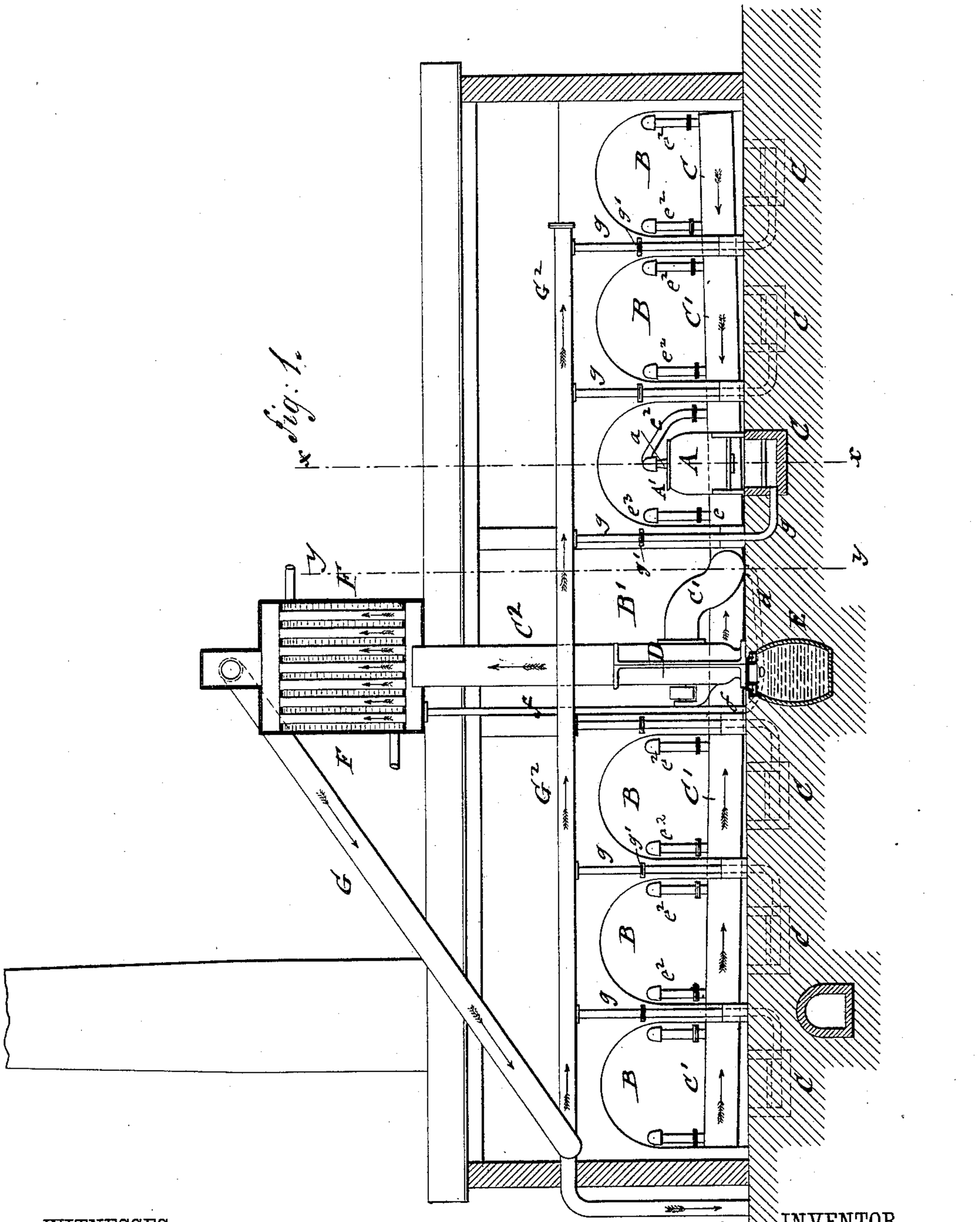
(No Model.) 3 Sheets—Sheet 1.

S. W. MAYER & P. J. BUNGART.

APPARATUS FOR THE MANUFACTURE OF VARNISH.

No. 318,642. Patented May 26, 1885.



WITNESSES:
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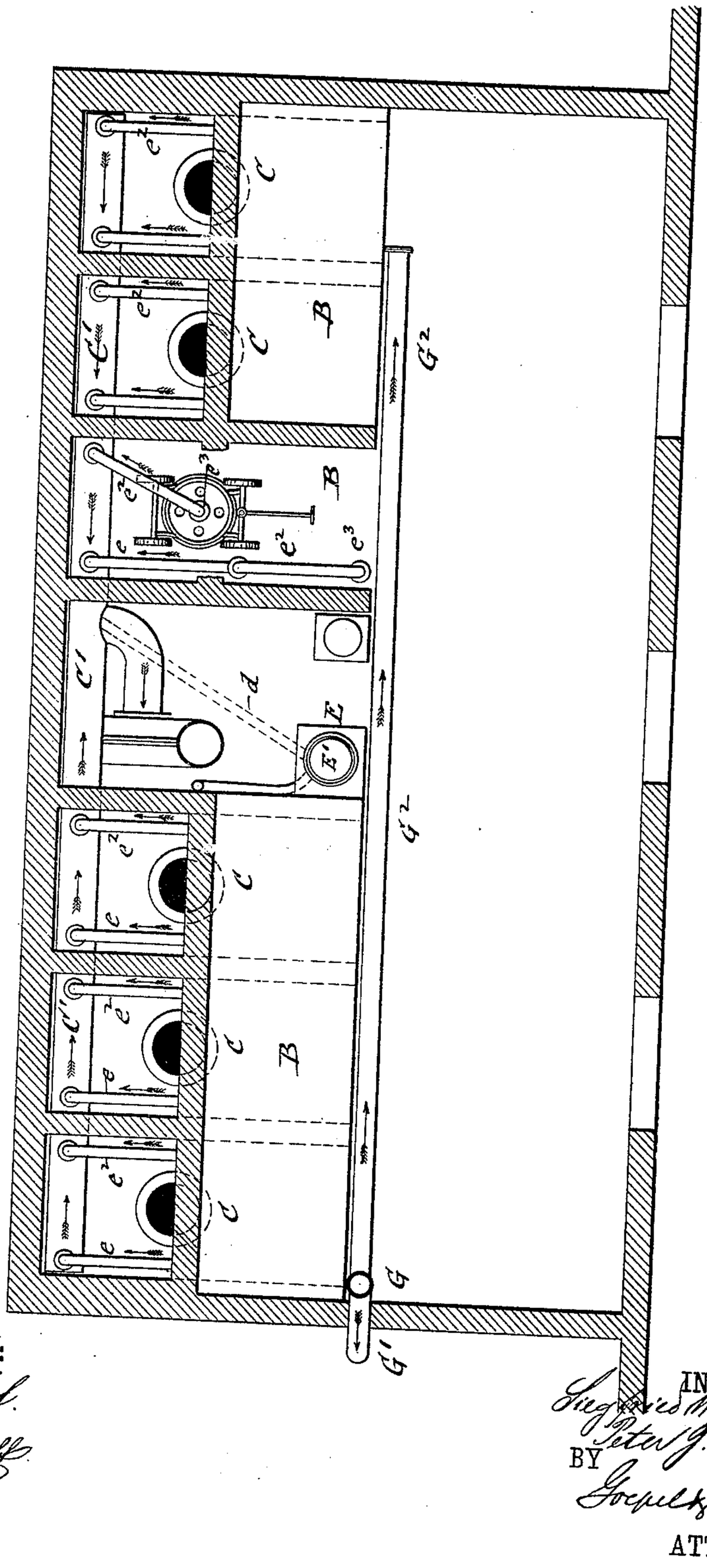
Fig: 2.



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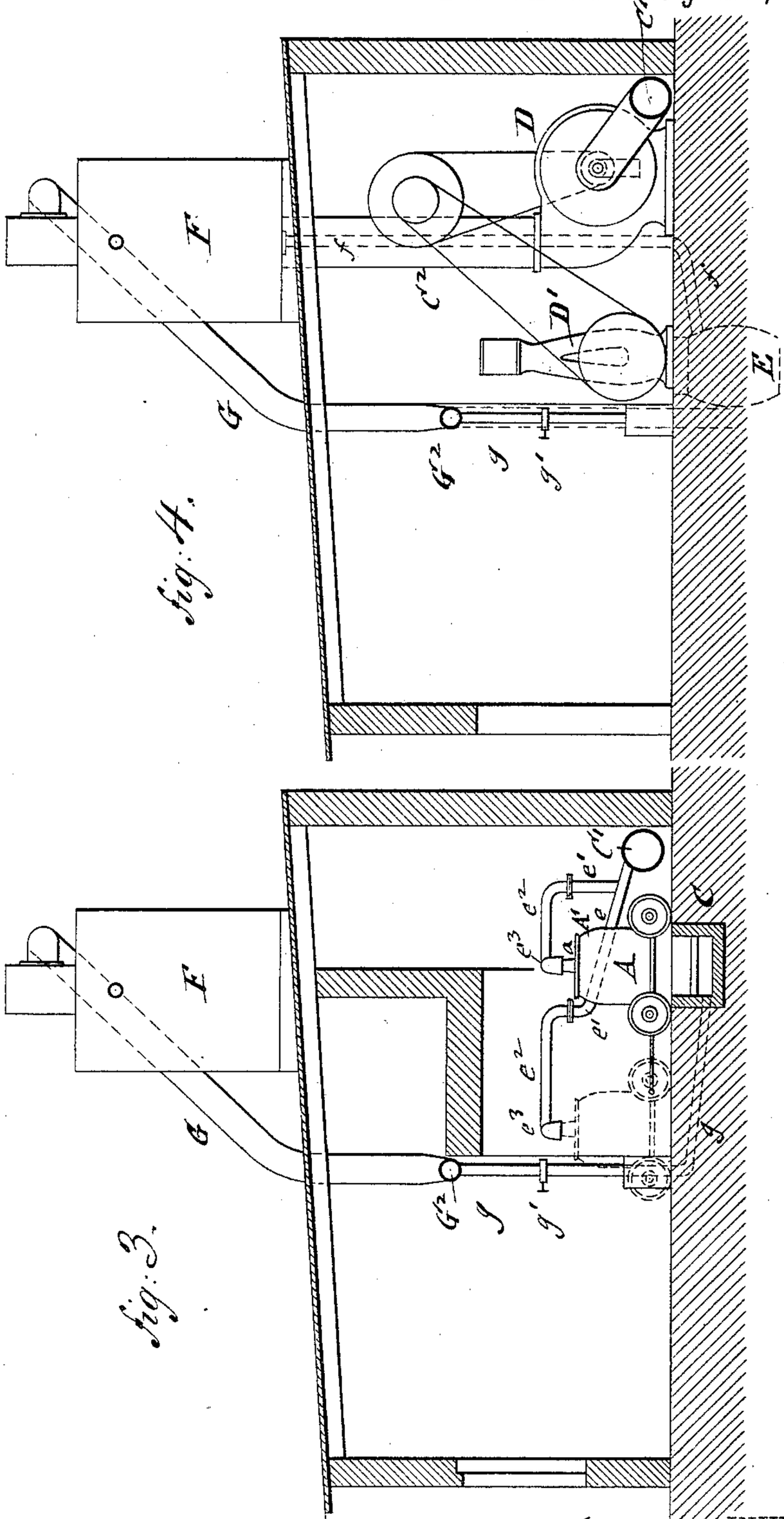

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR THE MANUFACTURE OF VARNISH.

SPECIFICATION forming part of Letters Patent No. 318,642, dated May 26, 1885.

Application filed December 10, 1884. (No model.)

To all whom it may concern:

Be it known that we, SIEGFRIED W. MAYER, of the city, county, and State of New York, and PETER J. BUNGART, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in the Manufacture of Varnish, of which the following is a specification.

This invention relates to improvements in the manufacture of varnish, whereby the objectionable vapors which have heretofore been emitted by varnish-factories are prevented from escaping and collected, partly in a condensed state for further utilization and partly in the form of vapors, which latter are used for heating the furnaces of the steam-boilers and the fire-places of the varnish-kettles of the factory.

The invention consists of a system of suction-pipes that connect the top openings of the varnish-kettles by means of a trunk-pipe with a suction-fan, by which the drawn-off vapors are forced into a condenser of suitable construction. The vapors condensed in the trunk-pipe and the condenser are collected in a suitable tank, the cover of which is closed by a hydraulic seal. From the condenser the vapors are carried to the furnaces of the steam-boilers and to the fire-places of the different varnish-kettles by means of distributing-pipes, which are provided with slide-valves for regulating the supply of vapors. Each varnish-kettle can be connected with the trunk-pipe by means of two jointed and horizontally-swinging pipes with enlarged hood-shaped ends, which pipes are placed in position over the top opening of the varnish-kettle when the same is either above the fire-place or in front of the same for cooling.

In the accompanying drawings, Figure 1 represents an elevation, and Fig. 2 a plan, showing a series of varnish-kettles with our improved system of suction-pipes for the kettles and vapor-distributing pipes for the fire-places of the same; and Figs. 3 and 4 are detail vertical transverse sections of the chambers, respectively on lines *x x* and *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the varnish-kettles, of the usual construction, which are supported on wheels and provided with a detachable lid, A′, having a conical vapor-escape pipe, *a*, at its center. The varnish-kettles are arranged in a series of arched chambers, B, which are open in front, but connected at their rear parts by suitable uptakes to the chimney. In the bottom of each chamber is arranged a circular fire-place for the kettle, said fire-place being lined with fire-bricks set into the ground and provided with a detachable circular grate. Below the grate an ash-pit of suitable depth is arranged. The fire-places C C are filled with coke or other suitable fuel.

Along the rear parts of the arched chambers B extends a large trunk-pipe, C′, to which a slight inclination is given toward the central chamber, B′, in which are located a suction-fan, D, and its motor-engine, and a collecting-tank, E, for the vapors condensed in the trunk-pipe. The collecting-tank E is connected by a pipe, *d*, with the lowest part of the trunk-pipe C′, and covered by a lid, E′, closed hermetically by means of a hydraulic seal. The conical escape-pipe *a* of each kettle A is connected to the trunk-pipe C′ by means of an inclined branch pipe, *e*, that runs along the side wall of each chamber. Each pipe *e* is provided with two upright pipe-sections, *e′ e′*, to which are jointed the horizontally-swinging suction-pipes e^2, that are provided with enlarged or hood-shaped ends e^3, as shown in Fig. 3. Both suction-pipes e^2 e^2 may also be connected directly to the trunk-pipe C′, as shown in Fig. 2. One of the suction-pipes e^2 serves to be swung over the escape-pipe *a* of the kettle when the same is placed in position over the fire-place for boiling the gums in the kettle, while the second suction-pipe e^2 is arranged in front of the other and placed over the escape-pipe *a* when the kettle has been moved forward to some distance from the fire-place for cooling off. In either position of the varnish-kettle nearly all the vapors escaping through the escape-pipe *a* of the lid A′ are sucked in by the hood e^3, and drawn through the pipes e^2 e^2 and the trunk-pipe C′ into the casing of the suction-fan D, and then forced by the latter through an upwardly-extending pipe, C^2, into a condenser, F.

The condenser F is arranged at a suitable

elevation above the roof of the arched chambers B, said condenser being made of any approved construction, that shown in the drawings consisting of a series of pipes with intermediate spaces, which pipes are cooled by means of running water that is supplied to the space around the pipes and conducted off in any suitable manner, as shown in Fig. 1.

The bottom of the condenser F is connected by a downwardly-extending pipe, *f*, with the collecting-tank E, as shown in Fig. 1, so that the condensed vapors are conducted off to the same. The condensed vapors collected in the tank are either mixed with the refuse of the kettles and used as fuel or treated with a view to the production of the essential oils contained therein.

From the upper part of the condenser a pipe, G, leads in downward direction to the distributing-pipes G′ G², of which the pipe G′ is conducted to the furnaces of the steam-boilers, so as to discharge the vapors to points below the grates of the same, while the pipe G² is conducted along the front wall of the chambers B, from which smaller distributing-pipes, *g g*, pass downward and below the floor of the chambers B into the ash-pits of the fire-places. The downwardly-extending distributing-pipes *g* are provided with slide-valves *g′*, so as to regulate the supply of vapors to the fire-places.

As the vapors escaping from the varnish-kettles A are hydrocarbon vapors of high combustibility, and as they are nearly all drawn off by means of the suction-pipes and fan, forced through the condenser, and partly condensed and collected in the tank E, the remaining vapors are conducted to the furnaces and fire-places and form a valuable fuel, as atmospheric air has been mixed with the vapors on being drawn in at the mouth of the suction-pipes. The vapors keep up thereby a very bright and intense fire in the furnaces and fire-places, instead of passing off through the chimneys, as heretofore. The atmosphere around the varnish-factories is thereby not polluted, which is of importance when they are located in cities or inhabited places.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination of varnish-kettles, furnaces beneath said kettles, suction-pipes connected to the discharge-pipes of the kettles, trunk-pipes connected to the suction-pipes, a suction-fan connected to the suction-pipes, a condenser, and distributing-pipes leading from the condenser to the furnaces of the varnish-kettles, substantially as set forth.

2. The combination of varnish-kettles, furnaces beneath said kettles, suction-pipes connected to the discharge-pipes of the kettles and provided with air-induction openings, trunk-pipes connected to the suction-pipes, a suction-fan connected to the suction-pipes, a condenser, and distributing-pipes leading from the condenser to the furnaces of the varnish-kettles, substantially as set forth.

3. The combination of the varnish-kettles, furnaces beneath said kettles, suction-pipes having hood-shaped ends arranged above the discharge-pipes of the varnish-kettles, a trunk-pipe or trunk-pipes connected to the suction-pipes, a suction-fan, a condenser connected to the fan, a hermetically-sealed collecting-tank connected to the trunk-pipes and to the condenser, and distributing-pipes leading from the condenser to the furnaces of the different varnish-kettles, substantially as set forth.

4. The combination of the varnish-kettles, furnaces beneath said kettles, suction-pipes having hood-shaped ends arranged above the discharge-pipes of the varnish-kettles, a trunk-pipe or trunk-pipes connected to the suction-pipes, a suction-fan, a condenser connected to the fan, a hermetically-sealed collecting-tank connected to the trunk-pipes and to the condenser, and distributing-pipes leading from the condenser to the furnaces of the different varnish-kettles, provided with regulating-valves, substantially as set forth.

5. The combination of a movable varnish-kettle, a furnace for heating said kettle, two horizontally-swinging suction-pipes having hood-shaped ends adapted to be placed successively over the discharge-pipe of the kettle while in position over the fire-place and while cooling, respectively, a trunk pipe or pipes, a suction-fan, a condenser, and distributing-pipes leading from the condenser to the furnace of the varnish-kettles, substantially as set forth.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

SIEGFRIED W. MAYER.
PETER J. BUNGART.

Witnesses:
ALEXANDRE K. INGRAHAM,
EDGAR SHULTZ.