

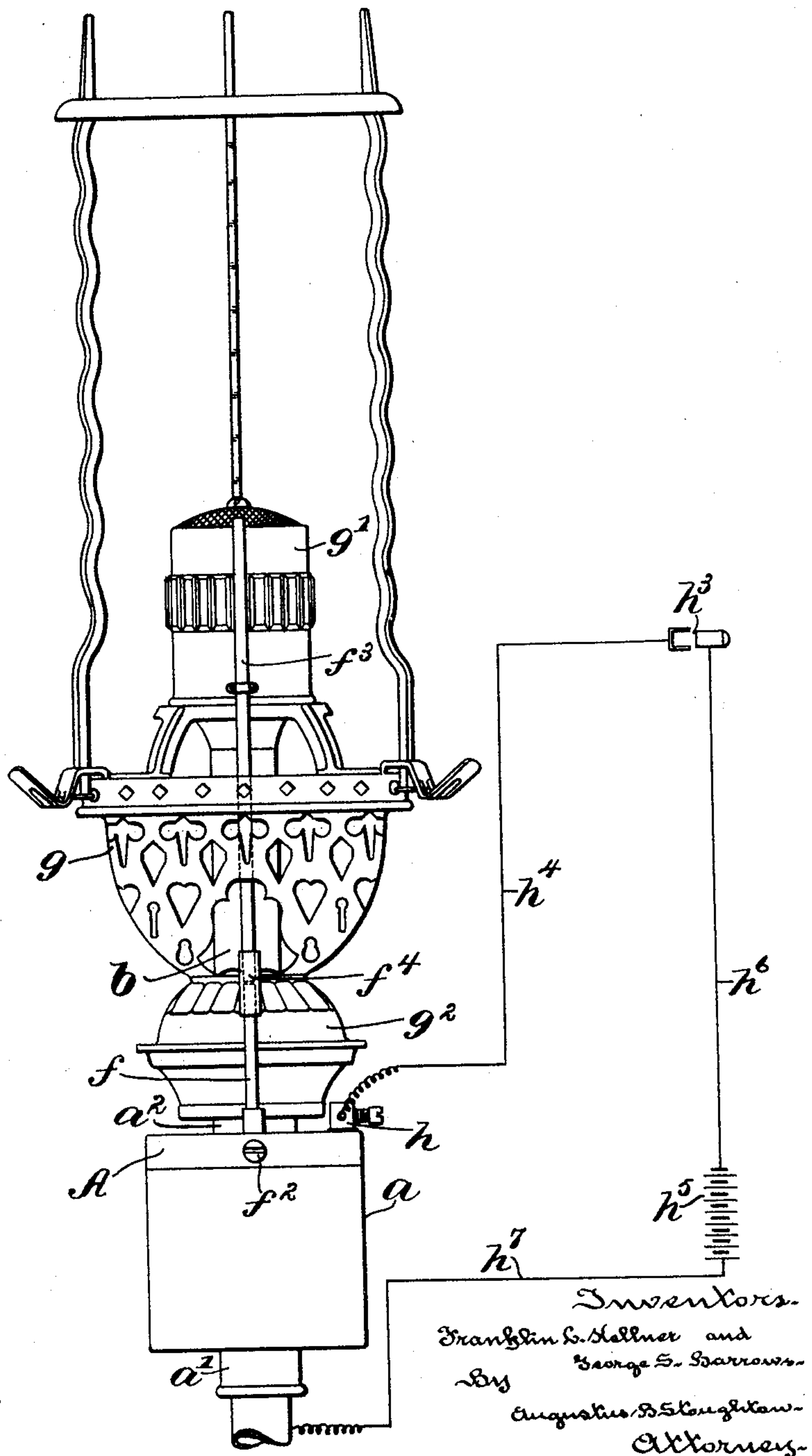
(No Model.)

2 Sheets—Sheet 1.

F. L. KELLNER & G. S. BARROWS.
ELECTRICAL ATTACHMENT FOR GAS LIGHTS.

No. 603,334.

Patented May 3, 1898.



Witnesses:
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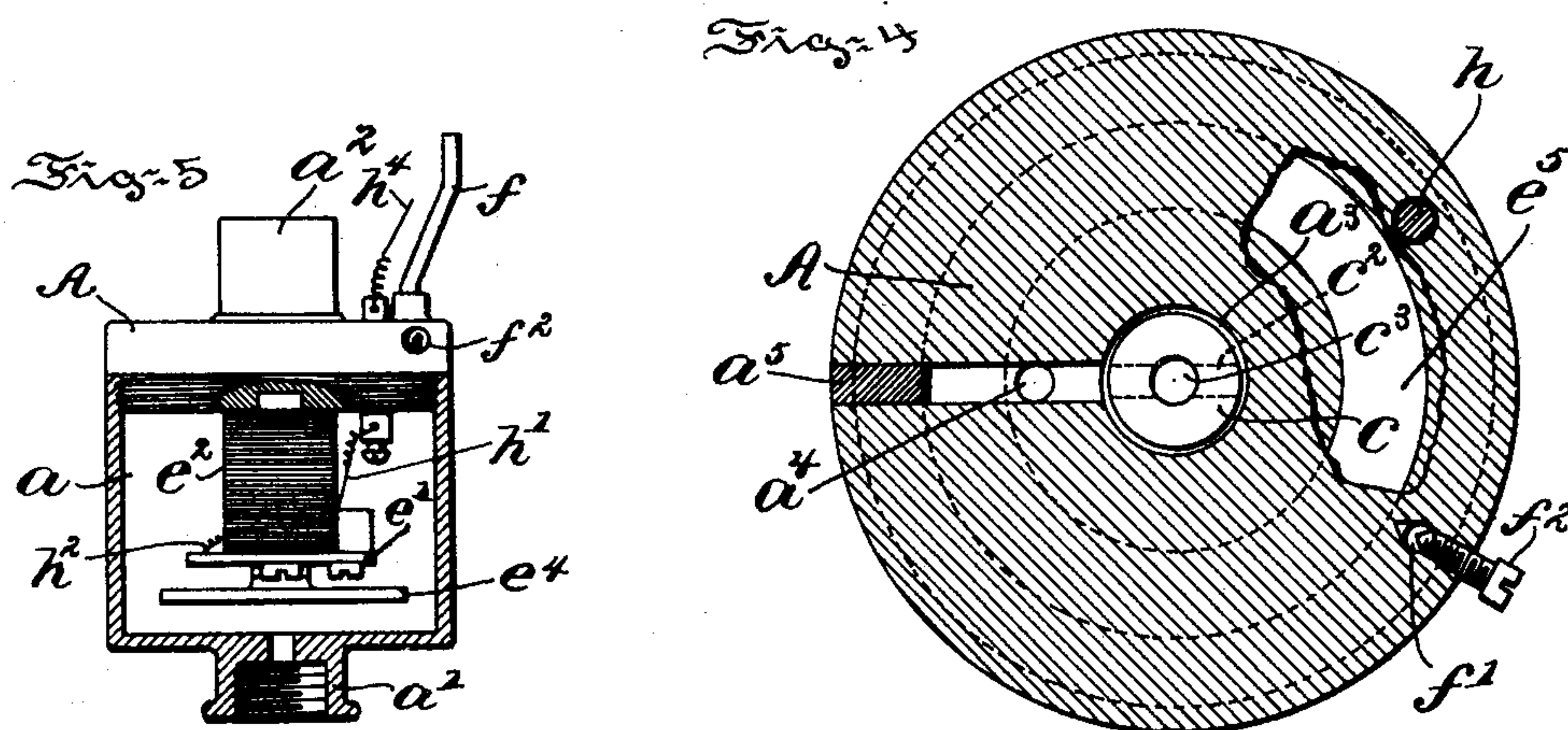
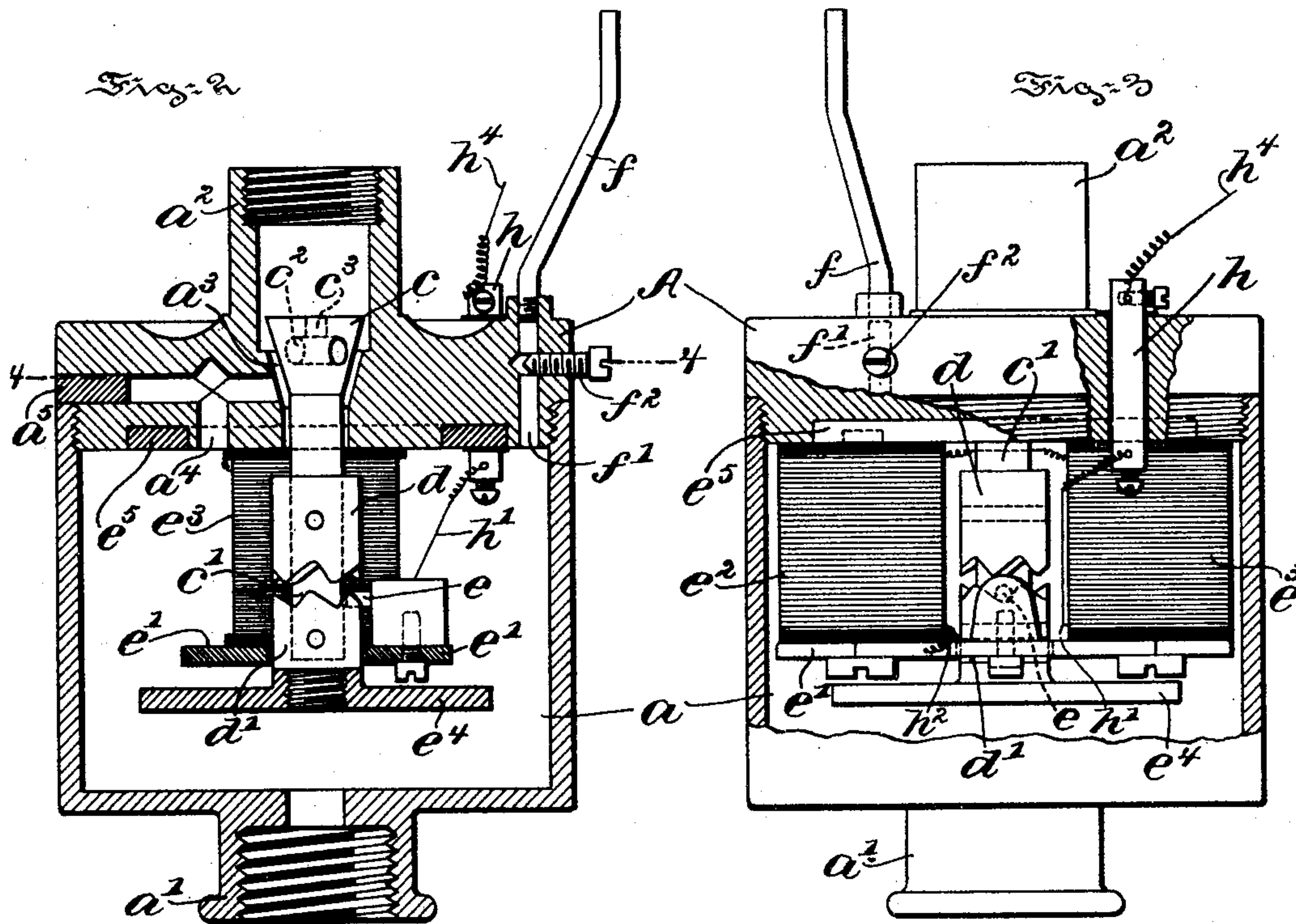
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ELECTRICAL ATTACHMENT FOR GAS LIGHTS.

No. 603,334.

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Witnesses:

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UNITED STATES PATENT OFFICE.

FRANKLIN L. KELLNER AND GEORGE S. BARROWS, OF PHILADELPHIA,
PENNSYLVANIA, ASSIGNORS TO THE WELSBACH LIGHT COMPANY, OF
GLOUCESTER CITY, NEW JERSEY.

ELECTRICAL ATTACHMENT FOR GAS-LIGHTS.

SPECIFICATION forming part of Letters Patent No. 603,334, dated May 3, 1898.

Application filed November 22, 1897. Serial No. 659,397. (No model.)

To all whom it may concern:

Be it known that we, FRANKLIN L. KELLNER and GEORGE S. BARROWS, citizens of the United States, residing in the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Electrical Attachment for Welsbach and other Gas-Lights, of which the following is a specification.

10 The objects of our invention are to provide a simple, compact, reliable, and efficient electrical and mechanical device for operating the gas-valve to turn on and off the gas and permit of its ignition, for example, by means
15 of a pilot light or burner, to control or operate the electrical and mechanical valve-actuating device by means of exceedingly simple circuit connections, and to provide a simple mechanical motion responding to electrical
20 impulses and operating the valve by a motion of rotation in one direction to turn the gasways of the valve and seat into and out of alinement to admit and exclude gas and to lift the valve from and immediately return
25 it to its seat at each of its movements of rotation.

Our invention consists in the improvements hereinafter described and claimed, and its nature, characteristic features, and scope will
30 be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is an elevational view illustrating
35 our improved attachment in application to an ordinary Welsbach light. Fig. 2 is a sectional view drawn to an enlarged scale and taken at right angles to the plane of Fig. 1 and illustrating the valve and its actuating
40 attachments. Fig. 3 is a view taken at right angles to the plane of Fig. 2 and illustrating portions of the device broken away so as to show the interior parts thereof. Fig. 4 is a
45 sectional view taken on the line 4-4 of Fig. 2, and Fig. 5 is a view illustrating a modification of our invention.

In the drawings, a is a chamber to which gas is admitted by way of the attachment a' , that is adapted to an ordinary gas-supply and
50 from which gas is delivered to or cut off from

the burner. When the attachment is intended for use with a Welsbach light, the Bunsen tube b of the light is secured to the connection a^2 of the chamber a . The chamber a is made in two parts, of which the top one A carries or supports all of the working parts of the device, so that the other may be removed and access had to the working parts conveniently and without disturbing the gas connections.

c is a valve of conical form and provided with a depending spindle c' . This valve c is adapted to a correspondingly-shaped seat a^3 , cut or otherwise formed in the upper member A of the chamber. This member is also provided with a gas-passage a^4 , that leads from the interior of the chamber through the conical ball of the valve-seat a^3 . As shown, the horizontal portion of the gas-passage a^4 is formed by boring radially from the outside of the casing and then filling up the outer portion of the hole so formed with a plug, as a^5 , this being a simple but not exclusive method of manufacture. The vertical portion of the gas-passage a^4 may be formed by boring upward, so as to intersect the described horizontal opening. It follows from this construction that the casing a is always filled with gas and that the latter enters the gasway a^4 and is conducted thereby to the seat a^3 of the valve. The valve itself is bored transversely, as at c^2 , Fig. 4, and from this transverse passage upward through its top, as shown at c^3 , Fig. 2, so that when either of the ends of the transverse hole c^2 is in line with the gasway a^4 gas escapes from a^4 through c^2 and through c^3 to the burner. In all other positions of the valve its conical surface being opposite to the outlet of the passage a^4 closes the latter and prevents the escape of gas to the burner.

From the foregoing description it is apparent that the rotation of the valve continuously in one direction and with a step-by-step motion of ninety degrees to each step will operate to alternately close and open the valve. The valve-spindle is provided with a zigzag groove. For this purpose we may on the valve-spindle mount crown-wheels d and d' , that have a space between them in which works a fixed pin e , suitably supported, as by

a plate e' , connected to the lower ends of the cores of the electromagnets e^2 and e^3 , of which two have been found sufficient to operate the device. The valve-spindle c' may be dropped through the valve-seat, through the crown-wheels, and through a central opening in the plate e , so that its lower end projects therefrom. The crown-wheels are pinned to the valve-spindle, which is a comparatively simple method of construction. Onto the lower end of the valve-spindle is attached, for example, by means of a screw connection, the plate-like armature e^4 of the electromagnets. When the electromagnets are energized, the armature is attracted and lifted upward, carrying with it the spindle-valve and crown-wheels. However, the fixed pin e operates in the zigzag groove, more specifically upon the teeth of the crown-wheel d' , and causes rotation of the spindle through, for example, forty-five degrees. Upon the interruption of the circuit the electromagnets cease to attract the armature, so that the latter falls, carrying with it the valve-spindle and parts connected therewith. During this fall the pin e operates upon a tooth of the crown-wheel d , thus causing the valve and spindle to be turned through forty-five degrees more. During its ascent and descent the valve has been lifted up and cleared from its seat and turned through ninety degrees, which is sufficient to open or close the outlet from the gasway a^4 , as has been described. The weight of the armature assists gravity and insures closing of the valve. A by-pass tube f is fitted to an opening f' through the wall of the chamber a . The effective area of cross-section of the opening f' may be increased or diminished by means of an adjusting-screw f^2 . Gas escapes continuously through the tube f and feeds a pilot-light which constantly burns near the burner. As shown, the burner is provided with a section of pilot-tube f^3 , having a sleeve or coupling f^4 , adapted to detachably engage or fit the section of pilot-tube f . This detachable connection permits of the removal of the gallery without disturbing the other parts of the device, which in many cases is advantageous. Moreover, the pilot-tube does not interfere with the ordinary adjustment of the air-shutter g^2 . The section f^3 of pilot-tube is passed through the gallery g and up outside of the burner-head g' ; but it can be passed up inside of the burner-head, if desired. h is a binding-post passing through and insulated from the upper wall of the casing. The lower end of this binding-post is in electrical connection with the leading-in wire h' of the electromagnets. The other wire h^2 of the electromagnets is connected with some part of the fixture, which constitutes an electrical path from it to the gas-pipe or through ground. The other end of the binding-post h is in electrical connection with the push-button or switch h^3 , for example, by way of a wire or conductor h^4 . The switch h^3 is connected through the battery or other source h^5 , for example, by way

of a conductor h^6 to ground or to the gas-pipe, as by a conductor h^7 .

The mode of operation of the described apparatus may be explained as follows: There is always a flame burning at the pilot-light tube f^3 in proximity with the burner of the light to be lighted. For the sake of description it will be assumed that the valve c is seated upon its seat a^3 and that the gasway c^2 is turned at right angles to the gasway a^4 , so that the latter is closed by the solid conical wall of the valve c . Consequently no gas passes the valve, and the main burner is therefore extinguished. To light the main burner, the push-button or circuit-closer h^3 , which may be located in any convenient position, is pushed or otherwise turned to close the circuit, which is shown on the drawings as follows: h^5 h^6 h^3 h^4 h h' , coils of the magnets e^3 and e^2 , h^2 , gas-pipe, and h^7 back to the battery. Of course the battery may be grounded, in which case the ground takes the place of the conductor h^7 , and it may be remarked that a single-wire circuit and an ordinary push-button are sufficient for operating the attachment. By closing or making the circuit as described the electromagnets are energized and attract their armature, which lifts the valve. During the lifting of the valve the zigzag groove and pin effect rotation thereof, as described, and since the valve is rotated as it is lifted it is thus prevented from sticking to its seat. When the push-button is released, the valve in falling is turned by the zigzag groove and its complementary pin in such manner that its gasway c^2 is brought into alinement with the gasway a^4 , thus permitting gas to escape from the chamber a to the burner, where it is ignited by the pilot-light or otherwise. The next time the circuit is closed and again broken the valve is rotated in the same direction and into position for cutting off the supply of gas and extinguishing the light. Subsequent makes and breaks in the circuit cause the valve to be lifted up and rotated in the same direction, with the result that the gas is alternately lighted and extinguished. The described attachment may be used for controlling the admission of gas to a plurality of burners instead of one, and in such case the burners may be lighted by a pilot-light or otherwise. The yoke e^5 of the electromagnets may be a circular ring inserted or inlaid in the top of the chamber a , or the top of the chamber may be constructed of iron, in which case it will operate as a yoke. The latter construction is illustrated in Fig. 5.

It will be obvious to those skilled in the art to which our invention appertains that modifications may be made in details without departing from the spirit thereof. Hence we do not limit ourselves to the precise construction and arrangement of parts hereinabove set forth, and illustrated in the accompanying drawings; but,

Having thus described the nature and ob-

jects of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. An attachment for Welsbach and other gas-lights comprising the combination of a
5 gas-admission valve and its complemental seat respectively provided with gasways and adapted to be lifted and turned in respect to each other, a zigzag groove and its comple-
10 mental pin for effecting rotation of the valve to position said gasways for the admission and exclusion of gas, and electromagnets and their armature and connections for lifting
15 and dropping the valve whereby it is rotated with a step-by-step motion in the same direc- tion, and lifted and dropped at each rotation, substantially as described.

2. An attachment for Welsbach and other gas-lights comprising the combination of a
20 two-part gas-chamber to which gas is supplied, a valve-seat and gasway in the upper part of said chamber, said gasway communicating with the interior thereof and through said seat, a valve provided with lateral gasways open-
25 ing through its top and with a depending spindle, crown-wheels mounted on the shank of said spindle, an armature on the end of said spindle, electromagnets, a fixed pin co- operating with said crown-wheels, and circuit
30 connections for the electromagnets, substan- tially as described.

3. In an attachment for Welsbach and other gas-lights, a chamber to which gas is supplied, a valve and its complemental gasways for con-
35 trolling the admission of gas to the main light, electrical and mechanical devices for operat- ing said valve, a section of a by-pass tube ex- tending from said chamber, means carried by said chamber for controlling the by-pass tube, a section of by-pass tube carried by the burner,

and a sleeve or coupling for detachably con- 40 necting the said sections of by-pass tube, sub- stantially as described.

4. In an attachment for Welsbach and other gas-lights, a valve provided with a gasway, a seat provided with a gasway, and electrical 45 and mechanical devices, substantially as de- scribed, for rotating said valve in one direc- tion with a step-by-step motion and for un- seating and reseating said valve to facilitate the described rotation thereof. 50

5. In an attachment for Welsbach and other gas-lights, the combination of a rotary and endwise-movable valve provided with gas- ways, a valve-seat provided with gasways, a plate-like armature attached to said valve, 55 electromagnets, a zigzag groove on said valve, and a pin coöperating with said groove, where- by the valve is intermittently rotated in the same direction for the admission and exclu- sion of gas and cleared from and returned to 60 its seat to prevent sticking and facilitate its rotation.

6. In an attachment for Welsbach and other gas-lights, the combination of a valve provided with a gasway and adapted to be lifted and 65 turned to position its gasway, a plate-like ar- mature connected with the valve, electromag- nets, and means for lifting, rotating, and quickly dropping the valve, substantially as described. 70

In testimony whereof we have hereunto signed our names.

FRANKLIN L. KELLNER.
GEORGE S. BARROWS.

In presence of—

F. H. MACMORRIS,
W. F. JACKSON.