

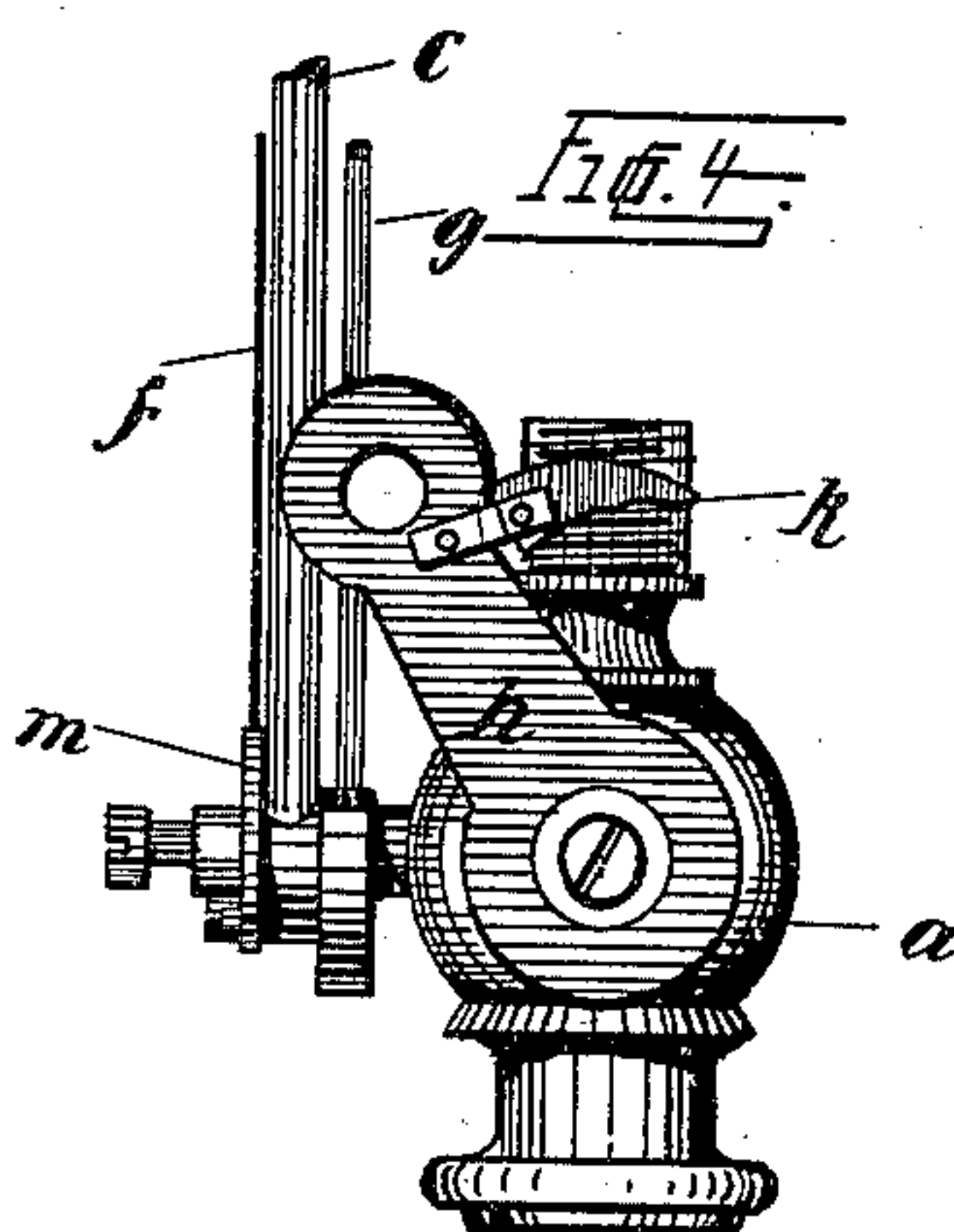
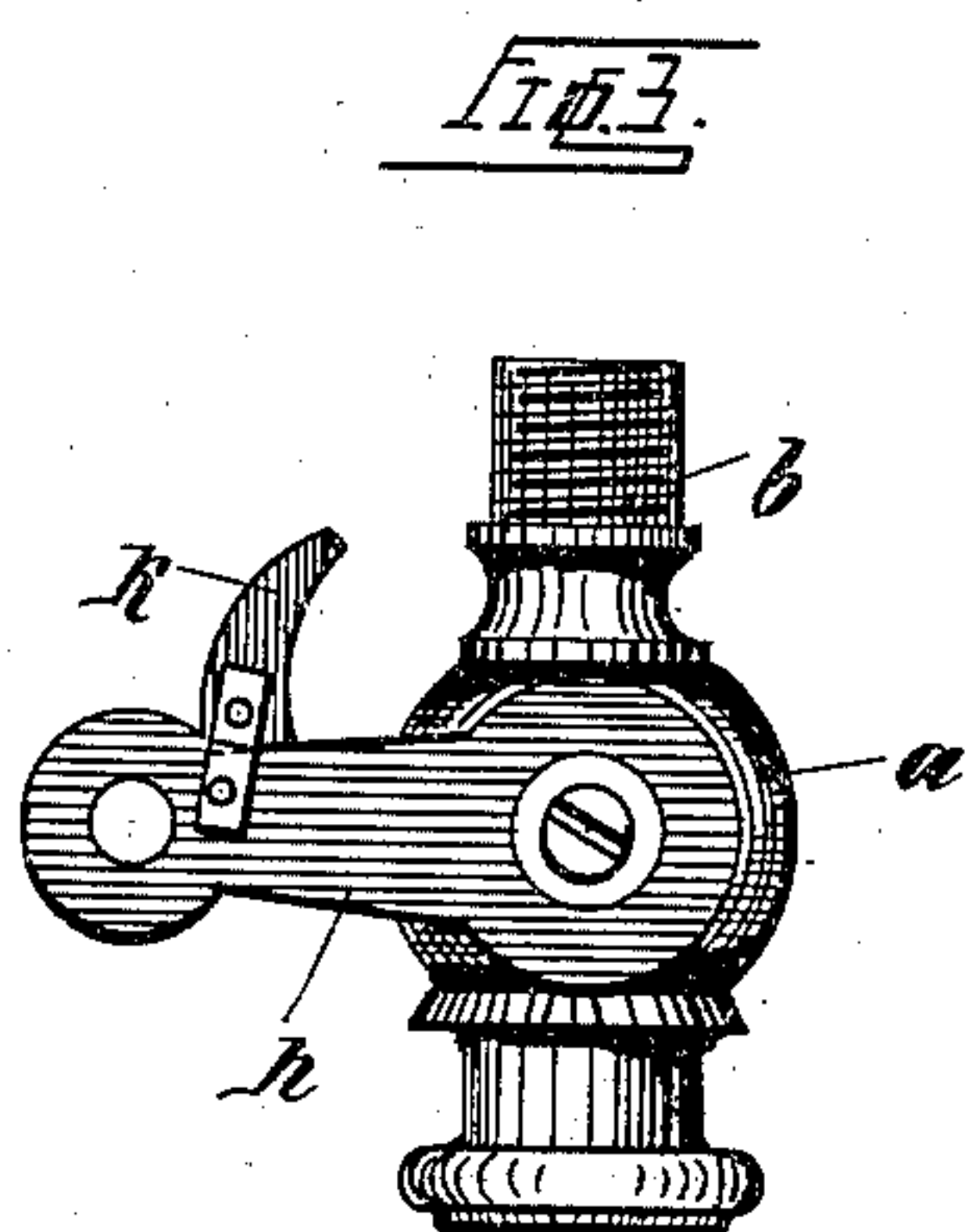
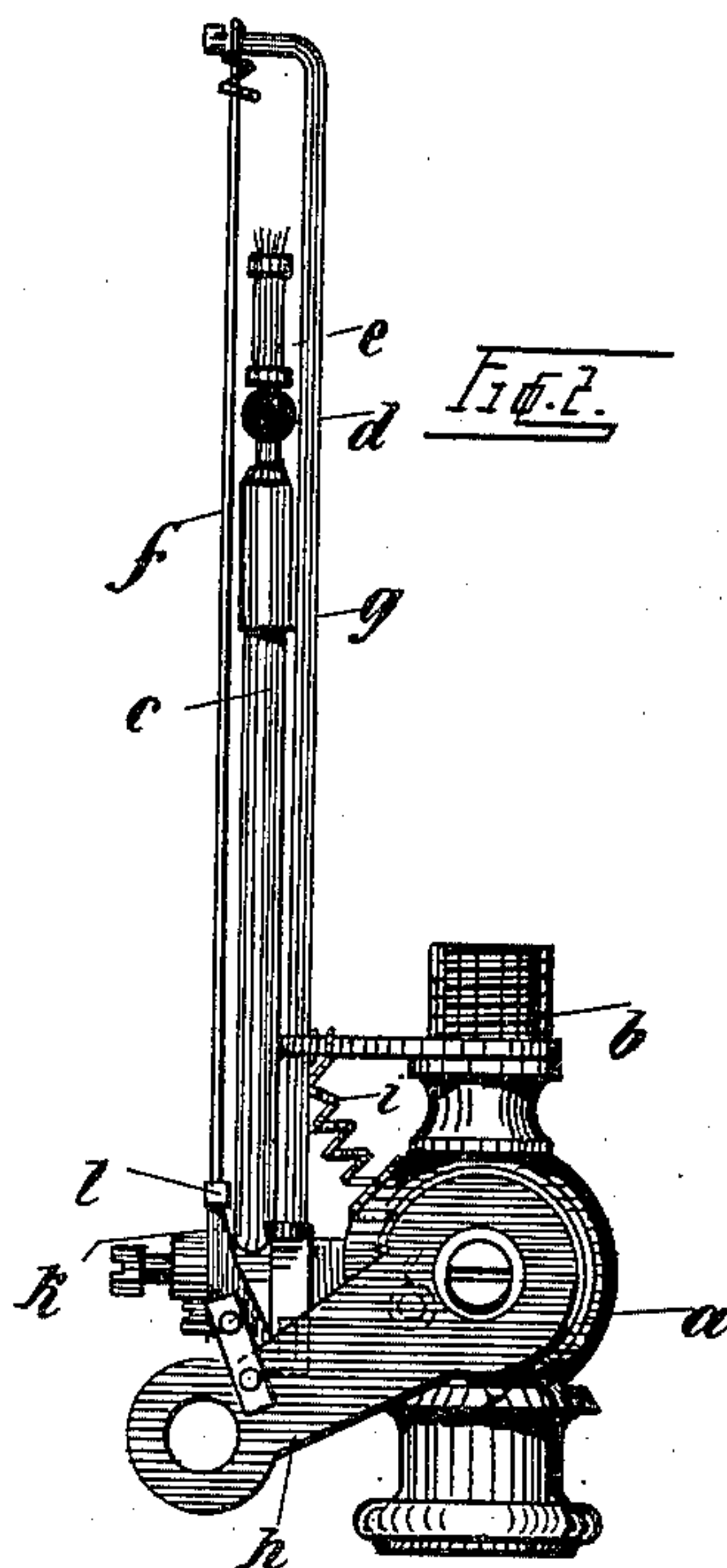
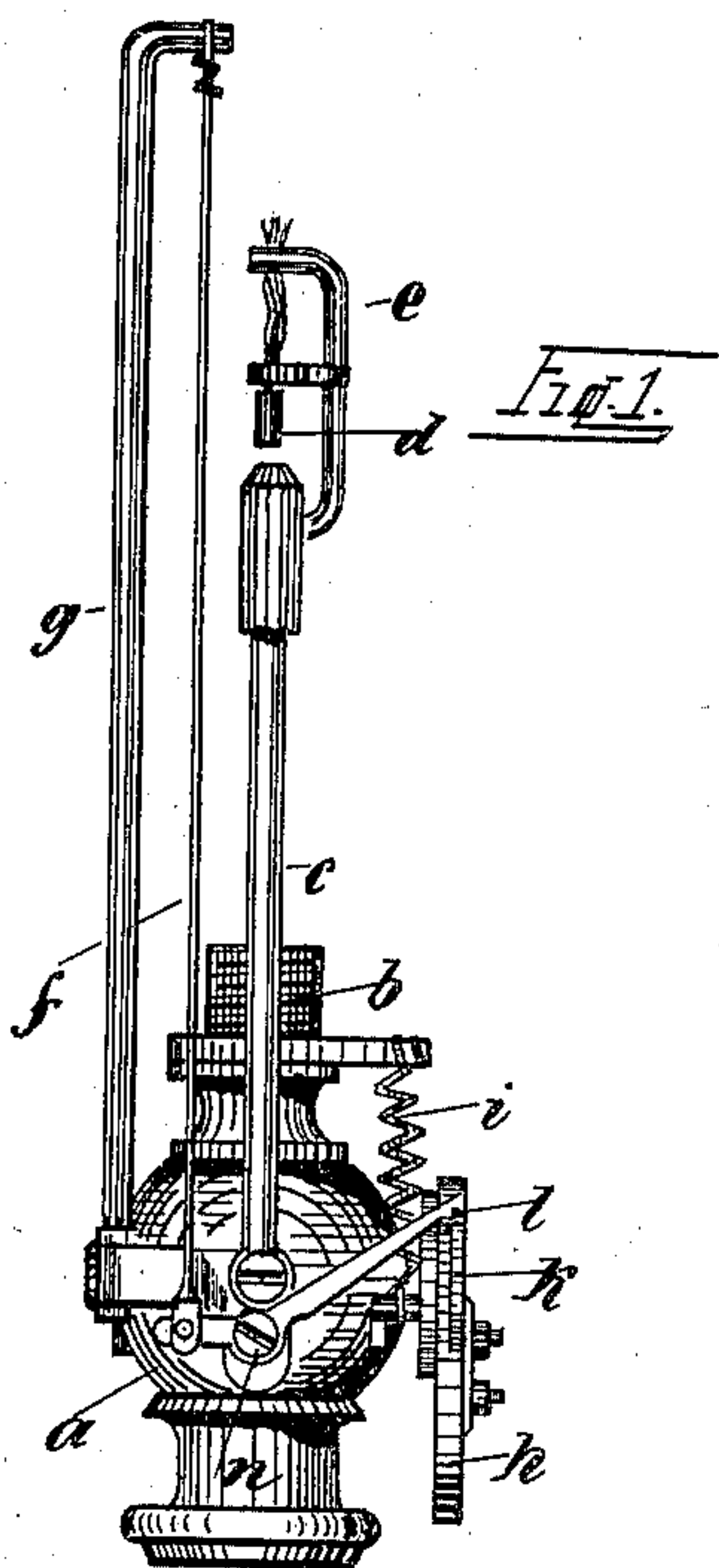
No. 668,249.

Patented Feb. 19, 1901.

F. ZACHER.
SELF LIGHTING GAS BURNER.

(Application filed Aug. 30, 1899.)

(No Model.)



Witnesses:
Edward Fiedler
Julius Petznick

Inventor:
F. Zacher
by
J. J. J. J. J.
Attorney

UNITED STATES PATENT OFFICE.

FRIEDRICH ZACHER, OF HAMBURG, GERMANY.

SELF-LIGHTING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 668,249, dated February 19, 1901.

Application filed August 30, 1899. Serial No. 728,988. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH ZACHER, a subject of the King of Prussia, German Emperor, residing at No. 15 Waudsbecker stieg, Hamburg, Germany, have invented new and useful Improvements in Self-Lighting Gas-Burners, of which the following is a specification.

The present invention relates to improvements in self-lighting gas-burners in which an auxiliary or pilot burner is employed for the purpose of igniting the main flame, said auxiliary burner being fitted with an ignition-pellet which becomes ignited by coming into contact with the gas issuing from the auxiliary burner, thereby igniting the latter. The flame of the auxiliary burner of self-lighting gas-burners of this kind causes a suitable body to be expanded or elongated, thereby turning the gas-cock from the position of ignition of the auxiliary flame to the position for the burning of the main flame, which becomes ignited from the pilot-burner, whereupon the auxiliary flame extinguishes as its gas-supply has been shut off.

The present invention has for its object certain improvements in the construction of such burners, as will be more fully described hereinafter.

Other objects of the invention are to simplify and cheapen the construction and to render more efficient, serviceable, and durable in operation this class of devices.

With these ends in view the invention consists in the novel combination, arrangement, and adaptation of parts, all as more exhaustively described in the following specification, shown in the accompanying drawings, and then specifically set out in the appended claims.

Referring to the drawings, a gas-burner constructed according to the present invention has been illustrated in Figure 1 in lateral elevation, the gas-cock and appended parts being shown in the position for the ignition of the burner. Fig. 2 is a front elevation similar to Fig. 1. Fig. 3 shows the burner-body and the gas-cock turned into the position for the supply of gas to the main flame only. Fig. 4 represents a front elevation similar to Fig. 2, the gas-cock being shown in the position

when the gas-supply to either burner is completely cut off.

The applicability of the expanding body or of its expanding force, respectively, to exercise direct pressure must, however, be considered a failure, as in its action, especially when the body is heated, and consequently in a softer and less resistible condition, it easily suffers a lateral distortion and is then obviously rendered unfit for further action. Such a distortion will all the easier take place should the wire employed as expanding agent show the slightest sign of a flaw or bend or should the starting-points of expansion at either extremity of the expanding not be situated exactly in alinement. Even supposed that these drawbacks are not present immediately in a construction of a self-lighting gas-burner based on the principle of direct action of the expanding force it will be obvious that after a short usage they must present themselves, which proves such constructions to be wrong in principle and construction to accomplish the desired result for a prolonged period of time.

In my present invention I have assigned a different purpose to the expanding wire and its appurtenances, which it will be enabled to accomplish under any circumstances and for an unlimited space of time, even should the wire show the above-mentioned defects—viz., a flaw or bend.

In the construction according to my present invention the expansion of the wire is not utilized for exercising pressure, but is facilitated and accelerated by the spring-governed gas-cock or a lever in combination with same acting against a stop on a centrally-pivoted lever, which carries at its other end the lower extremity of the expanding wire, thus pulling this wire until the expansion or elongation of same has reached such a degree that the gas-cock can clear the stop on the lever and assume, under the influence of its spring or springs, the position for the exclusive burning of the main flame. The gas-cock having then cut off the supply of gas to the pilot-burner the flame of the latter extinguishes and the expanding wire contracts and assumes its normal condition, turning the aforesaid lever to which it is attached into

its former position in which the stop on same is ready again to retain the gas-cock in the position for ignition when said cock has been turned sufficiently far for this purpose.

5 In the drawings *a* indicates the body of the burner.

b is the main-burner pipe; *c*, the auxiliary or ignition pipe; *d*, the ignition-pellet; *e*, the ignition-pellet carrier; *f*, the rod-like expanding body, suitably made of wire; *g*, the carrier or support for the upper extremity of the expanding wire, and *h* the lever attached to the gas-cock, which serves for actuating the latter. The lever *h* is under the influence of a spring *i* or of a plurality of springs, which exercises its force to turn the lever *h* and the gas-cock into the position for the exclusive burning of the main flame. This position of the gas-cock and lever is indicated in Fig. 3.

20 The plug of the gas-cock resting and rotatable in the burner-body *a* is fitted in the customary manner with two ways, which permit the passage of gas from the main to either the auxiliary burner or the main burner when the gas-cock is suitably turned, or it may be advantageous to provide the two ways in the gas-cock plug in such a manner that when one way establishes full communication between the main and auxiliary burners the second way simultaneously allows a certain limited amount of gas to pass to the main burner to facilitate the ignition of same.

The construction of the organs hereinbefore enumerated is the customary one, and I do not restrict myself to the one shown in the drawings, as any mechanic will readily understand how to vary same to accomplish the desired result without departing from the spirit of my invention.

40 A catch *k* is secured to the free extremity of the lever *h*, which latter on turning by hand the gas-cock into the position for ignition of the burner, as illustrated in Figs. 1 and 2, is retained in this position by means to be described hereinafter. The lever *h*, and consequently the gas-cock, may be actuated from a distance by attaching a pulling cord or chain or similar well-known means to an eye in the extremity of the lever *h*. A second lever *m* is pivoted centrally or intermediate of its two extremities to the burner-body *a* at *n* in a plane at a right angle to the plane of the lever *h*. One extremity of this lever *m* carries the lower end of the expanding wire *f*, the other is provided with a nose *l*, adapted to catch and retain the catch *k* of the lever *h*.

When employing a gas-cock in combination with a spring *i*, which permits oscillation of the lever *h* only for the purpose of opening and closing the gas-supply to the burner, as is illustrated in the drawings, it will be necessary to construct the extremity of the lever *m* which carries the nose *l* of a yielding and elastic nature, so that the catch *k* is enabled to push same aside when the lever *h* is being turned toward the left until the catch *k* arrives beneath same, whereupon the nose *l*

takes up its position over said catch. This extremity of the lever *m*, constructed as a steel spring, will readily answer the purpose, seeing that the extent to which the nose has to recede to permit the passage of the catch *k* is very small. The bearing-surface of the catch *k* is suitably curved to prevent it coming to rest on the top edge of the nose *l*.

The gas-cock may, if thought advantageous, be constructed to describe a complete revolution, in which case it would be superfluous to construct the extremity of the lever *m* carrying the nose *l* of elastic nature. This object can be accomplished by attaching the spring *i* to the rear extremity of the gas-cock plug, the support or carrier for the top end of the spring *i* being likewise situated at the rear of the burner-body. The spring *i* in both cases will have to be chosen to stop its influence on the lever *h* or the gas-cock, respectively, when the latter has assumed the position for the exclusive burning of the main flame. When the spring *i* is attached so as to permit a complete revolution of the gas-cock, its inner end will obviously have to be swiveled to the rear face of the plug.

The parts being assembled, as hereinbefore described with regard to the drawings, on turning the lever *h* from the position illustrated in Fig. 4 to that of Figs. 1 and 2, so that the gas-cock assumes the position for the ignition of the burner the catch *k* will arrive beneath the nose *l* of the lever *m*, when the gas-cock or the lever *h*, respectively, will be locked in this position, as the lever *m* is not enabled to turn around its pivot *n*, owing to its connection with the expanding wire *f*. On said wire *f* is now exerted a pulling force, due to the tendency of the spring *i* to turn the gas-cock into the position for the exclusive burning of the main flame. The gas passes through the auxiliary pipe *c*. The auxiliary flame is ignited by virtue of the ignition-pellet *d* in the well-known way, which consequently need not be detailed here. The expanding wire *f* is heated by said auxiliary flame and expands, elongating in a downward direction, and consequently assigning a certain movability to the lever *m*, to which its bottom end is secured. In view of this movability of the lever *m* the catch *k* of the lever *h* is enabled to push the nose *l* upward under the influence of the spring *i*, which turns said lever *h* until the catch *k* can clear said nose *l*. The lever *h* is thereby released and by virtue of the force of the spring *i* the gas-cock is turned into the position illustrated in Fig. 3, when the gas-supply to the main pipe *b* will be completely open, whereas the supply to the auxiliary pipe *c* is completely cut off, thereby extinguishing the auxiliary flame. While the heat of the auxiliary flame acts on the expanding wire *f*, the jet of the main burner is ignited by the flame of the auxiliary burner. Said auxiliary flame having been extinguished, the expanding wire *f* contracts again, thereby influencing the easily-movable

and not spring-governed lever *m* to return to its normal position, so as to be ready to be caught and actuated again for ignition purposes. When it is desired to extinguish the main flame, the lever *h* is turned by hand into the position illustrated in Fig. 4, in which it is retained, owing to frictional resistance or in any other suitable manner.

My improved self-igniting gas-burner as described above is applicable in principle as well as in construction for incandescent gas-lights as well as for ordinary gas-burners.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a self-igniting gas-burner essentially comprising a main and an auxiliary jet, a spring-governed plug adapted to change the gas-supply to said jets, means for igniting the auxiliary jet and a vertically-depending expanding wire within reach of the auxiliary flame; a free lever suitably pivoted and connected at one end with the expanding body, the other end being fitted with a nose to catch the plug-lever so as to retain same in the ignition position, until the elongation of the expanding wire due to heat enables the plug-lever to disengage from the catch and to assume the position for the exclusive burning of the main flame under the influence of its spring, substantially as set forth.

2. In a self-igniting gas-burner the combination with the main burner and a spring-governed plug, adapted to change the supply of gas of an auxiliary pipe, said pipe carrying an igniting device adapted to be ignited by coming into contact with the gas emitted, a carrier for the expanding body, the body adapted to be expanded or elongated by heat suitably made of wire, said body connected at the upper extremity to its carrier, a free lever suitably pivoted having the lower extremity of the expanding body secured thereto and fitted at the other free extremity with a nose, said nose adapted to catch the plug-lever of the burner and to determine its position,

a spring attached to said plug-lever causing the latter to constantly exercise a pulling force on the expanding body, which facilitates its expansion by virtue of heat, until the expansion enables the plug-lever to clear the aforesaid nose under the influence of its spring thereby cutting off the gas-supply to the auxiliary pipe, and open the main pipe substantially as set forth.

3. In a self-igniting gas-burner essentially comprising a main and an auxiliary jet, a spring-governed plug adapted to change the gas-supply to said jets, means for igniting the auxiliary jet and a vertically-depending expanding wire within reach of the auxiliary flame; a lever pivoted intermediate between its ends having one extremity secured to the expanding body the other adapted to constitute a catch for the spring-governed plug-lever when the latter is in position for ignition, said lever oscillating in a plane at a right angle to the plane of the plug-lever, substantially as set forth.

4. In a self-igniting gas-burner essentially comprising a main and an auxiliary jet, a spring-governed plug, adapted to change the gas-supply to said jets, means for igniting the auxiliary jet and a vertically-depending expanding wire within reach of the auxiliary flame; a lever pivoted intermediate between its ends having one extremity secured to the expanding body the other of elastic nature to permit lateral displacement of same adapted to constitute a catch for the spring-governed plug-lever when the latter is in position for ignition, said lever oscillating in a plane at a right angle to the plane of the plug-lever, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRIEDRICH ZACHER.

Witnesses:

E. H. L. MUMMENHOFF,
OTTO W. HELLEMICH.