

M. P. Coons.
Gas & Air Carbonizer.

116563

PATENTED JUL 4 1871

Fig. 1.

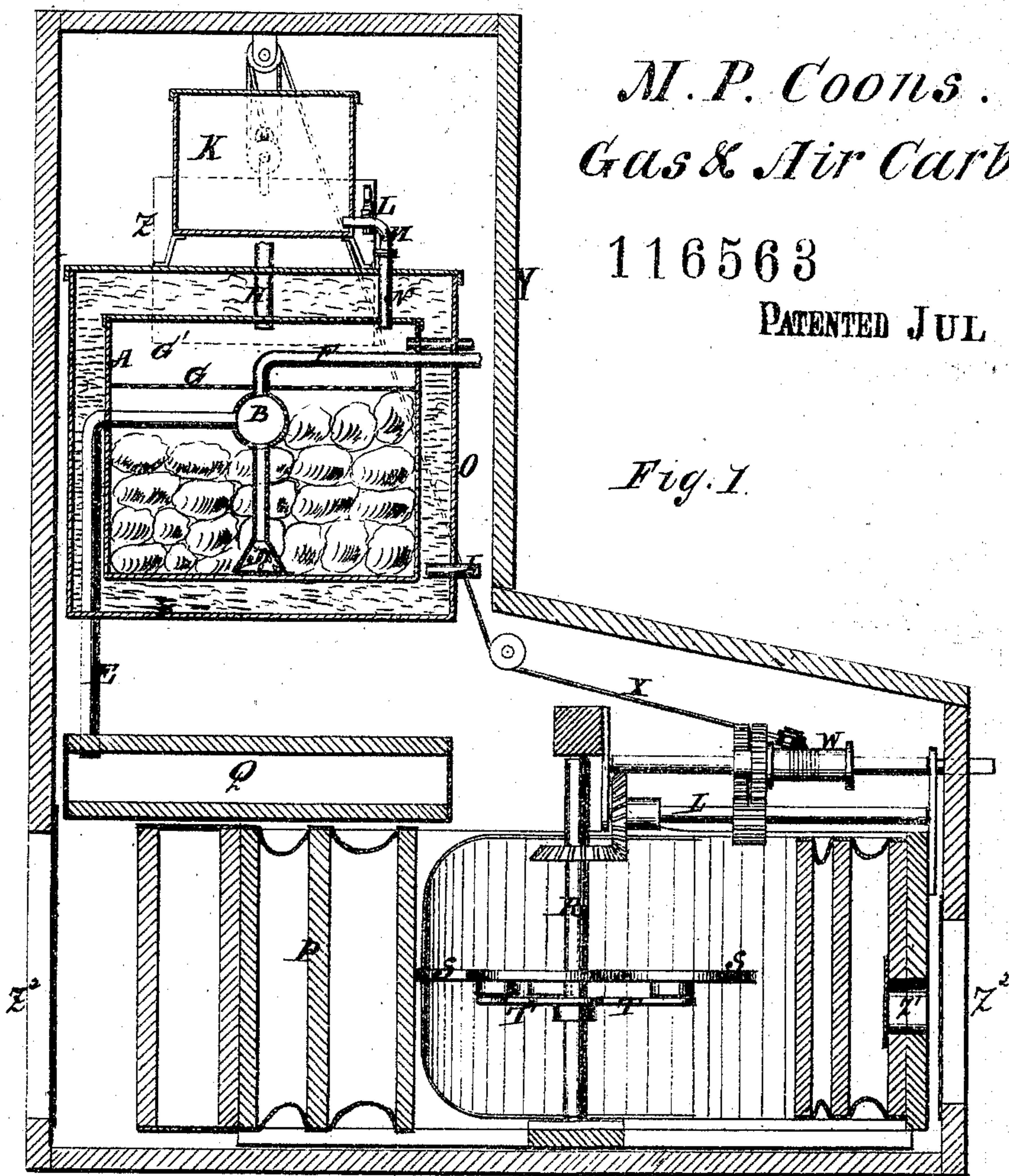
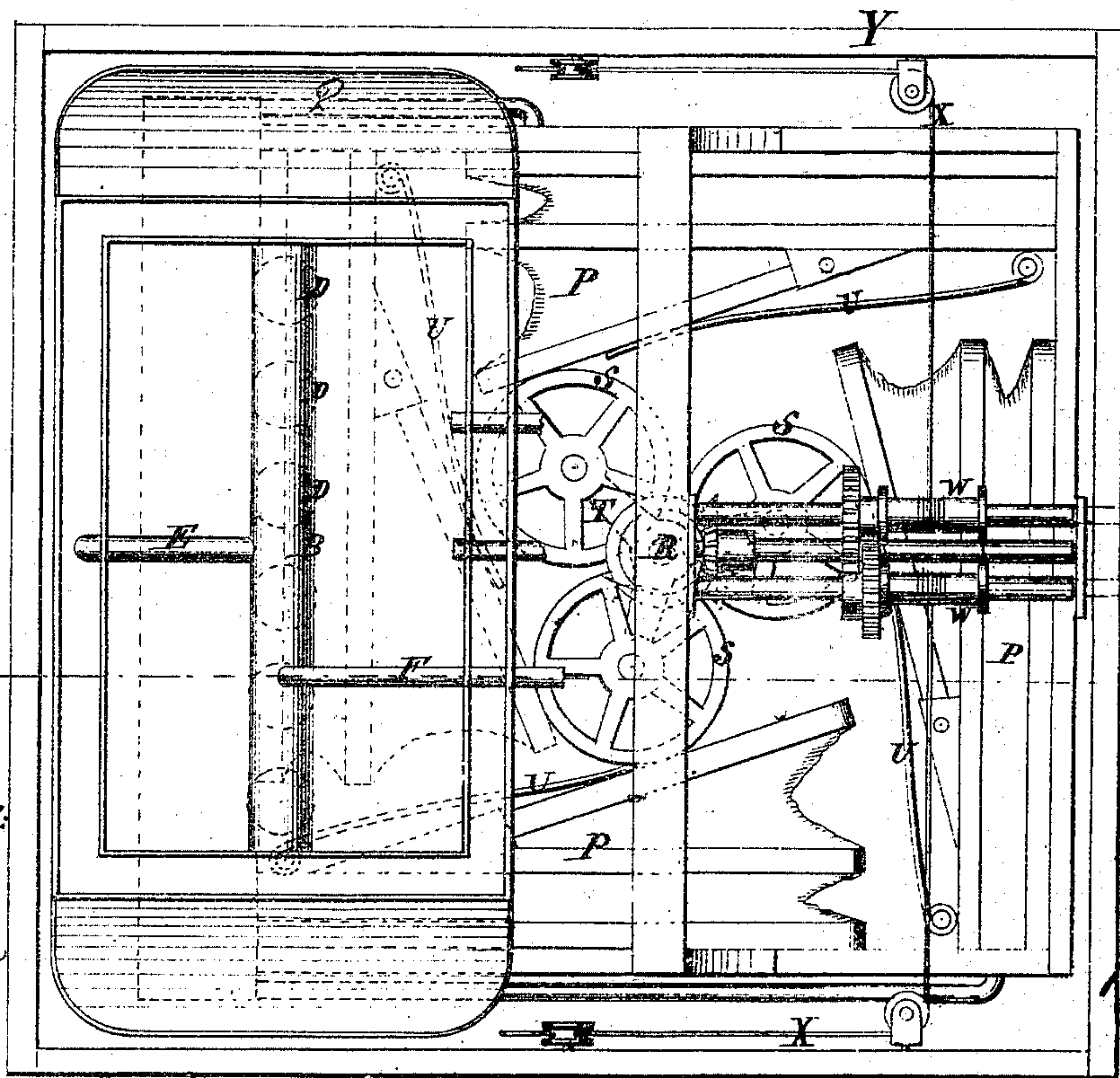


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CARBURETERS FOR GAS AND AIR.

Specification forming part of Letters Patent No. 116,563, dated July 4, 1871.

To all whom it may concern:

Be it known that I, MATTHIAS P. COONS, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Gas and Air-Carbonizer; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in gas and air-carbonizing apparatus; and has for its object to provide a simple, cheap, and efficient gas or air-carbonizer or carbureter, which will be perfectly safe against explosion in cases of fire or ignition by careless treatment or design, except at the ignition point of the burner; also, to provide an efficient and reliable means of supplying air and maintaining the requisite pressure when air is used. The invention consists in certain improvements in the arrangement of the air and gas-mixing apparatus; also, in improved absorbent material employed for taking up the hydrocarbon and exposing it to the air or gas; also, an improved safety-filling apparatus; also, an improved jacket of fire-proof and non-heat-conducting substance for the preservation of the carbureting-chamber, and regulation of the temperature of the same; and also, an improved apparatus for injecting the air, all as hereinafter fully described.

Figure 1 is a sectional elevation of my improved apparatus, and Fig. 2 is a plan view of the same.

Similar letters of reference indicate corresponding parts.

A is a sheet-metal case, for containing the hydrocarbon substance and mixing it with the gas or air. It may be of rectangular or other form. B is a large tube arranged in this case to extend from end to end above the center. It has a number of pendent tubes, C, extending nearly to the bottom, and having the perforated conical disseminators D, made of perforated sheet-metal screen-wire, or other suitable substance, attached to the lower ends, and held so that the bases are supported slightly above the bottom of the case A. E is an air-supply pipe leading from the blower into tube B, and F is a gas-supply pipe, also emptying into tube B. When air is to be carbureted it is forced in through E and the pipe

F is closed, and when gas is to be acted on it is admitted through F and E is closed. Above the large tube B is a fine wire-gauze protector, G, to prevent explosion or ignition of the gas below in case of the communication of fire by any means to the space above through the gas-pipes H leading to the burners. I represents a drainage-tube for removing the hydrocarbon if too much be put in the case, or for drawing off the excess.

This case or retort being thus prepared is fitted to the wire-gauze protector G with some non-combustible porous and absorbing substance, preferably woolen cloth and hair prepared in balls, for taking up the hydrocarbon or the gas and holding it for the more perfect combination of the same with the air. The hydrocarbon oil or gas is then admitted to the retort, also the air, and the mixture takes place in the most effective manner, the gas rising to the space G', where it is concentrated previous to emission. In case the gas is admitted, it comes in contact with the air in the large tube B, and is conducted with it down the tubes C to the conical disseminators, where it issues through the small perforations, and is thoroughly mixed thereby. If it be hydrocarbon oil that is to be mixed, the oil is taken up by the absorbing material and held so that the air attacking the balls on all sides becomes intimately connected and combined with the vapor of oil given off by the balls.

For introducing the hydrocarbon substance in the safest manner possible, I first introduce it into a portable filling-case, K, which may be taken to the cask or other vessel in which the oil is stored, and closed tightly after being filled, said case having a cock, L, and a pipe-connection, M, the latter being arranged for making a perfectly safe and tight connection with the supply-pipe N for the case or retort A when the said case K is placed on the top of A, when the connection is made and the cock L opened to the oil-flow into A. For the purpose of preventing the retort from any possibility of exploding when fully charged with the combustible fluid in case of fire surrounding the apparatus, I provide another opening and escape-tube through the side, which tube may be plugged or stopped in any way that will be opened by an increase of internal pressure or by the action of heat to let the gas escape.

In all cases where pipe-connections are made with the retort they are to be properly secured by lock or jam-nuts.

I have discovered by practical tests that the different degrees of temperatures materially affect the carbonization of atmospheric air for illuminating purposes, no matter what may be the specific gravity of the fluids used. To remedy this as far as possible by equalizing the temperature, and also as a further protection against fire and sudden ignition without, I provide an outside case or tank, O, of precisely the same form as the retort A, but larger, so that when placed in the said outer case there will be a space between the outer walls of A and the inner walls of O on all sides, for the reception of some non-combustible and non-heat-conducting material for the protection of the retort and equalization of the temperature therein, which may be pulverized asbestos saturated with the strongest possible solution of alum or coarsely-ground pumice-stone (lava), also saturated with alum or asbestos and pumice-stone mixed in about equal parts, or plaster of Paris made semi-fluid with alum, as above. Of these substances on trial, the first and last were found satisfactory as to the test of fire and the best for equalizing the temperature. Another excellent compound for these purposes may be made of wool and animal hair, the wool being in the form of woven cloth, and the hair cleansed, and both combined in the most compact manner. But the best of all which I have experimented with is a mixture of cleansed hair and pulverized asbestos saturated with alum, rendered fluid by heat and water, care being taken to combine with the hair as much of the asbestos as it will take when saturated and form a compact body. With this mixture, or any of the foregoing in which a solution of alum is used, I propose to pack the spaces between the two walls of the two cases, as above, for protection against heat and fire. The whole, being well packed, soon becomes nearly as solid as the alum in the natural state.

The flame produced by the gas issuing from apparatus of this kind is dependent for steadiness upon the equality and regularity of the pressure on the air introduced, and it therefore becomes highly important to have the most steady pressure that it is possible to get. To this end I have provided a blowing apparatus consisting of four, more or less, bellows, P, arranged one on each side of the sides of a figure, which will be described by the number used in any suitable way of supporting them and with the movable sides toward the center of the figure, which may be in a horizontal or vertical plane. In this instance they are in a horizontal plane, all of which have pipe-connections leading to one or more bellows, Q, arranged for acting as air-pressure regulators; and a vertical shaft, R, carrying wheels S at the ends of arms T, is provided for actuating the bellows by being turned slowly around between them and acting on the sides to press them inward, the said sides being drawn out again, after the wheels have passed, by springs U. This shaft R is turned by a shaft, V, gearing with it, which shaft is geared with one or more drums, W, on which cords X wind, which pass over pulleys to the uppermost part of the exterior wood or other case, Y, inclosing the whole apparatus, and have weights Z attached to them. Air is admitted to the suction sides Z¹ of these bellows through suitable openings Z² in the case Y, which are protected by wire-gauze or other substance. The air-regulating bellows Q may have weights placed on the top, which will rise and fall with any variations of the pressure, and thereby render it much more even and regular. The driving-shaft V may have any other competent power applied to it instead of the cords and weights, but for a cheap portable apparatus I prefer to use them.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The large tube B, combined with a branch air-tube, E, a branch gas-tube, F, and branch discharge-tubes C D, when all are constructed and relatively arranged in a carbonizer, as and for the purpose described.

2. The wax tube, operating as a safety-valve, in the manner described.

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