

A. C. GRANEL.  
CARBURETING DEVICE.  
APPLICATION FILED MAY 9, 1906.

900,999.

Patented Oct. 13, 1908.

Fig. 1.

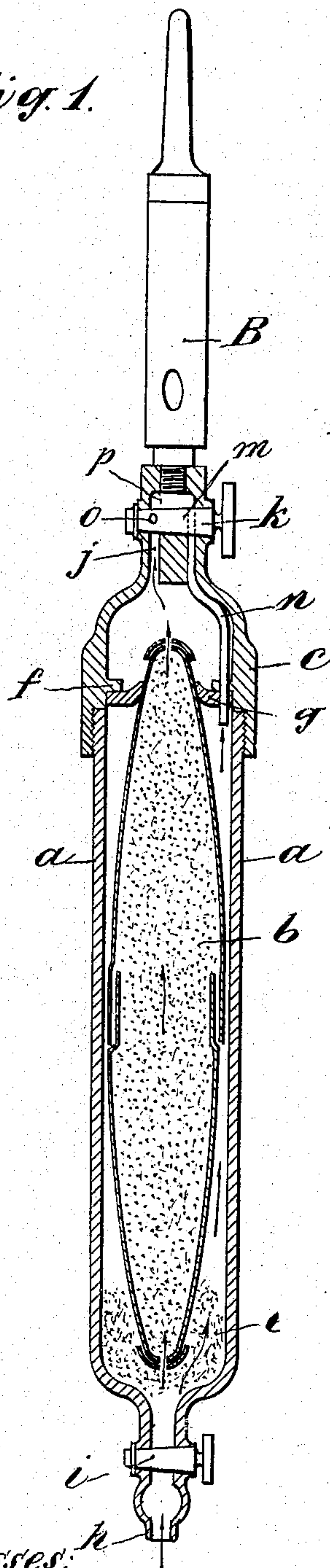


Fig. 2.

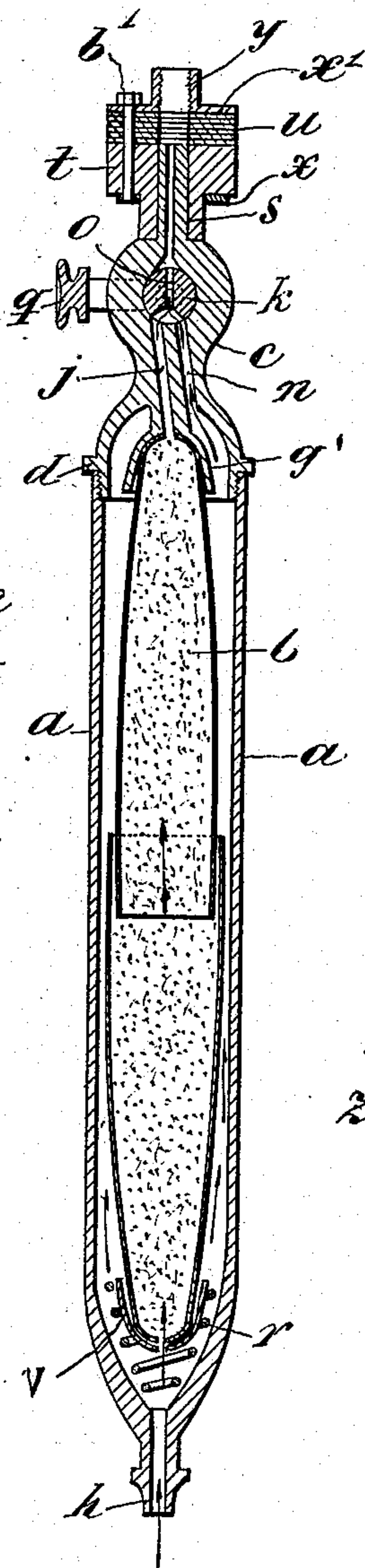


Fig. 3.

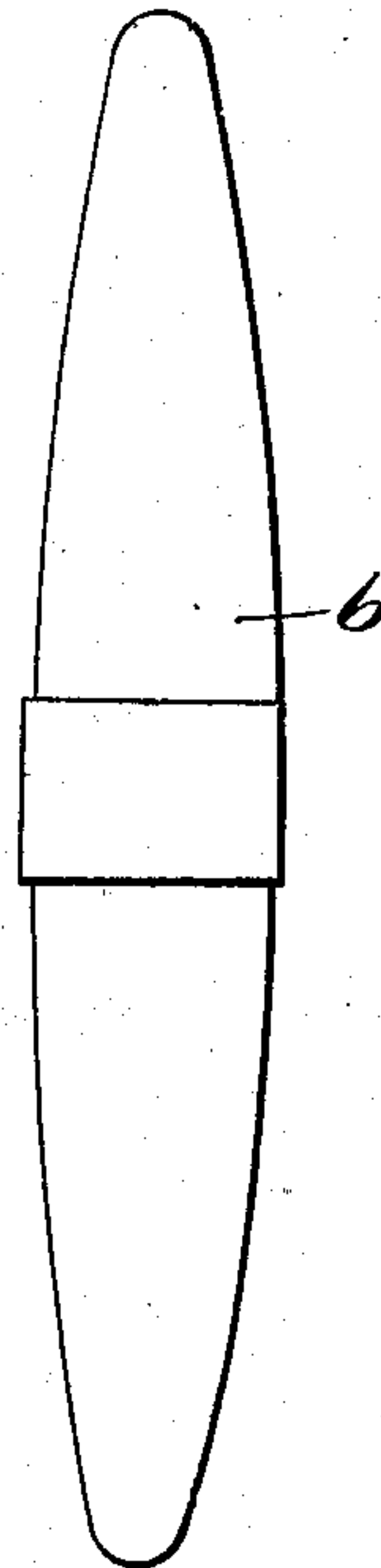


Fig. 4.

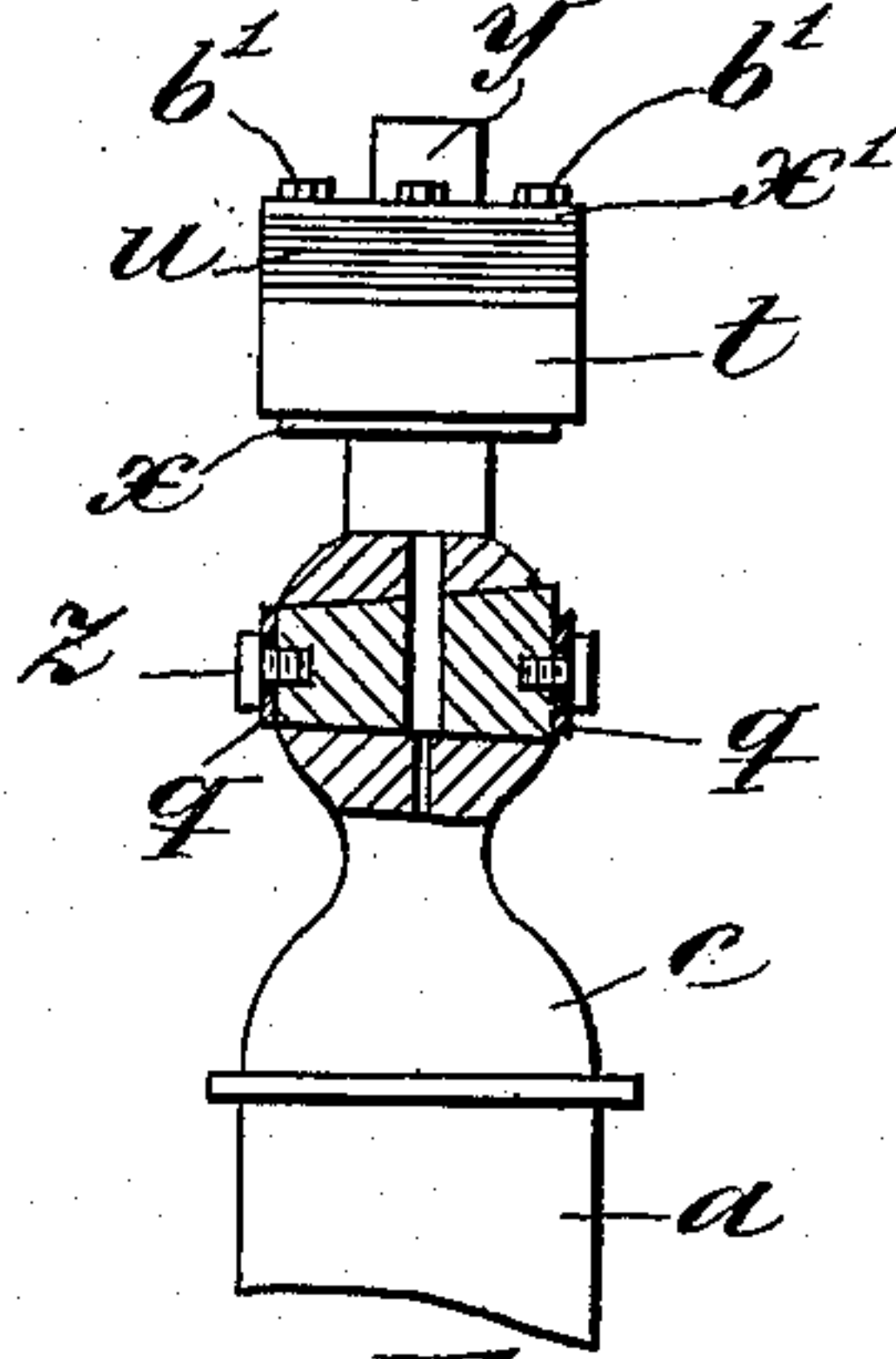
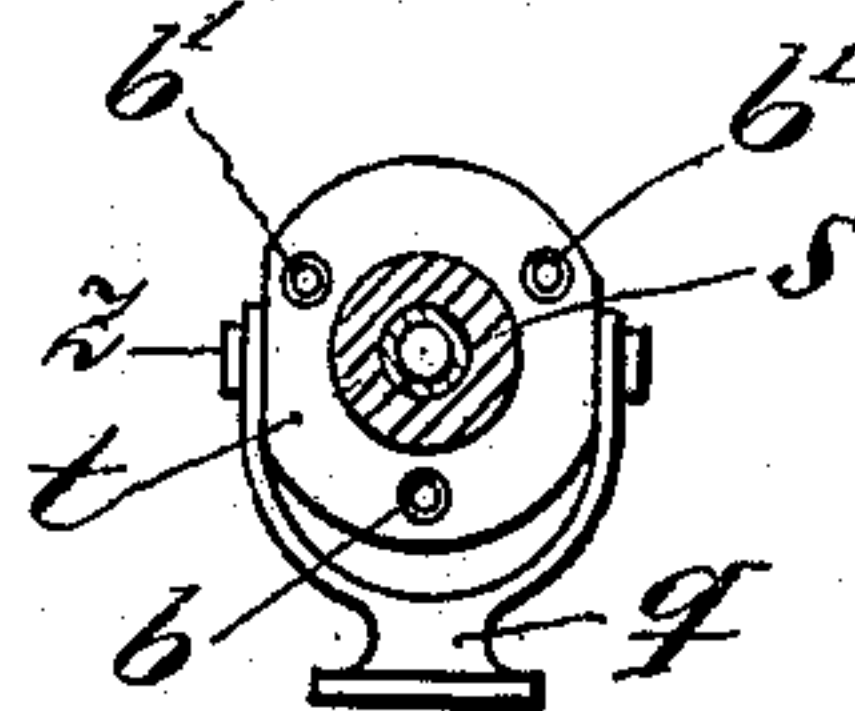


Fig. 5.



Witnesses:  
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by *Harry Conner*  
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# UNITED STATES PATENT OFFICE.

AIMÉ CLÉMENT GRANEL, OF ST. CLOUD, FRANCE.

## CARBURETING DEVICE.

No. 900,999.

Specification of Letters Patent.

Patented Oct. 13, 1908.

Application filed May 9, 1906. Serial No. 316,019.

*To all whom it may concern:*

Be it known that I, AIMÉ CLÉMENT GRANEL, a citizen of the French Republic, residing at St. Cloud, in the Province of Seine-et-Oise, France, have invented certain new and useful Improvements in Carbureting Devices, of which the following is a specification.

This invention relates to a small portable heating apparatus for burning a mixture of hydrocarbon vapor and air and which can be used as a thermo-cauterizer, as soldering lamp or as pencil for pyrography, for example.

The combustible gas generator consists of a kind of cartridge, preferably of cigar shape, which can be placed in the handle of the instrument; its casing is formed of a sheath of gelatin or other suitable material, that is to say, a material which will withstand the action of hydrocarbons, and it contains an absorbent and permeable ligneous body soaked with the hydrocarbon which it is desired to employ.

The cartridge or small carbureter is contained in the handle of the instrument which may be of metal or other material which will withstand the action of hydrocarbons, alcohol, ether and the like.

The accompanying drawing illustrates, by way of example, the application of the system to a thermo-cauterizer.

Figure 1 is a vertical section of the instrument; Fig. 2 is a longitudinal section of a modification of the same; Fig. 3 shows a carbureting cartridge detached in elevation; Fig. 4 is an elevation partly in section of the cock of the said modification; and Fig 5 is a plan showing the arrangement which allows of turning the plug of this cock.

The handle of the instrument consists of two parts: the body *a*, containing the carbureting cartridge *b* and the head *c* which carries the burner *B*.

The cartridge *b* introduced into the body *a* of the handle rests with one of its ends upon a plug *e* of soft and permeable material forming a cushion while allowing the air which is blown into the instrument to filter through.

The head *c* is provided with a shoulder *f* serving as a support for an indiarubber washer *g* which caps the other end of the cartridge and forms a hermetic joint between the body and the head of the handle of the instrument.

At the lower part of the body *a* is a nozzle *h* provided with a cock *i*, and which serves to receive the end of a tube connected with an air compressing bulb or other suitable compressor.

The head *c*, which is separated from the body of the handle by the indiarubber washer *g*, forms a chamber into which enters the carbureting air to be sent through a passage *j* to a passage *o* in a cock *k*, the plug of which is moreover provided with a passage *m* to which extends a small tube *n*, the other end of which is connected with the interior of the body *a* containing the carbureting cartridge.

The two passages *m* and *o* in the plug of the cock *k* are bored at a right angle to one another so that according to the position of the said plug its passages more or less uncover the tube *j* and the tube *n* at the same time.

The instrument is assembled in the following manner: The head *c* is unscrewed in order to uncover the upper mouth of the body *a* of the handle, and in this handle is placed the carbureting cartridge *b* previously perforated at each of its ends; it rests with its lower part upon the permeable plug *e*; the head *c* is replaced in position and the indiarubber washer *g* then caps the cartridge, forming a tight joint between the two compartments *a* and *c* of the handle; the upper part of the cartridge projects into the upper compartment formed by the head.

The cock *k* being in the proper position, air is blown in through the nozzle *h*; the air passes through the plug *e* and part of it becomes compressed in the body of the handle while the other part passes through the cartridge as indicated by the arrows in Fig. 1.

The air which is carbureted in its passage through the cartridge *b* enters the head *c* of the handle and passes through the passage *o* in the cock, while the compressed air in the lower part or body passes through the tube *n* to the other passage *m*.

The carbureted air passing through *o* and the uncarbureted air which passes through *m* become mixed in the chamber *p* above the cock *k* and thence pass to the burner. It will be understood that according to the position of the plug *k* the passages *m* and *o* will be more or less open so as to allow of varying the proportions of the combustible mixture; these passages being at right an-



gles to each other the proportions of carbureting and uncarbureting air vary inversely; a mixture of a given richness can therefore be obtained.

5 In the arrangement shown in Fig. 2 the mixture of carbureted and uncarbureted air takes place in the cock itself and the cartridge is pressed towards its upper cap by a spring which insures a sufficiently tight  
10 joint for preventing the mixture of the air passing into the cartridge and the air passing around the said cartridge.

The head *c* is screwed on to the handle *a* and a milled flange *d* which is provided on  
15 the head, not only serves as a stop to limit the movement of the head, but also serves in conjunction with the washer *g*, as an effectual means for hermetically closing the joint between the cartridge within the han-  
20 dle *a*, and the head. Within this casing, at the lower part, is a cap *g'* which is employed instead of the indiarubber washer or cap *g* of the preceding arrangement; this cap is of the same shape as the end of the cartridge *b* which  
25 is pressed against the cap by a spring *r* placed in the lower part of the handle *a*. I prefer to interpose between the spring *r*, and the lower end of the cartridge *b*, a cup  
30 *v*, which serves as a substantial retainer for that end of the cartridge. The cup is, of course, perforated to register with the opening in the cartridge.

The head *c* is provided with the cock *h* which has only one passage *o*. This passage  
35 *o* is enlarged at one end to allow of it communicating with the two passages *j* and *n*, one for the carbureted air and the other for uncarbureted air. By operating the plug by means of its forked handle *q* one of the  
40 passages *j* and *n* can be more or less opened, thus regulating the inlet of carbureted and uncarbureted air.

The head *c* is provided with an extension or stem *s* upon which is placed a socket *t*  
45 preferably of lignum vitæ surmounted by several washers *u* of asbestos or other insulating material held in position by means of bolts *b<sup>1</sup>* which bear upon washers *x*, *x<sup>1</sup>*. The washer *x<sup>1</sup>* has an extension *y* in the form  
50 of a socket screw-threaded internally to receive the burner.

It will be observed that the handle *q* which  
55 serves to operate the cock *h* is preferably in the form of a fork, the prongs of which are applied (see Fig. 4) against the two ends of

the plug of the cock. On the side of smallest diameter (in this instance, the left-hand side of Fig. 4) the prong of the fork serves, in conjunction with the screw *z*, to prevent the plug from coming out of its shell. 60

When compressed air is caused to enter through the nozzle *h*, part of the said air passes into the cartridge whence it issues in a carbureted state through the upper hole and the passage *j*. The other part of the  
65 compressed air passes into the annular space provided between the cartridge and the handle and out through the passage *n*.

The carbureted and uncarbureted air thus become mixed in the passage *o* of the  
70 cock *h*. The admission of the carbureted and uncarbureted air is regulated by turning the plug of the cock by means of the handle *q* and one of the passages *j* or *n* is more or less obstructed. The combustible  
75 mixture thus reaches the passage *o* whence it passes to the burner.

For certain uses, particularly for luminous projections, and for soldering lamps, oxygen instead of air may be passed into the appa-  
80 ratus.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be per-  
85 formed, I declare that what I claim is:

1. A carbureting device comprising a casing with an outlet, a cartridge insertible in the casing and adapted to be pressed against said outlet and having a passage adapted for communication with the outlet when so  
90 pressed, and yielding means carried by the casing and engageable with the cartridge to hold the same pressed against said outlet.

2. A carbureting device comprising a casing having a cap with an outlet, a cartridge  
95 insertible in the casing, with one end adapted for insertion within said cap and having a passage adapted for communication with the outlet, and a spring carried by the casing and engageable with the other end of the  
100 cartridge, whereby it is held within the cap and pressed against the outlet therein.

In witness whereof I have hereunto signed my name this 26 day of April 1906, in the presence of two subscribing witnesses.

AIMÉ CLÉMENT GRANEL.

Witnesses:

HANSON C. COXE,  
GABRIEL BELLARE.