

No. 616,637.

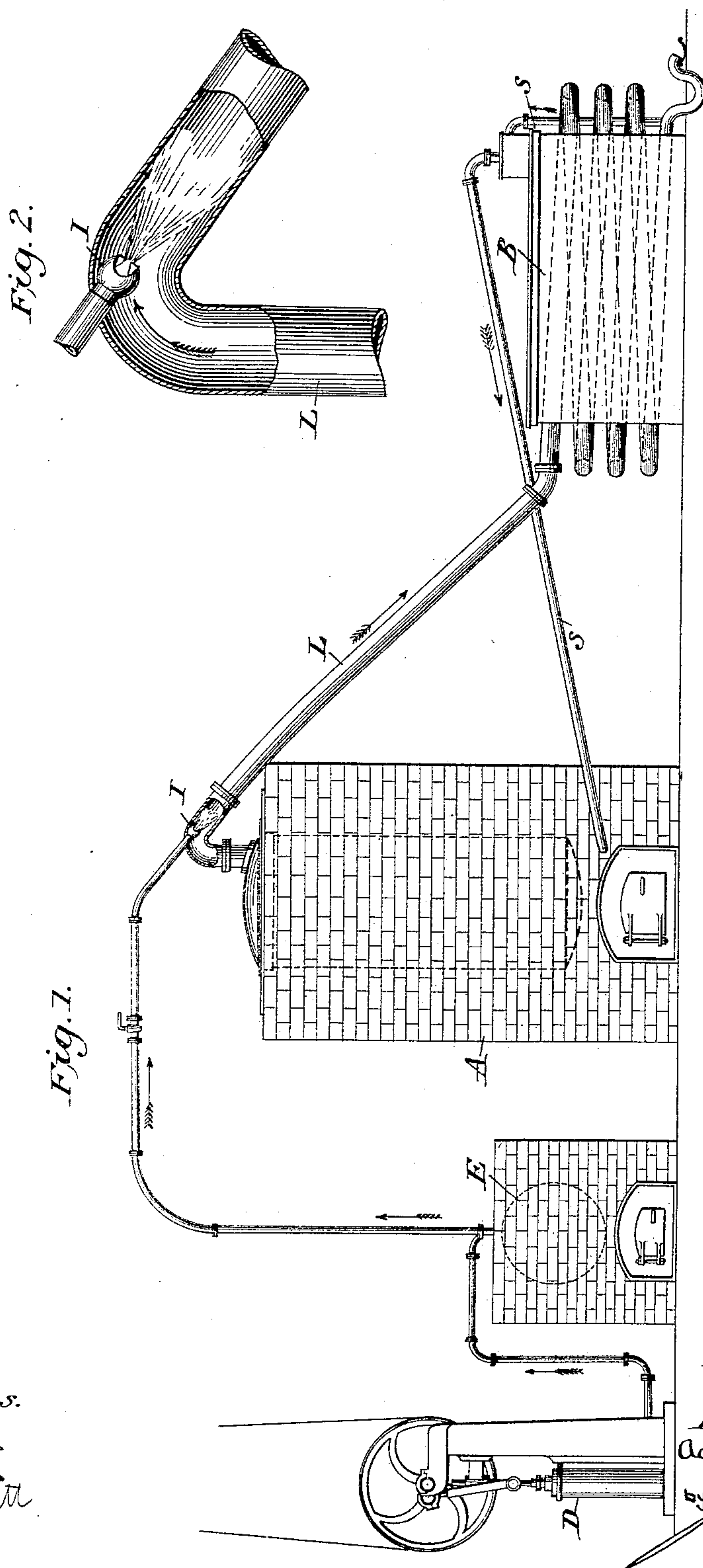
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A. SCHMIDT.

APPARATUS FOR EXTRACTING GASEOUS PRODUCTS FROM DRY DISTILLATION OF WOOD.

(Application filed May 2, 1896.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

ADOLPH SCHMIDT, OF CASSEL, GERMANY.

APPARATUS FOR EXTRACTING GASEOUS PRODUCTS FROM DRY DISTILLATION OF WOOD.

SPECIFICATION forming part of Letters Patent No. 616,637, dated December 27, 1898.

Application filed May 2, 1896. Serial No. 590,028. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH SCHMIDT, a subject of the King of Prussia, German Emperor, and a resident of Cassel, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Apparatus for Extracting Gaseous Products from the Dry Distillation of Wood, of which the following is a full, clear, and exact description.

The invention has been patented in Germany, No. 89,120, dated January 27, 1896; in Austria, No. 46/798, dated February 5, 1896; in Hungary, No. 6,936, dated February 7, 1896; in Luxemburg, No. 2,457, dated February 26, 1896; in Switzerland, provisional patent, No. 12,086, dated April 27, 1896; in France, No. 254,232, dated February 26, 1896; in Belgium, No. 120,051, dated February 26, 1896; in Great Britain, No. 4,598, dated February 29, 1896; in Denmark, No. 845, dated March 2, 1896; in Sweden, No. 7,640, dated March 3, 1896; in Norway, No. 4,818, dated March 2, 1896; in Italy, No. 31/41,218, dated April 2, 1896; in Spain, No. 18,634, dated February 6, 1896; in Portugal, No. 2,194, dated April 1, 1896; in Finland, No. 630, dated April 30, 1896; in Canada, No. 54,134, dated May 13, 1896; in Turkey, No. 498, dated March 30, 1896; in Tunis, No. 175, dated March 25, 1896; in Cape Colony, No. 6/419, dated May 22, 1896; in Natal, No. 45/1,896, dated May 18, 1896; in Congo Free State, No. 34, dated October 5, 1896; in Ceylon, No. 542, dated December 23, 1896; in India, No. 3,031, dated October 8, 1896; in New South Wales, No. 6,596, dated May 28, 1896; in New Zealand, No. 8,549, dated June 3, 1896; in Tasmania, No. 1,638, dated June 18, 1896; in West Australia, No. 908, dated May 29, 1896; in Victoria, No. 13,131, dated May 26, 1896; in Queensland, No. 3,400, dated June 16, 1896; in South Australia, No. 3,259, dated May 26, 1896; in Argentine Republic, No. 1,820, dated June 5, 1896; in Brazil, No. 2,050, dated May 25, 1896; in Peru, No. 15, dated September 14, 1896; in Uruguay, No. 135, dated June 16, 1896; in Colombia, No. 720, dated June 9, 1896, and in Mexico, No. 946, dated July 22, 1896.

My invention includes the combination of

parts hereinafter described, and particularly pointed out in the claims.

In order to render the present specification more easily intelligible, reference is had to the accompanying drawings, in which similar letters denote similar parts throughout both views.

Figure 1 is a diagrammatical representation of a distillery, and Fig. 2 a detail view of the present improvement.

In connection with the processes hitherto known for distilling wood there is considerable danger of decomposing the products of distillation, particularly acetic acid, wood-spirit, and tar, while they are exposed to the high temperature of the retorts. This danger is enhanced and the output correspondingly decreased the longer the products of distillation are allowed to remain in the retort after their formation. This circumstance is explained by the fact that the results of distillation are considerably better when the process is carried out by means of small retorts, in which case the products of distillation have only a short distance to go in order to pass out of the retorts. The employment of small retorts is, however, not sufficiently economical in connection with big works. According to the present invention the exit of the products of distillation from the retorts is accelerated and a more advantageous output attained.

The invention consists in means for introducing into the outlet-pipe of the distilling-retort at a suitable point in the same a current or jet of warm air. This jet serves a double purpose. In the first place it serves to draw out the gases developed in the retorts by means of suction, thus accelerating their exit from the retort and preventing the decomposition of the products of distillation formed, and in the second place the oxygen contained in the air introduced has an oxidizing effect on the gases. Since aldehyde is always formed in the dry distillation of wood and this substance, as is known, easily oxidizes to acetic acid, the introduction of the air-jet simultaneously effects an increased production of acetic acid in consequence of the oxidation of the products of distillation.

In the drawings, A is the distilling-retort;

l, the outlet for the gaseous products; B, the condenser; s, a pipe for conducting the non-condensable gases to the furnace. In Fig. 2 I is the injector-nozzle, by means of which
 5 the air is blown into the outlet-pipe L after having been pumped through the heating apparatus E by the air-pump D. It is necessary that the air introduced into the outlet-pipe should be previously heated. Otherwise
 10 it will tend to condense the products already in the outlet-pipe and block up the same.

The non-condensable gases are conducted to the furnace in the well-known manner and there used as fuel. The temperature of the
 15 injected air must be about 80° or 100° centigrade.

It may be said that the air is blown in—*i. e.*, the injector is set to action as soon as the gases begin to generate. To stipulate a definite time for this is an impossibility, because
 20 that depends upon the nature of the wood to be distilled and upon the firing, the construction and size of the retorts, &c. Moreover, the injection might be made in such a manner that a weak air-blast is injected at the
 25 beginning of the retort firing, and the strength and volume will be increased as the temperature rises in the retort and as the gases ac-

cordingly generate in proportion. As to the length of time employed in the injection of the
 30 air it is manifest that such injection should only take place while the gases generate—*i. e.*, while there is distillation going on. At the moment when the distillation is interrupted—*i. e.*, when coking has been
 35 achieved—the injector will be stopped.

I claim as my invention—

1. In combination, the kiln, its discharge-pipe for gases, an air-forcing fan, a heater between the same and the kiln, a pipe for
 40 leading the hot air through said heater to the discharge-pipe, said air-pipe having an air-injector in the discharge-pipe, substantially as described.

2. In combination with the discharge-pipe
 45 of a distilling-kiln, an injector in said pipe and a hot-air pipe leading to the injector, with means for heating the air in said pipe substantially as described.

In witness whereof I have hereunto set my
 50 hand in presence of two witnesses.

ADOLPH SCHMIDT.

Witnesses:

FRIEDRICH ROSENTHAL,
 HERMANN KERSTING.