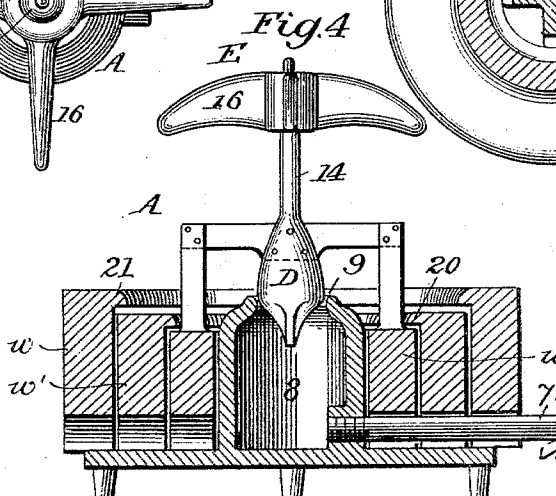
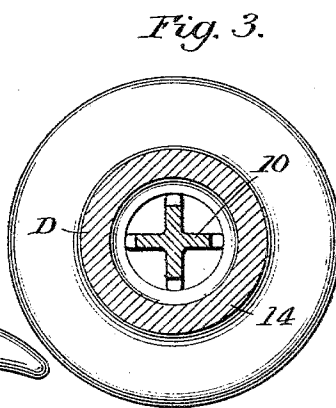
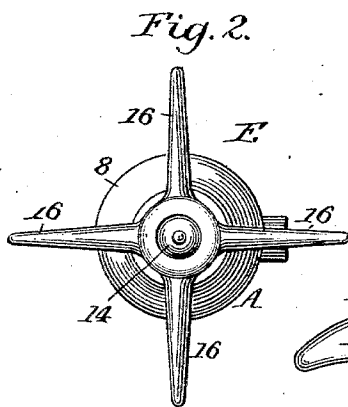
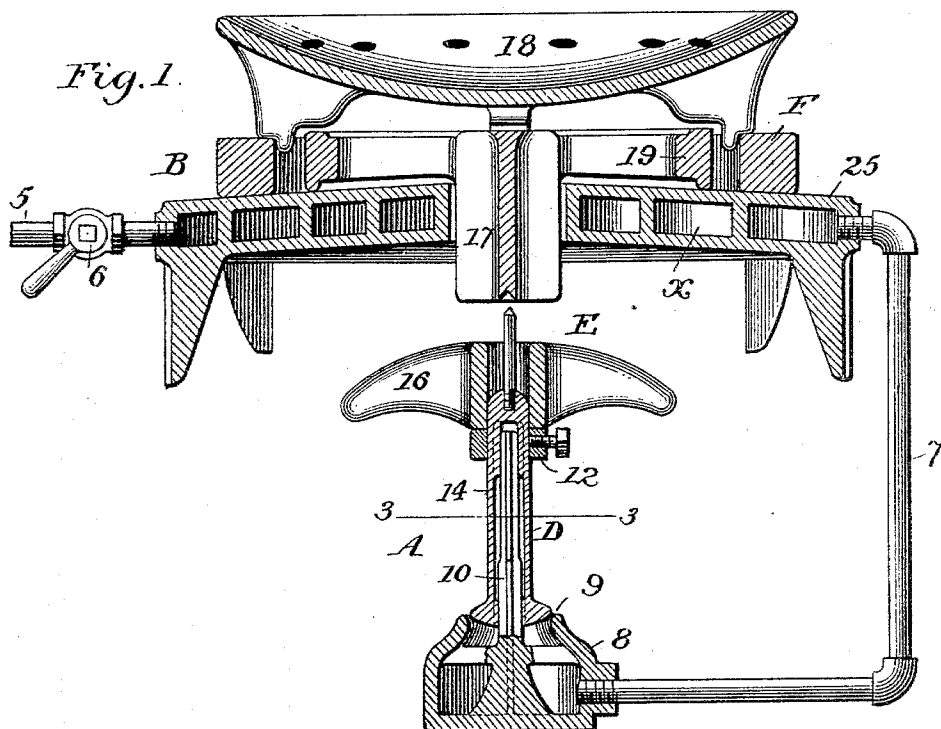


(No Model.)

H. A. HOUSE.
VAPOR BURNER.

No. 571,860.

Patented Nov. 24, 1896.



Witnesses
J. A. Fairbank
J. A. Fairbank

Inventor
Henry A. House
John F. Freeman
Attorneys

UNITED STATES PATENT OFFICE.

HENRY A. HOUSE, OF BRIDGEPORT, CONNECTICUT.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 571,860, dated November 24, 1896.

Application filed February 26, 1895. Serial No. 539,760. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. HOUSE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a specification.

My invention relates to that class of vapor-burners in which there are ports and valves which are lifted as the pressure of the vapor increases; and my invention consists in certain improvements fully set forth hereinafter, and illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of a vapor-burner embodying my improvements. Fig. 2 is a plan showing the form of one of the igniter-sections. Fig. 3 is a section on the line 3 3, Fig. 1. Fig. 4 is a sectional elevation showing a modification.

The burner A, of suitable construction, is combined with a generator B, also of suitable construction, which has a chamber or channel α , with which communicates a pipe 5, having a cock 6. This pipe 5 may communicate with an oil-reservoir or it may communicate with any other suitable source of supply. As shown, the burner A has a casing 8, which communicates through a pipe 7 with a chamber in the generator B, and which has a port 9, to which is fitted a valve D. The stem of the valve, however, instead of extending into the casing, slides upon a spindle or guide 10, projecting from the casing, as in Fig. 1, or it may be otherwise guided, as, for instance, in Fig. 4, hereinafter described. In either case the casing 8 may be made very small, as it need be of only sufficient dimensions to contain the chamber for the reception of the gas which passes to the port 9.

In this class of apparatus it is common to provide the burner with an opening or port through which the gas flows and of uniform dimensions. An objection to this construction is that the gas is generated under different circumstances under different pressures, and an opening adapted for one pressure and for a flame of one degree of efficiency is not adapted for another pressure and a flame which should be of a different

degree of efficiency; and in order to correct this effect I have in Letters Patent No. 533,593, granted to myself and H. A. House, Jr., set forth a construction wherein there is a movable weighted valve which will rise in proportion as the pressure increases, so as to afford a larger opening and permit a larger flame when a burner of greater energy is required. This has proved to be a great improvement upon the kind of burners previously made, but it is not capable of a wide range of action. Thus if but a small portion of oil passes to the generator and gas is generated in small quantities at a low pressure the valve may not be raised to any perceptible extent, whereas if the gas is generated at a very high pressure it may be raised to too great an extent, and the weight of the valve has therefore to be proportioned to a somewhat limited capacity.

In order that the burner may operate with equal efficiency whether the gas is so admitted as to constitute a burner of five horse-power or fifty horse-power, I provide a number or series of weights which may be brought successively into action to load the valve in proportion as it is raised higher, so that it will move under the action of one weight and be very sensitive to low pressures and under the action of all the weights when the pressure increases to a maximum.

The series of weights, or the equivalents of the same would be a series of or variable springs, may be combined with the movable valve in various different ways so as to secure this result.

In the construction shown in Fig. 4 there are a series of concentric weights w w' w'' , arranged around and guided by the casing 8 of the burner and by each other, and the valve D is connected by a cross-bar to arms of the inner weight w'' , which can play freely to a limited extent, but upon the valve being raised beyond a given point the weight w'' comes in contact with a lip 20 of the weight w' , and when the latter has been limited to a further extent it comes in contact with a lip 21 of the weight w , so that there is an increase of weight upon the valve in proportion as it is raised higher.

It will be obvious that any other suitable

connection may be made whereby the weights are successively brought to bear upon the valve in proportion as it is raised higher.

Another arrangement is illustrated in Fig. 1, where the valve-stem 14 carries an igniter E, arranged below a block 17, extending through an opening in the casing 25 of the generator and connected with a ring 19, the stem of the valve being of such a length that after the valve raises for a certain extent the stem of the valve will make contact with the block 17 and the weight of the latter will be added to the valve. Above the block 17 and ring 19 is a concave perforated disk 18, which rests upon a ring F above the generator a short distance above the ring 19, so that after the latter is raised for a certain extent the weight of the disk 18 will be added to that of the ring 19 and to the valve.

The parts E, 17, 19, and 18 are all of refractory material, so that after they have become thoroughly heated by the flame they will serve as igniters in case the flame is extinguished. It will be observed also that said several parts are disposed in proximity to the burner and generator with some part or branch projecting or extending into the space surrounding said burner and generator.

It is very apt to be the case with the character of oil that is used with such burners that there will be at times portions of water mixed with the oil, and these vaporize in the generator, so that steam passes to the burner, and for a short length of time, from one to five or ten seconds, the passage of ignitable vapor is interrupted and the flame is extinguished. By arranging in proximity to the burner a mass of refractory material, as, for instance, baked clay, which becomes very highly heated in the presence of the flame, the temporary extinguishing of the flame is accompanied with no injurious results, as the refractory material will remain in an incandescent state for several minutes, so that when the oil again passes to the generator and is vaporized and passes from the burner the vapor will be ignited, and by having the refractory material at several different points the vapor may be ignited at one point, if not at another. Thus in the construction shown in Fig. 1 the refractory material in three different sections serves not only as an igniter for the vapor which may pass to different points of the apparatus, but also serves as a succession of weights above the valves. The refractory material may be in different shapes. As shown, the portion or section E has a central hub receiving the stem of the valve and with radiating fingers 16, and rests upon an adjustable ring 12 upon the valve-stem, so that by raising or lowering this ring the refractory material may be brought in any desired proximity to the opening to which the flame passes.

It will be seen that in the burner herein described there is no casing around the mixing

case or chamber, which is practically the space or chamber within which the burner is arranged.

If desired, the chamber may be restricted by an inclosing casing; but the construction shown is preferable for certain purposes, as, for instance, in snuffing apparatus. The construction shown in Fig. 4 is especially adapted for such apparatus, in which case the generator would not be arranged above the burner, as in Fig. 1, but a separate and independent generator would supply the gas to the pipe 7.

I do not here claim, broadly, the arrangement of successive weights below the burner, as illustrated in Fig. 4, as this constitutes the subject of a separate application for Letters Patent. Nor do I describe or claim the particular construction illustrated of the generator, as this also constitutes the subject of a separate application for Letters Patent.

I claim as my invention and desire to secure by Letters Patent—

1. In a gas or vapor burner, the combination of a casing communicating with a gas generator or supply and provided with an outlet-port, and a valve adapted to said port, a series of weights arranged to act upon the valve outside of the casing and adapted to be raised by and in proportion to the pressure of the gas within the casing, substantially as set forth.

2. The combination in a vapor-burner, of a casing having an outlet-port and communicating with a supply-pipe, a valve adapted to said port having an outwardly-projecting stem, a weight upon the stem, and additional weights supported above the first arranged to be successively lifted to load the valve, substantially as shown and for the purpose set forth.

3. The combination of the casing of a burner, a valve adapted to a port in said casing, and a series of weights arranged to successively load the valve as the latter is raised, substantially as set forth.

4. The combination of the casing of a burner, its port, a movable valve, and a series of weights arranged above the valve to successively load the valve as the valve is raised, substantially as set forth.

5. The combination of a vapor-burner comprising a port and valve, and a number of sections of refractory material supported upon bearings and arranged to be brought successively into contact as the valve is lifted, substantially as described.

6. The combination of a vapor-burner comprising a port and valve, of an igniter device comprising branches or arms of refractory material extending into the space above or surrounding the burner and being carried by and adjustable on the valve, substantially as described.

7. The combination of the burner and valve and the generator having an opening, a section of refractory material extending through

5 said opening in a position above the valve, a disk of refractory material arranged above the said section, and another section of refractory material carried by the valve, all arranged to make successive contact as the valve is lifted, substantially as and for the purpose described.

10 8. The combination in a vapor-burner, of a casing having an outlet-port, a supply-pipe communicating with the casing, a guide, a valve adapted to the port and moving on said

guide, and an igniter-block of refractory material received by and adjustable on the stem of said valve, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY A. HOUSE.

Witnesses:

GEORGIA P. KRAMER,
I. A. FAIRGRIEVE.