.

Also, the combination of the stills B and C, and pipes G and G', substantially as shown and described.

Also, the combination of the stills B and C, the pipes I, *i*, K, and *k*, and the doubler H, substantially as described and for the purpose shown.

Also, the combination of the pipes F and *f* with the boiler A and stills B and C, substantially as shown, and for the purpose specified.

Also, the combination of the doubler H and pipe L with the mash-heater D and condenser M, substantially as and for the purpose shown.

Also, the general combination of the various parts of the apparatus, substantially as shown and for the purpose set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 2d day of September, 1869.

FRANK SONIER.

Witnesses:
GEO. O. MARCY,
C. M. MOSHER.