

No. 613,057.

Patented Oct. 25, 1898.

H. BORCHARDT.

AUTOMATIC LIGHTING DEVICE FOR GAS BURNERS.

(Application filed Feb. 1. 1898.)

(No Model.)

Fig. 1.

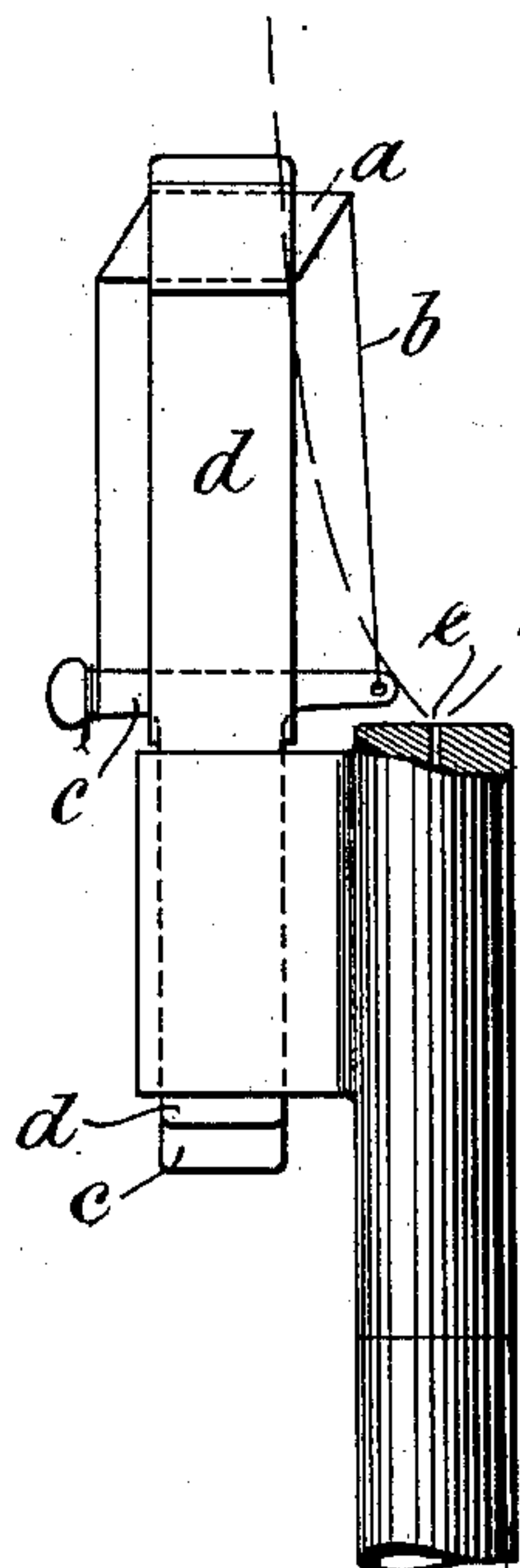


Fig. 2.

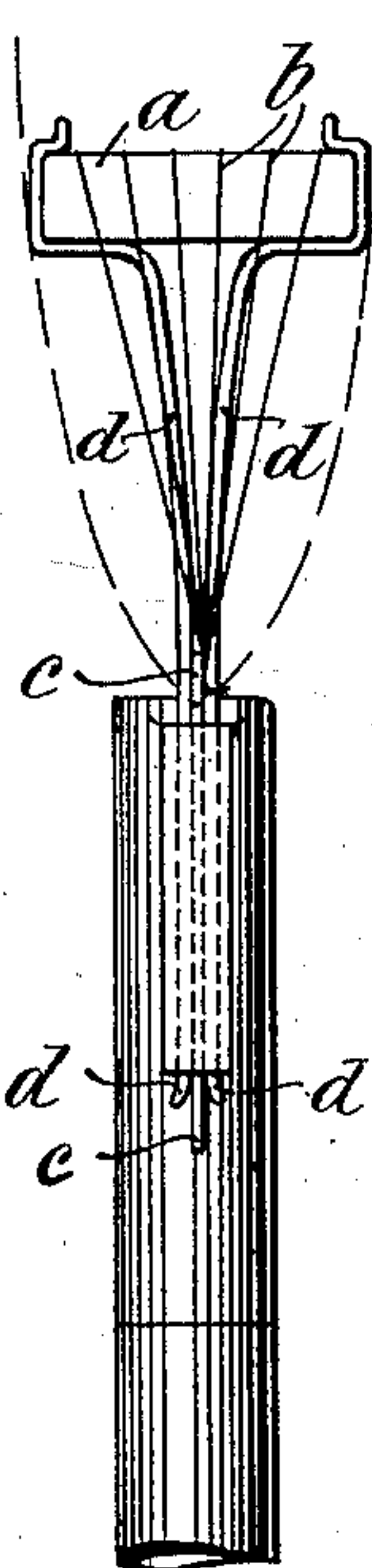


Fig. 3.

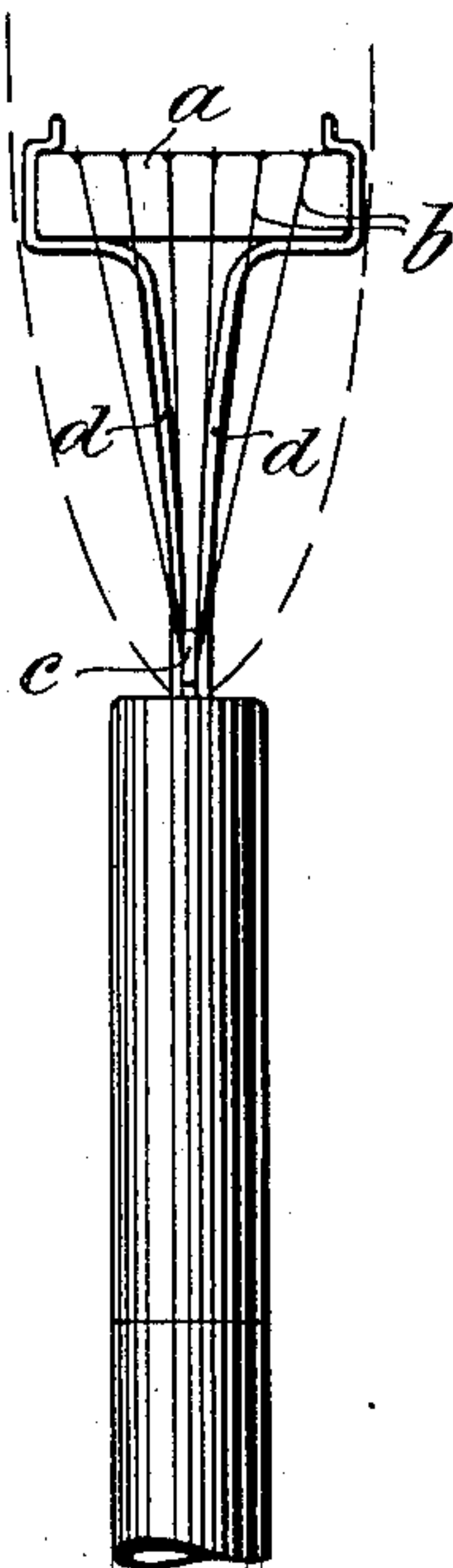
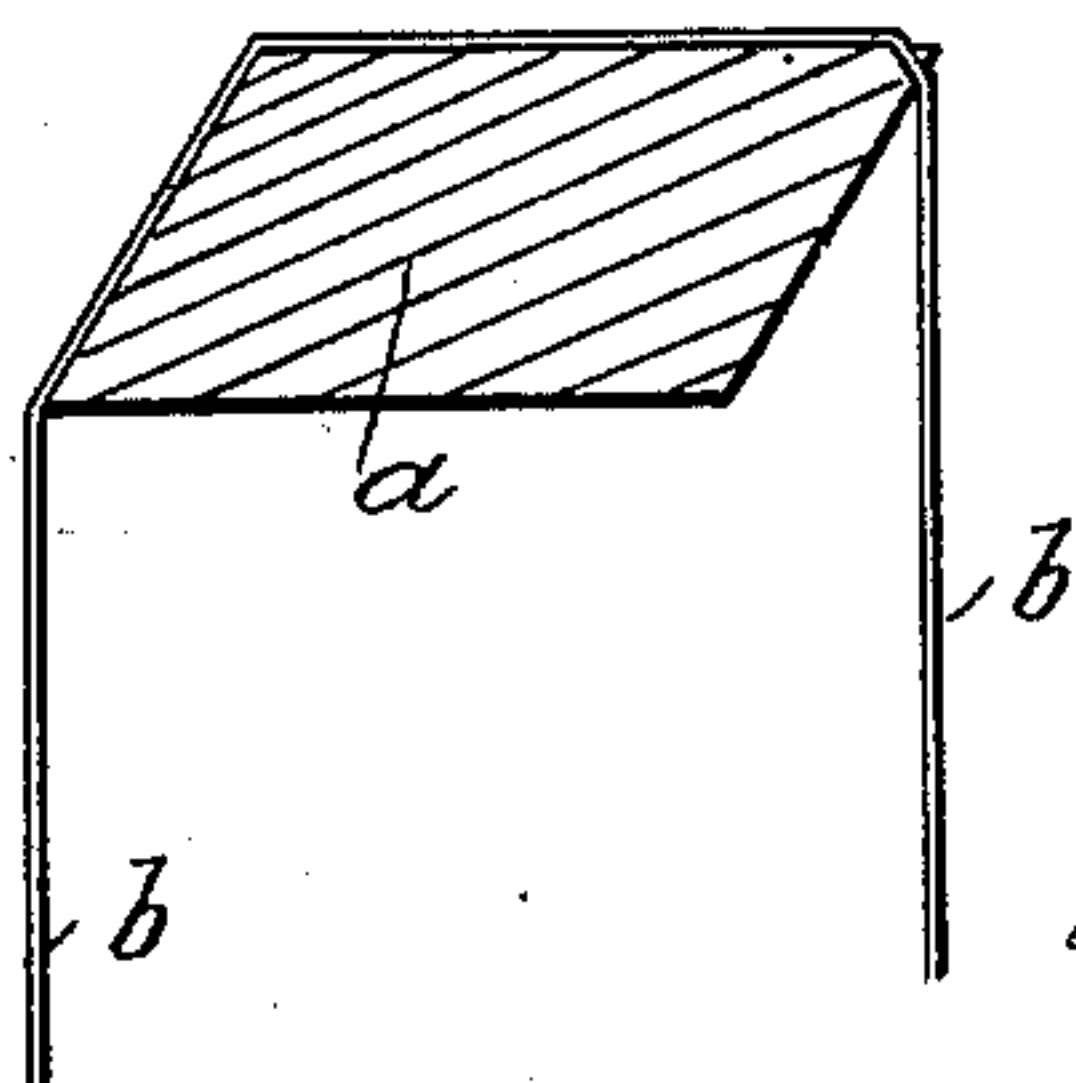


Fig. 4.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

HUGO BORCHARDT, OF BERLIN, GERMANY.

## AUTOMATIC LIGHTING DEVICE FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 613,057, dated October 25, 1898.

Application filed February 1, 1898. Serial No. 668,704. (No model.)

*To all whom it may concern:*

Be it known that I, HUGO BORCHARDT, a citizen of the United States of America, residing at Berlin, in the Kingdom of Prussia and Empire of Germany, have invented a new and useful Automatic Lighting Device for Gas-Burners, of which the following is a specification.

There have already been devised appliances for the automatic lighting of gas in which a platinum sponge was arranged at a predetermined height above the burner-orifice, whence thin and sometimes curled or coiled platinum wires were stretched down to a point in the vicinity of the said orifice. The action of these automatic lighting devices was based upon the fact that the platinum sponge in consequence of its contact with the illuminating-gas, which as it issued became mixed with air, was heated to incandescence and that the platinum wires attached to the sponge by reason of the well-known physical properties of platinum transmitted the heat to the burner-orifice. The rapidity and reliability of ignition in those arrangements have, however, been mainly dependent upon a condition which was not sufficiently taken into account—namely, upon the method of arrangement of the platinum wires.

Now I have ascertained that the following two conditions have to be fulfilled in order to insure the prompt and reliable operation of the platinum wires referred to. First, the wires must not extend down to the burner in the form of one single strand, as heretofore, whether spreading or expanding or not in the downward direction. What they should do, on the contrary, is to constitute a system expanding or spreading upwardly in the shape of a fan, their divergence as nearly as practicable corresponding to the cone of dispersion of the issuing gas, and, secondly, the wires should not, as in the method heretofore adopted, form a "frizzled curl," which is very apt to undergo alterations in its position either under the action of a draft of air or under other influences, but they should be stretched or strained taut with adjustable tension, so that they may permanently retain the position imparted to them.

In the accompanying drawings, Figures 1, 2, and 3 are respectively a side elevation, a

rear view, and a front view, of one form of automatic gas-lighting device combining the novel features above described. Fig. 4 is a cross-section through the platinum sponge, drawn to a larger scale and showing a portion of one of the wires.

*a* designates the platinum sponge, which is retained between resilient clamps *d*, mounted in an extension or projection of the burner. The platinum sponge *a* is preferably formed into an oblong block, which is rhomboidal in cross-section. Between the said clamps there is interposed a carrier *c*, automatically retained in place by friction and adjustable in height, and to this carrier is secured the system of platinum wires *b*, expanding upwardly in fan shape and stretched or strained over the sponge *a*.

*e* designates the burner-orifice.

The arrangement above described affords the following advantages: Inasmuch as the platinum wires *b*, which are arranged at approximately equal distances apart, expand or spread in front of the whole effective surface of the platinum sponge *a*, all the heat evolved from the sponge is utilized in heating the platinum wires, and the incandescent heat is transferred to the burner-orifice by the shortest way, and this action is all the more reliable as all the platinum wires are situated within the gas-cone. Again, owing to the attachment of the platinum wires *b* to the carrier *c*, the height or level of which may be adjusted by simple displacement, the possibility is afforded of imparting greater or less tension to the wires, as may be required, in securing them in place.

In some cases, indeed, the platinum sponges may be provided with small notches or dents for the wires to be embedded in, so that they are effectually precluded from shifting.

As the platinum sponge *a* is retained between the clamps *d* by friction merely, it may, if desired, be adjusted or displaced by shifting it so that its front surface is moved more or less into the gas-cone, since the wires *b*, being very thin, will follow the outline or position of the sponge in any situation.

The drawings show a conical flame issuing from a round hole; but burners or tips having holes or slots for producing flat flames may be used. The sponge and wires are



placed in any position, so that they are in the current of gas which issues from the burner.

What I claim is—

- 5 1. The combination, with a gas-burner, of an igniting - sponge supported above the burner, and a series of upwardly and outwardly diverging igniting-wires arranged between the said sponge and burner, substantially as set forth.
- 10 2. The combination, with a gas-burner, of an igniting - sponge supported above the burner, and a series of igniting-wires secured under tension and arranged between the said sponge and burner, substantially as set forth.
- 15 3. The combination, with a gas-burner, of an igniting - sponge supported above the burner, a series of igniting-wires arranged

between the sponge and the burner, and means for adjusting the tension of the said wires, substantially as set forth. 20

4. The combination, with a gas-burner, of an igniting - sponge supported above the burner and provided with a series of notches, and a series of upwardly and outwardly diverging wires engaging with the said notches 25 and arranged between the said sponge and burner, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HUGO BORCHARDT.

Witnesses:

PAUL AULICH,  
CHAS. H. DAY.