2 Sheets--Sheet 1.

H. J. HYAMS.

Carbureter.

No. 169,105. Patented Oct. 26, 1875.

Fig. 1.

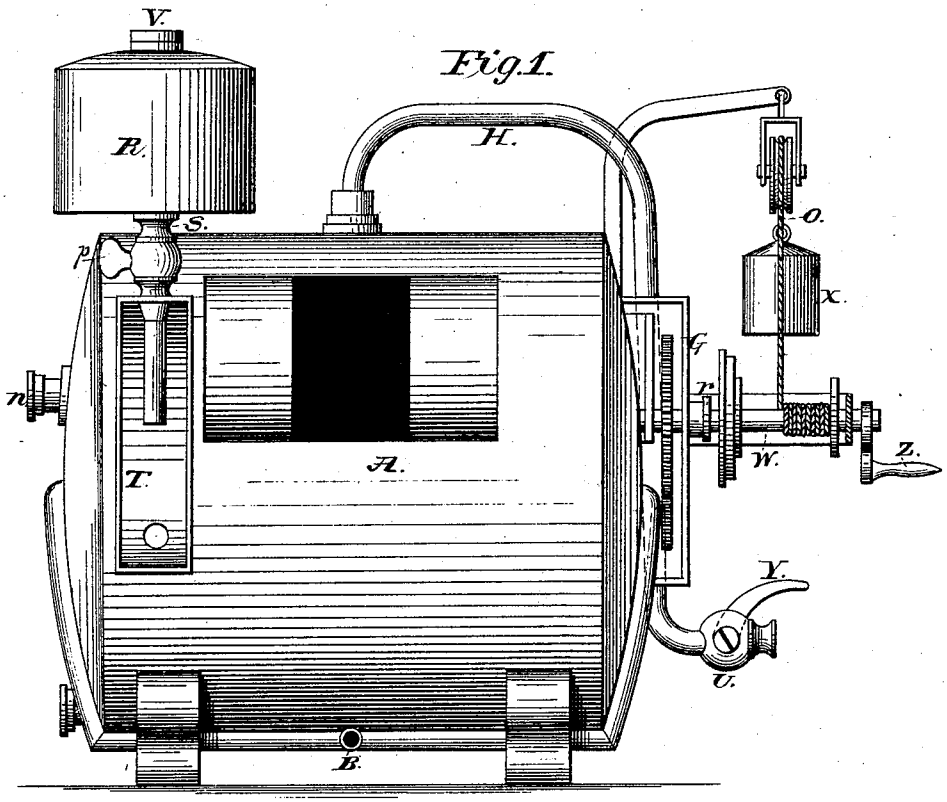
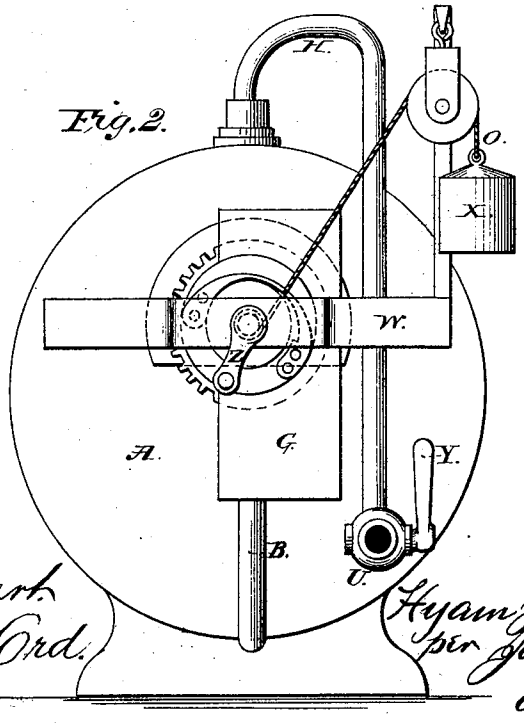


Fig. 2.



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2 Sheets--Sheet 2.

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Fig. 4.

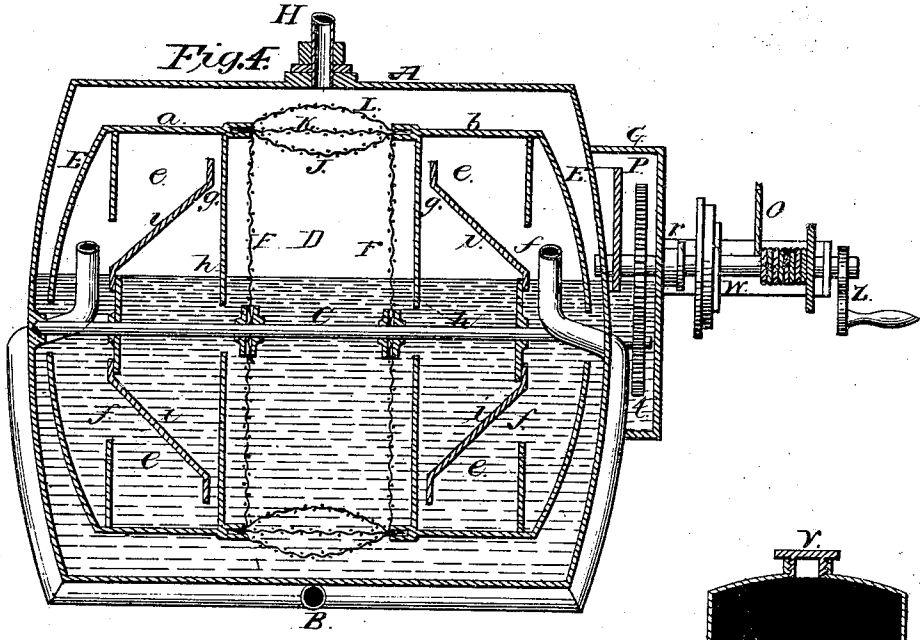


Fig. 3.

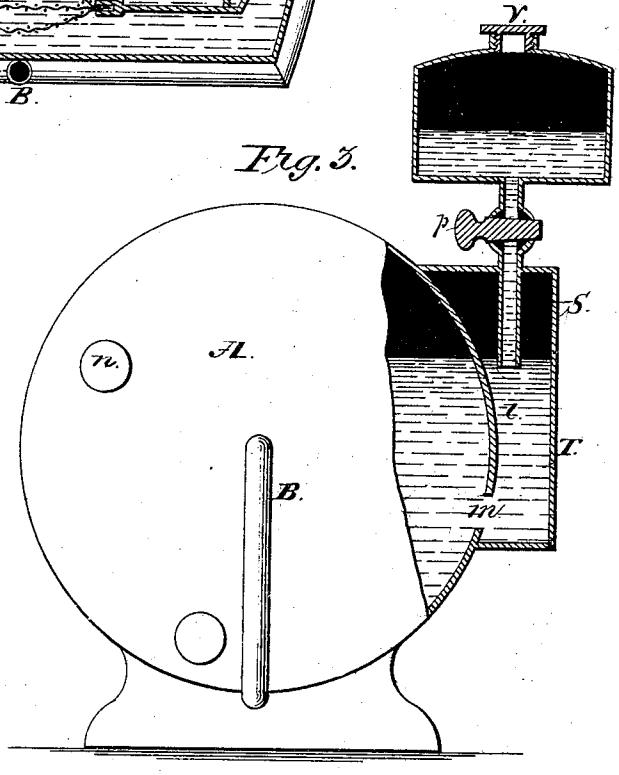
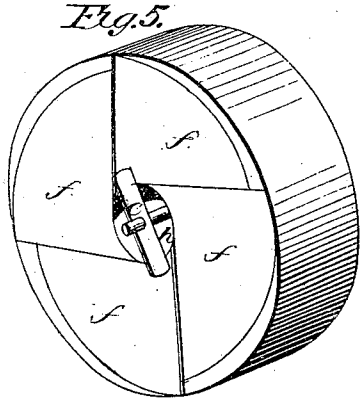


Fig. 5.



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UNITED STATES PATENT OFFICE.

HYAM JACOB HYAMS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO PETER L. BANNEN.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **169,105**, dated October 26, 1875; application filed January 25, 1875.

To all whom it may concern:

Be it known that I, HYAM JACOB HYAMS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Carbureter, having for its object the impregnation of atmospheric air with the vapor of gasoline, benzine, or other hydrocarbon fluid.

The apparatus I have designed, and the manner of its operation, will be readily understood from the following description, taken in connection with the accompanying drawings, wherein—

Figure 1 represents a side elevation of my improved apparatus for charging atmospheric air with hydrocarbon vapor; Fig. 2, an elevation of that end of the apparatus to which the driving mechanism is applied; Fig. 3, an elevation of the opposite end of the apparatus; Fig. 4, a longitudinal vertical section of the whole machine; Fig. 5, a perspective view of one of the air-forcing drums.

In my apparatus two hollow drums, *a b*, or cylinders, revolve about a horizontal axis, *c*, within another hollow drum or case, A, which case is to be filled with gasoline or other hydrocarbon fluid to a point above its central line or axis; the inner drums being divided into several compartments, *e e e e*, which are similar in every respect, each having an inlet, *f*, by which air can enter at one end, and an outlet, *g*, by which it can escape at the other end, and a passage-way, *h*, through the center of each, to allow the gasoline to have free access to the interior of each revolving chamber. The air enters through the heads of the outer case A by a pipe, B, turned up at each end, and within a hood, E, attached to each of the revolving drums, and so that its open ends may stand above the fluid-line. The partitions *i i i i* in the revolving drums, forming the several compartments *e e e e*, are set spirally, those in one drum being turned to the right, and those in the other to the left, so that, being placed on the same axis, and rotated in the same direction, each will draw the air from the outside and discharge it into the space D between them. The approximate faces of the two inner revolving drums are covered by diaphragms F F, of cotton or woolen cloth, fitting tightly around the edges. Surrounding and inclosing the space D between the diaphragms are arranged and fixed, first, a band, J, of light porous cloth, and next a similar band, K, of heavier or more closely-woven cloth, and over these a covering of fine wire-gauze, L.

The apparatus is to be charged with gasoline or other hydrocarbon fluid until it reaches a level above the central apertures *h h* in the inner drums. The charging is effected by pouring the gasoline into the elevated reservoir R, when it will flow down through its vertical stand-pipe *s* into the small chamber T, and from thence through a side opening, *m*, into the cylindrical casing A, until it reaches the proper height, which will best be known by unscrewing the small cap *n*, placed at the fluid-line in one end of the apparatus, and pouring in the gasoline until it reaches this point. The cock P in the stand-pipe of the reservoir may then be closed for the time, and the reservoir R filled to its utmost capacity, its cap *v* screwed tightly down. The cap *n* of the short tube is also screwed on, when the valve *p*, or cock, between the reservoir and the small outside chamber T, may be so turned or opened as to allow the column of fluid in the stand-pipe and reservoir to rest upon that in the chamber. The lower mouth *l* of the stand-pipe being slightly below the required fluid-line, the gasoline will remain in the reservoir until the fluid in the chamber falls below that point, when that in the reservoir will flow down and again bring it to its proper level, the amount being simply in proportion to the requirements of the apparatus.

After the generator has been charged with gasoline in the manner described, a slow rotary movement is to be imparted to the long central shaft, and to the revolving drums *a b*, together with their respective diaphragms F F and porous bands J K, which, in this case, is accomplished by placing a pinion, *t*, on one end of the long central shaft C, to which the chambered drums are affixed, and gearing it with a large toothed wheel, P, the axis of which is above the fluid-line. These wheels are inclosed in a tight casing, G, and the shaft of the larger wheel extends through the side of

the casing, and is packed at that point by means of a gland or stuffing-box, *r*. This shaft is supported on the outside by a suitable frame, W, and on its extreme end is placed a crank, Z, by which it may be turned as a windlass, to wind around it a cord, O, to one end of which is attached a weight, X, heavy enough to drive the mechanism of the gas-generator, and it is also provided with the usual pawl and ratchet, to prevent backward motion in the process of winding up.

As the drums *a b* rotate, the air will enter the inlet that is just rising out of the fluid, and as it rises that compartment becomes filled with air. As the rotation goes on the inlet will become submerged, and at that moment the outlet will rise above the surface of the fluid, which, on entering the compartment, will force the air out at the discharging end of the drum through the saturated porous cloth diaphragms F F, bands of cloth J K, and wire-gauze covering L, becoming thereby thoroughly permeated with molecules of gasoline, in which condition, and thus charged with illuminating material, it rises into the upper part of the outer casing A above the fluid-line, and is drawn off from thence for use through a pipe, H. By a further revolution of the drum the said compartment comes into a position to be again filled with air, as already described. That which takes place in one compartment takes place for all of them in both drums. By the time that the mouth of one compartment in one drum becomes closed by passing below the fluid the mouth of the compartment in the opposite drum will become uncovered, and the air will in a similar way enter it. After a time the compartment in the first drum will rise above the fluid, and will commence discharging the air it has received; and before this compartment is completely submerged and emptied another compartment will commence discharging, and so the operation continues.

The pipe H, by which the impregnated atmosphere or vapor passes from the generator to the burners, is turned down on the outside of the case, and provided with a cock, U, furnished with a long arm, Y, extending into the path of the descending weight X, and so arranged as that, when the weight has nearly run down, it will press upon the said arm, and thereby close the cock, thus preventing any escape of vapor in that direction while the apparatus is not in operation.

I claim—

1. The hollow revolving drums *a b*, each having a diaphragm, F, of porous material, stretched over its inner end, in combination with the intermediate surrounding cloth bands J K and wire-gauze L, attached to said drums, and revolving therewith around the same axial line, as and for the purposes set forth.

2. The hollow revolving drums *a b*, diaphragms F, intermediate surrounding cloth bands J K, and wire-gauze L, in combination with the concave hoods E, as and for the purposes set forth.

3. The hollow revolving drums *a b*, diaphragms F, intermediate surrounding cloth bands J K, wire-gauze L, and concave hoods E, in combination with the outer case A, air-pipes B, and vapor-pipe H, as and for the purposes set forth.

4. The hollow revolving drums *a b*, diaphragms F, intermediate cloth bands J K, wire-gauze L, and concave hoods E, in combination with the outside case A and elevated reservoir R, as shown and set forth.

HYAM JACOB HYAMS.

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