

W. G. W. JAEGER.

Condensing and Separating Oils and Gases.

No. 24,561.

Patented June 28, 1859.

Fig. I.

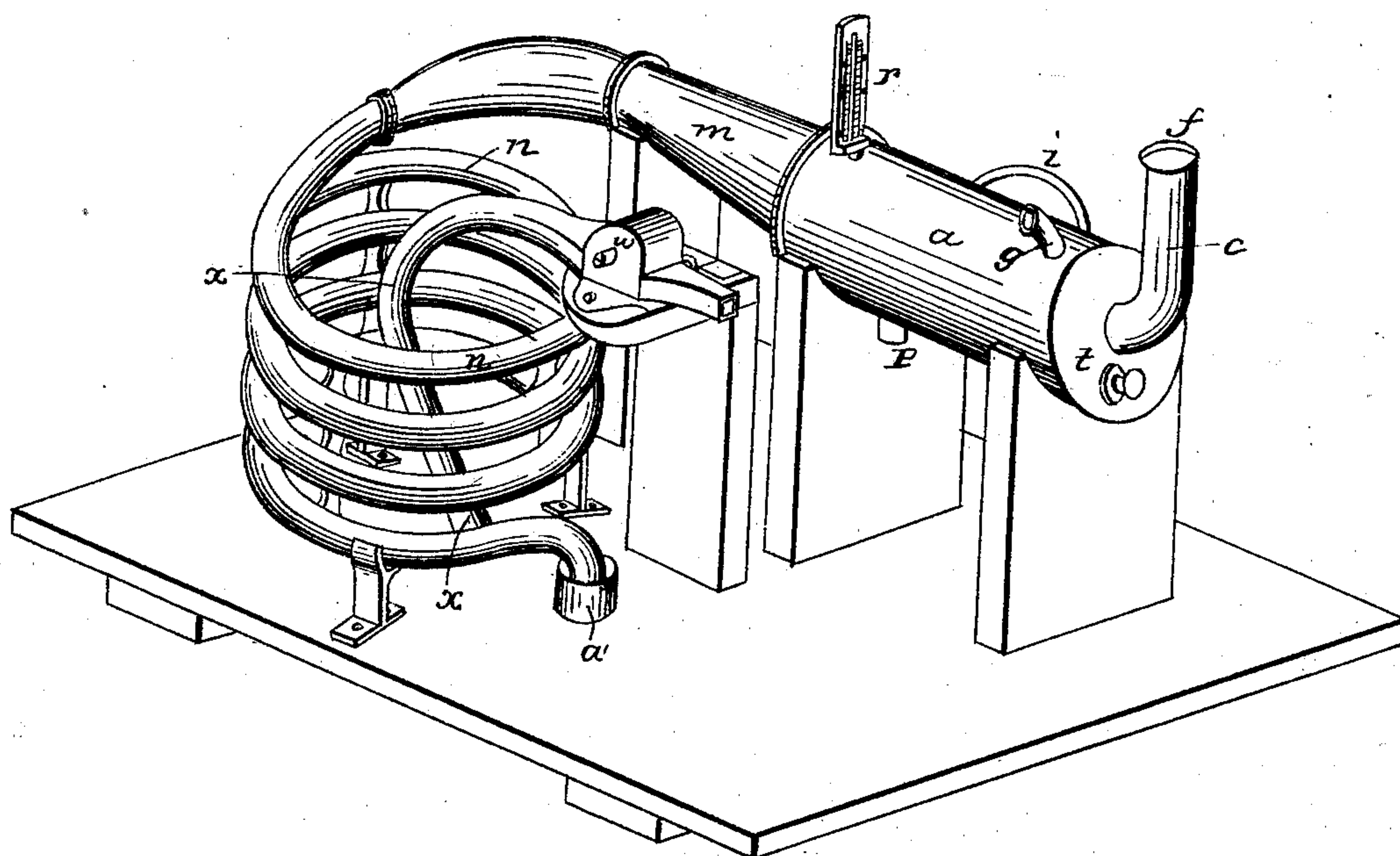
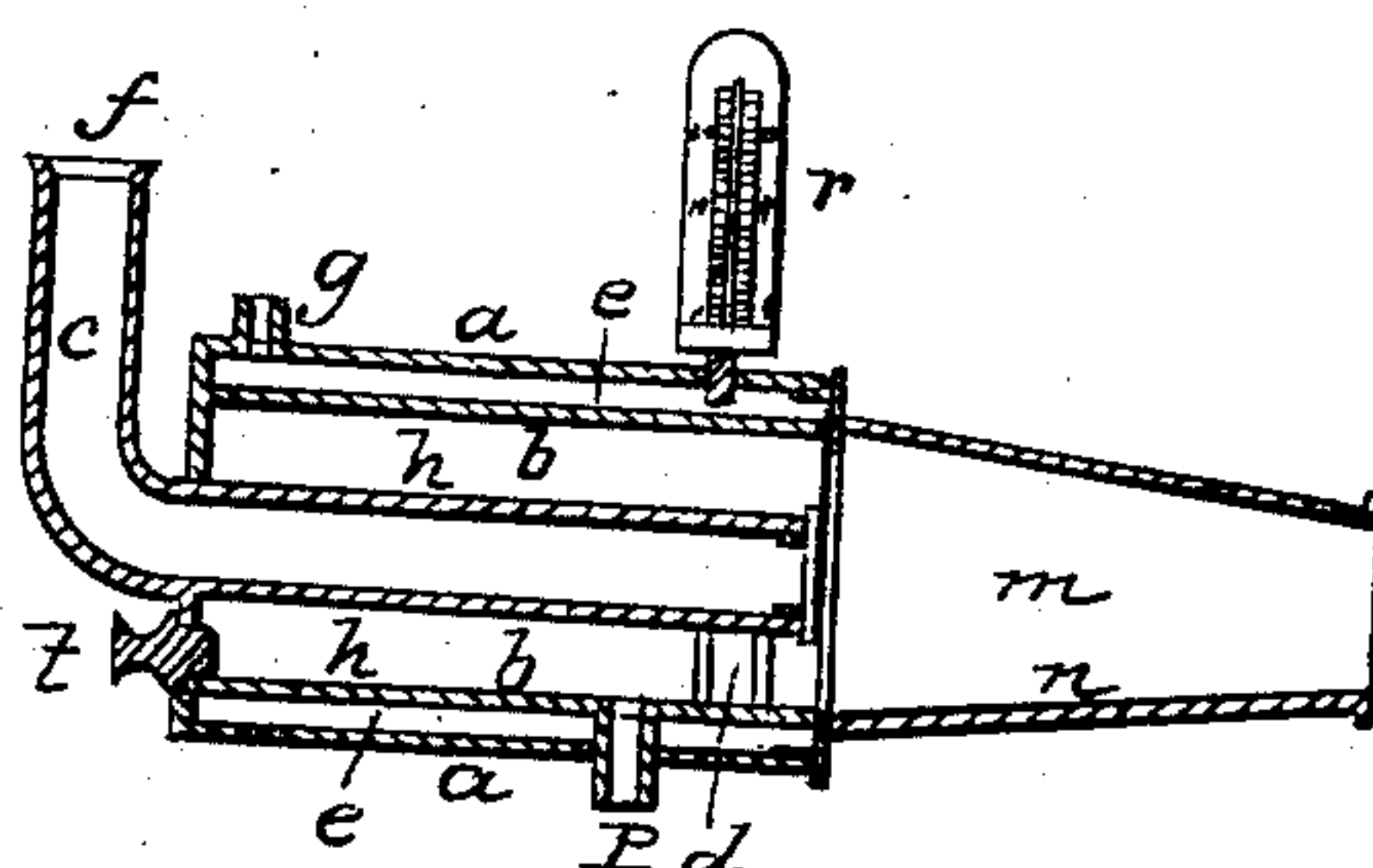


Fig. 2



Witnesses:

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UNITED STATES PATENT OFFICE.

WM. G. W. JAEGER, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN APPARATUS FOR CONDENSING COAL-OIL.

Specification forming part of Letters Patent No. 24,561, dated June 28, 1859.

To all whom it may concern:

Be it known that I, WM. G. W. JAEGER, of Baltimore, in the county of Baltimore and State of Maryland, have invented certain Improvements in the Condensation of Coal-Oils; and I do hereby declare that the following is a full, clear, and exact description of the principles or characters which distinguish them from all other things before known, and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, of which—

Figure 1 is a perspective view of the condensing apparatus, and Fig. 2 a vertical longitudinal middle section through the condensing-main.

My invention consists in certain improvements in the condensation of vapors in the process of distilling coal-oil, described and represented as follows:

The modes of distilling coal-oil now in common use, where the condensation of vapors takes place principally in condensing-worms or tubes, are liable to serious difficulties from the frequent choking of the pipe by the induration of the heavy oils and the difficulty of regulating the temperature of the cooling-water in the tubs, vats, or boxes containing the condensing-pipes, and of keeping the temperature of the water at or near the same degree throughout the tub.

To remedy these evils, and, further, to facilitate the separation of heavy and light oils, I introduce between the retort and the condensing-worm a large surface-condenser, which I call the "condensing-main," the construction of which is as follows: The main is constructed with two concentric cylinders, *a b*, and through center of the inner cylinder there is a cold-water pipe, *c*, which connects with the water-space *e* by the pipe *d*. The water-pipe rises to a suitable elevation, *f*, to receive the water from any convenient source. The water passes through and out from space *e* by the overflow-pipe *g*, and the flow or overflow of the water can be regulated to any required amount by the ordinary appliances used in such cases. The chamber *h* within the inner cylinder, *b*, and around the pipe *c* is in communication with the coal-retort by means of the large pipe or opening *i*, it not being necessary to exhibit

the retort here. The chamber *h* is continued through a conical funnel, *m*, to which funnel the condensing-worm *n* is attached. With the bottom of the chamber *h* is connected a pipe, *p*, which may be furnished with a spigot or trap. There is a thermometer, *r*, connected with the water-space, to indicate the temperature of the water, and at one end of chamber *h* is a man-hole, *t*.

The operation of the condensing-main is as follows: The vapors from the retort enter chamber *h*, and the heavier and more condensable oils are there condensed and discharged through the pipe *p*, while the vapors of the lighter oils pass over through the funnel *m*, and any heavy oils that may be condensed in this funnel are returned to chamber *h* by means of the inclined surface *u*.

It will be seen that the action of this condenser is quite different from that of the worm-condenser. The water entering pipe *c* and passing down through pipe *d* and upon either side through space *e* is kept at nearly a uniform temperature throughout, while the water is found always to be cooler at the bottom of the worm-tub than above. After the vapors of the lighter oils pass over to the worm they are there condensed in the usual manner, and the oil run off at the lower end of the worm.

For the purpose of facilitating the passage of vapor through the condenser and worm, and also for the purpose of separating the uncondensed vapors or gases from the oils and conducting them to suitable receptacles to be further utilized, I employ a fan-blower, *w*, connected with a pipe, *x*, which has its lower end opening into the lower end of the worm, and at a point just above the trap *a'*. In many instances, where the inflammable gases have been suffered to run off with the coal-oil or escape into the room, serious accidents have occurred, and the odor also is very offensive. The draft of the fan being properly regulated, the gases are prevented from escaping at the trap, and are conveyed away either to a gasometer or forced through suitable condensing media. The draft of the fan is direct in its communication with the retort, and acts to relieve the pressure and facilitate the escape of vapor and its conveyance through the apparatus.

I am aware that pumps are used in gas-works to relieve the "main," as the gas is obliged to dip or pass down into water; but the draft of my fan is direct upon the retort and for a distinct purpose and effect.

The pipe *x*, connected with the lower end of the worm, may convey the gases without the aid of the fan, and the fan may, if necessary, be connected with other parts of the worm than the bottom, with similar advantages in respect to relieving the pressure.

What I claim as my improvement in the distillation of coal-oil is—

1. The employment of a fan-blower when the same is used to draw the vapors from the retort, in the manner and for the purposes herein set forth.

2. In combination with the fan-blower or draft so used, the escape-pipe *x* and trap *a'*, arranged and operating as herein set forth.

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Witnesses:

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