No. 674,173. Patented May 14, 1901.

A. MARTINI.

AUTOMATIC GAS IGNITER.

(Application filed Aug. 30, 1900.)

(No Model.)

Fig. 1

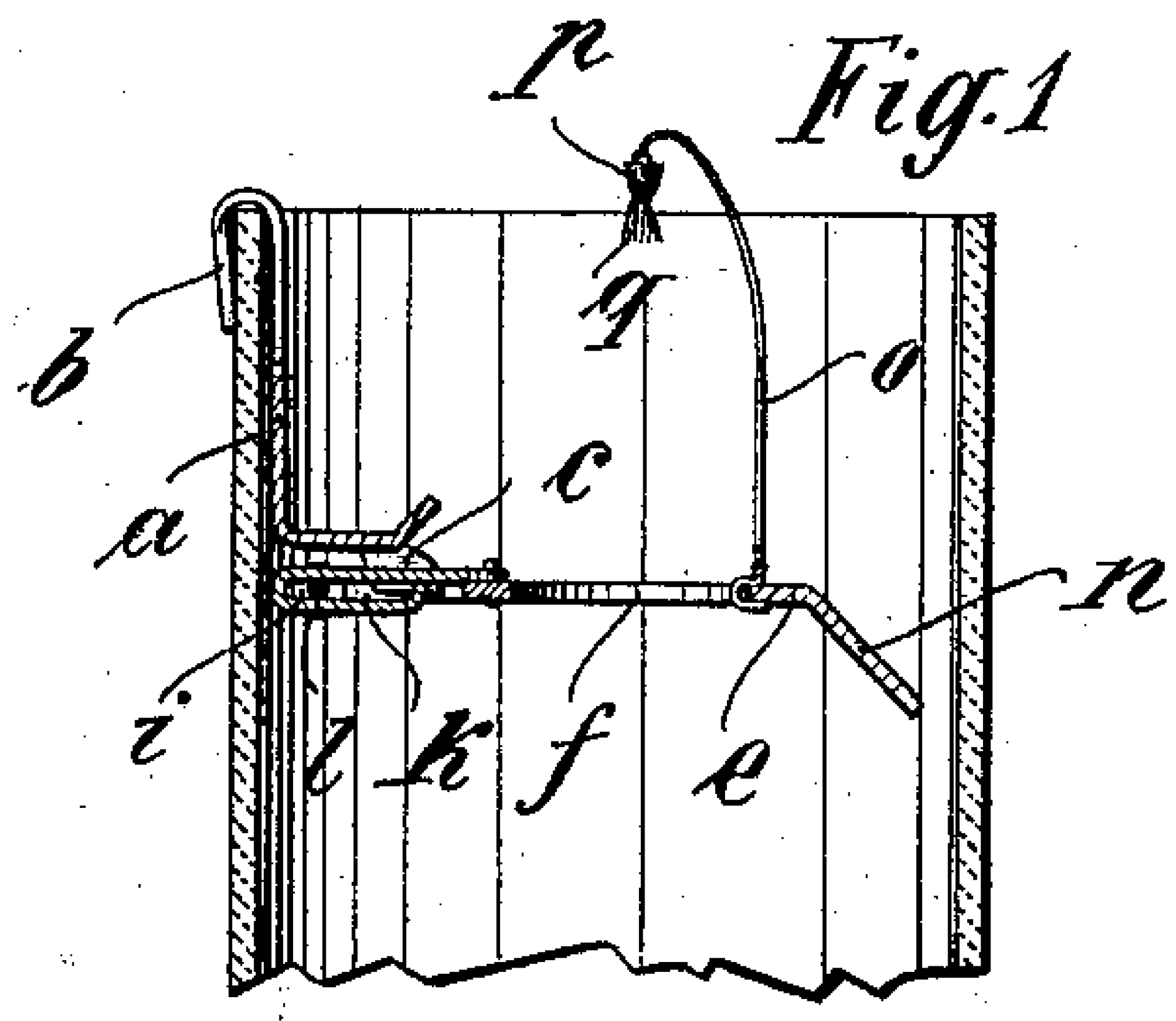


Fig. 2

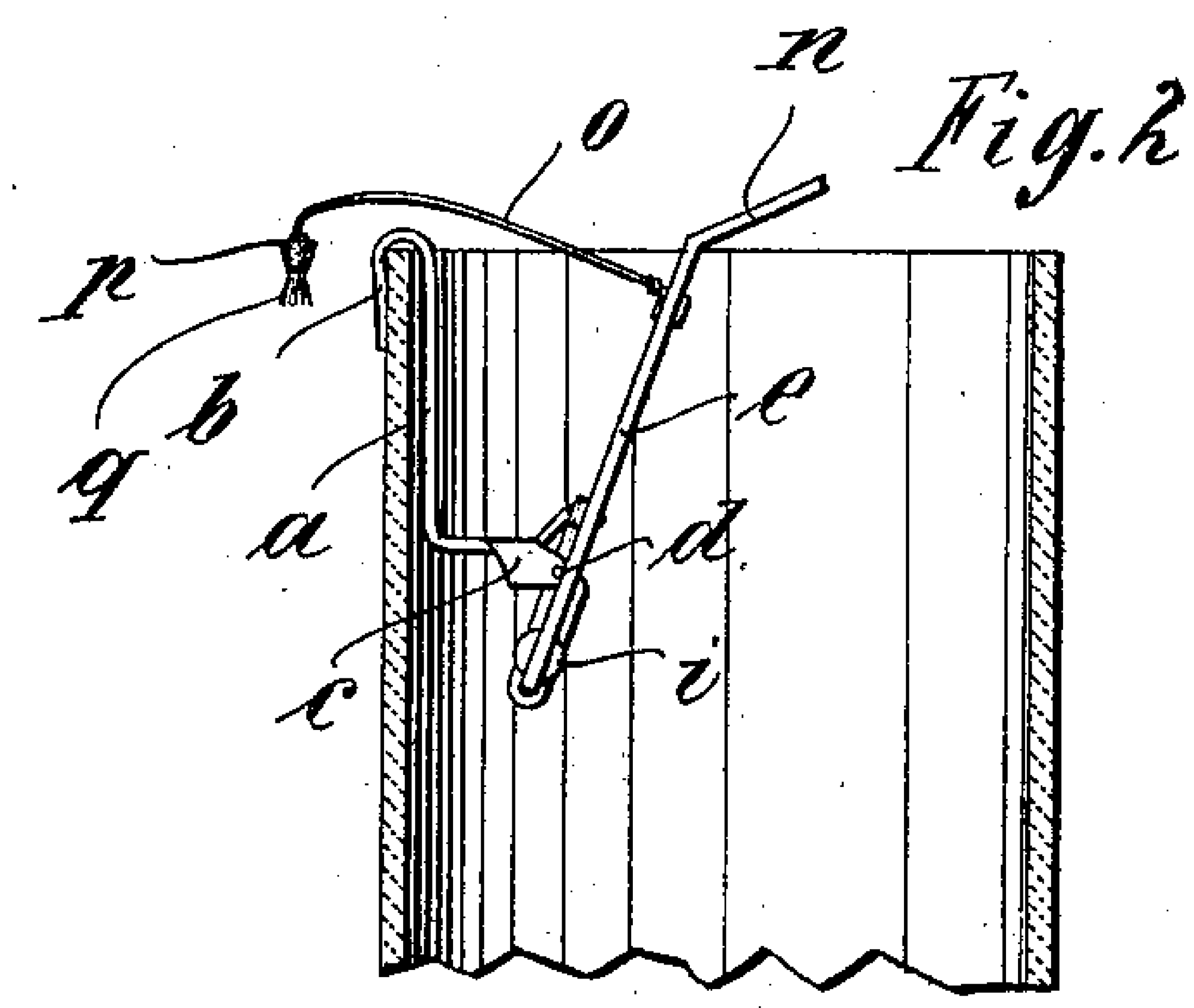


Fig. 3

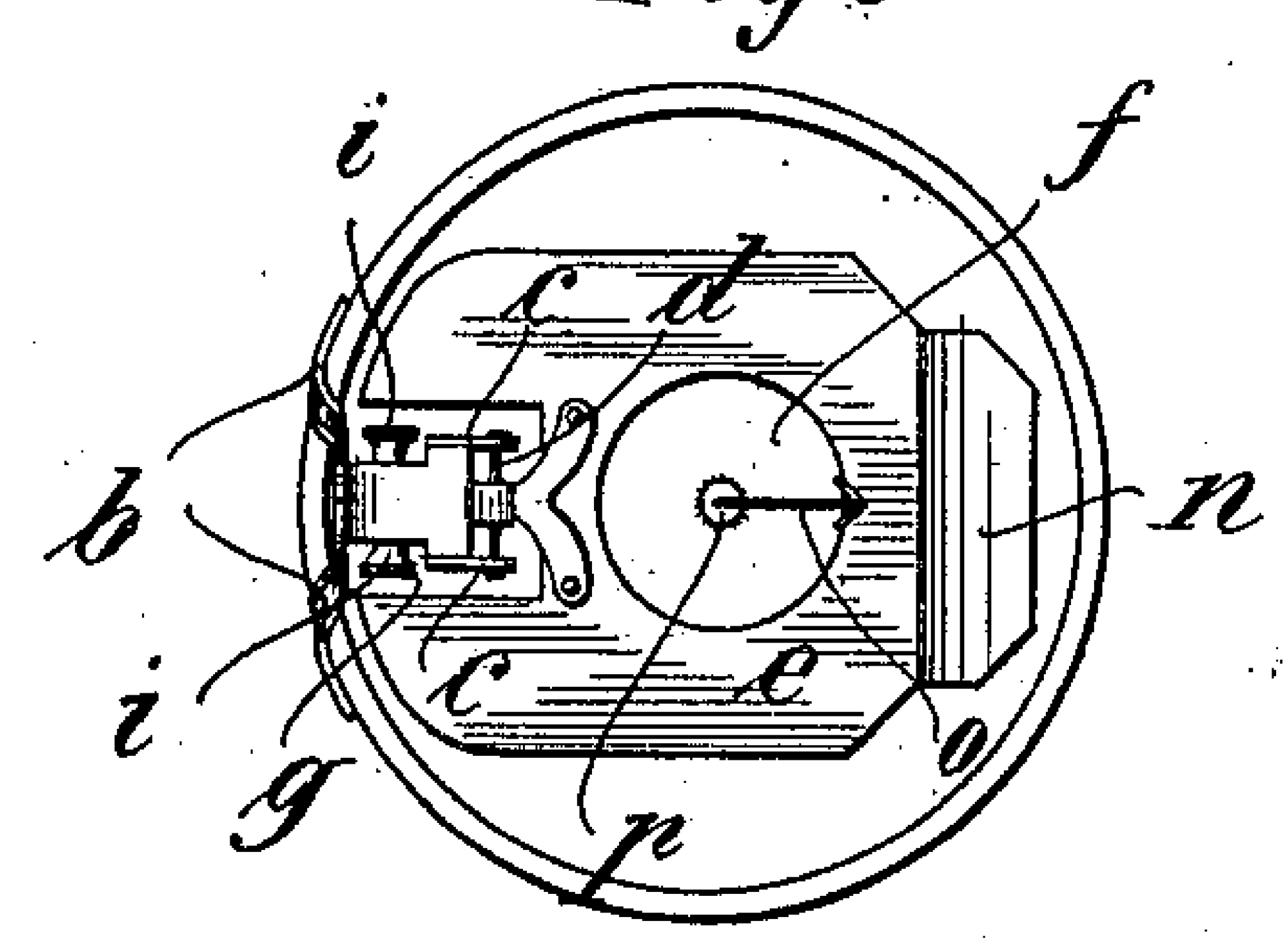


Fig. 4

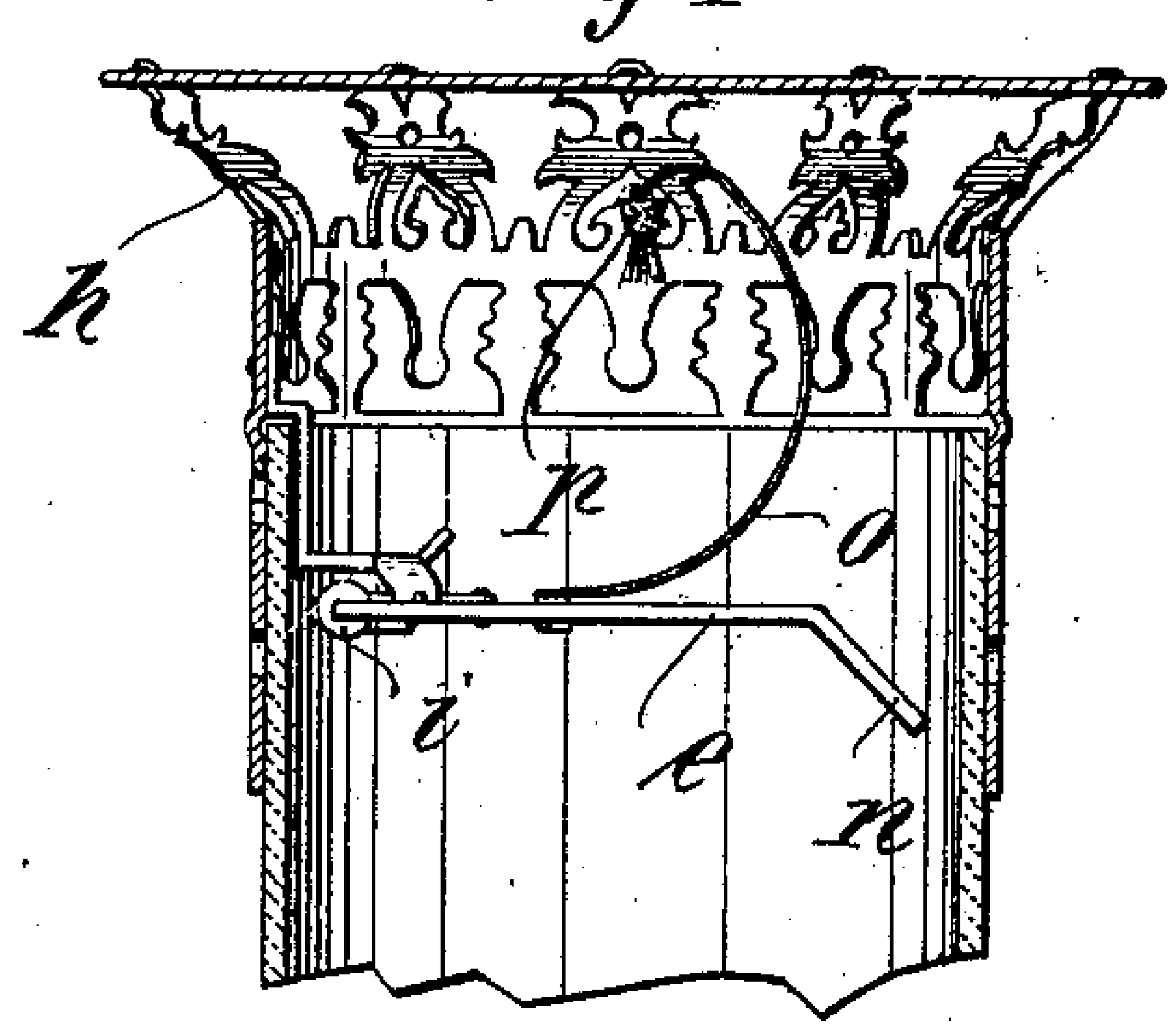


Fig. 5

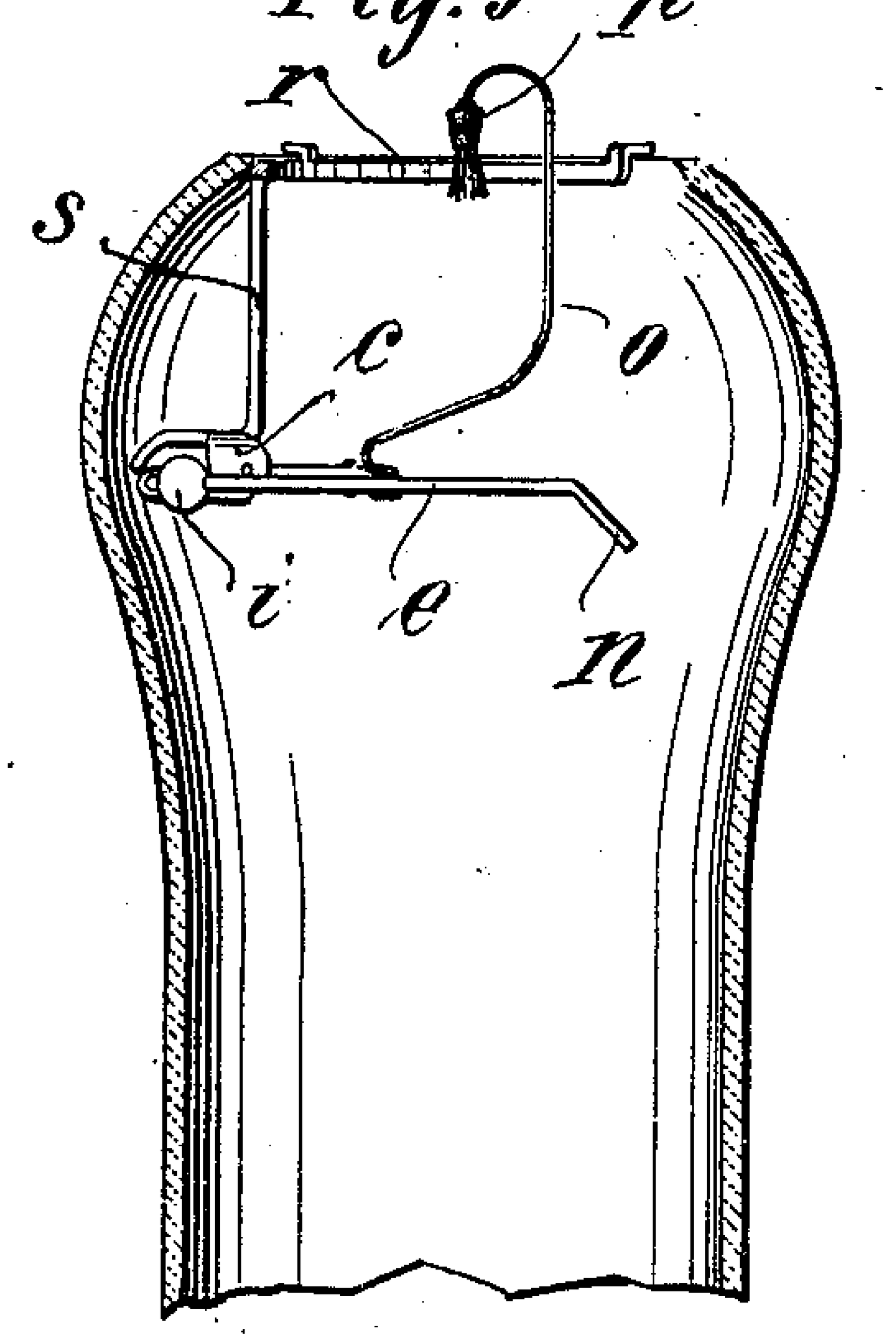
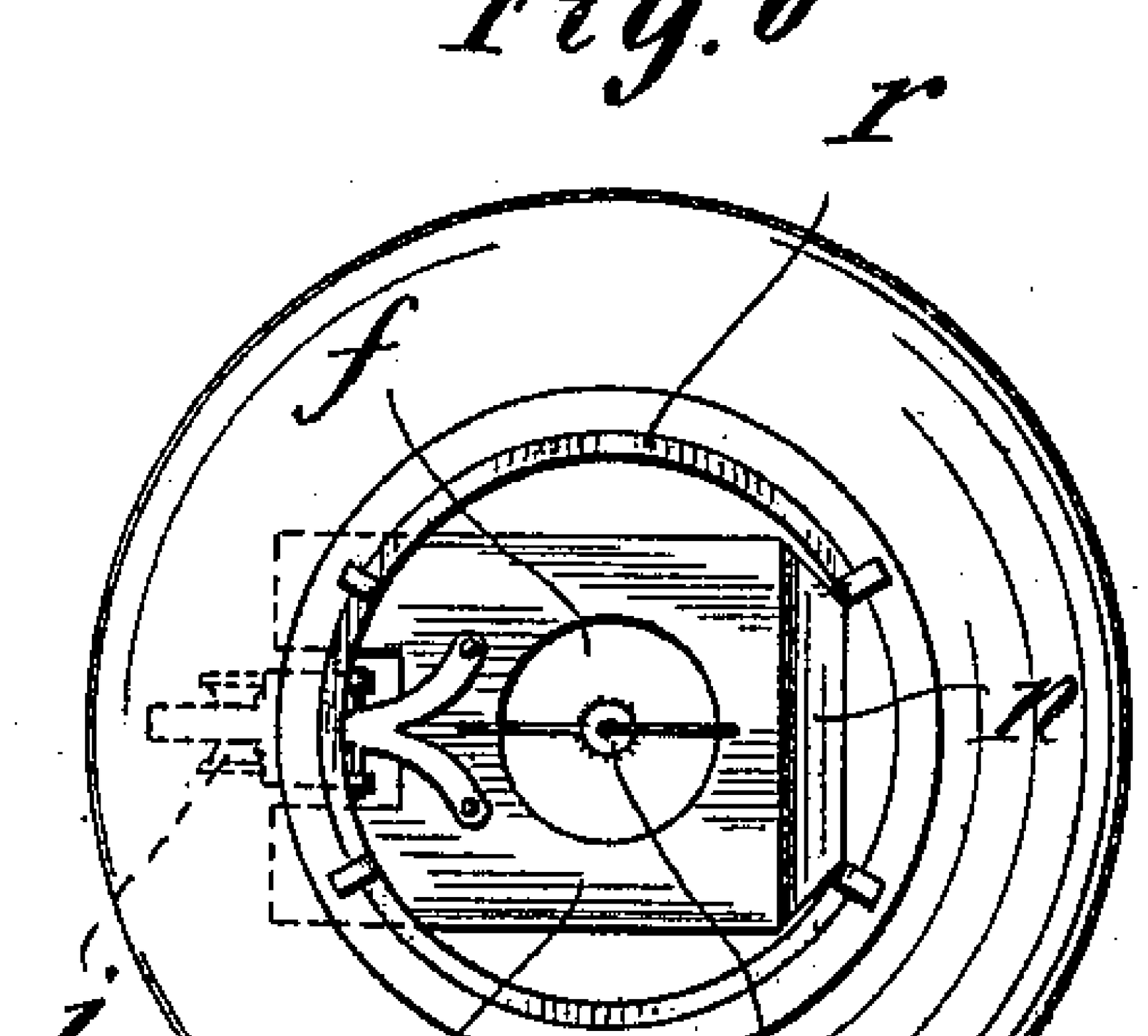


Fig. 6



Witnesses:

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Inventor:
Adolf Martini
by [signature]
Attorney

UNITED STATES PATENT OFFICE.

ADOLF MARTINI, OF BERLIN, GERMANY.

AUTOMATIC GAS-IGNITER.

SPECIFICATION forming part of Letters Patent No. 674,173, dated May 14, 1901.

Application filed August 30, 1900. Serial No. 28,557. (No model.)

To all whom it may concern:

Be it known that I, ADOLF MARTINI, chemist, a citizen of the Kingdom of Prussia, and a resident of Berlin, Germany, (whose post-office address is Leipzigerstrasse 111,) have invented certain new and useful Improvements in Automatic Gas-Igniters, of which the following is a specification.

To operate automatic gas-igniting devices, the energy generated by the flame has already been used successfully; but all these igniting devices were constructed to be placed on the top of the lamp-chimney or the shade and to remain visible throughout.

The object of this invention is an automatic gas-igniting device embodying a platinum ignition-pill which by aid of the energy of the flame is carried out of reach of the latter. Devices of the kind have been known before. My new apparatus differs from all the older ones in that it is placed inside the chimney or shade, and thus made partially or totally invisible.

In this new device only the wire carrying the ignition-pill stands out from the chimney, the body of the apparatus being arranged inside the upper part of the chimney. To render the device totally invisible, the upper part of the cylinder may be frosted. If this apparatus is used with pear-shaped or other shades replacing the chimney, it is absolutely invisible from outside. In the same way the apparatus may be concealed from view in a dust-cap mounted on top of the chimney. The task of concealing the igniting device being thus solved, there remains to be effected the automatic removal of the igniting-pill to a cooler place during the burning of the lamp. In effecting this there has to be considered the fact that in order to hasten the heating of the pill compressed gas and some air have to be supplied. Besides this the heat generated in the igniting-pill and communicated to the ignition-wires connected with it has to be raised to such a degree as to ignite the gas almost directly. This may be effected by supplying a sufficient quantity of air to the wires. If the ignition-pill itself were placed inside the lamp-chimney, the ignition would be a very slow one by cause of want of air. It is therefore necessary for the ignition-pill to project over the chimney or shade. In this case the pill is supplied from below with a mixture of air and compressed gas, while from the sides the air required for the ignition-wires pours in. The pill is supported by a wire fastened to a plate of fireproof material, (mica.) The shape of this plate must be such that the mixture of gas and air ascending from below may pass sidewise, as well as through perforations of the plate. The plate may consist of one or several pieces. If the plate is too large, it might form a hindrance to the eduction of the detonated gases, thus causing a percussion which might destroy the incandescent mantle. It has further to be considered that the plate is to remain in the turned-up position during the whole time the burner is turned on. To this purpose there might be used a flat plate having a perforation carrying the wire which supports the ignition-pill. It is, however, preferable to bend the plate, so as to offer a certain resistance to the combustion-gases and the heated air ascending together during and after the detonation. The bent part of the plate forms a sort of sail, preventing the plate during the time of burning of the flame from returning to its initial position, at the same time causing the pill fastened to a long wire to remain at a relatively cool place outside the warm sphere. After the burner has been turned off, the plate automatically, through its own weight, swings back to the horizontal position. At the same time the pill returns to its former position ready for ignition.

There remains to be shown how the plate carrying the ignition-pill may be equilibrated in the narrow space given in the interior of the chimney. In the older constructions applied to igniting devices mounted on top of the chimney the plate carrying the pill was linked at one side to an axle, a long arm carrying a counterweight extending from the other side of the axle. If a device of this kind be placed in the interior of the chimney, owing to a want of space sufficient to hold the counterweight, the working of the device will be hindered. In the case of the chimney leaning over to one side the plate would be too small to be held in an upright position by the hot gases during the period of burning, besides the equilibration would

be a rather difficult affair, thus rendering the apparatus practically useless. I therefore place the axle designed to carry the plate near the middle of the latter by simply cutting out a part of the plate. With this arrangement I find no difficulty in producing an apparatus which carries the pill out of reach of the flame with the greatest ease and exactness and retains it in this position as long as the burner is lighted. The main body of the apparatus remaining within reach of the flame remains nearly or totally invisible from outside.

In the accompanying drawings several forms of application of such gas-igniting devices are shown.

Figures 1, 2, and 3 show the form preferable for ordinary tubular lamp-chimneys as seen from the side and from below. Fig. 4 represents a dust-cap provided with my automatic igniting device. Figs. 5 and 6 show the igniter adapted to the use in pear-shaped chimneys as seen from the side and from above.

The holder *a* is stamped out of a single piece of sheet metal, ending at one side in two narrow diverging strips or grips *b*. The lower portion of *a* is bent at a right angle to the upper one and carries at its end two arms *c*, bent down to form an axletree for the axle *d*, carrying the mica plate *e*. The latter has a perforation *f* and a notch *g* cut out at one side. Near the inner edge of said notch a Y-shaped piece of sheet metal carrying the axle *d* is riveted to the plate. At the other end this Y-shaped piece carries the adjustable counterweight either in the shape of a metal ball or of screw-nuts *i*, allowing the equilibrium to be restored at will after replacing the used-up pill by a new one of greater weight. The stem of the Y-shaped metal piece shows a slot *k*, embracing a pin *l*, screw-threaded at both ends and carrying the nuts *i*, which serve to fix the pin in any position in the slot. That part *n* of the mica plate which lies opposite the holder *a* is bent down at an obtuse angle to catch the jet of hot gases after the detonation and to act as a sail by retaining the plate *e* in a vertical position as long as the burner is lighted. From the horizontal part of the mica plate between the bent-down part *n* and the perforation *f* a wire *o*, extending vertically, carries the ignition-pill *p*.

The jet of gas passing through the perforation *f* as soon as the burner is turned on causes a vivid kindling of the pill. The heat generated in this way causes the thin platinum wires *g*, fastened to the pill, to be heated to a strong heat, which suffices to ignite the mixture of gas and air surrounding them. The detonation of the gas mixture contained in the interior of the chimney causes the mica plate *e* to swing back and assume a vertical position, the wire carrying the ignition-pill being carried out of reach of the flame and the hot gases, Fig. 2. As soon as the burner is turned off and cold air enters the chimney the mica plate missing the energy of the hot gas-jet returns to its horizontal position, the ignition-pill thus being brought back to its old place above the perforation *f*.

To adapt this apparatus to be used in chimneyless lamp-shades, the holder *a* is replaced by an open ring *r*, Figs. 5 and 6, designed to rest upon the upper edge of the shade. The ring may be adapted to different widths of shades. A metal arm *s*, fastened to said ring, embraces the axle carrying the mica plate.

In fastening this device to a dust-cap covered with a mica cover, as shown in Fig. 4, care has to be taken that the pill and the head of the wire carrying same be enabled to remain outside the chimney during use, the pill *p* and the wire *o* passing through one of the side openings *h* of the dust-cap.

Having thus fully described the nature of my invention, what I claim is—

1. An automatic gas-ignition device comprising a lamp-chimney, an arm suspended therefrom, a plate of fireproof material hinged to a horizontal axis at the lower end of said arm; an adjustable counterweight; a bracket arranged on the upper side of said movable plate, reaching above the upper rim of the chimney and having an ignition-pill suspended from said bracket substantially as shown and described.

2. In an automatic gas-ignition device a lamp-chimney, an arm suspended from its upper rim and extending inside the lamp-chimney, a plate of fireproof material movably hinged to the lower end of said arm and balanced by an adjustable counterweight, said plate having on its upper side arranged a bracket bearing at its end suspended an ignition-pill in such a way that this is above the upper rim of the chimney; the axle, on which said plate is hinged being located near the center of said plate, substantially as hereinbefore shown and described.

3. In an automatic gas-ignition device a lamp-chimney, an arm suspended from its upper rim and extending inside the lamp-chimney, a plate of fireproof material hinged to the free end of said strip, an adjustable counterweight, a bracket arranged on the upper side of said plate, extending over the top of the chimney and having at its end suspended an ignition-pill, that part of the plate opposite the arm being bent down at an obtuse angle; substantially as shown and described.

4. In an automatic gas-igniter a lamp-chimney a ring put on the upper rim of same, an arm extending vertically from said ring into the interior of the lamp-chimney, a light plate of fireproof material, counterbalanced by an adjustable counterweight, being hinged to the lower end of said arm, the axle of rotation being situated near the middle of said plate; a bracket arranged on the upper side of said plate, extending over the upper end of the chimney and having suspended from its end an ignition-pill, substantially as hereinbefore shown and described.

5. In an automatic gas-ignition device, a lamp-chimney, a perforated ring covered by a fixed plate of non-combustible material, an arm suspended from said ring and extending inside the lamp-chimney, a plate of fireproof material, counterbalanced by an adjustable counterweight and bent downward in an obtuse angle at its free end being hinged to the lower end of said arm, a bracket arranged on said movable plate and extending over the upper rim of the chimney, said bracket having suspended from its upper end an ignition-pill, the perforated ring having an opening for giving free passage to said ignition-pill, when the plate has its highest position; substantially as shown and described.

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

ADOLF MARTINI.

Witnesses:

HENRY HASPER,

WILLIAM MAYNER.