

No. 691,917.

Patented Jan. 28, 1902.

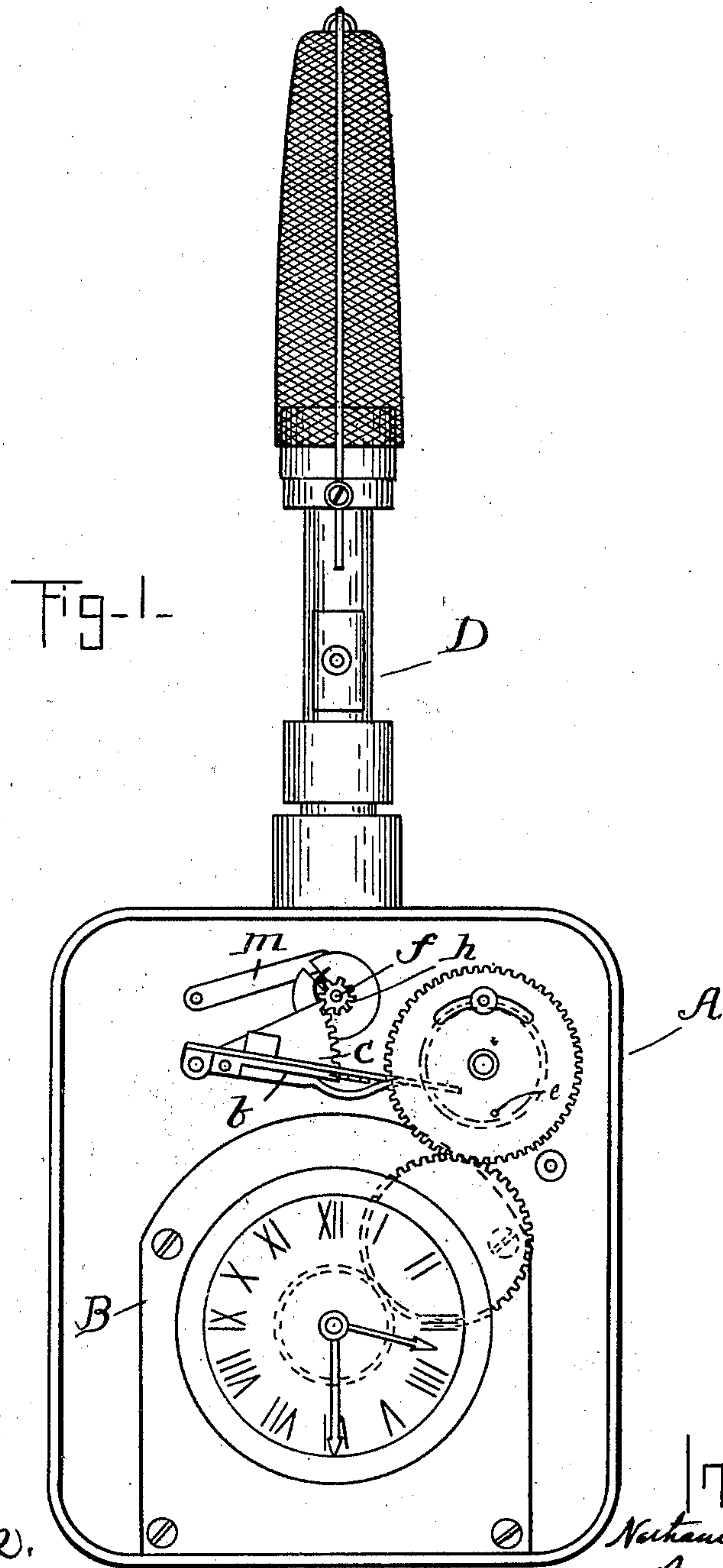
N. H. SHAW.

AUTOMATIC LIGHTER OR EXTINGUISHER FOR GAS LAMPS.

(Application filed Nov. 18, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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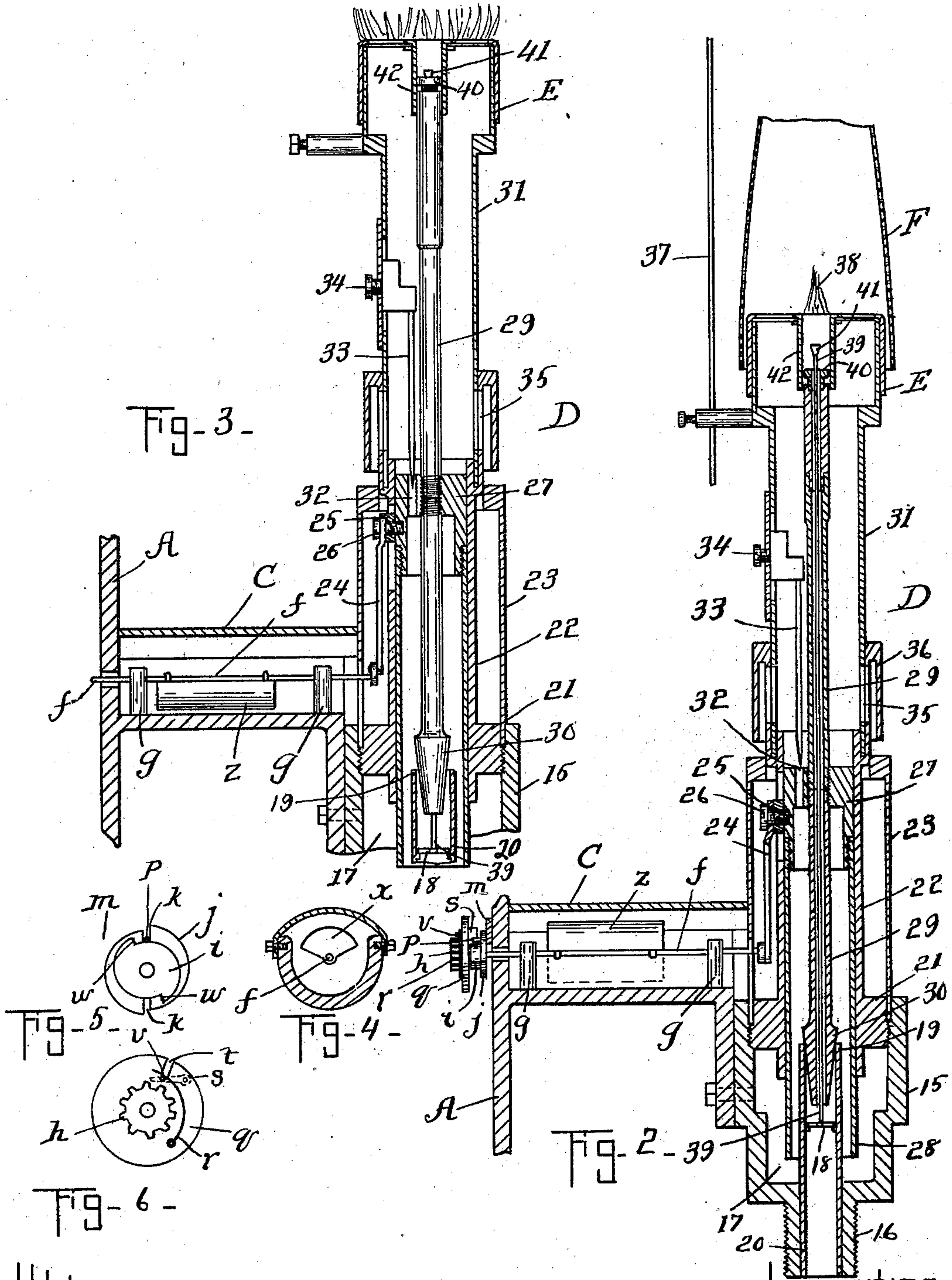
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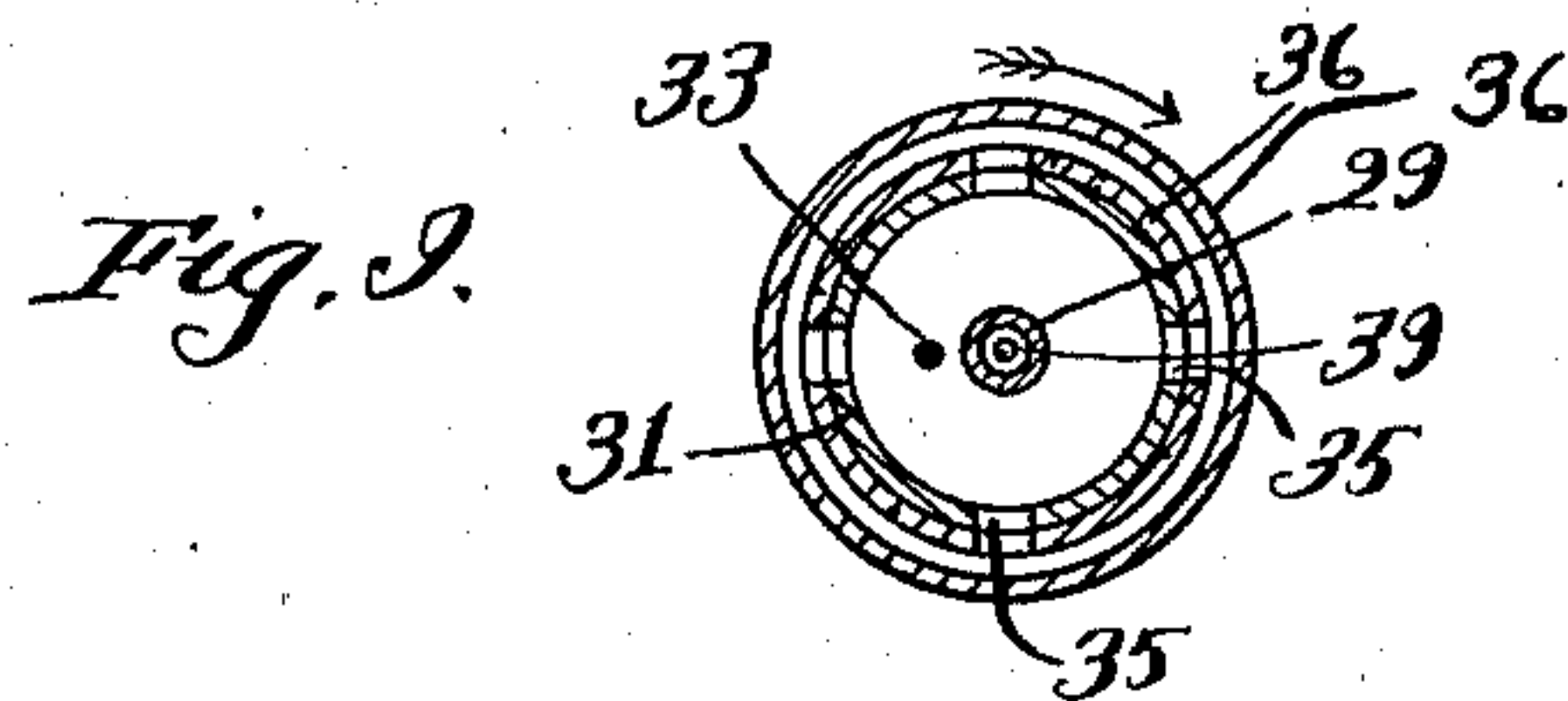
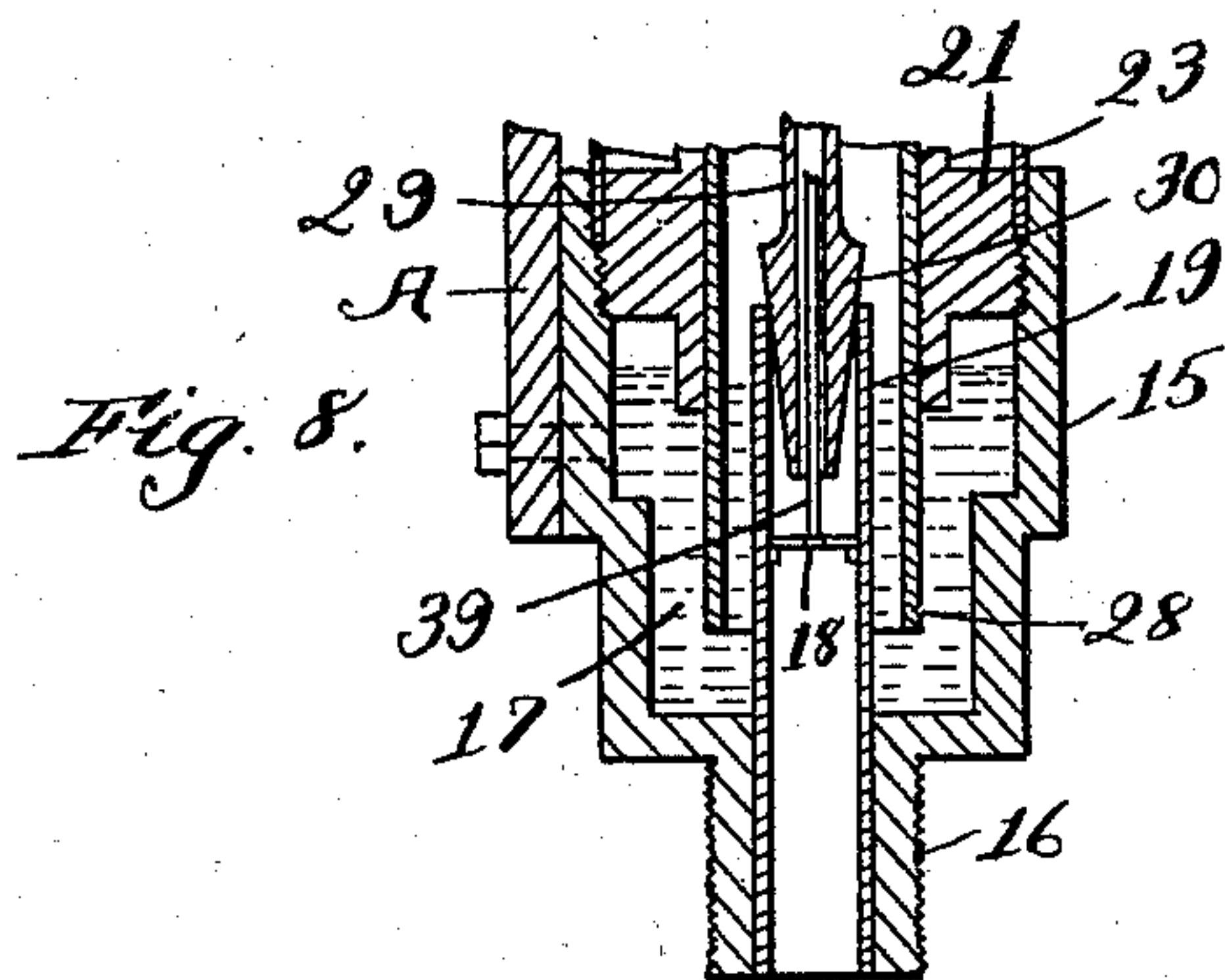
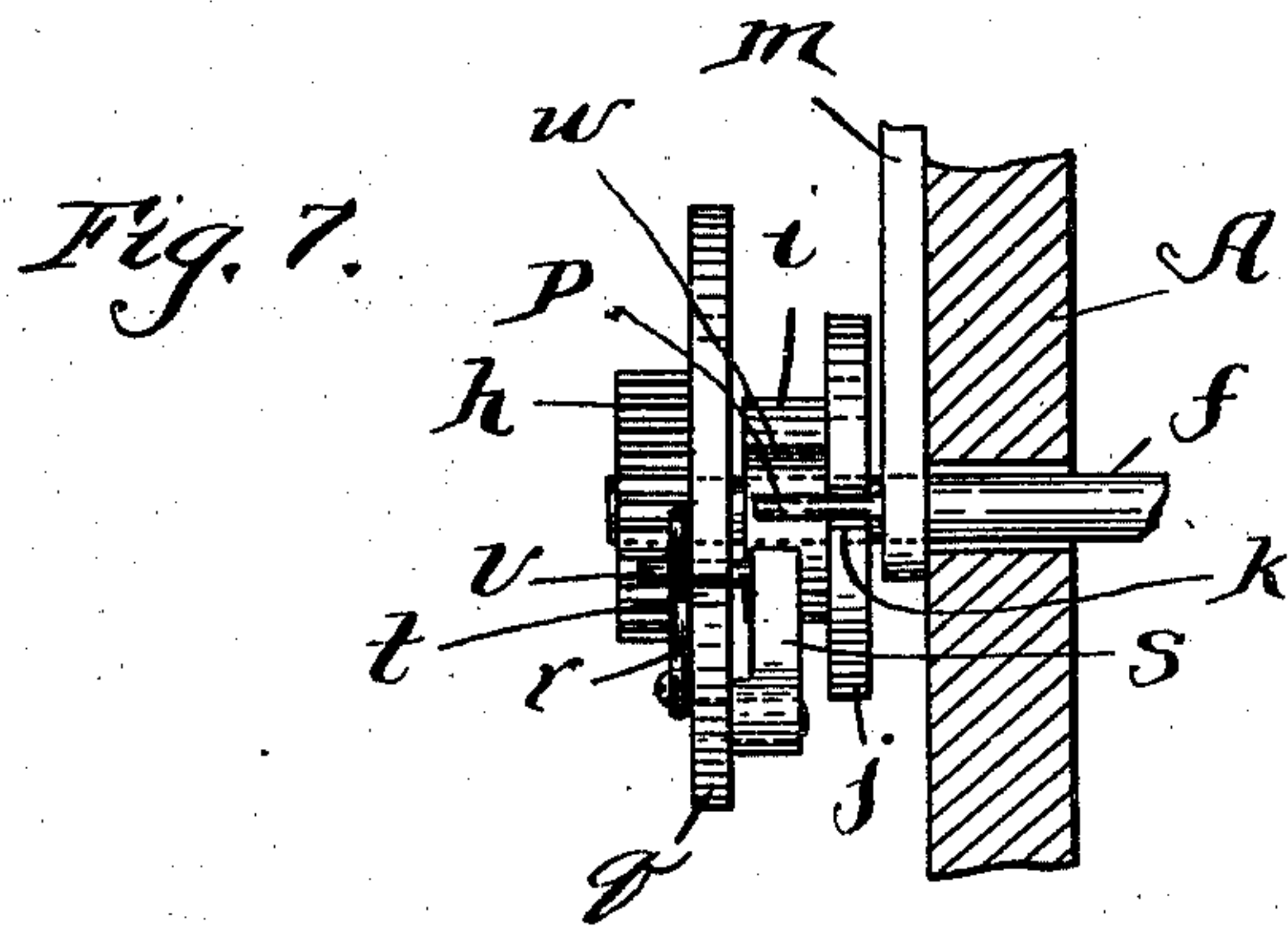
N. H. SHAW.

AUTOMATIC LIGHTER OR EXTINGUISHER FOR GAS LAMPS.

(Application filed Nov. 16, 1900.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC LIGHTER OR EXTINGUISHER FOR GAS-LAMPS.

SPECIFICATION forming part of Letters Patent No. 691,917, dated January 28, 1902.

Application filed November 16, 1900. Serial No. 36,707. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL H. SHAW, of Boston, county of Suffolk, and State of Massachusetts, have made certain new and useful
5 Improvements in Automatic Lighters or Extinguishers for Gas-Lamps, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention apper-
10 tains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of my improved lighting and extinguishing apparatus; Fig. 2,
15 a vertical transverse section of the same, showing the parts in the position assumed when the pilot-light is open; Fig. 3, a similar view showing the pilot-light supply closed, and Figs. 4, 5, and 6 sectional views and eleva-
20 tions illustrating details; Fig. 7, a sectional view of the shaft-actuating mechanism; Fig. 8, a sectional view of the mercury seal, and Fig. 9 a horizontal section showing the draft-regulator.

25 Like letters and numerals of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to improvements in automatic mechanism of this class
30 whereby the gas-supply may be turned on and off a mantle or Welsbach gas-lamp and conjointly with such movements turn on and off a pilot-light for said lamp. This apparatus is operated by a clock mechanism in common
35 use in devices of this class.

The particular object of my invention is not only to do away with the use of explosives in igniting the gas whereby the mantles may be destroyed, but also to provide a simple, cheap,
40 and effective device whereby a pilot-light may be maintained for this purpose.

The nature and operation of the device will be readily understood by all conversant with such matters from the following explanation.

45 In the drawings, A represents a casing adapted to be attached to a street-lamp post and which contains the clock mechanism B, from which the lighting and extinguishing apparatus is run. As I do not claim specifically
50 this mechanism it is not deemed essential to fully illustrate or describe the same.

Within the case A a counterbalanced lever *b*

is pivoted to periodically be engaged by a pin *e* on a gear of a train operated by the clock. Fast to and projecting horizontally from the
55 rear wall of the casing A there is a hollow bracket C, which supports the burner D. A shaft *f* is journaled on standards *g g* within this bracket and projects through the casing. On its inner end is a loose pinion *h*, with which
60 the segment *c* meshes. Back of the pinion there are two fixed cam-wheels *i j*, fast on said shaft. The wheel *j* is provided with two diametrically opposite slots *k*, in which a pin *p* on a latch-lever *m*, pivoted within case A, may
65 take. On the hub of the loose pinion there is a wheel *q*, provided with a slot *l*. On its rear face is pivoted a dog *s*, (shown in detail in Fig. 7,) which normally rides on the faces of the cam *i*, against which it is held by a pin
70 *v*, projecting through slot *t* and pressed downward by a spring *r*, Fig. 6. This dog engaging the shoulders *w* of cam *i* actuates the shaft when pinion is rotated, as herein-
75 after described. The dog is arranged also to pass under pin *p* of the latch, lifting the same from slot *k* in outer cam-wheel and freeing said wheel, so that said dog may contact with said shoulders *w*. In the present case it
80 drives the shaft a half-revolution or until pin *p*, riding on a face of cam *j*, drops into the opposite slot *k* and checks the movement. Supported from the bracket C is the burner
85 D. This comprises a cup-shaped base 15, provided in its lower end with a nipple 16 for attachment to a gas-supply. Through this a tube 20 runs for a gas-inlet, and around this tube the cup makes a mercury seal 17. (Shown in Fig. 8.) The upper end of the
90 inlet-tube forms a valve-seat 19. Into the mouth of the cup the block-base 21 of a tube 22 is turned and inclosed by a casing 23. Through this casing the shaft *f* projects, its inner end bearing a crank from which a connecting-rod 24 joins to a block 25, fitted to
95 slide vertically in a slot in the tube 22. This slide is held by a screw 26 to a block 27, fitted to slide within the tube 22, and turned onto the lower end of this block is another tube 28, open at its bottom and seating in the
100 mercury 17. Fast in the sliding block 27 there is a hollow valve 30, Fig. 2, which seats at 19 to close the gas-inlet 20. A tubular casing 31 projects vertically from the main

casing 23, near which it is provided with air-ports 35, closed by rotary slide 36, to admit air to the gas-flow in the ordinary manner of a burner of this class, as shown in Fig. 9. In the sliding block 27 there is a gas-port 32, opening into gas-tube 28, and a needle 33, adjustable by a slide 34 in wall of casing 31, regulates the flow of gas in said port to the burner proper, E, which surmounts said upper casing 31. This burner is of common construction in its main features and is provided with the perforate mantle F, supported by holder 37, as usual.

Centrally the burner is provided with a drop-tube 42, in which the upper end of the hollow valve-stem 29 slides and which is capped by a pilot-light 38. A rod 39 is fitted to slide through the hollow stem 29, its upper end forming a valve 41, which may seat at 40 on the upper end of said stem and the lower end of which rests on a start 18 in the gas-supply tube 20. This hollow stem and valve automatically regulate the pilot-light which burns in the cone 38.

In the use of my improvement at a determined hour, adjusted on the regulator B of the clock mechanism, the lever *b* is tipped, driving segment *c*, actuating pinion *h*. Supposing the parts in position shown in Figs. 2 and 7, with the valve 40 open and the pilot 38 alight, its supply being taken direct through hollow stem 29, the pinion thus rotated a determined distance by the upward movement of the segment carries the wheel *q* and its dog *s*, riding on the face of cam *i*, projects under pin *p*, lifting latch *m* and freeing wheels *i j*. The dog continuing to advance engages shoulder *w* of wheel *i* and drives shaft *f*, on which said wheels *i j* are fast, a half-revolution, the pin *p* meanwhile riding a face of *j* until it enters the outer slot *k* therein and stops such revolution. This operates crank 24, lifting block 27, and with it the attached stem 29, opening valve 30 from seat 19, and admitting gas to tube 28, whence it passes through port 32 into the upper casing 31 and thence to burner E, where it is ig-

nited by the pilot before the upward movement of the stem is completed. At the completion of this movement the seat 40 engages the pilot-valve 41 and closes the supply to said pilot, the parts being now in the position shown in Fig. 3. The shut off is accomplished by a reversal of this movement. The counterbalanced lever *b*, freed at determined intervals by the clock, falls, continuing the rotation of shaft *f*, aided by its counterbalance *x*. This is carried down by the crank 24. The pilot-valve is opened to flow and immediately ignites, and the downward movement continuing seats valve 30 and shuts off the main supply from the tube 20 to the burner E, the flame in the mantle being thus extinguished and the pilot in the cone left burning.

The clock mechanism and the mechanism *per se* for actuating the shaft *f* I purpose making the subject-matter for another application for Letters Patent.

Having thus explained my invention, what I claim is—

1. In a device of the class described a gas-supply tube in combination with a crank-actuated valve having a hollow stem, and a pilot-valve in said stem operated by movements of said main valve.

2. In a device of the character described the supply-tube, 20; the crank-actuated hollow valve, 30; seating thereon; the rod, 39, sliding in said valve and having a valve-head, for closing the hollow stem of said valve, 30, when moved to open the supply, 20, substantially as specified.

3. In a device of the class described the crank-actuated block, 27, provided with port, 32, in combination with the adjustable needle, 33, registering with said port and acting as a valve therewith as said block is moved whereby the gas-flow in said port may be regulated.

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Witnesses:

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