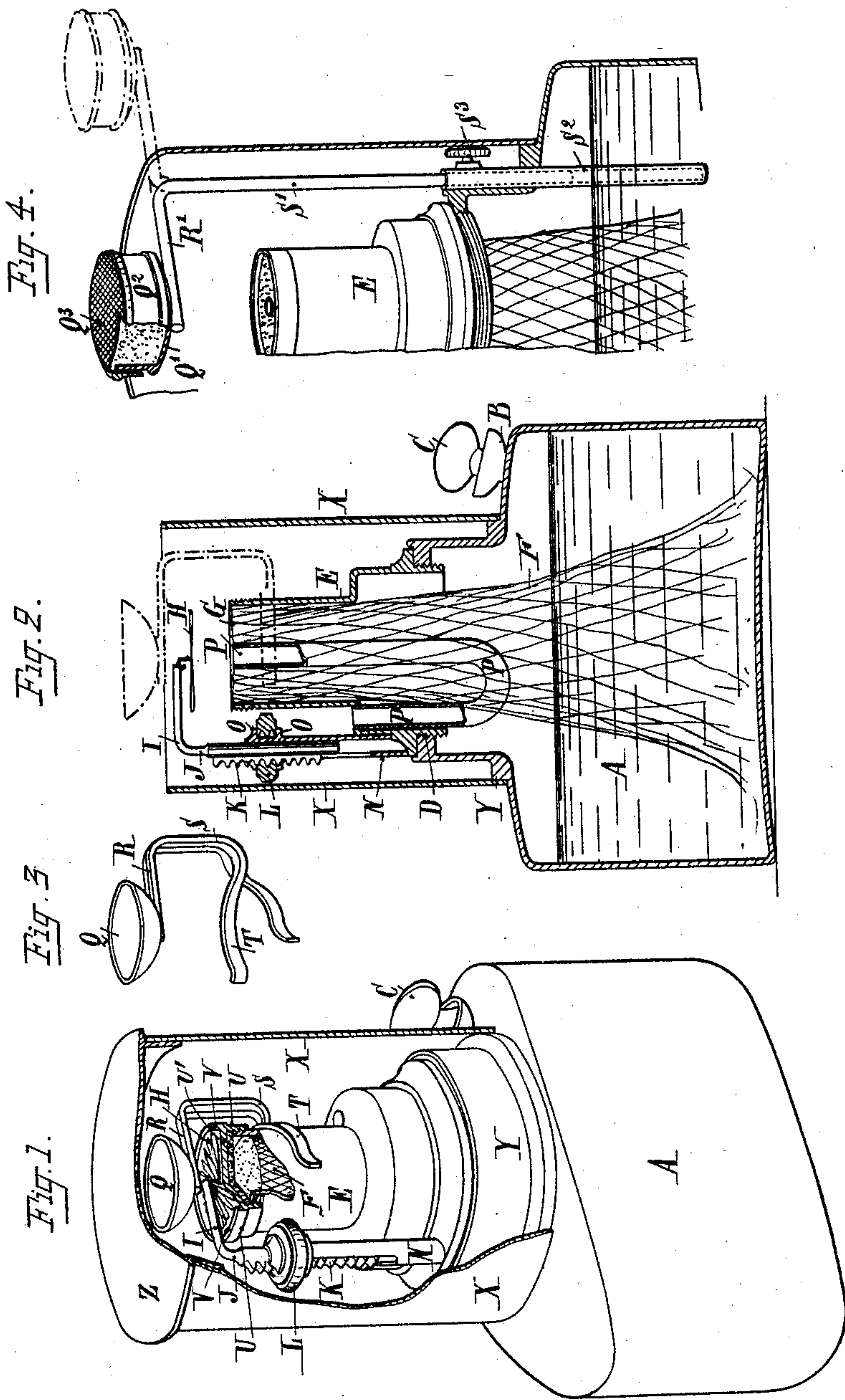


(No Model.)

E. FOURNIER.
ALDEHYDE LAMP.

No. 603,682.

Patented May 10, 1898.



Witnesses:

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UNITED STATES PATENT OFFICE.

EUGÈNE FOURNIER, OF PARIS, FRANCE.

ALDEHYDE-LAMP.

SPECIFICATION forming part of Letters Patent No. 603,682, dated May 10, 1898.

Application filed April 10, 1897. Serial No. 631,561. (No model.) Patented in France March 23, 1897, No. 265,297; in Belgium March 25, 1897, No. 127,219; in England March 26, 1897, No. 7,887; in Italy March 27, 1897, 44/334; in Austria April 28, 1897, No. 1,537, and in Spain May 3, 1897, No. 20,623.

To all whom it may concern:

Be it known that I, EUGÈNE FOURNIER, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in Lamps or Burners, (for which Letters Patent have been granted in England, No. 7,887, dated March 26, 1897; in France, No. 265,297, dated March 23, 1897; in Belgium, No. 127,219, dated March 25, 1897; in Austria, No. 1,537, dated April 28, 1897; in Spain, No. 20,623, dated May 3, 1897, and in Italy, No. 44/334, dated March 27, 1897,) of which the following is a full, clear, and exact description.

The present invention chiefly relates to a new construction of burner or lamp by means of which vapors of aldehyde or of formaldehyde are formed, according to the combustible alcohol being ethyl or methyl alcohol. These vapors of acetic or formic aldehyde are produced by the oxidation of alcohol in contact with a block of spongy platinum or of platinum in a very fine state of division.

The invention is illustrated, by way of example, in the accompanying drawings, in which—

Figure 1 is a perspective view of the whole apparatus, said apparatus being shown with its parts in the position occupied when not in use or for transport, some parts being broken away to better show the interior; Fig. 2, a vertical section with the parts in the position occupied when in use. Figs. 3 and 4 are detail views relating to the cup. By examining these figures it will be easy to understand the construction of my apparatus, which is mainly constituted as follows:

A lamp-reservoir A receives through a filling-orifice B, closed by a screw-plug C, (having a safety-opening,) the ethylic or methyl alcohol, according to whether it is desired to produce vapors of acetic or formic aldehyde. Onto the reservoir A is screwed at D the burner-tube E, inclosing one or several wicks F. The alcohol contained in the reservoir A rises to the upper ends of said wicks, appearing at the upper orifice G of the tube E.

Inside the tube E there is centrally arranged a tube P, which is surrounded by the wick or wicks F, its upper extremity being at the center of the orifice G of the burner, while at the bottom the tube P is bent upward in a U form and terminates outside the wick, thus forming an air-inlet.

Above the orifice G is suspended concentrically with this orifice a horizontal disk H, consisting of very fine platinum wires and attached at its center to the end of a horizontal branch I of a bracket J, bent at a right angle and provided with a rack K, having helical teeth, held and guided in a vertical guide N, provided with an opening for the passage of the teeth, said guide supporting between its shoulders O O a milled nut L, by means of which the rack K can be raised or lowered. The result of this arrangement is that the disk H of platinum wires is vertically adjustable above the orifice G of the burner by vertically moving the rack K by means of the nut L.

A cap U, which is screwed on the upper end G of the tube E, enables said orifice to be closed in an air-tight manner for the purpose of transporting the apparatus or when not in use and at the same time affords support to the platinum disk H, which when the rack K is in its lowest position rests with its lower face on the top U' of the cap U, where it is protected against injury by the flange V, formed around the disk U'.

A cylinder X, secured with its lower open end to a shoulder Y on the reservoir A below the burner, forms a casing for the latter and also a screen, so that the lamp may be carried about when lighted without any special precautions and without risk of extinguishing it.

The casing X is arranged so as to receive at the top a cover Z, which serves, moreover, to protect the whole burner when the lamp is not used, so that its main parts are protected against shocks during transport or in handling the lamp.

For a special purpose which will be described later on the burner of the present

lamp, constructed as described, is combined with a small cup which is intended to be arranged at a suitable variable height above the platinum disk H. Said cup must be sufficiently heated to produce the desired hereinafter-described result by the heat radiating from the disk H, which heat has been produced first by lighting the burner, and after the latter has been extinguished maintained by the vapors rising from the burner, mixed with the air entering through the tube P.

According to the use for which it is meant the cup may be simply an ordinary cup Q, as in Figs. 1, 2, and 3 or as in Fig. 4, which shows a cup Q' filled with some absorbing powder or material—such, for instance, as pulverized pumice-stone—said material being held in place by an asbestos cap Q³, fastened by a ring Q², securing the edge of said cap against the corresponding edge of the cup Q'. Whatever its construction this cup may be supported in any suitable manner above the lamp-burner. It may be supported, for instance, as shown in Figs. 1, 2, and 3, at the end of a horizontal band or rod R, bent downward at a right angle, the vertical portions S being again bent back at a right angle in the same direction as the upper part R, this lower horizontal portion being divided into two branches, forming an elastic clamp T, to grip the tube E and to be placed on said tube at any desired height or, as in Fig. 4, at the end of a horizontal rod R', bent at a right angle, the vertical portion S' being guided and supported in a vertical tube S², closed at the bottom and passing into the lamp-reservoir A, a set-screw S³ enabling the rod S' to be fixed in any desired position. This latter arrangement has, if compared with that in Figs. 1, 2, and 3, the advantage of enabling the cup carried by the rod R' to be horizontally adjusted relatively to the burner—that is to say, to be placed, for instance, outside the reach of the heat in the position indicated by dotted lines in Fig. 4 simply by turning the rod S' in the tube S² without being obliged to separate it completely from the lamp, as would be necessary in the arrangement shown in Figs. 1, 2, and 3.

Figs. 2 and 4 partially show the present device in working position—that is to say, the cap U as well as the cover Z of the cylindrical casing X removed and the disk H placed by means of the rack K, operated by the nut L, at a suitable height above the top G of the burner.

The operation of the apparatus is as follows: The wick F being lighted, the platinum disk H is heated by the flame until it is red-hot. This temperature being reached, the flame of the wick F is extinguished and the disk H is maintained at this temperature by the alcohol-vapors, which, under the influence of the initial temperature of the disk H, continue to come from the wicks F. These

vapors coming in contact with the red-hot platinum disk H become oxidized, the result of which oxidation, considerably assisted by the oxygen of the air entering through the tube P, is the production of vapors of aldehyde or formaldehyde, according to whether ethylic or methyl alcohol is used. In case the production of these vapors becomes too strong, so that a disagreeable smell is produced, this inconvenience is remedied by putting into the movable cup Q, placed over the disk H, as shown dotted in Fig. 2, some salts of ammonia or some solid scented body, which, being decomposed by the heat, will produce a pleasant odor and mask that of the aldehyde, thus rendering it inoffensive. If it is preferred to use liquid scents or essences for this purpose, the cup shown in Fig. 4 may be used, the scents being poured on the asbestos cover Q³ and then absorbed by the absorbing substance under the asbestos cover and become slowly evaporated by the heat to which the cup Q' is exposed. The result of this immediate absorption of the liquid scents or essences is to avoid boiling and upsetting under the influence of too strong a heat, whereby the apparatus may be injured. When the disagreeable smell has disappeared and the apparatus is still required for use, the cup may be either removed, if it is arranged as in Figs. 1, 2, and 3, or moved farther away from the burner beyond the reach of heat of the burner, as shown dotted in Fig. 4, if said cup be of construction shown in Fig. 4.

I claim—

1. In an aldehyde-vapor lamp a disk of platinum wires adjustably mounted over the wick-tube by means of a bent rod as J provided with a rack K in a guide-support N and an adjusting-nut L substantially as described.

2. An aldehyde-vapor lamp consisting of a liquid-container as A and wick-tube E provided with an air-supply pipe as P in combination with a disk of platinum wires H adjustably supported in the vessel by means of a bent lever I rack K support N and nut L, and a cup Q and clip R, S, T, the whole being inclosed in a casing X provided with a cover Z substantially as described and illustrated in the accompanying drawings.

3. An aldehyde-vapor lamp consisting of a liquid-container as A and wick-tube E provided with an air-supply pipe as P in combination with a disk of platinum wires H adjustably supported on the vessel by means of a bent lever I rack K support N and nut L and a cup Q' containing absorbent material and provided with a cover Q³ the cup being carried on a bent lever R' S' adjustably secured in a tube S² by set-screw S³ substantially as described and illustrated in the accompanying drawings.

4. An aldehyde-vapor lamp consisting in

the combination with a liquid-container and burner-tube and wick, of a platinum disk adjustable in height, and a cup arranged above the said disk and adapted to be adjusted relatively to the latter.

5 5. An aldehyde-vapor lamp consisting in the combination with a liquid-container and burner-tube and wick, of a platinum disk adjustable in height, and a cup arranged above

the said disk and adapted to be adjusted horizontally relatively to the disk.

In witness whereof I have hereto set my hand in the presence of two subscribing witnesses.

EUGÉNE FOURNIER.

Witnesses:

LOUIS SULLIGER,
EDWARD P. MACLEAN.