

(No Model.)

L. HECK.

AUTOMATIC GAS LIGHT EXTINGUISHER.

No. 381,370.

Patented Apr. 17, 1888.

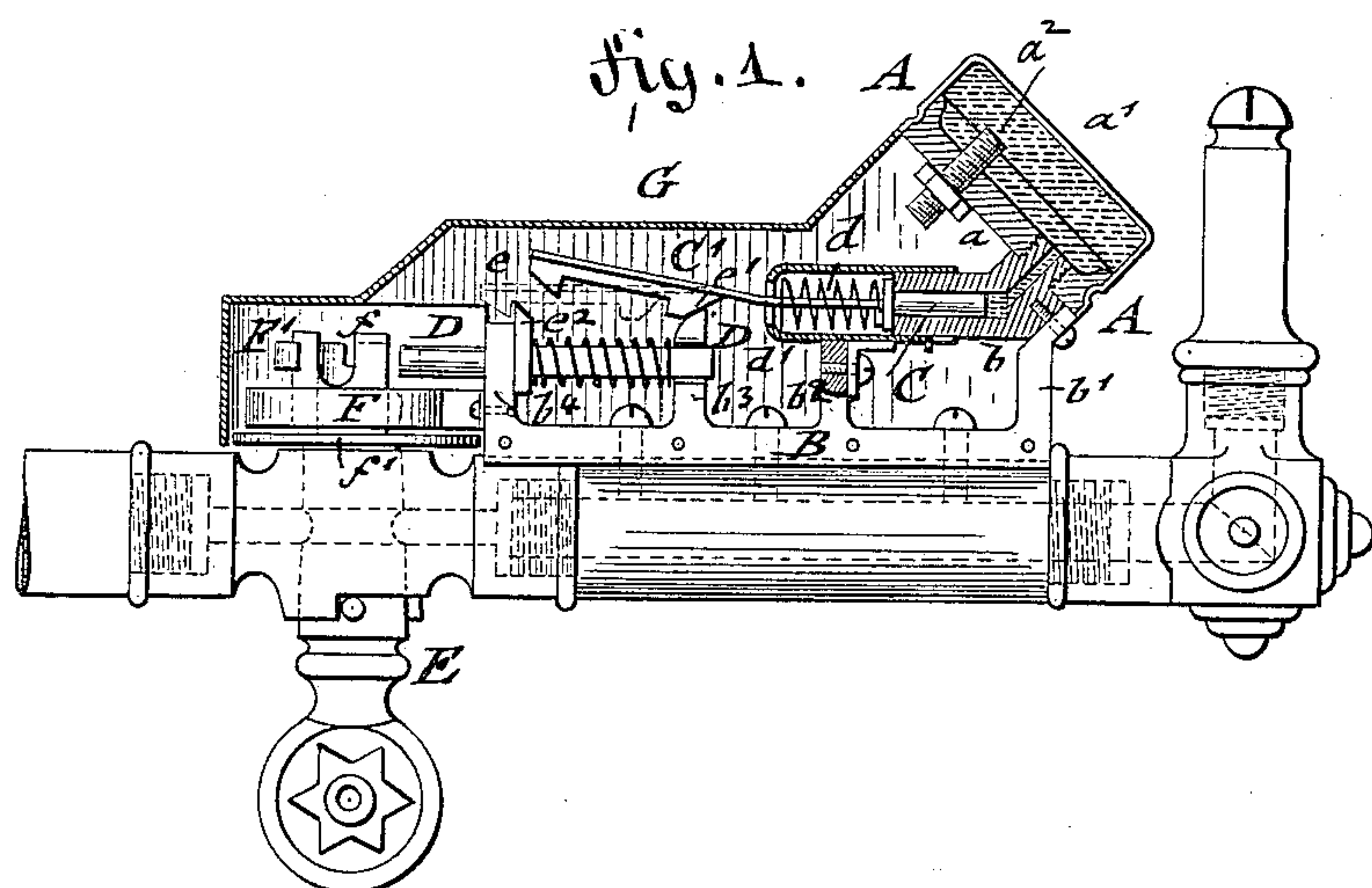


Fig. 2.

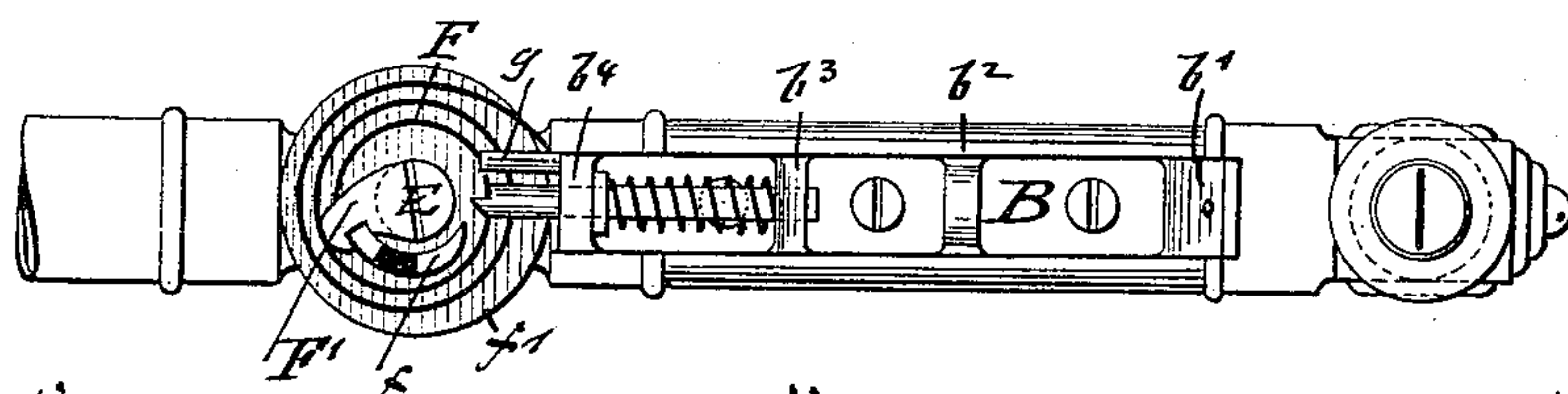
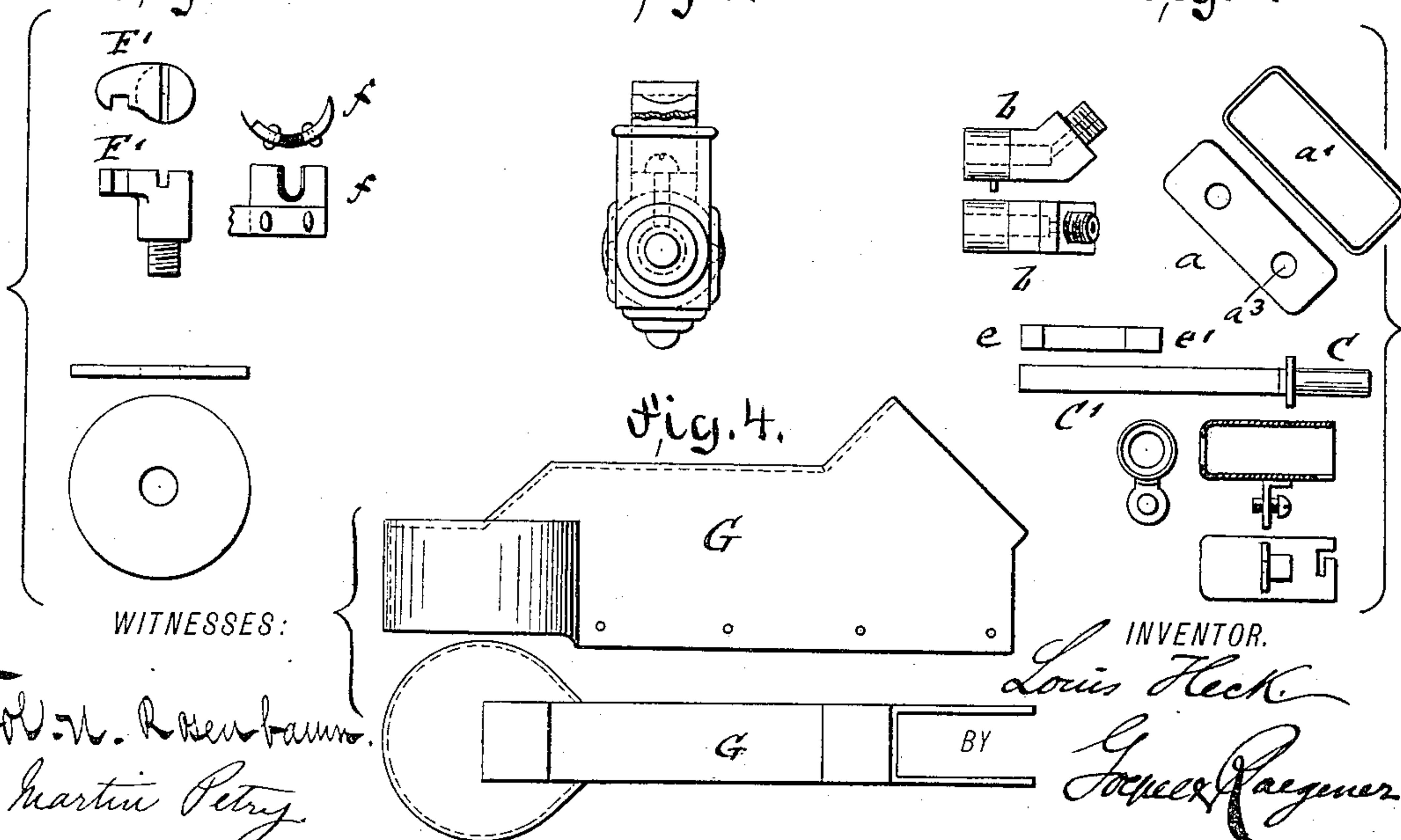


Fig. 3.

Fig. 4.

Fig. 5.



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AUTOMATIC GAS-LIGHT EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 381,370, dated April 17, 1888.

Application filed July 16, 1887. Serial No. 244,461. (No model.)

To all whom it may concern:

Be it known that I, LOUIS HECK, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Automatic Gas-Light Extinguishers, of which the following is a specification.

This invention relates to an improved automatic gas-light extinguisher, by which the gas-cock is closed whenever the flame is suddenly extinguished, either by blowing it out or by a sudden interruption of the gas-supply; and the invention consists of an extinguishing device that is applied to the gas-bracket in proximity to the burner-flame and connected to the gas-cock, the extinguishing device comprising a mercury-receptacle which is exposed to the heat of the flame, a spring-actuated piston provided with a spring-shank, and a spring-bolt locked by said shank. The spring-bolt also serves to engage the recessed keeper of a spiral spring applied to the gas-cock when the gas-cock is turned on, said spring returning the gas-cock into closed position as soon as, by the contraction of the mercury in the receptacle, caused by the cooling off of the flame, the spring-bolt is withdrawn by the spring-piston and released from the spiral spring.

The invention consists, further, of certain details of construction and combination of parts, which will be fully described hereinafter, and finally be pointed out in the claims. In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved automatic gas-light extinguisher, shown as attached to a gas bracket and cock. Fig. 2 is a top view of Fig. 1, the inclosing-casing and other parts being removed. Fig. 3 is an end view with parts broken away. Fig. 4 shows a detail side and a top view of the inclosing-casing. Fig. 5 are details of the parts by which the gas-cock is connected with the spring for closing the same; and Fig. 6 are details of the mercury-receptacle, the piston actuated by the same, and the casing for said piston.

Similar letters of reference indicate corresponding parts.

My improved gas-light extinguisher is based

on the principle that mercury or other liquids are considerably expanded by exposure to heat and contracted when cooling off. For this purpose a mercury-receptacle, A, is arranged close to the burner, preferably in an inclined position thereto, as shown in Fig. 1. The mercury-receptacle A is made of oblong shape and formed of a cast-metal bottom part, *a*, and a sheet-metal cap, *a'*, which latter is tightly applied to the bottom part, *a*. A screw-stud, *a*², that passes through the bottom *a*, can be screwed in more or less into the receptacle, so as to diminish the space not taken up by the mercury in the receptacle in case the same does not entirely fill the space in the same. The screw *a*² is adjusted from time to time, and thereby any diminution of mercury in the receptacle compensated without requiring the refilling of the receptacle. The receptacle A connects by an opening, *a*³, in the bottom *a* with an angular tube, *b*, a part of said tube serving as a cylinder for guiding a piston, C. The tube *b* is screwed into the bottom *a* of the receptacle, and is screwed to an arm, *b'*, of a supporting-bracket, B, which in its turn is attached to the gas-arm by screws.

The piston C is provided at the outer end with an enlarged head, and with a shank, C', made of a flat spring. On the piston C acts a spiral spring, *d*, which is inclosed by a sheet-metal casing, *d'*, and retained by the same, so as to act on the head of the piston C. The casing *d'* is supported on a second arm, *b*², of the bracket B. To the outer end of the shank C' is applied a catch, *e*, and at some distance from the same an inclined lug, *e'*, the catch *e* serving to engage the upwardly-projecting lug *e*² of a spring-bolt, D, that is guided in arms *b*³ and *b*⁴ of the bracket B, while the lug *e'* moves over the rounded-off upper end of the arm *b*³, as shown clearly in Fig. 1. The actuating-spring of the spring-bolt D is interposed between the lug *e*² and the upright arm *b*³ of the bracket B. The outer end of the spring-bolt D is recessed and inclined at one side, so as to engage a recessed edge of a keeper, *f*, which is attached to the inner end of the spiral spring F, while the outer end is attached to the arm *b*⁴ of the bracket B. The keeper *f* is made arc-shaped and tapering at the end and engaged by a recessed hook, F', attached to

the upper end of the gas-cock E, said hook and keeper being clearly shown in detail in Fig. 5. A clearer-pin, *g*, is arranged sidewise of the spring-bolt D and serves to disengage the keeper from the end of the bolt D at the proper time. The spiral spring F is arranged on a disk-shaped washer, *f'*, that rests on the gas-arm and prevents it from getting out of order. A casing, G, extends over the entire mechanism described, with the exception of the mercury-receptacle A, the shape of the casing being clearly shown in Fig. 4. It protects the extinguishing mechanism and prevents tampering therewith, while facilitating repairs in case any part of the extinguishing device gets out of order.

The extinguishing device operates as follows: When turning the gas-cock for lighting the burner, the hook F' at the upper end carries along the keeper *f* and sets the spiral spring F to tension. The keeper *f* is locked by the end of the spring-bolt D, which thereby keeps the spiral spring F in tension. When the gas-cock E is closed, the spiral spring F is retained in tension by the spring-bolt D. The heat of the flame, acting on the cap-plate of the mercury-receptacle, expands the mercury in the same and moves thereby the piston C against the tension of its spiral spring *d*, so that the lug *e'* of the spring-shank C' moves over the rounded-off end of the arm *b'*, while the catch *e* engages the lug *e''* on the spring-bolt D, as shown in dotted lines in Fig. 1.

In case the flame should be suddenly extinguished by blowing out or by a sudden failure of the gas-supply, the mercury in the receptacle is contracted and the spring-bolt D pulled back by the action of the spring-shank C' and spiral spring *d* acting on the piston, which spring has to be of greater force than the spring that actuates the spring-bolt D. The clearer-pin *g* prevents the keeper *f* from following the backward motion of the spring-bolt, and causes the clearing of the keeper from the pointed end of the same, and thereby the release of the spring, which engages by the keeper the recessed hook on the gas-cock, so as to turn the latter on its axis and return the same automatically into closed position. When the stop-cock is closed by hand in the ordinary manner, the spiral spring F is released in the same manner by the contraction of the mercury, it being set to tension whenever the gas-cock is turned so as to let on the gas and locked by the spring-bolt D. The play of the piston C, caused by the expansion and contraction of the mercury, produces the engaging or releasing of the spring-bolt D by its spring-shank and the releasing of the spring F, which latter closes automatically the gas-cock. The entire device is made smaller in width than the diameter of the gas-bracket and supported on the top of the same, forming a safety attachment for the gas-brackets of hotels, boarding-houses, &c., as it produces the automatic closing of the gas-cock whenever

the gas is extinguished by blowing out or otherwise without shutting it off by the gas-cock.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a gas-bracket, gas-cock, and burner, of an automatic extinguishing device connected to said gas bracket and cock and operated by the heat of the flame, said extinguishing device being composed of a mercury-receptacle, a guide-cylinder, a spring-actuated piston, a spring-shank applied to the piston, a spring-bolt adapted to be engaged by the spring-shank, a spiral spring connected to the gas-cock, and a recessed keeper at one end of the spiral spring, substantially as set forth.

2. The combination of a gas-cock, a hook attached to the same, a spiral spring, a keeper attached to the inner end of the spring, and a spring-bolt for engaging said keeper, substantially as set forth.

3. The combination of a gas-cock, a recessed hook attached to the same, a spiral spring, a recessed keeper attached to the inner end of the spring, a spring-bolt engaging the recessed keeper, and a clearing-pin sidewise of the end of the spring-bolt, substantially as set forth.

4. The combination of a gas-cock, a spiral spring, a recessed keeper at the inner end of the spring, a hook attached to the gas-cock for engaging said keeper, a spring-bolt adapted to engage the keeper and set the spiral spring to tension, a spring-actuated piston having a spring-shank, a guide-cylinder for the piston, means for locking and releasing the spring-bolt, a mercury-receptacle arranged near the gas-outlet and communicating with the guide-cylinder, and a gas-burner, substantially as set forth.

5. In a gas-light-extinguishing device, the combination of a mercury-receptacle, a cylinder communicating with said receptacle, a piston guided in said cylinder, a spiral spring acting on the piston, a casing for retaining said spiral spring, a spring-shank attached to the piston and provided with a catch, and a spring-bolt adapted to be engaged by said catch, substantially as set forth.

6. The combination of a mercury-receptacle arranged in proximity to the gas-outlet, a cylinder connected to said receptacle, a spring-actuated piston guided in said cylinder, a spring-shank attached to the cylinder and provided with a catch, an inclined lug, a bracket-arm having a rounded-off end for engaging said lug, and a spring-actuated bolt having a lug adapted to be engaged or released by the catch of the spring-shank, substantially as set forth.

7. The combination of a gas-burner, a mercury-receptacle, a cylinder communicating with the same, a spring-actuated piston guided in said cylinder, a spring-shank applied to the piston, said shank being provided with means for engaging or releasing the spring-bolt, a spring-bolt acted upon by a spring of less force

than the spring of the piston, a spiral spring
having a recessed keeper at the inner end and
adapted to be locked by the spring-bolt, and
a gas-cock having a recessed hook for engag-
5 ing said keeper and setting the spring to ten-
sion on being opened, substantially as set forth.

In testimony that I claim the foregoing as my

invention I have signed my name in presence
of two subscribing witnesses.

LOUIS HECK.

Witnesses:

PAUL GOEPEL,
MARTIN PETRY.