

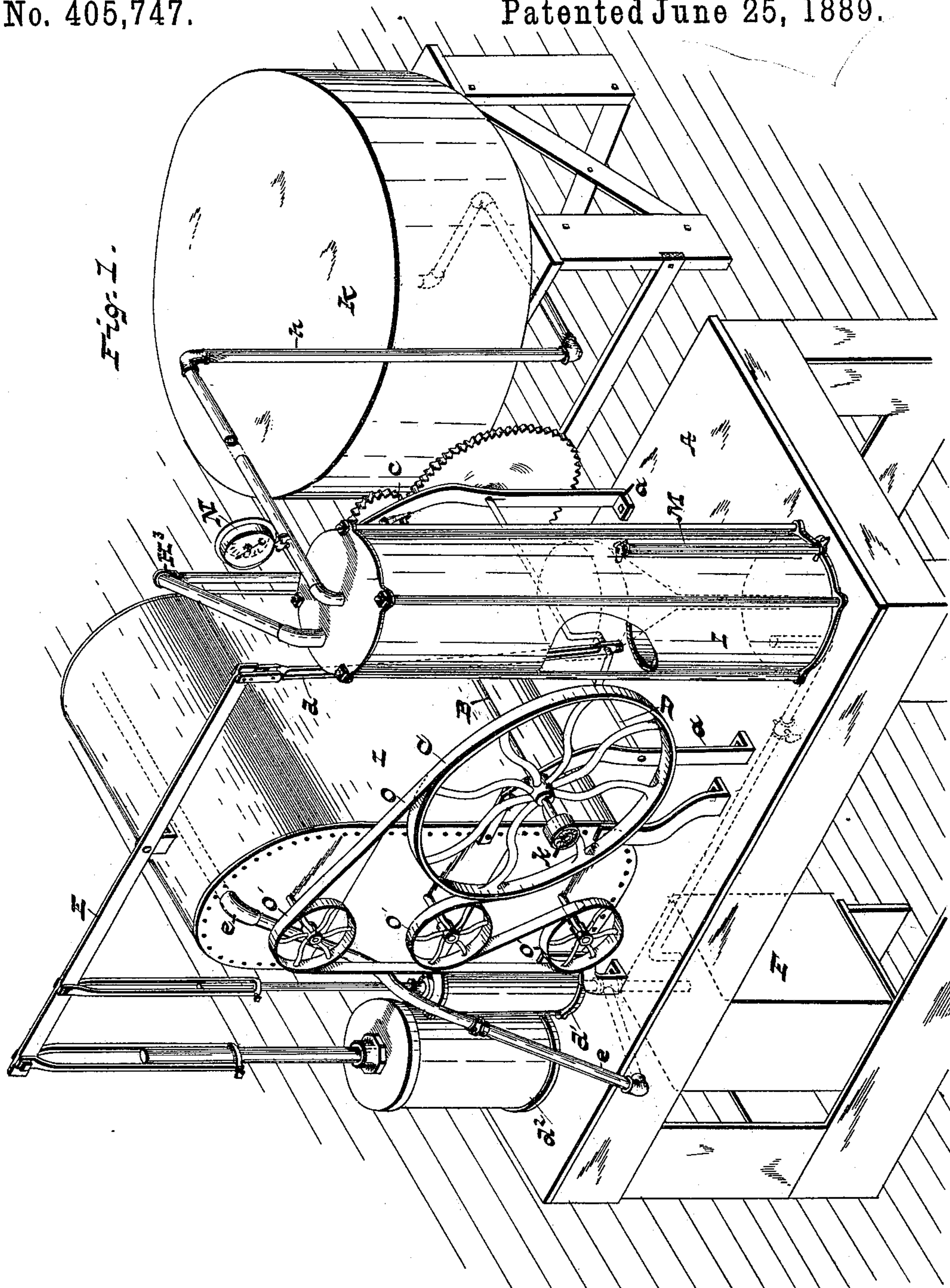
(No Model.)

3 Sheets—Sheet 1.

D. J. SNYDER & J. STEPHENSON.  
APPARATUS FOR CARBURETING AIR OR GAS.

No. 405,747.

Patented June 25, 1889.



Witnesses  
E. G. Lane  
Ed. Smith

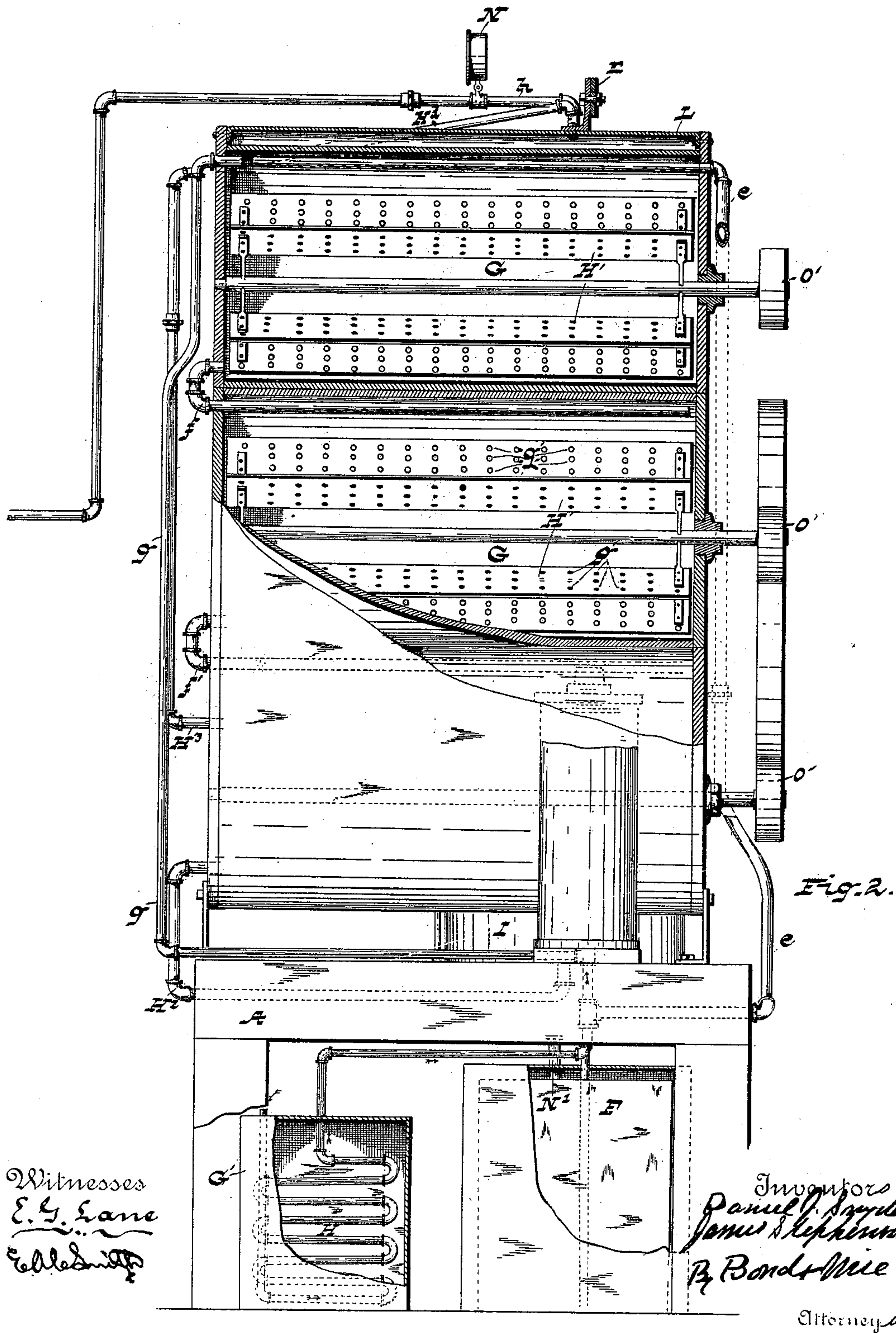
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3 Sheets—Sheet 2.

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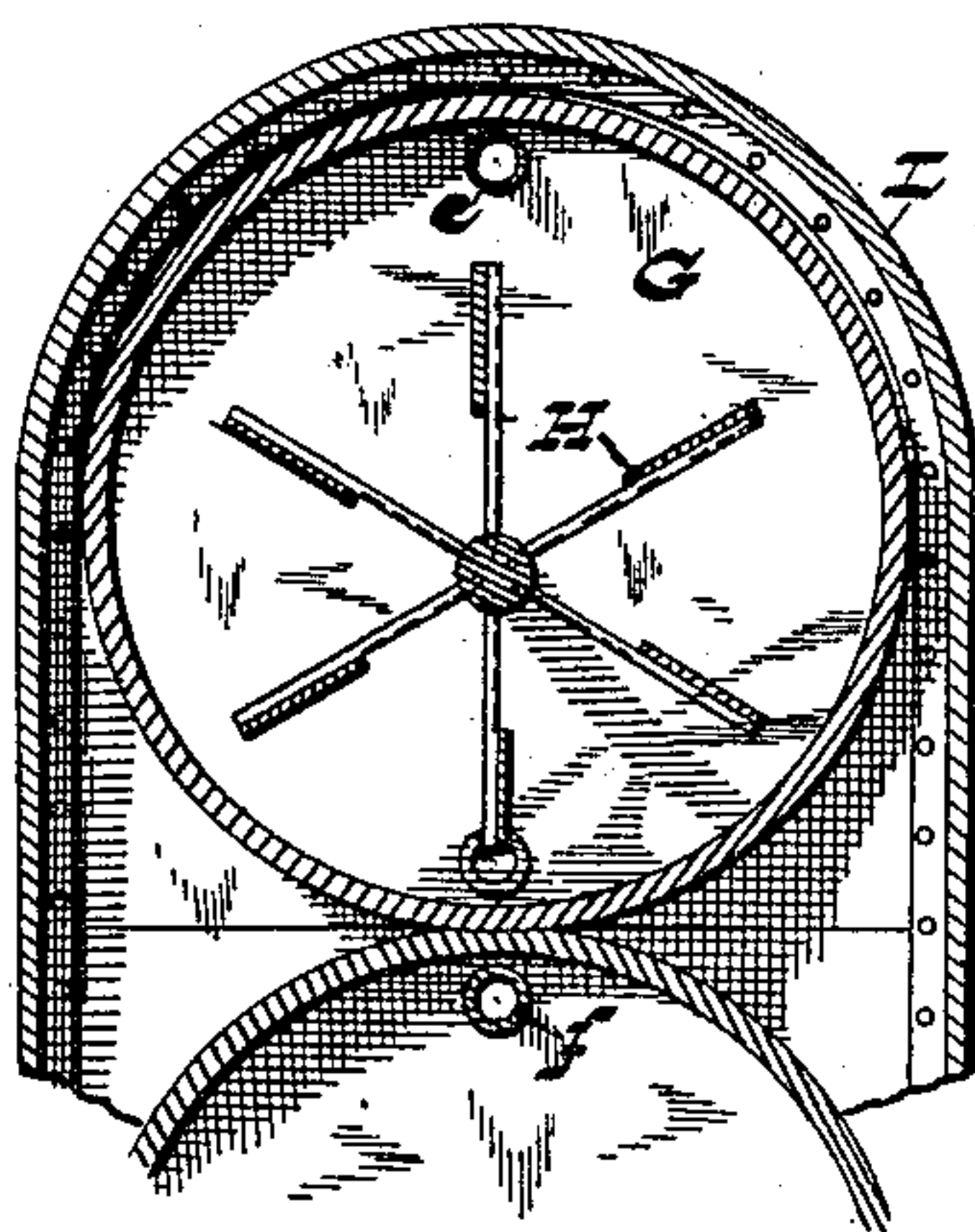
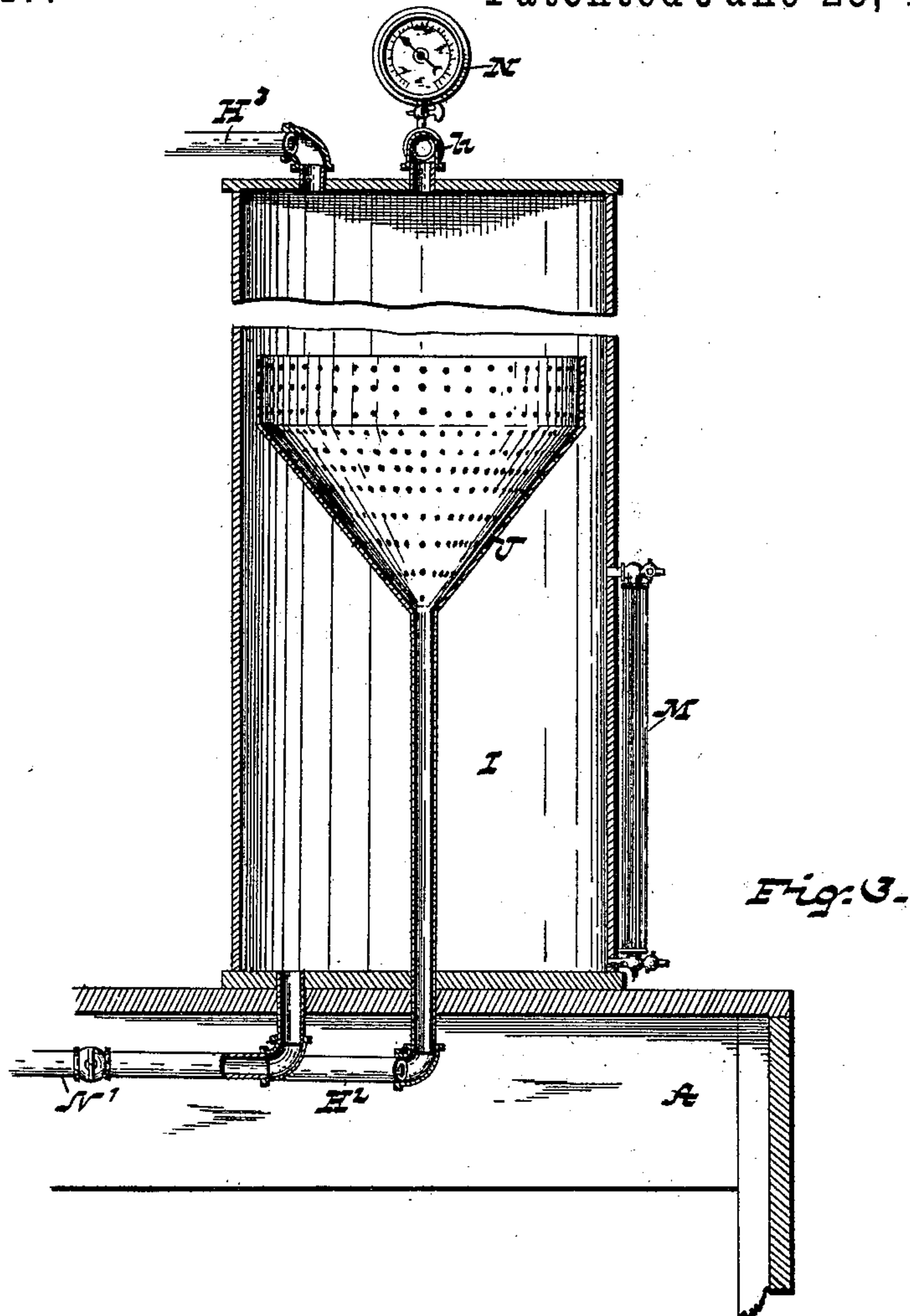
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# UNITED STATES PATENT OFFICE.

DANIEL J. SNYDER AND JAMES STEPHENSON, OF SCIO, OHIO.

## APPARATUS FOR CARBURETING AIR OR GAS.

SPECIFICATION forming part of Letters Patent No. 405,747, dated June 25, 1889.

Application filed January 14, 1889. Serial No. 296,354. (No model.)

*To all whom it may concern:*

Be it known that we, DANIEL J. SNYDER and JAMES STEPHENSON, citizens of the United States, residing at Scio, in the county of Harrison and State of Ohio, have invented certain new and useful Improvements in Apparatus for Carbureting Air or Gas; and we do hereby declare the following to be a full, clear, and exact description of the same, reference  
10 being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon, in which—

Figure 1 is a general isometrical view. Fig. 2 is a side elevation showing the two upper hydrocarbon-chambers in section. Fig. 3 is a longitudinal section of the separating-chamber. Fig. 4 is a transverse section of one of the hydrocarbon-chambers.

20 The present invention has relation to a carbureting apparatus and its different parts and combination of parts, hereinafter described, and particularly pointed out in the claims.

Similar letters of reference indicate corresponding parts in all the figures of the drawings.

30 In the accompanying drawings, A represents the base-frame, which may be substantially of the form shown in the drawings, or it may be of any other desired form, reference being had to properly attaching the different parts to said frame.

To the frame A are securely attached the posts or standards *a* and *b*. The posts *a* are  
35 for the purpose of providing supports and bearings for the shaft B, which shaft may be located substantially as shown in Fig. 1.

To one end of the shaft B is securely attached the pinion *c*, which is for the purpose  
40 of communicating motion to the wheel C and crank-shaft D.

To the crank-shaft D is attached the pitman *d*, which is for the purpose of communicating reciprocating motion to the oil-pump  
45 *d'* and the air-pump *d''* by means of the walking-beam E.

The oil-tank F may be located substantially as illustrated in Fig. 1, and is for the purpose of receiving the oil from which gas is to be  
50 manufactured, as hereinafter described.

The oil-pump *d'* may be located substan-

tially as shown in Fig. 1, which pump is constructed in the ordinary manner and is for the purpose of forcing the oil from the tank F to the top or upper portion of the hydro- 55 carbon-chamber by means of the pipe *e*. The portion of this pipe *e* which is located within the hydrocarbon-chamber is provided with fine perforations from the point where it enters said chamber to its end, said perforations 60 being for the purpose of permitting the oil to flow in streams to the bottom of the upper chamber, from where it is conveyed to the chamber next below by means of the connecting-pipe *f*, which pipe is also provided with 65 fine perforations, which permit the oil to fall in streams to the bottom of this chamber, from where it is conveyed to the next or lower chamber by means of the connecting-pipe *f'*.

The air-pump *d''* is for the purpose of pump- 70 ing air into the hydrocarbon-chambers G, the air being forced into the top or upper chamber G through the pipe *g*, said pipe entering the chamber at the opposite end from the oil-pipe.

75 For the purpose of heating the air which is forced into the hydrocarbon-chamber G, the pipes H are provided, which are located within the jacket G', said jacket being heated by steam or otherwise, and the air passed through 80 the pipes H.

Within the hydrocarbon-chambers G are located the rotating fans or dashers H', which dashers are provided with the perforations *g'*, said fans or dashers being for the purpose of 85 agitating the oil, and at the same time thoroughly commingling the heated air with the oil, for the purpose of saturating the air with the gases of the oil, and at the same time forcing the oil and air thus commingled together 90 through the pipe H<sup>2</sup> by means of the air-pump *d''* and the oil-pump *d'*, which pipe H<sup>2</sup> leads to the bottom or lower end of the separating-chamber I, and extends about to the middle of said separating-chamber, and the 95 top or upper end of said pipe is provided with the perforated funnel J, said funnel being located and arranged substantially as shown in Fig. 3. As the commingled oil and air ascends the pipe H<sup>2</sup>, it will expand into the fun- 100 nel J, at which place the gas extracted or removed from the oil will ascend to the top or



upper end of the separating-chamber I and be carried to the gas-receiving tank K by means of the pipe *h*, and the oil will fall through the perforated funnel J, where it is  
 5 conveyed back to the oil-tank F and again forced through the hydrocarbon-chambers G and the separating-chamber I, which process and operation is continued until all of the gas is removed from the oil. The hydrocarbon-  
 10 chambers G are incased in the jacket L, which jacket is formed steam-tight, and steam forced into said jacket for the purpose of properly heating the chambers G.

It will be seen that by our peculiar arrangement heated air is forced in through the particles of oil, and the oxygen and nitrogen of the atmospheric air and the carbon and hydrogen of the petroleum-oil are thoroughly commingled together.

20 In case a steam-engine or other power is used for operating the oil and gas pumps and rotating the fans or dashers, the walking-beam E may be dispensed with; but we prefer to construct a machine complete within itself  
 25 and apply the power directly to the machine proper by means of the pulley *k*; or, if desired, the machine may be operated by an ordinary crank.

It will be understood that the pipe *h*, which  
 30 connects the separating-chamber with the gas-receiving tank K, should be provided with an ordinary check-valve, which is for the purpose of preventing the return of gas from the tank K.

35 To one side of the separating-chamber I is located a glass tube M, which is for the purpose of indicating the amount of oil contained in said separating-chamber. To the top or upper end of the separating-chamber I is located the gage N, which is for the purpose of  
 40 denoting the amount of pressure upon the gas.

A valve should be provided between the oil-tank and the oil-pump, which is for the purpose of regulating the flow of oil into the  
 45 chambers G. The pipe *e* should be closed at its inner end, for the purpose of causing the oil to pass through the fine perforations. It will be understood that each chamber G is provided with the perforated pipe *e*.

50 The fans or dashers are rotated by means of the belt O and the pulleys O'.

The gas which is formed in the top or upper portion of the lower hydrocarbon-chamber G is conveyed to the top of the separating-  
 55 chamber I by means of the pipe H<sup>3</sup>, where the same, together with the gas forming in the separating-chamber, is conveyed to the tank K by means of the pipe *h*.

60 The return-pipe N' is attached to the bottom or lower end of the separating-chamber I,

and leads from there to the oil-tank F, and is for the purpose of conveying the oil which falls to the bottom of the separating-chamber I to the oil-tank F, when it is again forced through the hydrocarbon-chambers G and the  
 65 separating-chamber I.

It will be understood that two or more separating-chambers may be employed, if desired.

Having now fully described our invention, 70 what we claim as new, and desire to secure by Letters Patent, is—

1. In a carbureting apparatus, the combination of the oil-tank F, a series of carburetors G, the perforated pipes *f f'*, located in and  
 75 connecting said carburetors, the oil-pump *d'*, the pipe *e*, connecting said pump and carburetors, the air-pump *d*<sup>2</sup>, a pipe *g*, connecting the air-pump and carburetors, the separating-chamber I, the pipes H<sup>2</sup> and H<sup>3</sup>, leading from  
 80 the carburetors to the separating-chamber, a return-pipe N', leading from the separating-chamber to the oil-tank, the receiving-tank K, and a pipe *h*, leading from the separating-chamber to said tank, substantially as de-  
 85 scribed.

2. In a carbureting apparatus, the combination of the steam-jacket L, a series of carburetors G, located one above another in said  
 90 jacket and provided with rotary dashers H', and perforated oil-conveying pipes above said dashers, the oil-tank F, oil-pump *d'*, air-pump *d*<sup>2</sup>, hot-air jacket G', coiled pipe H, located in said jacket and communicating with the air-pump, the separating-chamber I, to which oil  
 95 and carbureted air are delivered from the carburetors, and the tank K, for receiving carbureted air from the separator, substantially as described.

3. In a carbureting apparatus, the combination of a series of carburetors G, a tank K, for receiving carbureted air, an intermediate  
 100 separating-chamber I, the pipe H<sup>2</sup>, for conveying oil and carbureted air from the carburetors to the separating-chamber, a perforated  
 105 funnel located in the separating-chamber on the upper end of said pipe, the pipe H<sup>3</sup>, for conveying carbureted air from the carburetors into the upper part of the separating-chamber, and a pipe *h*, connecting said cham-  
 110 ber with the receiving-tank K, substantially as described.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

DANIEL J. SNYDER.  
 JAMES STEPHENSON.

Witnesses:

JOHN MC LANDSBOROUGH,  
 ALEXANDER SCOTT.