

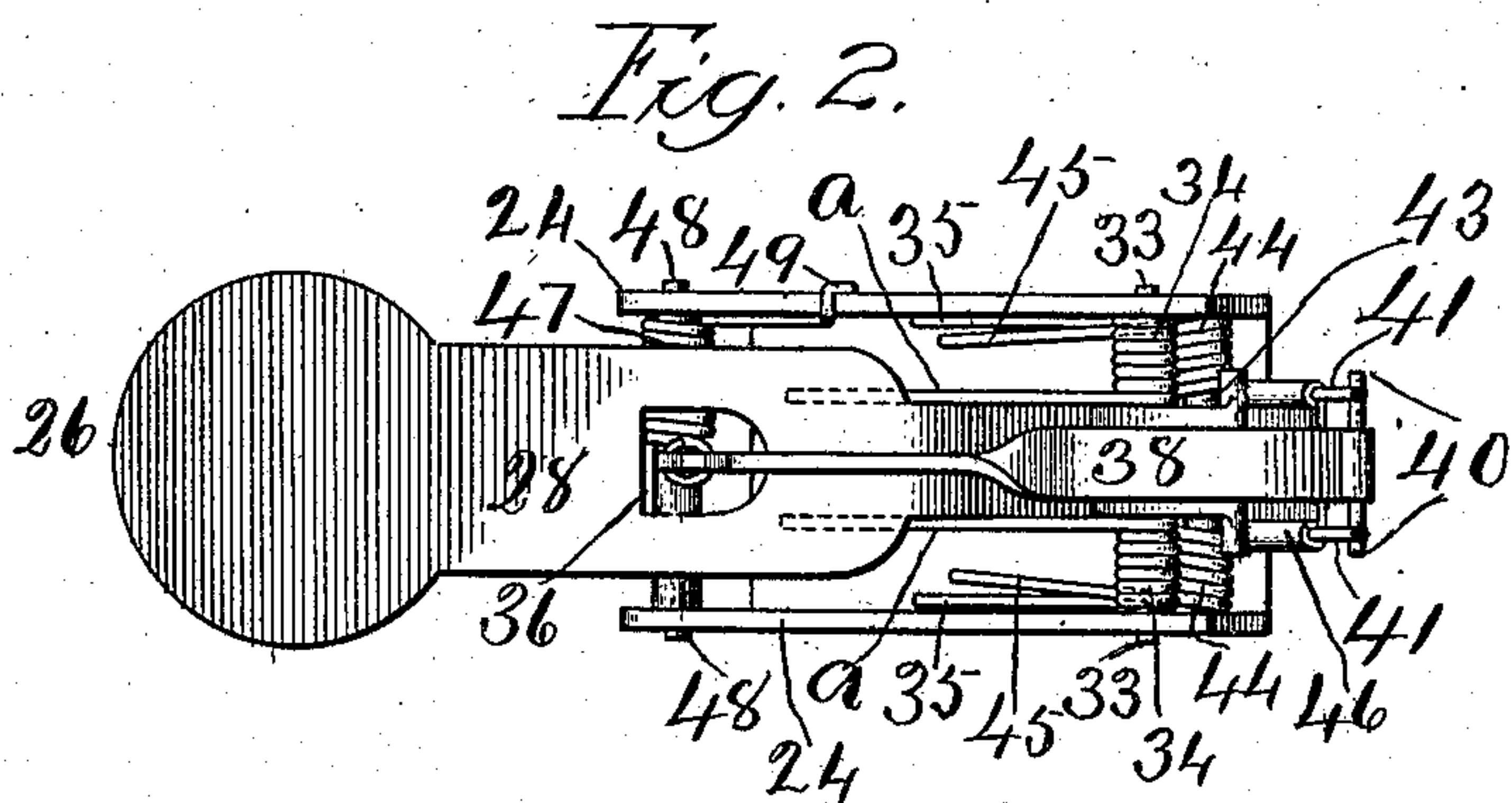
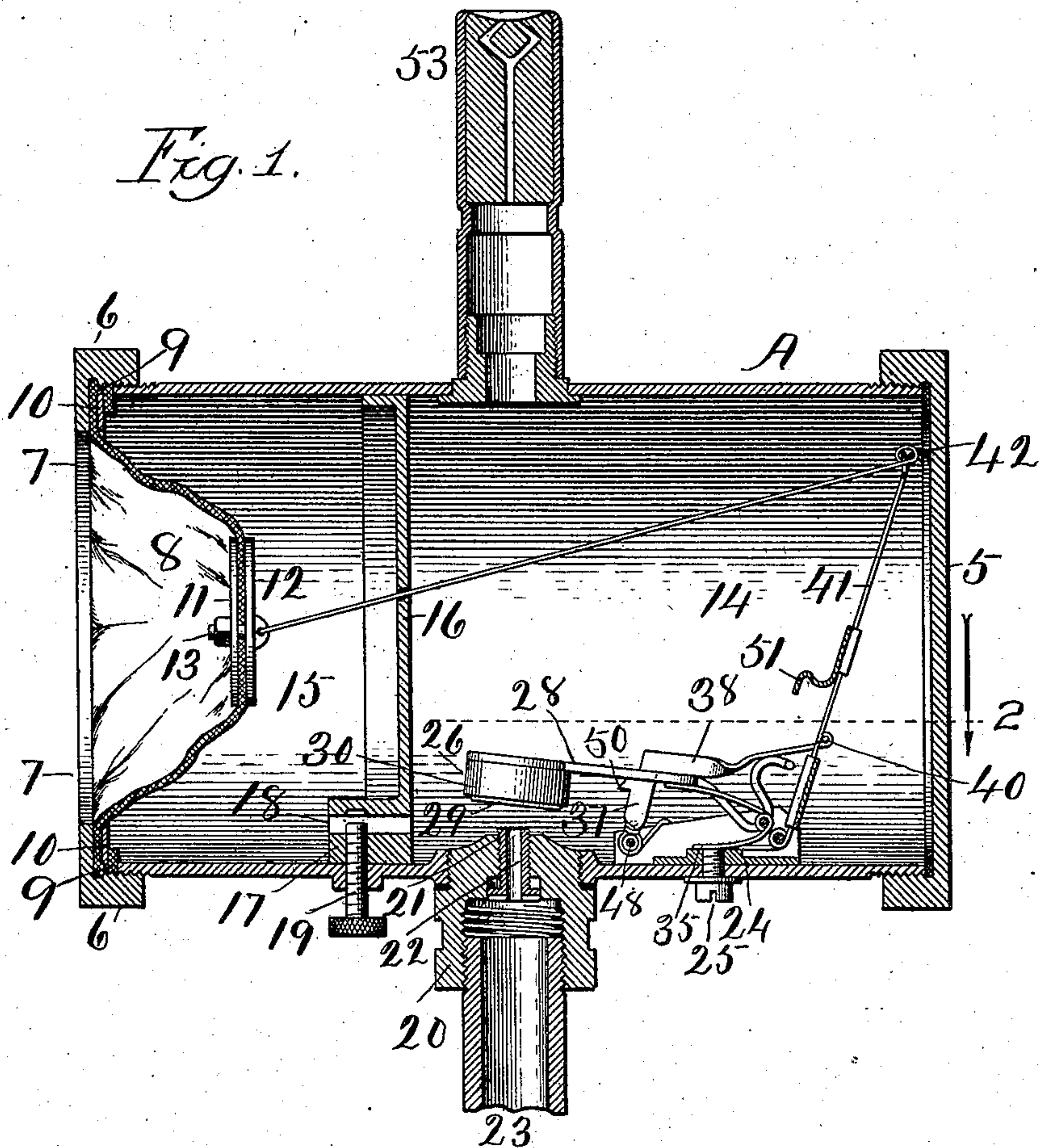
No. 854,880.

PATENTED MAY 28, 1907.

G. F. EHEMANN.  
FLASH LIGHT.

APPLICATION FILED JUNE 22, 1906.

2 SHEETS—SHEET 1.



Witnesses:

*Ed. J. Gaylord,*  
*John Enders.*

Inventor:

*George F. Ehemann,*  
*By L. B. Coupland,*  
*Attorney.*

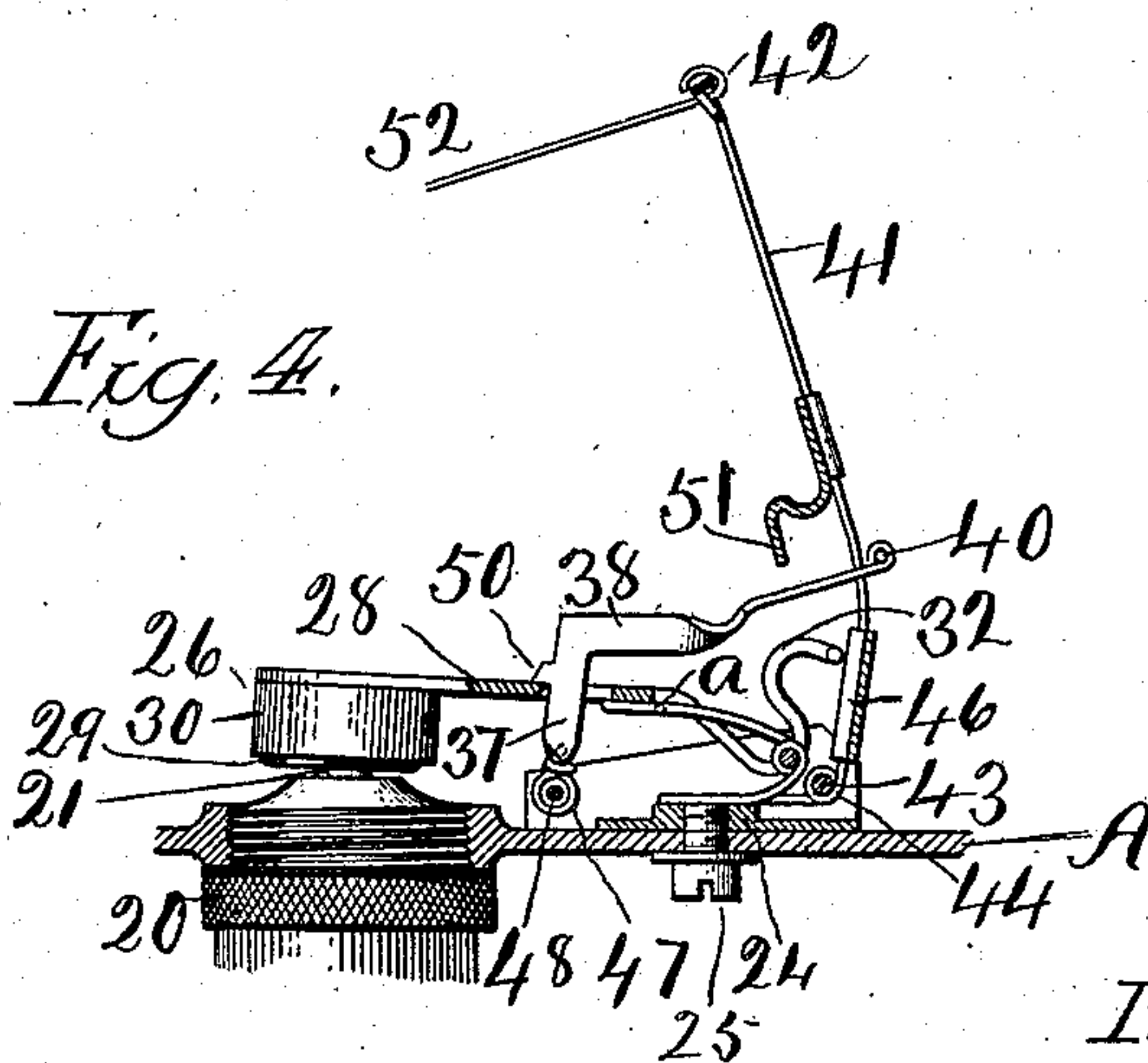
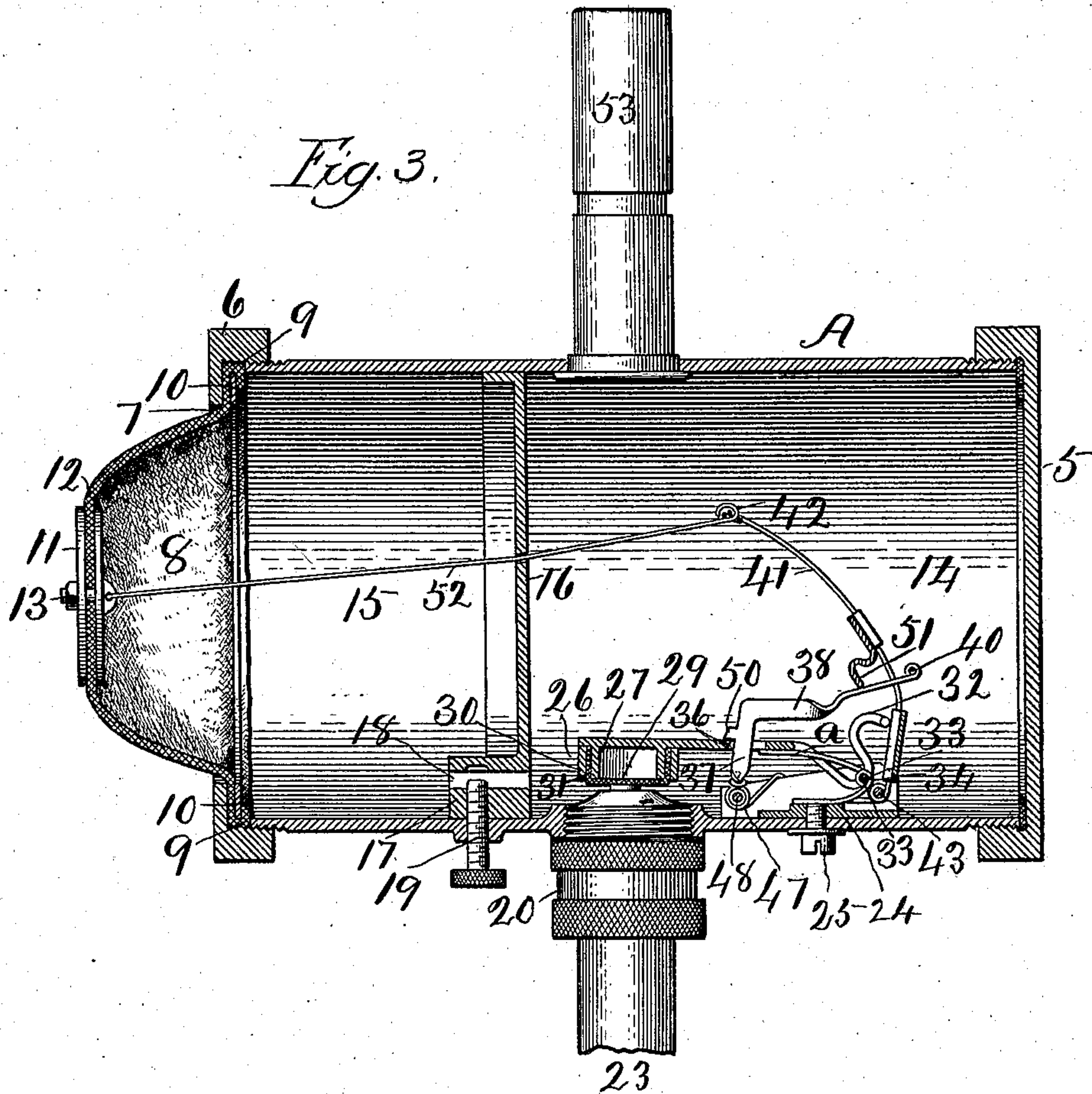
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George F. Ehemann,  
By *L. B. Coupland.*  
Attorney



# UNITED STATES PATENT OFFICE.

GEORGE F. EHEMANN, OF CHICAGO, ILLINOIS.

## FLASH-LIGHT.

No. 854,880.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed June 22, 1906. Serial No. 322,917.

*To all whom it may concern:*

Be it known that I, GEORGE F. EHEMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in a Flash-Light, of which the following is a specification.

This invention relates to an apparatus for automatically producing a flash light effect and is more especially intended for use in connection with gas-lighting appliances; and has for its object to provide a device of this character for illuminating signs and other display mediums for commercial advertising.

A further object is to provide a device having an intermittent or predetermined periodical action in producing an alternating light and dark effect without entirely extinguishing the flame.

It is also obvious that this apparatus may be used in connection with ornamental and amusement devices, in addition to its use for commercial purposes.

In the drawings, Figure 1 is a longitudinal section of an apparatus embodying the improved features. Fig. 2 is a detached plan of a valve actuating mechanism on line 2, Fig. 1, looking in the direction indicated by the arrow. Fig. 3 is a longitudinal section, showing the operating mechanism in the opposite position from that shown in Fig. 1; and Fig. 4 is an elevation of the valve mechanism shown in the other figures.

A represents a gas-holder and receptacle for the operating mechanism which may be located at any convenient point in the gas-supply-pipe. This gas-holder is preferably made in the elongated cylindrical form shown, but it is obvious that any other suitable form may be employed. One end of the gas-holder is closed by a removable cap 5, so that convenient access may be had in installing and keeping the mechanism in proper working condition. The opposite end is provided with a cap or ring 6 having an opening 7 therein in which is seated a flexible piston 8 tightly closing the opening in the end wall. The cap or ring 6 has a screw threaded engagement and the border edge 9 of the flexible piston is folded over an interposed packing ring 10, so that when the cap ring 6 is screwed into place the piston is properly secured in its working position and at the same time a gas tight joint is formed at this end of the holder. The central part of the flexible piston is clamped be-

tween companion button disks 11 and 12 fastened together by a bolt or rivet 13. This provides the flexible piston with a rigid center, increases its durability and has a tendency to facilitate the operation of expansion and contraction.

The gas-holder is divided into two compartments or chambers 14 and 15 by a division diaphragm 16 having a thickened part 17 with a gas-passage 18 therethrough in providing communication between said compartments. A regulating screw 19 is inserted from the outside and extends into the passage 18 and provides a convenient means for controlling and regulating the volume of gas flowing back and forth from one chamber to the other. By turning the screw outward the area of passage 18 is increased, and in the opposite direction the area is diminished in providing for a greater or less flow of gas from one compartment to the other, as practical working may require.

The compartment 14 is the main or gas-chamber proper, the compartment 15 will be termed an auxiliary or piston chamber, the specific functions of which will be hereinafter set forth.

A screw-plug 20 is threaded in the holder and has a valve-seat 21 inserted therein. This valve-seat has a gas inlet passage 22 therethrough and is threaded in place so as to permit of the same being properly adjusted with reference to the closing position of the valve and bring the same to a uniform bearing thereon. The gas-supply pipe 23 connects with the plug 20.

The major part of the actuating mechanism is located in chamber 14 of the holder and is mounted on a base-part 24 rigidly secured to the inner wall by a screw 25.

A valve 26 is positioned to open and close the inlet passage 22 through the valve-seat at the proper time. This valve is made up of a number of parts, as, a hollow body 27, a stem 28, a facing 29 and a clamping ring 30 as best shown in Fig. 3. The valve facing may be composed of any suitable flexible material and will have the edge 31 thereof turned up to surround the valve body 27 and is removably secured in place by the ring or band 30. By this arrangement a soft bearing valve-face is provided and having the hollow portion of the valve back of the same will yield slightly to conform to an unevenness so that a perfectly tight closure is always insured. When the facing is worn so as to be



no longer serviceable it can be conveniently removed and a new facing substituted.

The free end 32 of the valve-lever 28 is turned upward and is provided below the turned up end on each side with integral pins 33 projecting laterally and having a bearing in the respective sides of the base-part 24 as best shown in Fig. 2. Companion springs 34 are coiled on pins 33 and have the straightened out lower ends 35 thereof brought to a tension bearing on the base 24 and the upper ends *a* to a bearing against the underside of the valve stem, as shown in the different figures of the drawings and indicated by dotted lines in Fig. 2. The springs 34 act to return the valve from its closed position, Figs. 3 and 4 to the normal open position shown in Fig. 1.

The valve-lever 28 is provided with an opening 36 down through which is inserted the end 37 of an angle locking-arm 38. The opposite free end of this locking-arm has a pin 40 inserted through and projecting from each side thereof, as best shown in Fig. 2. The pin 40 extends across and back of a bifurcated spring lever-rod 41 which extends upward and stops short of the top of the holder. The spring-rod 41 consists of a single piece of wire and has one or more coils 42 formed on the upper end thereof. The forked lower parts of this spring-rod are coiled on a rod 43, inserted in the base-part 24 to form springs 44, the tension ends 45 resting on said base-part. A plate 46 is mounted on the spring rod 41 just above the tension springs 44 and forms a fulcrum bearing for the spring rod when it is bent inward to the abnormal or valve-closing position shown in Fig. 3, the normal position of all parts being shown in Fig. 1.

A spring 47 is coiled on a rod 48 and has one end secured to the lower inner end of the locking arm 38, the other tension end 49 resting on the base. The locking-arm is provided with a catch 50 which bears against the underside of the valve-stem in its open position and on the upper side when in the closed position. A depressing finger 51 is mounted on the spring-rod 41 above the adjacent part of the locking arm and normally out of contact therefrom.

A flexible piston-rod 52 passes through the division diaphragm and has one end secured to bolt 13 fixed in the bottom center of the flexible piston, the other end being secured to the upper end of the spring rod 41 in forming an operative connection between the actuating mechanism in chamber 14 and the piston in chamber 15. The flexible piston will ordinarily be composed of soft pliable leather such as kid or the like and which will be coated with some suitable substance to preserve the pliability of the same, making it impervious to the passage of gas or air therethrough and protect it against the har-

dening destroying effects of the gas. This piston has two positions. In its normal collapsed condition it is inside of the chamber 15 (Fig. 1) and when expanded it is forced outward therefrom, as shown in Fig. 3.

The-gas supply pipe is provided with the usual stop-cock (not shown) for controlling the gas coming from the source of supply. Now, referring to Fig. 1, and assuming this cock to have just been opened the gas will flow into the holder when the burner 53 may be ignited as it ordinarily would be. As the holder fills a portion of the gas will pass through the diaphragm into chamber 15 and force the piston out to its expanded position, which movement will have the effect, through the piston-rod connection of drawing the upper end of the spring lever-rod inward from its normal position.

Normally, the spring rod 41 is in engagement with the pin 40, thus holding the locking lever 38 slightly tilted backward with the catch 50 out of locking position. The first effect of the movement of the spring lever rod under the influence of the piston is to leave the pin 40 free and to permit the locking lever 38 to rock forward under the action of spring 48, positioning the catch 50 in locking relation under the valve-arm 28, thus positively holding the valve against closing. Next, the plate 46 is brought into contact with the end 32 of the pivoted valve-arm 28. The tendency, of course, is to close the valve; but this tendency is resisted by the positive locking action of the catch 50 beneath the arm 28. As the spring rod 41 is bent still farther, the finger 51 comes into engagement with the top of the locking arm 38, thereby rocking the latter and retracting the catch 50, when the valve is forced down instantaneously on its seat by the pressure exerted by the rod 41 upon the end 32 of the valve-arm. At the moment of closing the valve, the flame at the burner is reduced to a pilot flame.

It will be noted that the forward edge of the catch 50 is beveled, so that, after the catch has been retracted a certain distance, the valve-arm rides over the bevel, rocking the locking lever 38 slightly downward out of engagement with the finger 51. As soon as the valve-arm has ridden off the bevel, and the valve is closed, the locking arm is free to tilt forward slightly under the action of its spring, until it contacts again with the finger 51, this movement being sufficient to position the catch in positive locking relation over the top of the valve-arm. The piston now begins to collapse within its chamber, both by reason of atmospheric pressure and because of the tension of the rod 41, having the coils 44 at its base and in addition being bowed over the end 32 of the valve-arm. As the piston collapses, the spring rod straightens; and, at the conclusion of the straightening movement, the rod engages the pin 40, and



again releases the catch, permitting the valve to fly upward under the action of its spring 34, when the flame instantly flashes upward to its full size.

5 It will be noted that one side of the flexible piston being exposed to the atmosphere the pressure of the air will assist in returning the same from its bulged out position to its normal contracted position. The compartment 10 15 provides an ebb and flow chamber in regulating the pressure of the gas as between the two compartments in the holder in insuring a proper working of the flexible piston.

It will be understood that the intermittent 15 operation or change from light to dark and vice versa is instantaneous. The movement of the actuating parts may be so timed as to vary the period between flashes.

Any number of branch burner pipes may 20 be connected with and operated from the same holder, the capacity of the latter being proportionately increased.

Having thus described my invention, what I claim is—

25 1. In a device of the character described, the combination of a gas holder having an inlet and an outlet, a valve for closing said inlet at intervals, a piston and connections between the same and the valve adapted to be 30 actuated by the gas-pressure within the holder and constituting the actuating means for the valve, and an automatically-releasable positive lock distinct from said actuating means for holding said valve in closed and open po- 35 sitions.

2. In a device of the character described, the combination of a gas holder having an inlet and an outlet, a valve for opening and 40 closing said inlet at intervals, a piston connected with said valve to close the same, said piston being adapted to be actuated by the gas-pressure within the holder, a spring for automatically opening the valve, and an auto- 45 matically releasable positive lock for holding said valve in closed and open positions.

3. In a device of the character described, the combination of a gas holder having an inlet and an outlet, a valve for opening and closing said inlet at intervals, a spring for holding 50 said valve normally open, a positive locking device normally inoperative with reference to said valve, a gas-pressure operated piston, and means operated by said piston when being distended under gas-pressure first to per- 55 mit said locking device to lock said valve positively in open position, then to apply pressure to the valve tending to close the same, and finally to release the locking device permitting the valve to close under such 60 pressure.

4. In a device of the character described, the combination of a gas holder having an inlet and an outlet, a valve for opening and 65 closing said inlet at intervals, a spring for holding said valve normally open, a positive

locking device normally inoperative with reference to said valve, a gas-pressure operated piston, and means operated by said piston when being distended under gas-pressure 70 first to permit said locking device to lock said valve positively in open position, then to apply pressure to the valve tending to close the same, and finally to release the locking device permitting the valve to close under 75 such pressure, said locking device being constructed upon closing of the valve immediately and positively to lock the same in closed position, and the piston-operated means being arranged to again release said locking de- 80 vice upon collapse of said piston, permitting the valve to open instantaneously under the action of its spring.

5. In a device of the character described, the combination of a gas holder having an inlet and an outlet, a valve for opening and 85 closing said inlet at intervals, a spring for holding said valve normally open, a positive locking device, a spring for moving the same into locking position with reference to the valve, a gas-pressure-operated piston, 90 and piston connections arranged normally to hold said locking device inoperative against the tension of its spring, and during the distention of said piston under gas-pressure to permit said locking device to assume locking 95 position with reference to the valve in its open position, then to apply pressure to the valve tending to close the same, and finally to release the locking device permitting the valve to close under such pressure, said lock- 100 ing device being constructed upon closing of the valve immediately and positively to lock the same in closed position, and said piston connection being arranged to return the locking device to inoperative position upon col- 105 lapse of the piston, permitting the valve to open instantaneously under the action of its spring.

6. In a device of the character described, the combination of a gas holder having an 110 inlet and an outlet, a valve for opening and closing said inlet at intervals, a spring for holding said valve normally open, a positive locking device, a spring for moving the same into locking position with reference to the 115 valve, a gas-pressure-operated piston, and piston connections having spring means for holding them in normal position in which they hold the locking device inoperative, said connections being arranged during the 120 distention of said piston under gas-pressure to permit said locking device to assume locking position with reference to the valve in its open position, then to apply pressure to the valve tending to close the same, and finally 125 to release the locking device permitting the valve to close under such pressure, said locking device being constructed upon closing of the valve immediately and positively to lock the same in closed position, and said piston 130



connections being arranged to return the locking device to inoperative position upon collapse of the piston, permitting the valve to open instantaneously under the action of its spring.

7. In a device of the character described, the combination of a gas holder having an inlet and an outlet, a valve for opening and closing said inlet at intervals, a spring for holding said valve normally open, a positive locking device, a spring for moving the same into locking position with reference to the valve, a gas-pressure-operated piston, and piston connections arranged normally to hold said locking device retracted against the tension of its spring, and during the distention of said piston under gas pressure to permit said locking device to assume locking position with reference to the valve in its open position, then to apply pressure to the valve tending to close the same, and finally to retract the locking device permitting the valve to close under such pressure, said locking device having a bevel over which said valve rides in closing after the device has been partially retracted and which permits the device to move slightly forward under the action of its spring to lock the valve closed, and said piston connection being arranged again to retract the locking device upon collapse of the piston, permitting the valve to open instantaneously under the action of its spring.

8. In a device of the character described, the combination of a gas holder having an inlet and an outlet, a valve for opening and closing said inlet at intervals, a spring for holding said valve normally open, a positive locking device, a spring for moving the same into locking position with reference to the valve, a gas-pressure operated piston, a spring rod anchored at one end and connected with said piston at the other, said rod being arranged normally to hold said locking device retracted in inoperative position against the tension of its spring, and during distention of the piston under gas-pressure to permit said locking device to assume locking position with reference to the valve in its open position and then to bear against said valve tending to close the same, and a finger carried by said rod in position to engage and retract said locking device during the further distention of the piston, permitting the valve to close instantaneously under the pressure of the rod, said locking device

being constructed upon closing of the valve immediately and positively to lock the same in closed position, and said rod being arranged to again retract the locking device upon collapse of the piston, permitting the valve to open instantaneously under the action of its spring.

9. In a device of the character described, the combination of a gas holder divided by a partition into two compartments, there being a restricted gas passage through said partition, a flexible piston in one of said compartments being exposed to the pressure of the atmosphere, a gas inlet and outlet at the other side of the partition, and an automatically opening and closing valve co-operating with said inlet and operatively connected with said piston.

10. In a device of the character described, the combination of a gas holder divided by a partition into two compartments, there being a restricted gas passage through said partition, a flexible piston in one of said compartments being exposed to the pressure of the atmosphere, a gas inlet and outlet at the other side of the partition, an automatically opening and closing valve co-operating with said inlet and operatively connected with said piston, and manually operated means for regulating the size of said passage.

11. In a device of the character described, the combination of a gas holder divided by a partition into two compartments, there being a restricted gas passage through said partition, a flexible piston constituting one of the walls of one of said compartments, a gas inlet and outlet at the other side of the partition, and an automatically opening and closing valve co-operating with said inlet and operatively connected with said piston.

12. In a device of the class described, a gas-holder, a gas inlet valve located therein, a lever upon which the same is mounted, a locking-arm inserted through said lever and provided with a catch adapted to engage the upperside of said lever when the valve is closed and the underside when the valve is in its normal open position, and means for actuating said locking arm to correspond to the position of said valve.

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

GEORGE F. EHEMANN.

Witnesses:

L. B. COUPLAND,  
G. E. CHURCH.