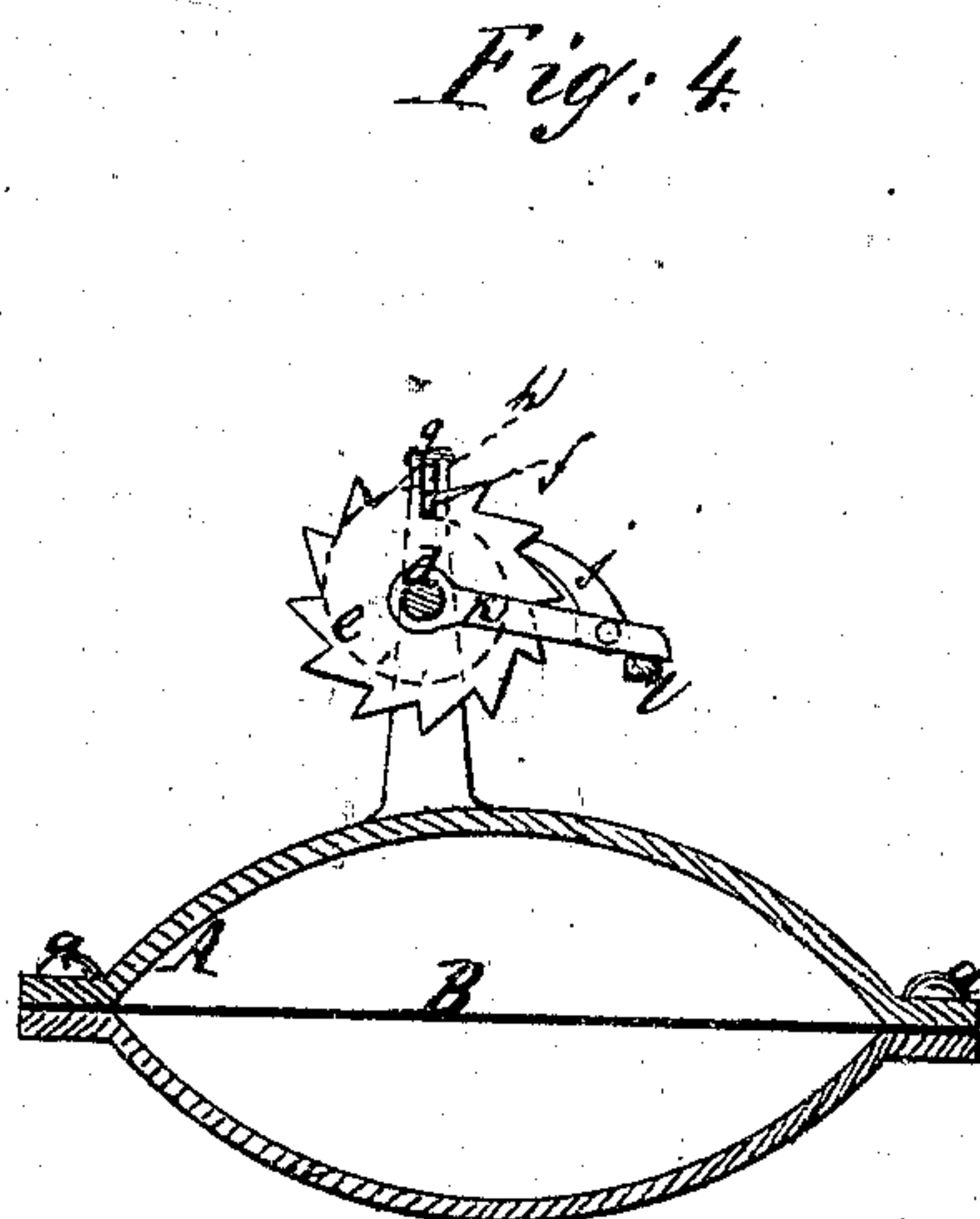
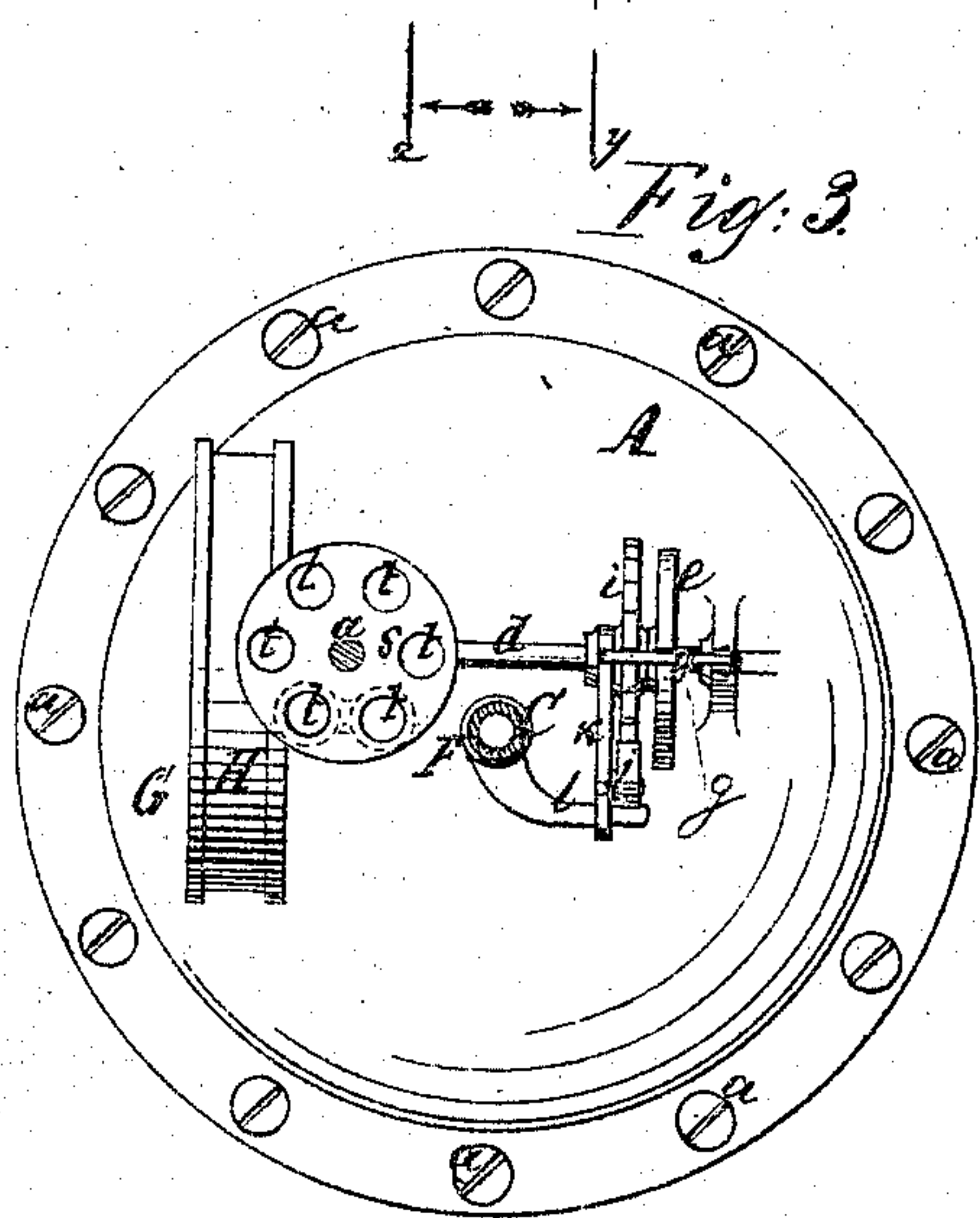
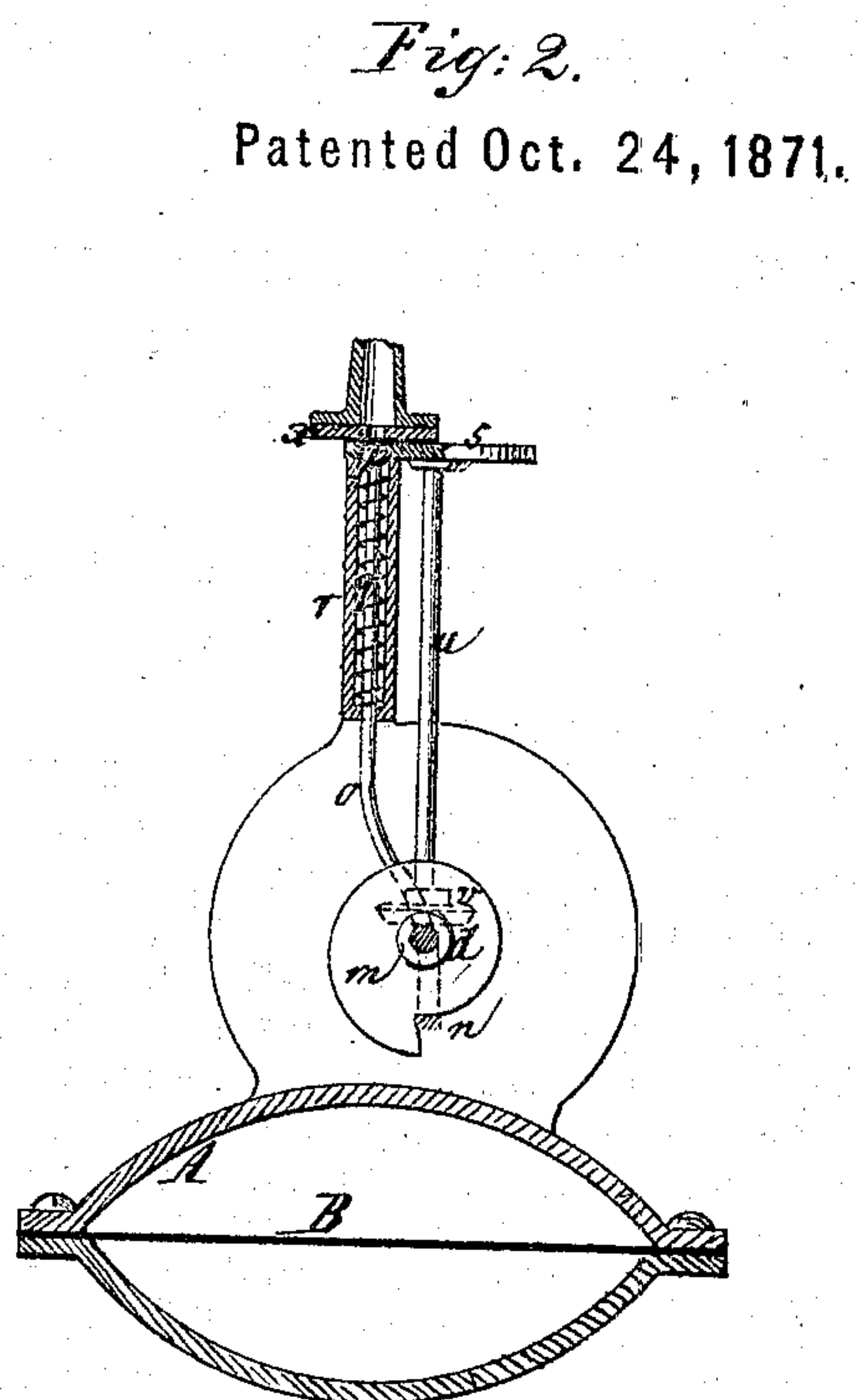
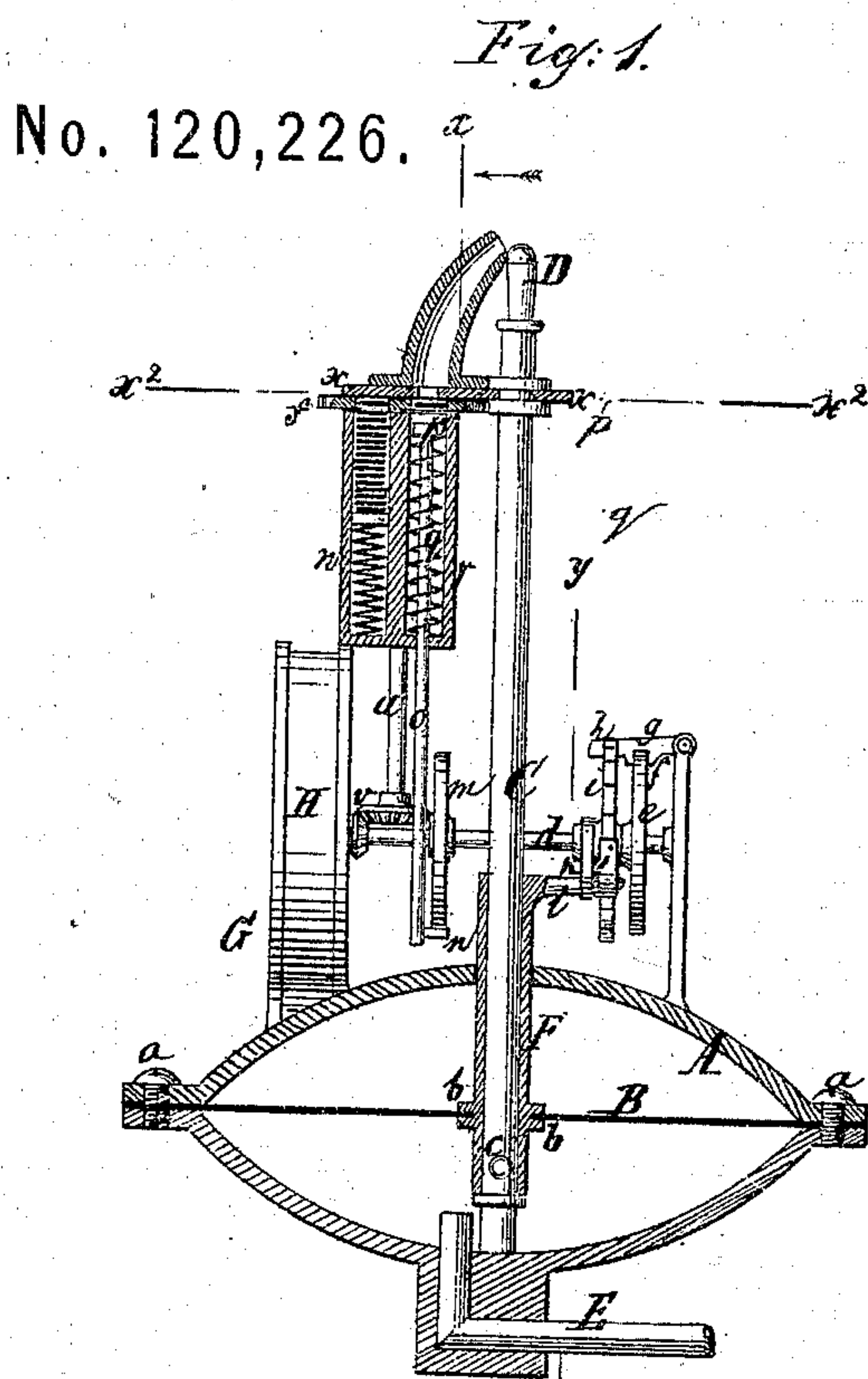


ALMON N. ALLEN & RODNEY H. DEWEY.
Improvement in Automatic Gas Lighters.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALMON N. ALLEN AND RODNEY H. DEWEY, OF PITTSFIELD, MASSACHUSETTS.

IMPROVEMENT IN AUTOMATIC GAS-LIGHTERS.

Specification forming part of Letters Patent No. 120,226, dated October 24, 1871.

To all whom it may concern:

Be it known that we, ALMON N. ALLEN and RODNEY H. DEWEY, of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Automatic Gas-Lighter; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming a part of this specification, in which drawing—

Figure 1 represents a sectional side view of this invention. Fig. 2 is a vertical section of the same in the line *x x*, Fig. 1. Fig. 3 is a sectional plan or top view of the same. Fig. 4 is a vertical section in the line *y y*, Fig. 1.

Similar letters indicate corresponding parts.

This invention consists in the combination of a diaphragm with the gas-valve, with a spring-power, and with a percussion mechanism in such a manner that, by the pressure of the gas on the diaphragm, the gas-valve is opened and, at the same time, the spring-power is liberated. A fuse or match is carried under the hammer of the percussion mechanism, and said hammer is actuated so as to explode the fuse or match and to ignite the gas admitted to the burner through the gas-valve. With the diaphragm is combined a stop acting on a cam which is connected with the spring-power, and also another cam which actuates the hammer of the percussion mechanism in such a manner that, whenever the diaphragm is raised by the action of the gas, the stop is raised for a short time, long enough to liberate the spring-power and to allow the cam-shaft to revolve just far enough to explode the fuse without wasting the power of the spring.

In the drawing, A represents a spheroidal or lentil-shaped case made in halves, which are united by screws *a*. Between the halves of said case is clamped the elastic diaphragm B, and through the top of the case extends a pipe, C, which connects with the burner D. The lower half of the case A communicates, by a pipe, E, with the gas-holder or reservoir. The pipe C extends through the diaphragm B, and it rests on the bottom of the case A. On said pipe is fitted a sleeve, F, which is made in halves, each of which is provided with a flange, *b*, and between these flanges the diaphragm B is clamped, as shown in Fig. 1. Said sleeve fits gas-tight on the pipe

C, and when the diaphragm B is down in the position shown in Fig. 1 a hole, *c*, in the lower part of the pipe C is covered by the sleeve F and no gas can pass up to the burner. But when gas is admitted through the pipe E the diaphragm is forced up and the hole *c* is uncovered, so that the gas from the lower compartment of the case A can pass up to the burner. From the case A rises a frame, G, which contains a spring-power or clock-movement, H, of any suitable construction. This spring-power acts on a shaft, *d*, which carries a cam, *e*, the shape of which is shown in Fig. 4, and which acts against a stop, *f*, seen in Figs. 1 and 4. Said stop is secured to a lever, *g*, which carries a nose, *h*, that engages with the teeth of a ratchet-wheel, *i*, mounted loosely on the shaft *d*. With this ratchet-wheel engages a pawl, *j*, pivoted to a lever, *k*, which swings on the shaft *d*, and which is connected to or rests on an arm, *l*, projecting from the sleeve F. When the sleeve rises the pawl *j* imparts to the ratchet-wheel *i* a partial revolution, and as this ratchet-wheel turns the nose *h* is forced up and the stop *f* is raised so as to clear the cam *e*, and thereby the spring-power is released and the shaft *d* is permitted to make one revolution when the cam *e* catches up against the stop *f*, said stop being free to drop down as soon as the nose *h* has passed the tooth of the ratchet-wheel. On the shaft *d* is also mounted a cam, *m*, which acts on a tappet-arm, *n*, projecting from the stem *o* of a hammer, *p*. This hammer is exposed to the action of a spring, *q*, which has a tendency to drive the same upward, and it works in a cylinder, *r*, situated under a disk, *s*, which is perforated with six (more or less) holes, *t*. This disk is mounted on the top of a vertical shaft, *u*, which connects, by a bevel-gear, *v*, with the shaft *d*, and the holes in said disk are at such distances apart that if one stands directly over the hammer-cylinder *r* the preceding one stands directly over the tubular magazine *w*, which contains the fuses or matches. Close over the disk *s* is placed an abutting-plate, *x*, and if the shaft *d* is permitted to revolve said disk progresses far enough to carry the hole previously situated in line with the magazine over the hammer-cylinder, and by these means the fuse, which is forced into said hole by a spring acting on the fuses in the magazine, is brought in line with the hammer. At the same time the hammer is depressed by the action of

the cam *m*, and as soon as the tappet *n* is released by said cam the hammer flies back and the fuse is exploded.

It is obvious that in order to produce the correct motion of the disk *s* the proportion of the bevel-gear *v* must correspond to the number of holes in said disk, so that said disk is moved the proper distance each time the stop *f* is raised.

With the hammer may be connected a clearer to clear out the cells of the disk *s* after each explosion. The diaphragm may also be actuated by the pressure of air, and in this case the pipe *C* would be connected directly with the gas-reservoir, so that when the gas is turned on and compressed air admitted through the pipe *E* the gas will be lighted by the action of the percussion mechanism, as above described.

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

1. The combination of a diaphragm, *B*, with a gas-burner, a spring-power, and a percussion mechanism, substantially as described, so that, by the action of the gas on the diaphragm, gas is admitted to the burner, the spring-power is released, and a fuse or match is exploded by the action of the percussion apparatus.

2. The lever *q*, ratchet-wheel *h*, and cam *e*, in combination with the sleeve *F*, diaphragm *B*, spring-power *H*, and with a percussion mechanism constructed substantially in the manner herein set forth.

This specification signed by us this 18th day of September, 1871.

ALMON N. ALLEN.
RODNEY H. DEWEY.

Witnesses:

W. HAUFF,
E. F. KASTENHUBER.

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