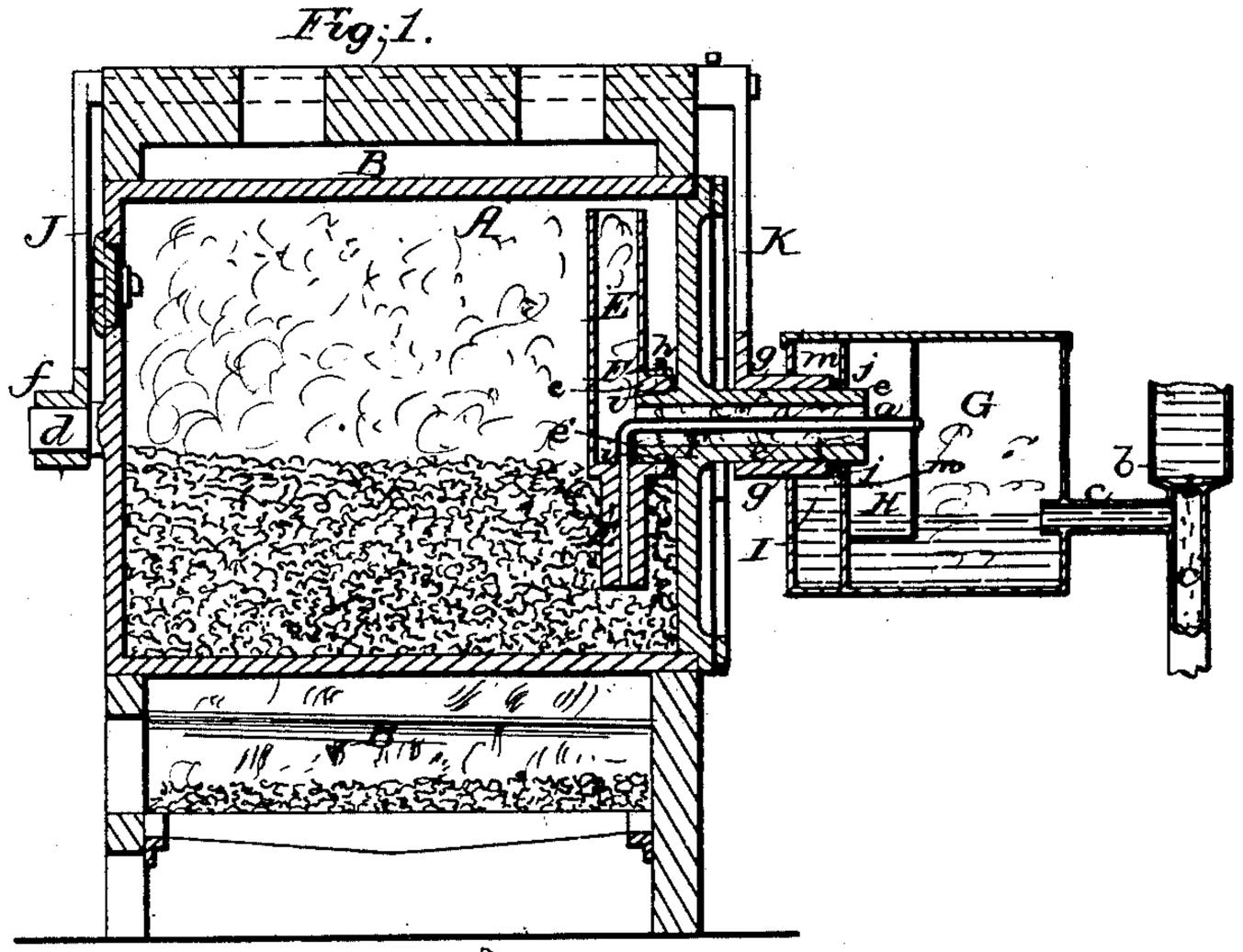
J. E. HOLMES.

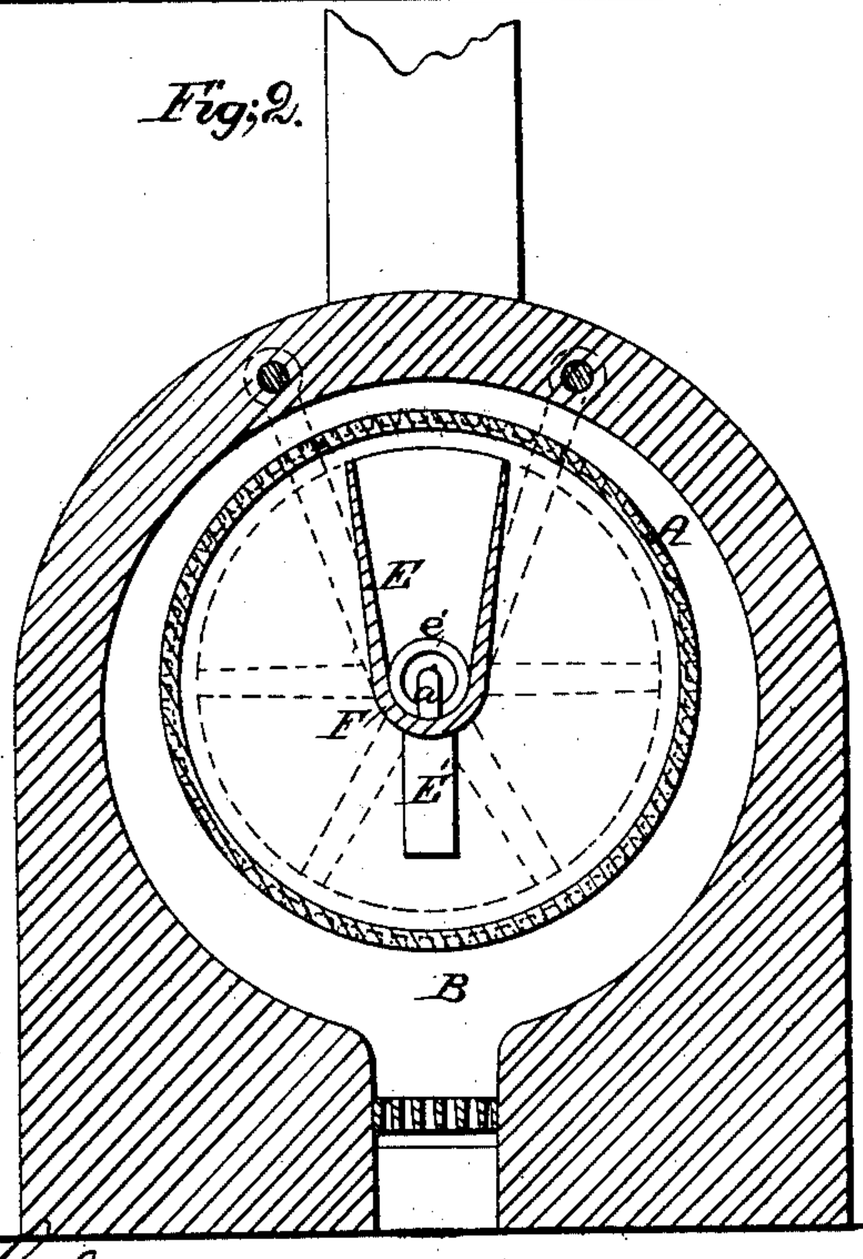
REVOLVING RETORT.

No. 23,427. Patented Mar. 29, 1859.

Fig; 1.



Fig; 2.



Witnesses;

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UNITED STATES PATENT OFFICE.

JOSEPH E. HOLMES, OF NEWARK, OHIO, ASSIGNOR TO HIMSELF, AND JOSEPH PALMER, OF NEW YORK, N. Y.

IMPROVEMENT IN RETORTS FOR DISTILLING COAL-OIL.

Specification forming part of Letters Patent No. **23,427**, dated March 29, 1859.

To all whom it may concern:

Be it known that I, JOSEPH E. HOLMES, of Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Revolving Retorts for Distilling Coal and other Substances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section of a retort with my improvements. Fig. 2 is a transverse vertical section of the same.

Similar letters of reference indicate corresponding parts in both figures.

This invention is more particularly applicable to retorts for distilling coal-oil. It consists, first, in certain means of protecting the hollow journal by which the vapors escape from the retort against the entrance of lumps of coal or other substance under treatment, and in a great measure against the entrance of the fine dust that is raised in the retort by the agitation of the charge.

It also consists in a certain method of applying a steam-pipe for the admission of steam into and among the charge during the distilling process.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the retort, made of cylindrical form, with one or both ends movable, and having a solid journal, *d*, at its front end and a hollow journal, *e*, at its back end, constituting a means of exit for the vapors, the said journals being fitted to bearings *f* and *g* in hangers J and K, attached to the front and back of the furnace B, in which the retort revolves and by which it is heated, or in any suitable framing outside of the said furnace. The hollow journal is prolonged some distance within the retort, as shown at *e'*, Fig. 1, to receive the pipe E F, which is formed like an elbow, and so that it may fit to the exterior of the prolongation *e'* and reach therefrom nearly to the top of the retort. The arm F of the said pipe E F fits over the prolongation *e'* of the hollow journal, and is confined thereto in such a manner as to be permitted to remain stationary while the retort revolves by means of a screw or pin, *h*, inserted through it far enough to enter a groove, *i*, in the prolongation *e'* of the hollow journal. The said pipe E F has attached to it a leg, E', so arranged and of such weight that it is capable, by the force of gravitation, of keeping the arm E upright and with its mouth near the top of the retort. The leg E' should be long enough to reach nearly to the bottom of the retort, so that the force of gravitation may be assisted by the dragging of the said leg in the charge of coal or other material in the retort in preventing the pipe from being swung from side to side by the friction produced by the revolution of the retort.

G H is the hydraulic main, into the front chamber, H, of which the hollow journal enters through an opening, *j*, in the external plate, to which opening the said journal fits easily, as in a bearing, and which may therefore be considered as a part of the bearing for the said journal.

Between the chamber H and the retort is a water-box, I, through which the journal *e* passes, and to which the bearing *g* may be tightly connected. The box I is kept filled with water to a sufficient height to keep the top of the journal *e* covered, so that there may be a constant and sufficient leakage both through the portion *e* and through the portion *g* of the bearing to keep the journal lubricated, while the water in the box I surrounding it keeps it comparatively cool. The water also forms a seal around the opening *j*, and thus prevents any leakage of vapor from the hollow journal to the atmosphere. The escape of water through the bearing *j* into the hydraulic main is immaterial, as the water overflows from the hydraulic main when it gets above the proper height; but an unnecessarily great leakage is prevented by winding round the journal between the two parts *g* and *j* of its bearing a loose packing, *m*, of hemp, cotton, or other material.

a is the steam-pipe for the introduction of steam into and among the charge, said pipe coming from the boiler or steam-generator, passing through the hollow journal *e*, and entering the leg E', which is made hollow for the purpose of receiving it and conducting the steam admitted by it down into and among

the charge and near the bottom thereof. The leg E′ may be bent at the bottom and extended in a direction parallel with the sides of the retort and perforated at intervals to admit steam at various points among the charge. By thus admitting the steam near the bottom of the charge its perfect circulation through and in contact with every particle of the coal or other material under treatment is insured.

c is the pipe by which the vapors are conveyed from the hydraulic main to the condensing apparatus, said pipe being formed with a T-piece, as shown in Fig. 1, the lower part of the T-head communicating with the condensing apparatus and the upper part connecting with a water-injection pipe, *b*, from which cold water is supplied through a perforated plate or strainer, *l*, in a shower of spray among the escaping vapor. This method of condensation is the most effective that can be used, and there is no difficulty in subsequently effecting the separation of the oil from the water, owing to the difference of their specific gravity.

I do not claim the invention of a revolving retort, that being specified in the French patent of Mr. Ajasson de Grandsagne, dated October 9, 1839; neither do I claim the introduction of steam into the retort during the distilling process; but

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

1. The combination, with the internal vapor-pipe, E F, of a leg, E′, so applied as to keep the mouth of the said pipe in the upper part of the retort, either by the direct action upon it of the force of gravitation or by its dragging in the coal or other matter in the lower part of the retort.

2. The arrangement of the steam-pipe *a* to communicate through the hollow journal with a passage in the leg E′ of the vapor-pipe E F, for the admission of steam directly into and among the charge, substantially as herein specified.

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Witnesses:
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