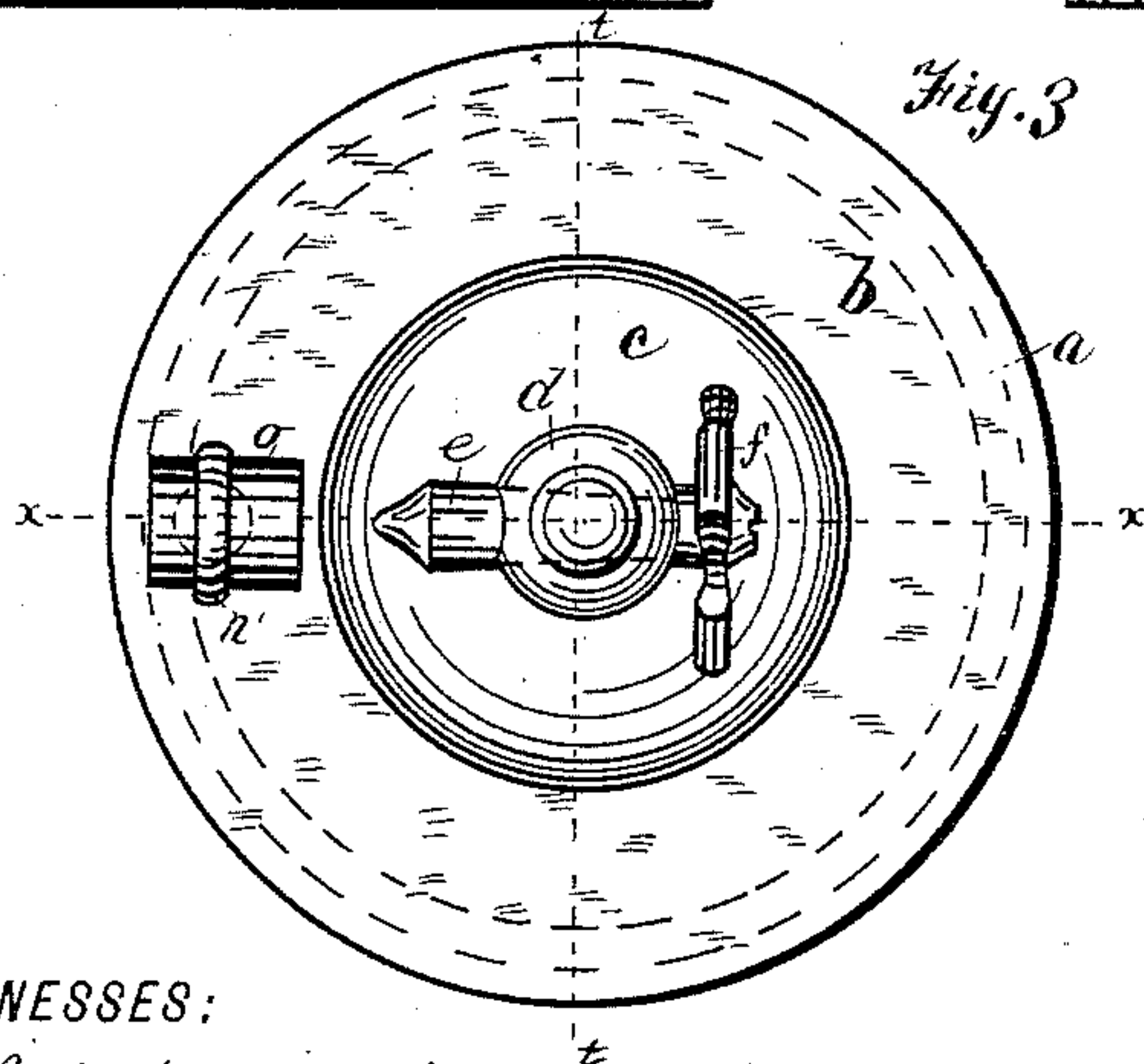
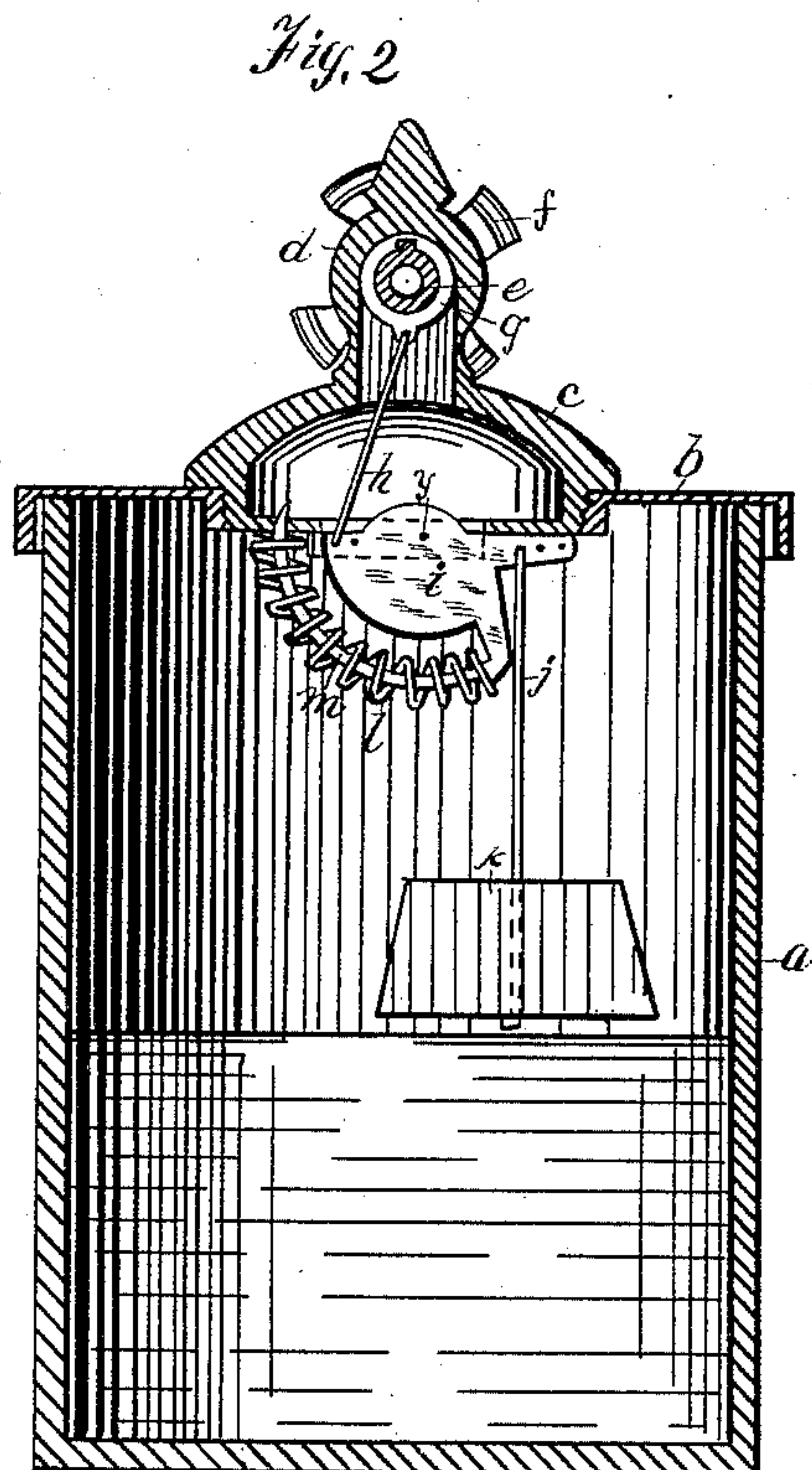
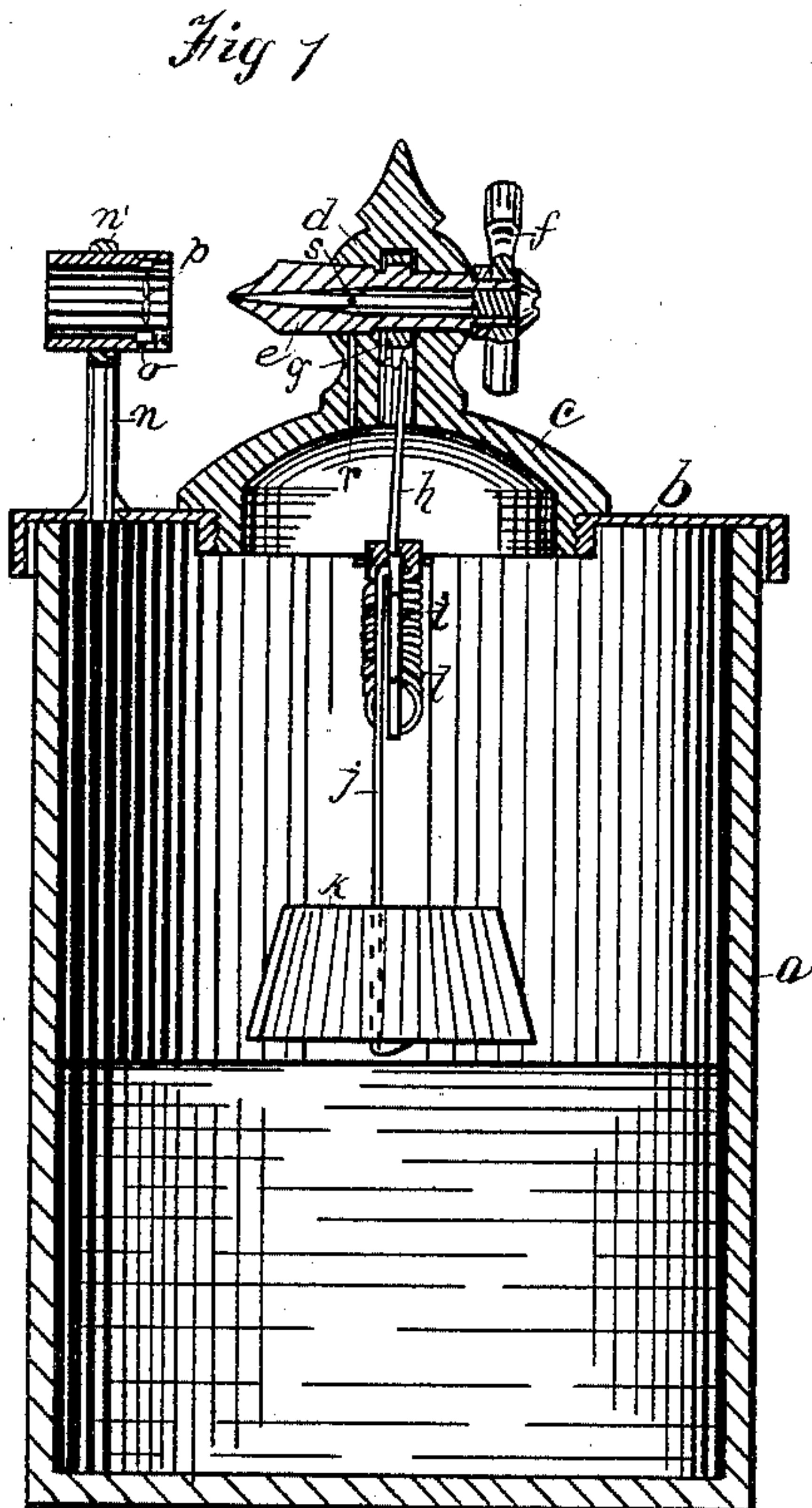


(No Model.)

F. AURNHAMMER.
HYDROGEN LAMP.

No. 432,590.

Patented July 22, 1890.



WITNESSES:

Carl J. Dietrich
Grace H. Daves.

INVENTOR

Frank Aurnhammer
BY *Allen Webster*

ATTORNEY

UNITED STATES PATENT OFFICE.

FRANK. AURNHAMMER, OF HOLYOKE, MASSACHUSETTS.

HYDROGEN-LAMP.

SPECIFICATION forming part of Letters Patent No. 432,590, dated July 22, 1890.

Application filed February 9, 1889. Serial No. 299,244. (No model.)

To all whom it may concern:

Be it known that I, FRANK. AURNHAMMER, a citizen of the United States, residing in Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Hydrogen-Lamps, of which the following is a specification, reference being had to the accompanying drawings and letters of reference marked thereon, in which—

Figure 1 is an elevation in section on line *x x*. Fig. 2 is a like view taken on line *t t*, and Fig. 3 is a top or plan view of the device.

Like letters of reference indicate like parts.

The construction and operation are as follows: A jar is provided in which is deposited dilute sulphuric or other acid for the production of gas. To the top of the jar is secured a plate or cover *b*, which may be cemented or otherwise tightly secured in position. A cap *c* is secured to the plate *b*, preferably by being threaded and screwed therein, as shown. The cap *c* is provided with a part *d*, within which a valve or cock is properly arranged. The plug *e* is provided with a collar *g*. An opening is provided in the cap, which extends downward from the location of the collar *g* and opens into the jar. A lifting-rod *h* is connected at one end with the collar *g* and at its opposite end with a pivotal lever *i*, pivoted at the point *y*. A rod *j* extends from the pivotal lever *i* to a block *k*, which block is of zinc or other material adapted to produce the desired results when immersed in the acid, the block being suspended or supported by the rod *j*. The lever *i* is provided with an arm *m*, upon which is mounted a coiled spring *l*, which serves to maintain the lever *i* and parts attached thereto in their normal position, as shown in the drawings. The plug *e* is made tapering from the nozzle end downward, and is tightly fitted within the part *d*, and is provided with levers or arms *f*. The plug is also provided with an interior opening tapering toward the nozzle end, and is provided with an opening *s*, arranged to register with the opening *r* in the cap when the plug is turned to the desired position. To the plate or cover *b* is secured a standard *n*, provided with a ring *n'*, into which ring is fitted a thimble or cylindrical piece *o*, and within the part *o* is arranged a platina sponge *p*. The

platina sponge and its support are of course arranged opposite the nozzle-opening of the plug *e*.

When the device is not in use, the operative parts remain in the position shown in the drawings. The block *k* is not, therefore, in contact with the acid, and no chemical action takes place, and therefore no loss results. When, however, it is desired to set the device in operation, the levers or arms *f* are revolved or moved a short distance, this causing the plug *e* to be turned, bringing the opening *s* in register with the opening *r*, lowering the rod *h*, turning the lever *i* upon its pivot, lowering the rod *j*, and lowering the block *k*, thus bringing the block in contact with the acid, when chemical action immediately results and hydrogen gas is evolved, which escapes through the openings *r* and *s*, and thence through the nozzle-opening of the plug *e* in a fine jet, impinging against the platina sponge *p*, which produces a flame. Immediately upon a release of the levers *f* the spring *l* operates to return the parts to their normal position and the production of the gas ceases.

Having therefore described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus of the kind shown, the combination of a jar and cover fitting the same, the upper portion of the cover being projected upward and provided with a rotatable plug *e*, provided with openings, as stated, and a hand-wheel *f*, mounted on said plug, a lever *i*, pivoted between its ends to a bar on the inner face of the cover, and provided with a spring *m*, mounted upon an arm projecting from the lever *i*, a rod *h*, attached at one end to the lever *i* and at the opposite end to the plug *e*, and a rod *j*, attached to the lever *i* opposite the point of connection of rod *h* therewith, substantially as shown.

2. The combination of a jar *a*, cover *b*, cap *c*, provided with a part *d*, a plug *e*, provided with openings and having levers *f* attached, collar *g*, mounted on the plug, rod *h*, lever *i*, having arm *m*, with spring *l* mounted thereon, rod *j*, and block *k*, substantially as and for the purpose shown.

FRANK. AURNHAMMER.

Witnesses:

ALLEN WEBSTER,
W. M. THISME.