No. 817,640. PATENTED APR. 10, 1906.

A. B. HANDSCHUG.

AUTOMATIC GAS IGNITER.

APPLICATION FILED JAN. 21, 1905.

2 SHEETS—SHEET 1.

Fig. 1

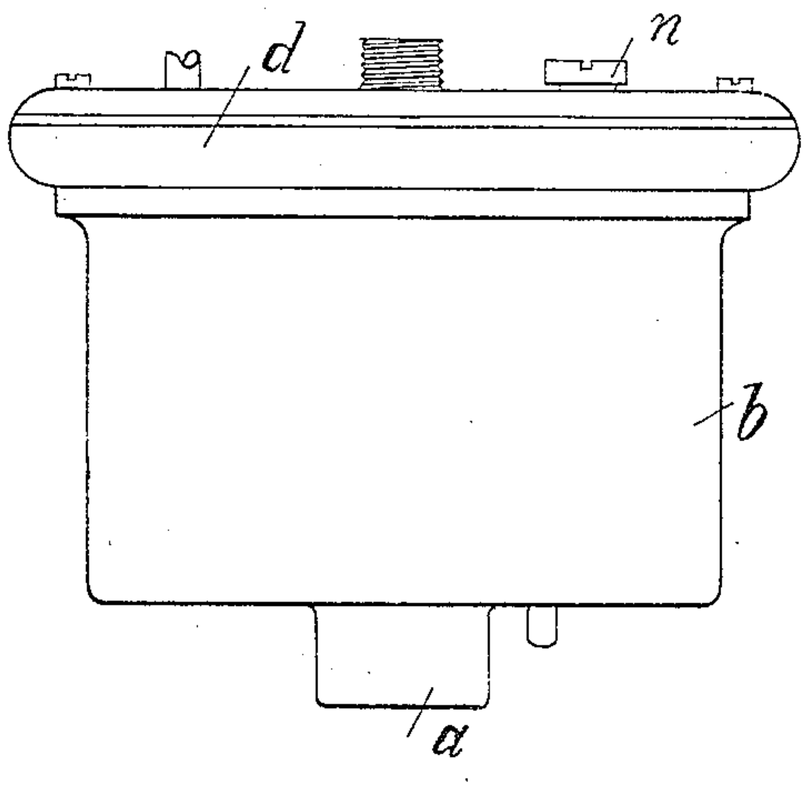


Fig. 2

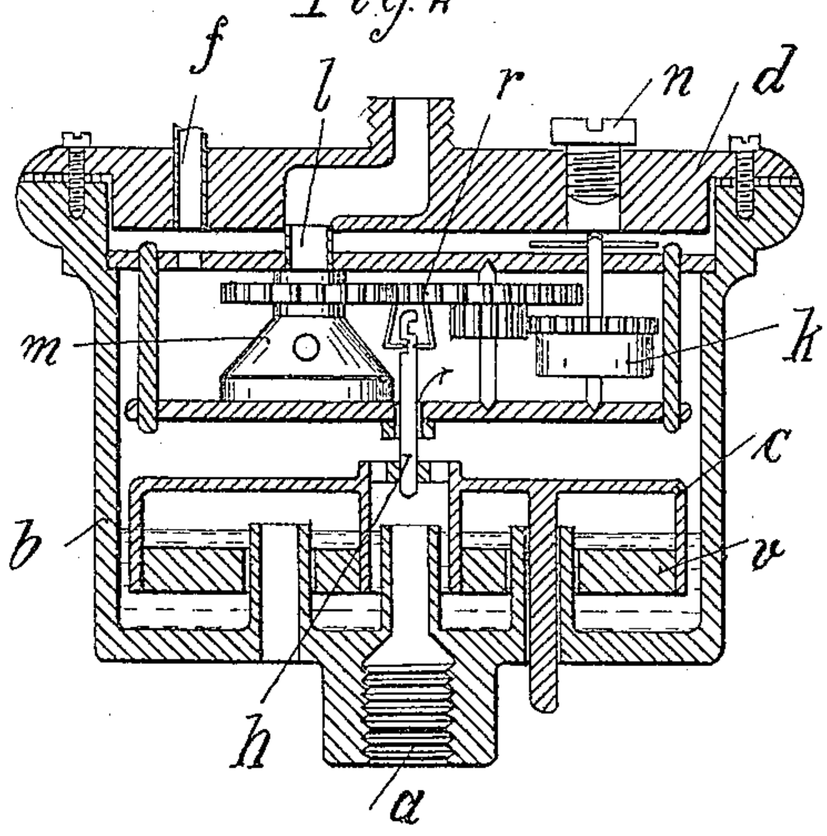


Fig. 3

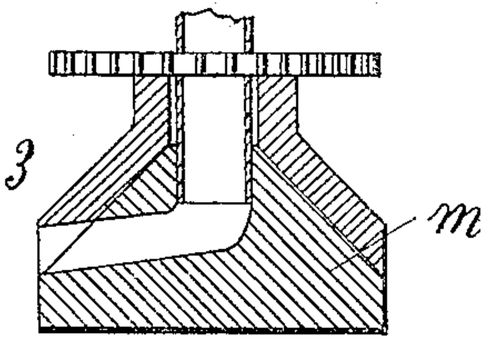


Fig. 4

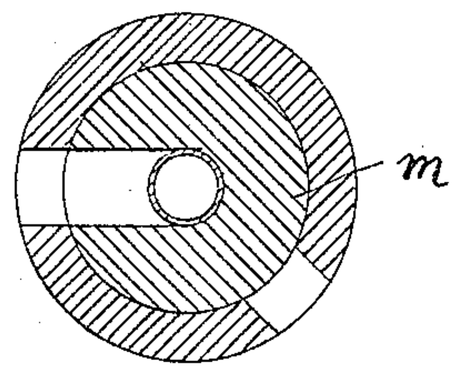


Fig. 5

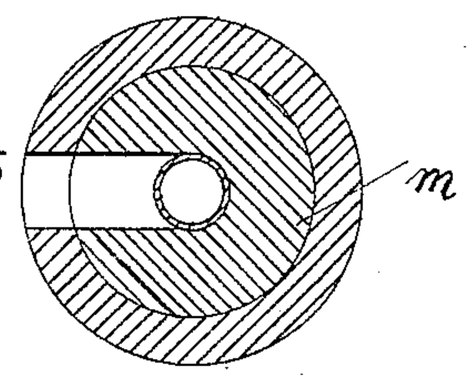
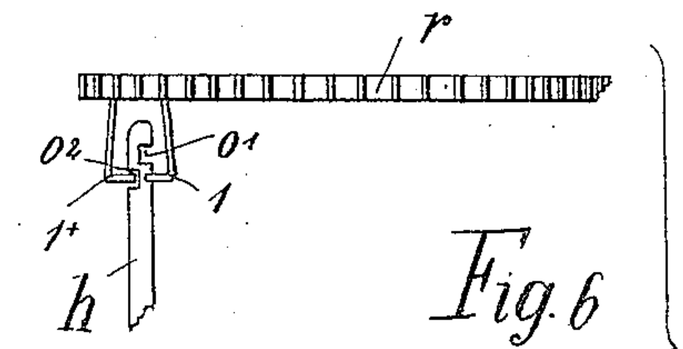
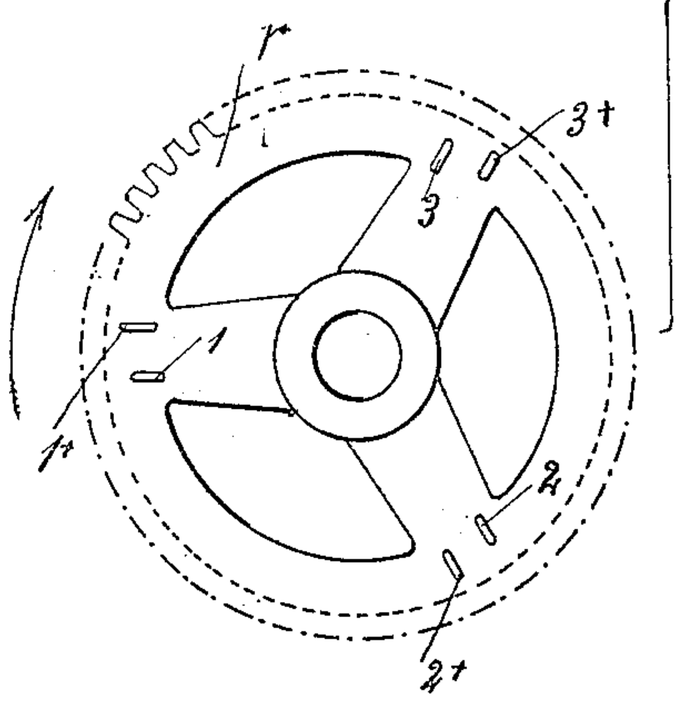


Fig. 6





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No. 817,640. PATENTED APR. 10, 1906.

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AUTOMATIC GAS IGNITER.

APPLICATION FILED JAN. 21, 1905.

2 SHEETS—SHEET 2.

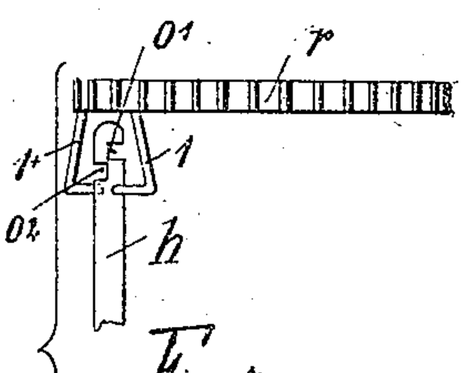


Fig. 7

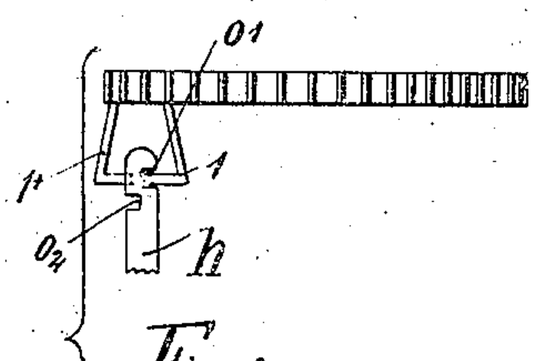


Fig. 8

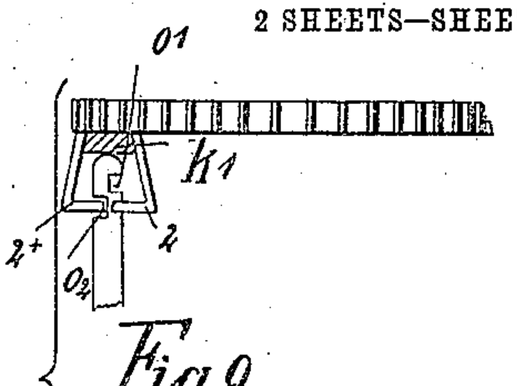
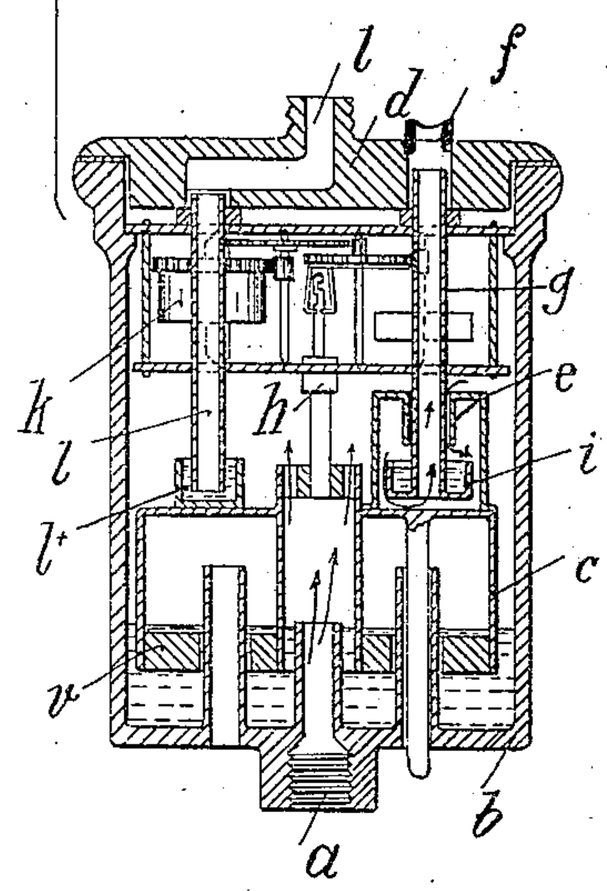
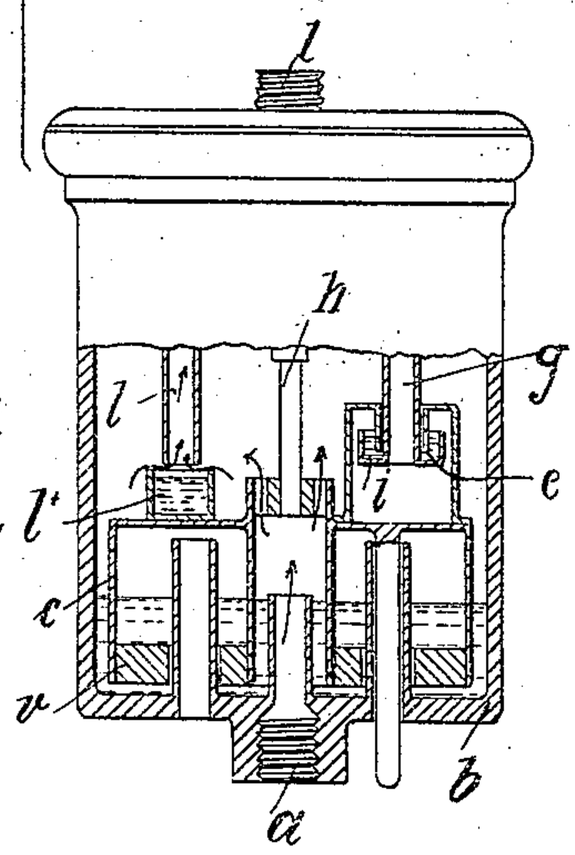
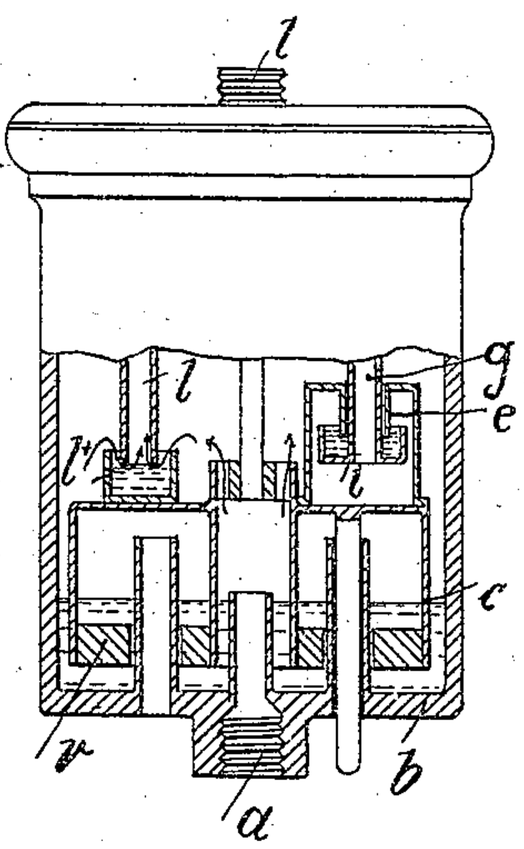


Fig. 9







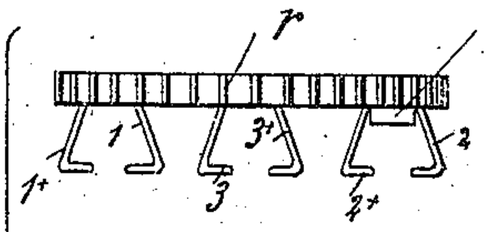
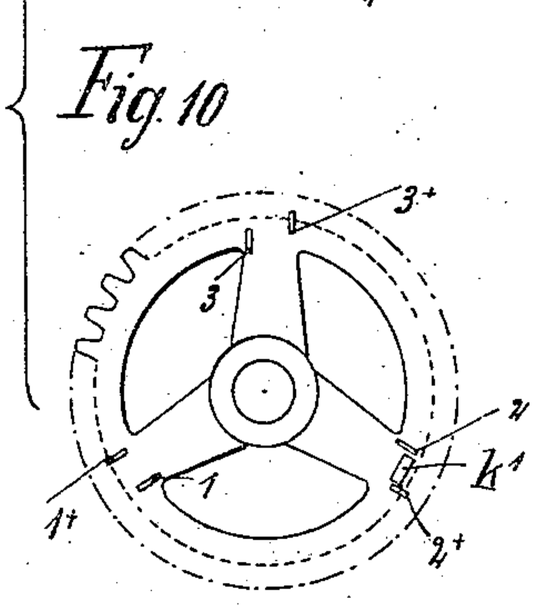


Fig. 10



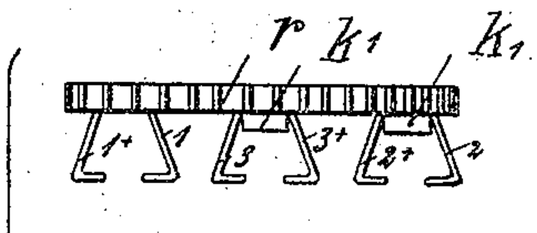
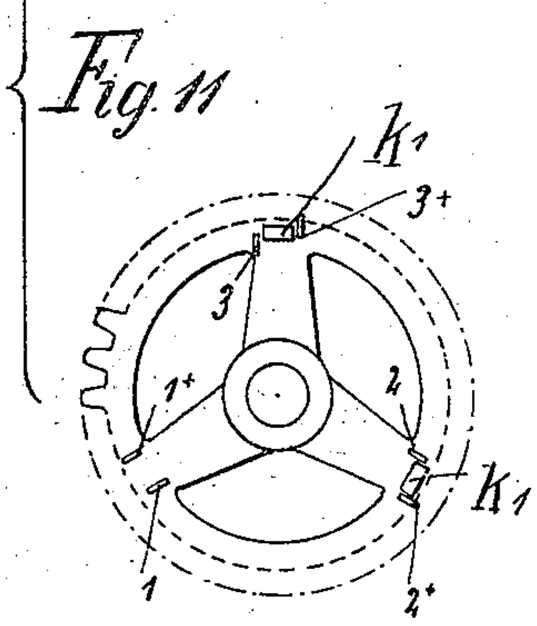


Fig. 11



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Inventor.
A. B. Handschug
By J. M. Hirschel
Atty

UNITED STATES PATENT OFFICE.

AUGUST BERNHARD HANDSCHUG, OF KIRCHBERG, GERMANY, ASSIGNOR TO THE FIRM OF GEBRÜDER JACOB, OF ZWICKAU, SAXONY, GERMANY.

AUTOMATIC GAS-IGNITER.

No. 817,640. Specification of Letters Patent. Patented April 10, 1906.

Application filed January 21, 1905. Serial No. 242,149.

To all whom it may concern:

Be it known that I, AUGUST BERNHARD HANDSCHUG, a subject of the German Emperor, residing at Kirchberg, Saxony, in the German Empire, have invented new and useful Improvements in Automatic Gas-Igniters, of which the following is a specification.

The object of this invention is to provide automatic means or an installation or apparatus particularly for use in district lighting and extinguishing gas-lights and which combines the advantages of the various existing means and arrangements for this purpose, but without having their inherent disadvantages. The existing arrangements of this kind may be divided into three classes, viz: The district lighting is either effected by the increased pressure in the gas-pipes supplied from the gas-works during the entire time of burning the lamps or the lighting and extinguishing of said lamps are regulated by clockwork at definite periods, and is therefore useless at suddenly-occurring darkness. A third class of this kind is the well-known pneumatic installation, which requires a separate independent high-pressure gas-conduit.

According to this invention continuous high pressure is not required, while, moreover, the automatic lighting-up of the street-lamps can be effected at all times, and afterward series of lamps can be extinguished, while others are kept alight for the small hours of the night.

The invention is illustrated in the annexed drawings, which show two different forms of apparatus, and in which—

Figure 1 is an elevation, and Fig. 2 a vertical section, of the same fitted with rotary valve. Figs. 3 and 4 show the valve for sectional supply during small hours. Fig. 5 shows the valve for full supply in the early evening, and Fig. 6 shows two views of the reversing means. Figs. 7, 8, and 9 show three different positions of a similar apparatus with water or like seals. Fig. 10 gives two views of the wheel for controlling the full supply, and Fig. 11 gives two similar views of the wheel for controlling the sectional supply.

Throughout all the figures the same reference letters and numerals denote the same or corresponding parts.

Referring first to the apparatus as shown in Figs. 1 to 6, *a* denotes the socket for screwing the apparatus to the gas-tube in the street-lantern. *b* is a cup in which a bell *c* is floated by means of a suitable liquid, said cup being hermetically sealed or closed by a cover *d* and has a small pipe *f*, providing the gas-supply for the pilot-flame or by-pass. The bell *c* is fitted with a thin rod *h*, which forms a catch to stop the clockwork under normal pressure in the main. The burner-nipple *l* and its inlet-nozzle are here controlled by a rotary valve *m*, operated by the clockwork, the latter being wound up through a hole ordinarily closed by the screw *n*.

The automatic action is as follows: With normal gas-pressure the bell is in the position indicated at Fig. 2, and so stops the clockwork. At the time for lighting up the pressure in the main is increased from the works for a short time, and this causes a depression of the floating bell in each apparatus and the lowering of the rod *h*, which latter has prevented the rotation of the wheel *r* by being in the path of the pin 1. The lowering of the rod *h* permits the pin 1 to escape through the slot *o'* of said rod, whereby the wheel *r* of the clockwork is permitted to turn in the direction indicated by the arrow at Fig. 6 until a pin 2* strikes against the rod *h*. By this motion the rotary valve *m* has been turned one third of a revolution and is now in the position shown in Fig. 3, when the gas can pass to the burner, where it ignites at the pilot-flame. Hereupon the normal gas-pressure is restored and continued for lighting, so causing the bell to rise and the pin 2* to pass through a slot o^2. Finally, the pin 2 comes in contact with the rod *h*. The shortness of the angular motion prevents any disturbance in the gas-conduits. At the time for extinguishing the lamp the works again increase the gas-pressure for a short duration, thus allowing the wheel *r* again to turn one-third of a revolution, and so close the valve *m*, which cuts off the gas-supply for the full-evening service, the valve being arranged as shown in Fig. 5. When some of the lamps are required for service during the small hours of the night, the valve is arranged as shown in Fig. 4 and then supplies the lamps for the late service. When it is afterward desired to extinguish all the street-lights, the pressure is once more increased at the works in the same manner as previously stated.

Referring now to the slightly-modified apparatus shown in Figs. 7, 8, and 9, (which apparatus is secured to the street-lamps in the same manner as before stated,) it is to be noted that the clockwork is not here used to open and close the gas-supply, but to maintain the bell in the required position. The apparatus will be readily understood from the following description of the working: The bell *c*, whose position or floating capability can be accurately adjusted by a removable disk *v*, is provided with a small cup *l**, filled with a suitable liquid, such as mercury, to constitute a seal. It further carries in an upper chamber an inwardly-depending nozzle *e*, adapted to dip into an annular cup *i*. At daylight, when the main flame is not required, the bell is in the position shown in Fig. 7 with the main burner-pipe dipping into the cup *l**, but with the nozzle *e* free of its cup *i*, thereby allowing the gas to pass through the small tube *g* to the pilot-flame. The rod *h* of the bell acts on the main wheel *r* of the clockwork, as previously explained with reference to Fig. 6. For lighting the lamps the gas-works provide increased pressure for a short time, which causes the bell and its rod *h* to descend to the position shown in Fig. 8. This movement brings the slot *o'* opposite the end of the pin 1 and allows the wheel *r* to make one-third revolution till the pin 2* comes in contact with the rod *h*. The lowering of the bell effects the opening of the gas-supply tube *l* for the main flame, while shortly after the small tube *e* and the gas-supply pipe *g* of the pilot-flame are closed. On the wheel *r*, between the pins 2, is provided a boss *k'*, which limits the position of the rod *h* and the bell, as shown at Fig. 9. For extinguishing the lamps the pressure is again raised, so as to cause the bell *c* to sink and disengage the rod *h* from the pin 2. When now the pressure is gradually reduced, the bell ascends and first opens the tube *e* for the supply of gas through the pipe *g* to the pilot-flame, which ignites at the main burner. Almost immediately herewith the tube *l* closes and the main flame extinguishes, the wheel *r* meanwhile turning till the pin 3 strikes the rod *h*. For the so-called "small-hour lamps," the wheel *r* is provided with another boss *k* between the pins 3, as shown in Fig. 11. In these lamps when the other early-evening lamps are extinguished the bell is maintained in the position shown in Fig. 9, and consequently the lamps are kept burning. Only after the pressure is again increased for a short period will the clockworks of the remaining lamps be permitted to assume the position shown in Fig. 7—that is to say, all the wheels *r* will be in the same position and all the lamps will be extinguished. By reason of the small pipe *g* being rather short it is caused to leave the cup slightly before the pipe *l* enters its own cup, thus insuring that before interrupting the gas-supply to the main burner the by-pass is open and supplies the necessary gas for the ignition of the pilot-flame from the flame of the main burner. Again, the pilot-flame is only extinguished some time after the lighting-up of the main burner, so that the main flame may become securely lighted by the pilot-flame.

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

1. In an automatic gas-igniter for district-lamps, the combination with the gas-pipe of the lamp, of a hermetically-closed outer vessel provided with a gas-inlet screw-socket attached to the said gas-pipe, a liquid within the vessel, a floating bell dipping in said liquid, a vertical rod fixed to the top of the bell, a rotary valve controlling the gas-outlet in the top of the said vessel, and clockwork mechanism to operate said valve as stated.

2. In an automatic gas-igniter for street-lamps the combination with the burner-pipe in each lamp, of a timing apparatus consisting of an outer vessel fixed to said pipe with gas-inlet at bottom and gas-outlet at top, a liquid in the lower part of the vessel, a bell floating in the liquid, a notched rod projecting from the top of the bell, a rotary valve connected with the gas-outlet, a toothed wheel fast on the valve, stop-pins on said toothed wheel to engage said notched rod, and clockwork for the direct drive of the valve, as and for the purpose stated.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses, this 10th day of December, 1904.

AUGUST BERNHARD HANDSCHUG.

Witnesses:
G. MENZEL,
F. MEINECK.