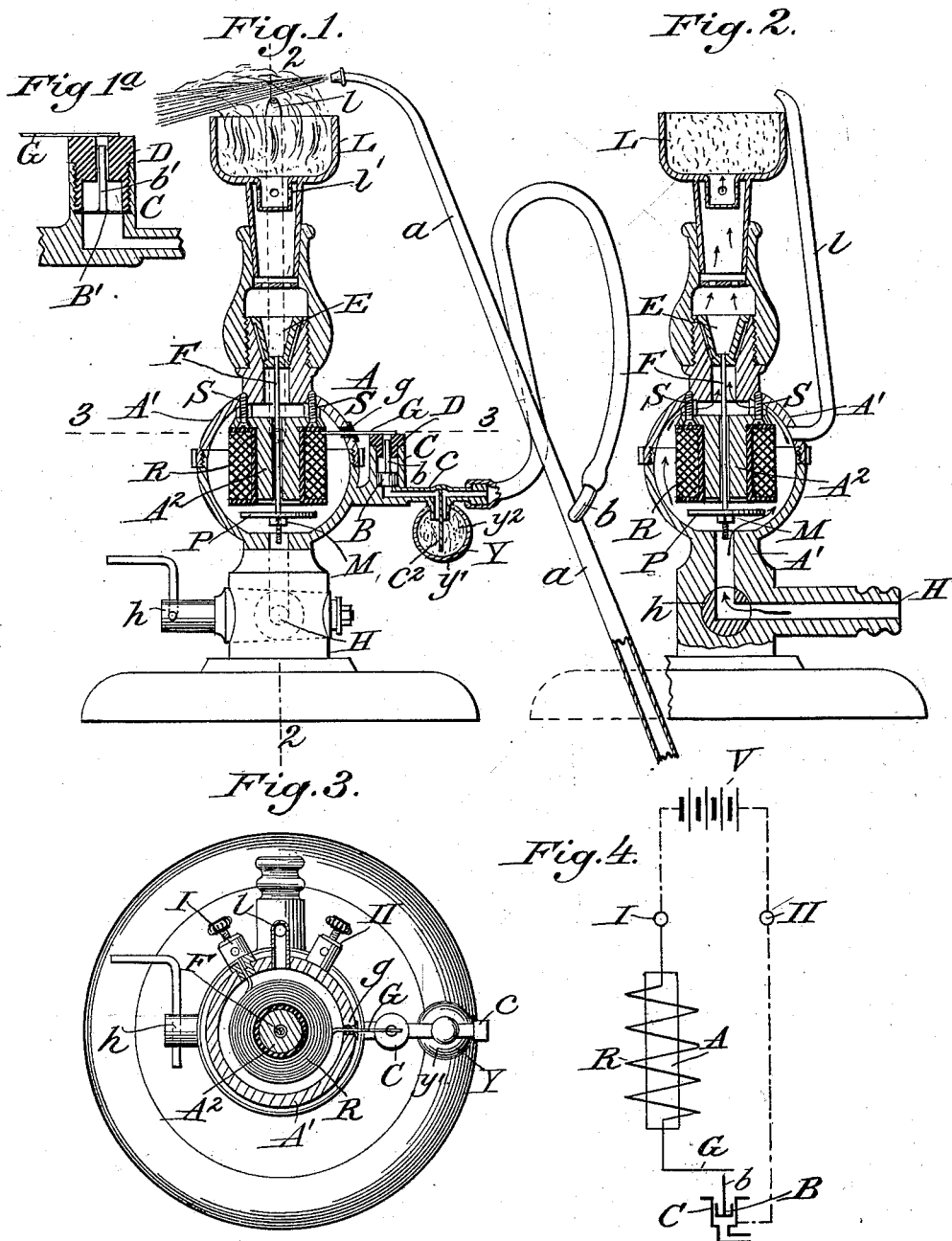


J. HEINZ.
BLOWPIPE LAMP.

(Application filed Feb. 7, 1900.)

(No Model.)



Witnesses

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JOHANN HEINZ, OF PFORZHEIM, GERMANY.

BLOWPIPE-LAMP.

SPECIFICATION forming part of Letters Patent No. 646,985, dated April 10, 1900.

Original application filed October 17, 1899, Serial No. 733,905. Divided and this application filed February 7, 1900.
Serial No. 4,388. (No model.)

To all whom it may concern:

Be it known that I, JOHANN HEINZ, a citizen of the Empire of Germany, residing at Pforzheim, Germany, have invented certain new and useful Improvements in Blowpipe-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved construction in blowpipe-lamps wherein the flame is automatically controlled by the air-pressure in the blowpipe.

This invention has been illustrated and described, but is not specifically claimed, in my application filed October 17, 1899, Serial No. 733,905, of which this is a divisional application.

In blowpipe-lamps as heretofore constructed the supply-valve for the combustible gas has been actuated by the expansion of an accordion or bellows like air-chamber contained within the lamp-casing, which air-chamber in expanding actuates a weighted elbow-lever connected to the valve. According to the present invention the air under pressure in the blowpipe serves to close a valve-controlling circuit, for example, by causing the same to act directly upon a piston or diaphragm connected to a contact-rod, which in being urged forward closes the circuit of an electromagnet, which in turn moves an armature connected to the gas-controlling valve.

In order to more clearly elucidate my invention, I will now give a detailed description of the same, reference being had to the accompanying drawings, in which the same characters of reference designate the same parts throughout the several views, and in which—

Figure 1 is a vertical central section through a blowpipe-lamp embodying my invention in its preferred form; Fig. 1^a, a detailed view of a modified form of contact-stem device; Fig. 2, a vertical central section on the plane of line 2 2, Fig. 1; Fig. 3, a sectional plan view on line 3 3, Fig. 1; and Fig. 4, a diagram of the electric circuit employed.

As shown in Fig. 1, the blowpipe *a* is provided with the usual branch pipe *b*, which is

connected by a flexible tube with the lamp proper, *A*, the said flexible tube being slipped over the end of the blast-pipe *c*, extending out from the lamp *A*.

In the upper half of the lamp-casing *A'*, which in the present instance is formed of two halves or hemispheres secured together; a soft-wrought-iron core *A*² is fixed by a number of screws *S*. On this core is mounted a solenoid *R*, consisting of a number of turns of copper wire of suitable diameter—such, for example, as three hundred and sixty-three turns of copper wire of 0.4 millimeter diameter—one end *G* of which passes out through the casing, being insulated through the lamp by an ebonite sleeve *g*, while the other end, which is also insulated from the lamp-casing, is in conducting connection with the binding-post *I*. (See Fig. 3.) From the binding-post an electrical circuit passes to any suitable source of electric energy—such as a battery *V*, Fig. 4—thence to the binding-post *II*, Fig. 3, and thence through the casing *A'* to the cylinder *C* and piston *B*, to be referred to hereinafter. The core *A*² has a central passage through its length, and through this passes a brass stem *F*, which carries at its upper end a conical valve *E*, while its lower end carries a wrought-iron disk *P*, whose position on the stem *F* may be adjusted preferably by means herein shown. These means consist in a screw-thread provided on the lower end of the valve-stem *F* and a corresponding inner screw-thread on the wrought-iron disk adapted to engage the threaded stem. By this means the disk may be screwed up or down on the said stem and locked in its various positions by means of the lock-nut *M*, also threaded onto the screw-threaded stem *F*.

On the lower half of the lamp-casing *A*² is cast a cylinder *C*, which is fitted with a movable piston *B*, as shown, carrying an upwardly-extending stem which fits into an opening in the upper end of the piston below the end *G* of the circuit-wire. This opening of the cylinder is preferably arranged in an ebonite stopper *D*, which closes the top of the cylinder, and thereby prevents the admission of dirt, while, on the other hand, it serves as a guide to the stem *b* of the piston *B*.

Instead of the movable piston B, I may, as shown in Fig. 1^a, arrange a fixed yielding diaphragm B' within the same, carrying an upwardly-extending contact-stem *b'*, as in the former case. The movable piston B and the yielding diaphragm B' may both be designated generically as the "movable" member for closing off the air-cylinder behind the make-and-break connection.

As in my aforesaid application, Serial No. 733,905, I arrange a moisture-trap Y at a suitable point along the passage of the blast to arrest any moisture which may be carried along by the air-blast. The said trap, as in the former case, consists of a bulb *y'*, arranged below the blast-pipe *c* and preferably filled with absorbent or dehydrating material *y''*, such as wadding or other fibrous material. At this point the blast-pipe *c* is divided by a diaphragm *c''*, which dips almost to the bottom of the bulb *y'*, thereby diverting the blast downwardly through the absorbent or dehydrating material and compelling the same to discharge its moisture before reaching the flame.

The combustion-gas enters the lamp at the inlet H, where its flow is controlled by the cock *h*. It then passes through the bottom or lamp casing A', around the conical valve E when the same is open, and thence through the openings *l'* to the flame-cup L, which is filled with fine copper wire or the like, so as to produce a gentle and evenly-disseminated issue of gas. A by-pass pipe *l* (shown in Fig. 2 and also in dotted lines in Fig. 1) serves in the usual manner for the supply of a very small amount of gas for the constantly-burning igniting flame.

The operation of this blowpipe-lamp will be obvious from the foregoing. If the operator blows into the blowpipe, the compressed air therein will raise the piston B or diaphragm B', and the stem *b* or *b'* thereof will be thereby raised so as to contact with the circuit-wire G, thereby establishing an electric circuit, as indicated in the diagram of Fig. 4. By this means the core A becomes energized and the disk P is raised more or less, whereby the valve E is also raised to allow sufficient gas for the blowpipe-flame to pass around it, which gas as it emerges from the cup L becomes ignited by the small by-pass jet *l*. When the blowpipe action ceases, the piston drops, whereby the circuit is broken, so that the disk P again falls away from the electromagnet R and the valve E closes by gravity.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In blowpipe-lamps, a gas-valve, and an armature connected thereto, an electromag-

net, and a make-and-break connection arranged in the circuit of said electromagnet, in combination with a blowpipe and a blast-pipe communicating therewith, an air-cylinder communicating with the latter, and a movable member for closing off the air-cylinder behind the make-and-break connection, whereby the circuit of the electromagnet is closed whenever air is forced through the blowpipe.

2. In blowpipe-lamps, a gas-valve, and an armature connected thereto, an electromagnet, a make-and-break connection arranged in the circuit of the electromagnet and comprising a fixed and movable contact, in combination with a blowpipe and a blast-pipe communicating therewith, an air-cylinder communicating with the latter, and a movable member closing off the air-cylinder behind the make-and-break connection and connected to the movable contact of the same.

3. In blowpipe-lamps, the combination of an electromagnet and its circuit, with an armature and a gas-valve connected with the same, a blast-pipe, an air-cylinder communicating therewith, and a piston provided with a circuit-closing stem arranged within the cylinder and adapted to be advanced by the pressure of air within said cylinder, whereby the blast will cause the said stem to close the circuit of the magnet to operate the gas-valve.

4. In blowpipe-lamps, a blast-pipe, a cylinder connected with the same, a piston arranged to move within said cylinder and provided with a contact-stem, in combination with an electromagnet, one of whose circuit-wire ends is in the path of the contact-stem, an armature arranged opposite the electromagnet, and a gas-valve connected to the armature.

5. In blowpipe-lamps, a gas-valve, an armature connected therewith, an electromagnet opposite said armature, and a circuit for the same having a wire end in combination with a blowpipe having a branch pipe, a cylinder communicating with said branch pipe, a contact-stem arranged in said cylinder opposite the wire end of the circuit, and a movable member connected to the contact-stem and closing off the air behind the same; whereby the contact-stem is forced against the wire end of the circuit of the electromagnet when air is forced into the cylinder, thereby closing the said circuit and energizing the magnet.

In testimony whereof I affix my signature in presence of two witnesses.

JOHANN HEINZ.

Witnesses:

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KARL KNAPP.