(No Model.)

J. H. BEAN.

VAPOR BURNER.

No. 253,498. Patented Feb. 14, 1882.

Fig. 1.

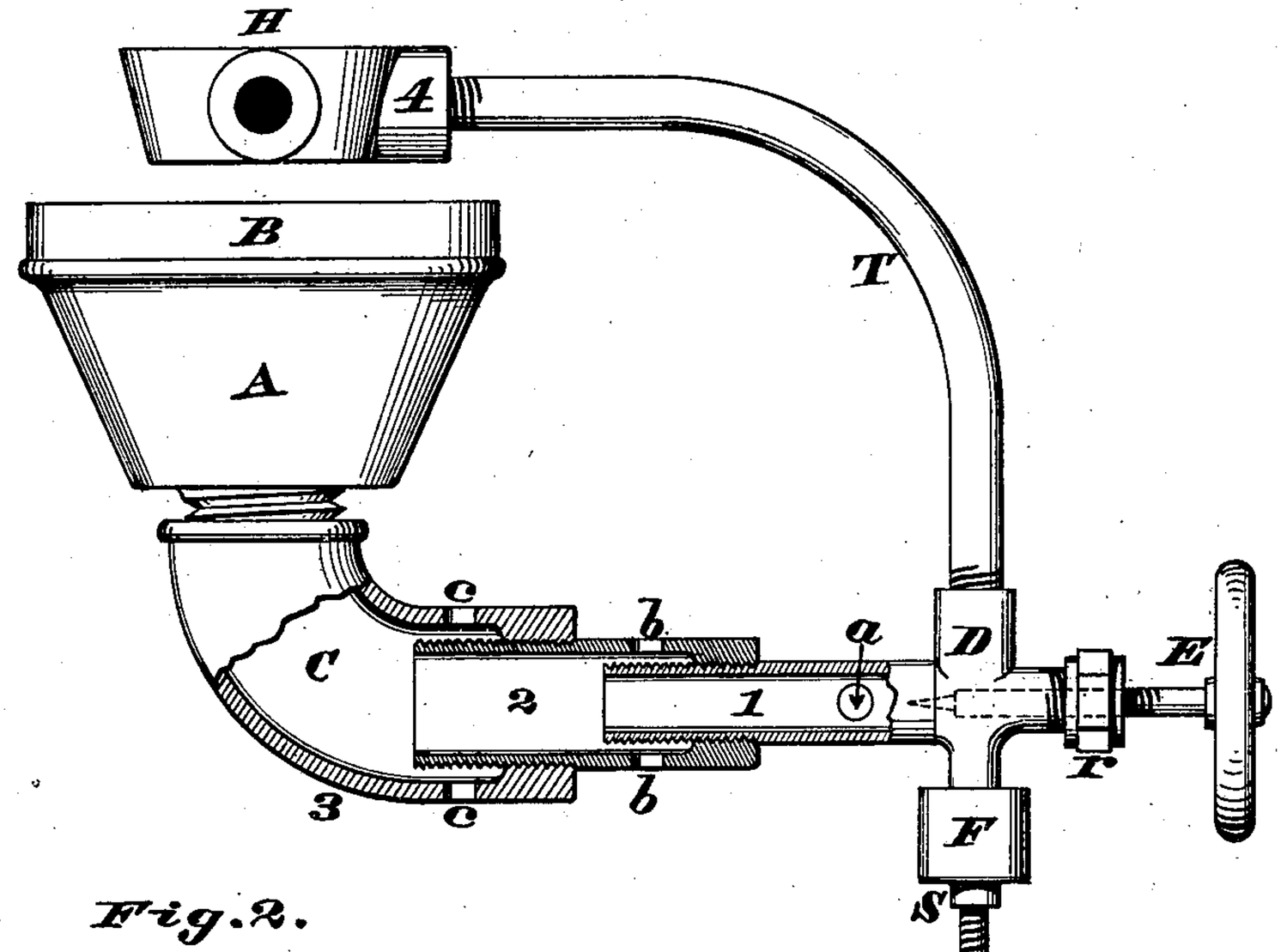


Fig. 2.

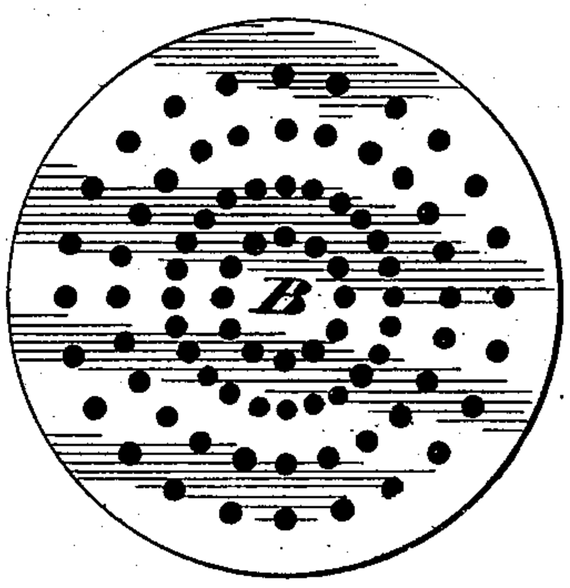


Fig. 3.

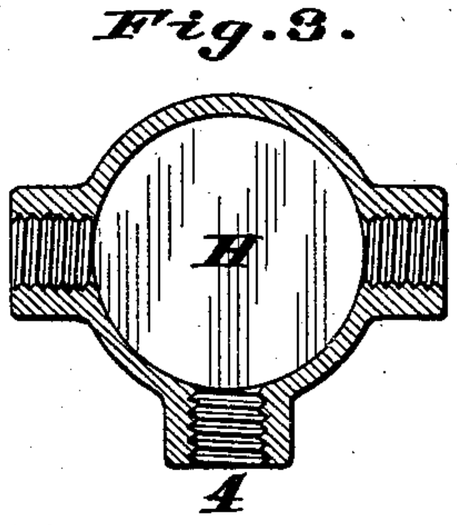


Fig. 4.

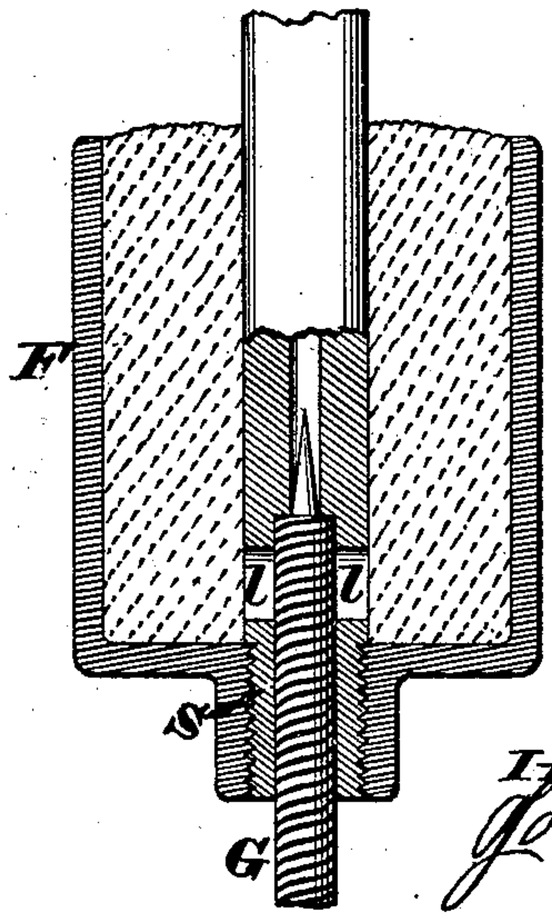
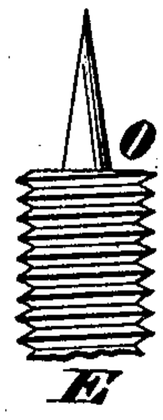


Fig. 5.



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JOSEPH H. BEAN, OF BOND HILL, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 253,498, dated February 14, 1882.

Application filed June 3, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. BEAN, of Bond Hill, Hamilton county, and State of Ohio, have invented a new and useful Improvement in Vapor-Burners, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to produce a vapor-burner which shall be more particularly adapted to use in a common cooking-stove, but may be used for any other purpose. Its novelty consists in certain peculiarities of construction, which can be better understood by a detailed description.

Figure 1 is a sectional view of my burner; and Figs. 2, 3, 4, and 5 are separate parts of the same.

A represents the burner, which is made of a bowl-shaped casting, with a nipple on the bottom for a screw-thread. This bowl is covered with a cast-iron lid full of perforations, as shown at B, Figs. 1 and 2. This burner is screwed into the elbow of a compound injector, C. This injector is designed to mix the vapor very largely with the air before entering the burner, and it is composed of a small straight pipe, No. 1, of suitable length, which has an air-inlet, *a*. This pipe is screwed to one arm of the needle-valve seat D. Onto this pipe is screwed another short pipe, No. 2, cast with one end closed, in which is cut a screw-thread. This pipe is larger than the first, so as to leave a space between it and No. 1 of about one-eighth of an inch all round. No. 1 is caused to project into No. 2 about one-half an inch. Around the base of No. 2 are drilled small air-holes, as shown at *b*. No. 2 is screwed into the end of the elbow No. 3, which is larger than No. 2, and has air-holes, as shown at *c*. No. 2 projects into No. 3 as did No. 1 into No. 2. This may be multiplied as often as is necessary to give the required result, or the burner may be used with No. 1 and the elbow alone, if desired.

D represents a four-way needle-valve seat, provided with a stuffing-box, *r*, two needle-valves, E and G, and a heating-cup, F. Onto the lower arm, S, is screwed the heating-cup F, which is packed with asbestus or other suitable absorbent. Up through arm S is drilled a small hole to the center of the valve, into which is fitted the needle-valve G. This valve stops abruptly at the upper side of the small opening *l*. This opening is made close to the bottom of the cup F on its inside and through the arm S. The object of this arrangement is to allow the gasoline, when the needle-valve G is slightly opened, to flow through the valve-seat D into the bottom of the heating-cup F. This gasoline is quickly absorbed by the asbestus in the cup and carried to the top, where it is lighted by a match, and the needle-valve G is then instantly closed. This gives the required amount of heat for starting the burner with absolute certainty, as the amount taken up must be the same every time, and effectually prevents overflow, as is so often the case with open cups, and does away with all smoke in lighting, as the flame is very small. This cup may be placed on a pipe leading from the fount, if desired, and then placed under the needle-valve, instead of being fastened to it, and produce the same results. The value of this feature of my invention can be readily seen and appreciated by all users of vapor-burners.

The needle-valves E and G are provided with a sharp, slightly-tapered point, at the base of which is made a square shoulder, as shown at O, Fig. 5. This effectually prevents the continual expansion of the point of the valve, caused by the oft-repeated closing of the same, and insures absolute certainty in shutting off the vapor or gasoline, which is not the case with a tapered needle-valve made in the usual way. This is another feature of great importance, as can be plainly seen by all who understand the nature and construction of the needle-valve.

H represents my retort, which is cast hollow and in approximately the shape of a letter T. Into the outlet No. 4 is screwed the pipe T, which connects the retort with the needle-valve-seat casting D. Into one of the other openings is screwed a pipe connected with the gasoline-supply pipe, and into the other is screwed a solid rod, which rests on one of the side jambs of the stove to hold the burner firmly in place.

Some of the advantages of my invention are the large amount of air mixed with the vapor, the safety, certainty, and convenience of the lighting, and the way in which the burning-vapor escapes from the burner, all coming out

at the top of the burner and in direct contact with the object to be heated, instead of at the side of the burner, as is the usual manner.

I am aware that attempts have been made by Holland, Humiston, and others to adapt the vapor-burner to the common cook-stove; but owing to the expensive nature of their burners, or the danger of overflow in lighting causing dangerous explosions, they have proved nearly useless for the purpose intended.

Having thus fully described my invention, what I claim is—

1. In a vapor-burner, the combination of the four-way needle-valve seat D, compound injector C, and burner A, as and for the purpose set forth.

2. In a vapor-burner, a lighting-cup filled with an absorbent and combined with and arranged in relation to the oil-pipe in the manner described, so that the gasoline from the needle valve or fount may be made to enter at or near the bottom of the cup, instead of at the top, as and for the purpose set forth.

3. The burner described, consisting of the bowl A, perforated lid B, compound injector C, needle-valve seat D, heating-cup F, needle-valves E and G, pipe T, and retort H, substantially as described, and for the purpose set forth.

JOSEPH H. BEAN.

In presence of—
SAML. S. CARPENTER,
ELMER A. VANCE.