E. A. C. PEW.

Carbureting Apparatus for Air and Gas.

No. 213,931. Patented April 1, 1879.

Fig. 1.

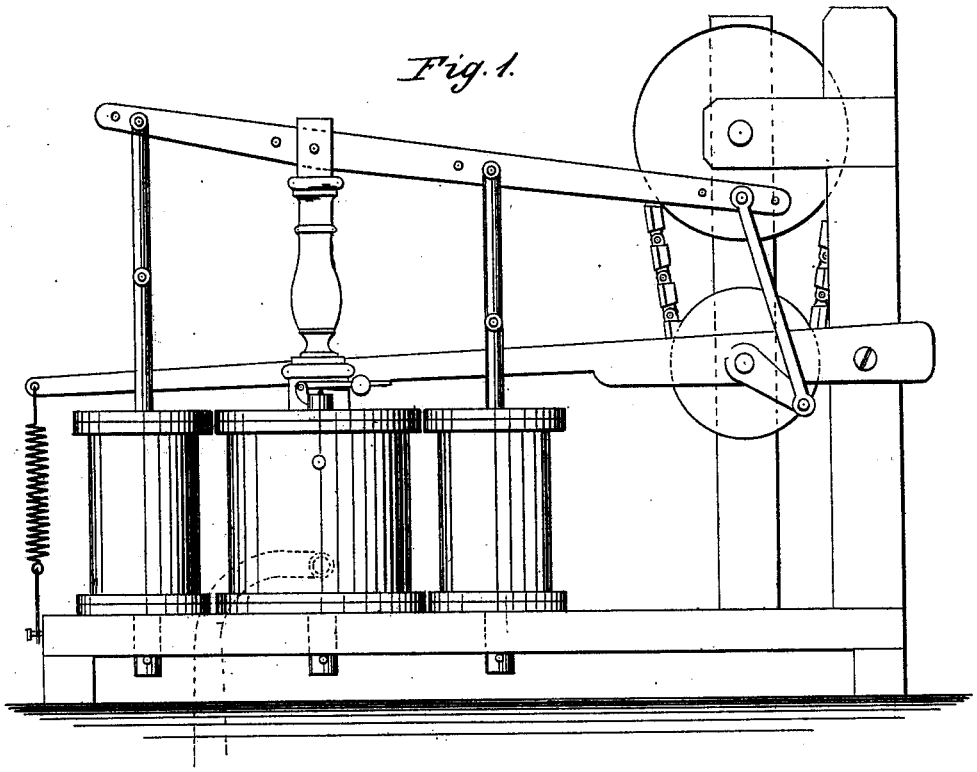
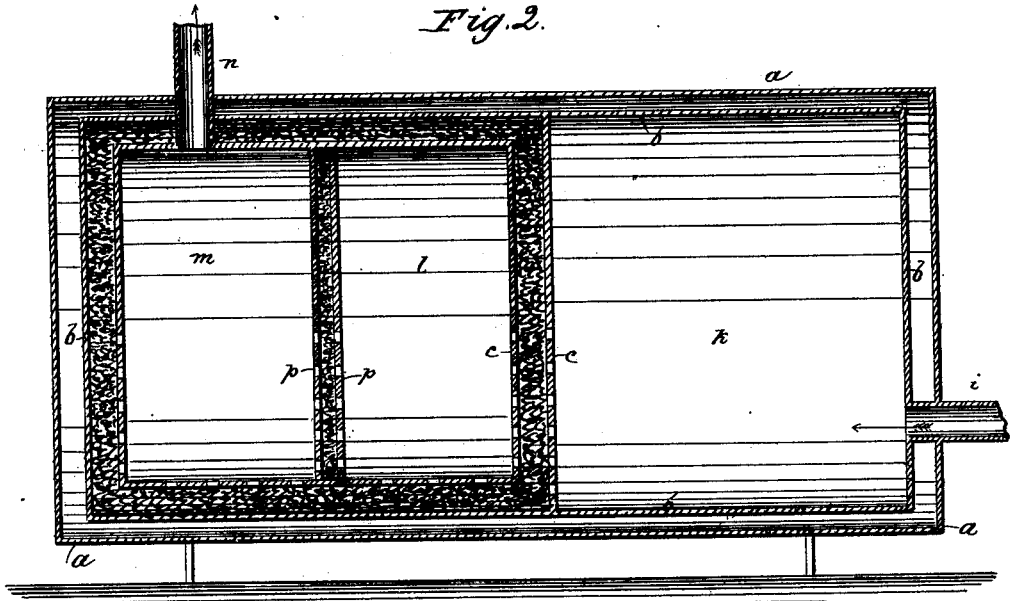


Fig. 2.



WITNESSES:

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IMPROVEMENT IN CARBURETING APPARATUS FOR AIR AND GAS.

Specification forming part of Letters Patent No. **213,931**, dated April 1, 1879; application filed January 21, 1879.

To all whom it may concern:

Be it known that I, EDWARD A. C. PEW, of Welland, in the Province of Ontario and Dominion of Canada, have invented a new and useful Improvement in Apparatus for Carbureting Air and Gas, of which the following is a specification:

The invention is an improvement in the class of air-carbureting apparatus in which air is forced through cylinders containing a liquid hydrocarbon, so that by taking up the vapors of the latter it will become highly charged with carbon, and thus rendered inflammable.

The improvement relates to the construction and arrangement of the parts constituting the carbureting-vessel, as hereinafter described and claimed, and as illustrated in the accompanying drawings.

Figure 1 is an elevation of an air-pump or air-forcing apparatus, which I preferably employ, but which I do not claim in this patent. Fig. 2 is a vertical longitudinal section of the carbureting-cylinder embodying my invention.

Referring to Fig. 2, *a* indicates an outer cylinder, and *b* an inner smaller cylinder, which is concentric therewith, but separated from it by a narrow space, which is to be filled with any suitable non-heat-conducting material. The outer cylinder, *a*, serves as a protector for the inner one, *b*. The latter is divided in the middle by a vertical diaphragm, *c*. The space *k* on the right of the diaphragm is the first air-receiving chamber. The corresponding space on the left of said diaphragm is occupied by a cylinder, *l m*, which is separated from the cylinder *b*, on all sides, by a packing of absorbent material. The cylinder *l m* is divided vertically and centrally by a diaphragm, *p*. The ends of said cylinder and diaphragm *p*, and also the diaphragm *c* of cylinder *b*, are perforated vertically in the lower half. The cylinder *l m* is likewise perforated along the bottom.

A small quantity of the carbureting-liquid is placed in chamber *k*, and is in a few minutes taken up by the absorbent packing surrounding the cylinder *l m*, so that the chamber *k* is left dry, so to speak. In most carbureters of this class the cylinder is kept nearly, or at least partly, filled with the hydrocarbon, so that the liability of dripping and leakage and violent explosion is greatly increased.

The chambers *k l m* are filled with hydrocarbon vapor.

The air or gas to be carbureted is forced by the apparatus shown in Fig. 1 through pipe *i* into chamber *k*, thence through partition *c* and the absorbent material contiguous thereto, and enters the right-hand chamber, *l*, of the smaller cylinder. From chambers *l* it enters chambers *m*, whence it finally escapes through pipe *n* into the service-pipe. (Not shown.)

The air or gas takes up or becomes charged with hydrocarbon in the several chambers *k l m*, and also in its passage through the absorbent material, so that it ultimately becomes inflammable to the required degree.

It has also been demonstrated by experience that air or gas carbureted by passing through a vessel thus filled, and in which it comes into direct contact with the liquid, burns with a flickering and also a smoky or colored flame, whereas by constructing the carbureting-cylinder with the several chambers and partitions according to my invention, and arranging or locating the absorbent material as shown and described, I do not require to place a large quantity of gasoline or other hydrocarbon in the cylinder at any one time, but only such quantity as the absorbent material will take up, and the flame produced is also clear or nearly colorless. This last effect is mainly due to the fact that the air or gas is not forced down upon or over the surface of hydrocarbon liquid, as in various other apparatus, and that in passing through the several chambers and partitions and thicknesses of absorbent material it is more thoroughly commingled with the hydrocarbon vapors, and takes up less of the heavy portion thereof.

What I claim is—

1. The carbureting-vessel constructed of the horizontal outer and inner concentric cylinders, *a b*, the latter having the chamber *k*, and the innermost cylinder, *l m*, having perforations, and the absorbent material sur-

rounding it, all combined as shown and described.

2. The carbureting-cylinder *b*, having central vertical partition *c*, and the smaller perforated cylinder, having chambers *l m*, separated by vertical perforated partition *p*, and the absorbent material placed around said smaller cylinder, whereby the air first enters chamber *k*, and thence passes successively into chambers *m l*, all as shown and described.

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Witnesses:
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