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PATENTED DEC. 8, 1903.

F. W. A. WIESEBROCK.

CUT-OFF APPARATUS FOR GAS OR LIQUID SUPPLY PIPES.

APPLICATION FILED APR. 11, 1903.

NO MODEL.

FIG. 1.

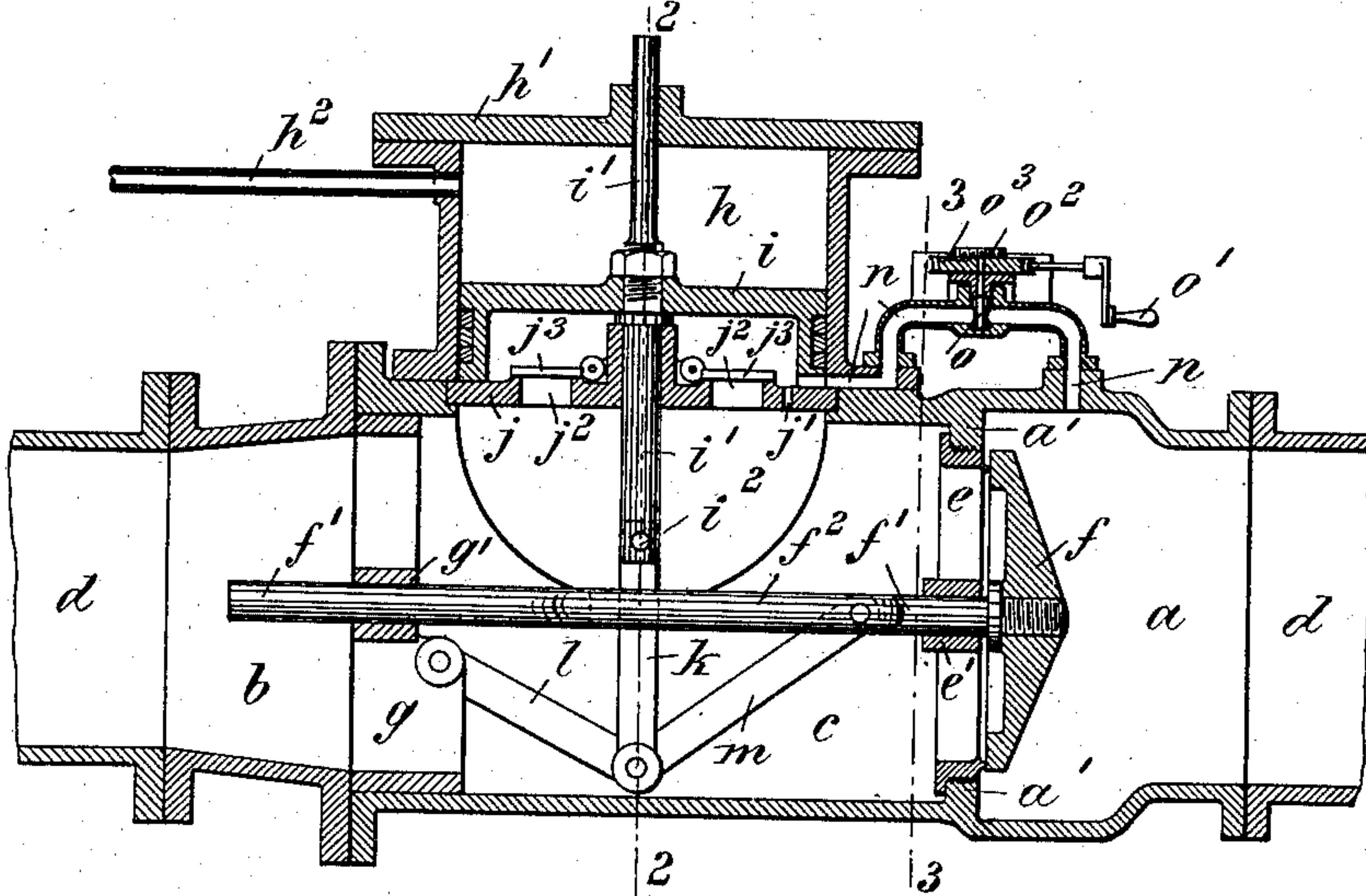


FIG. 2.

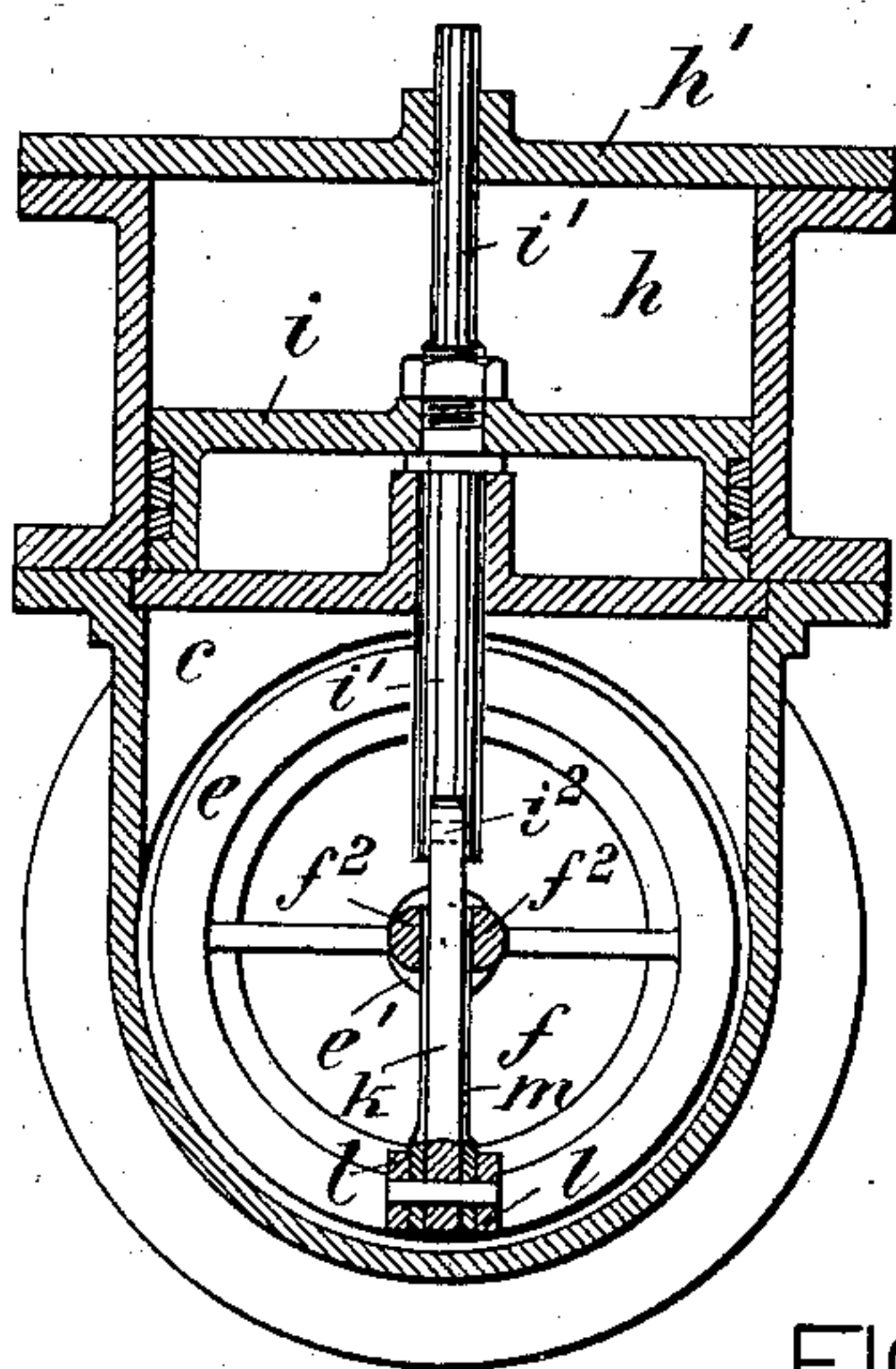


FIG. 3.

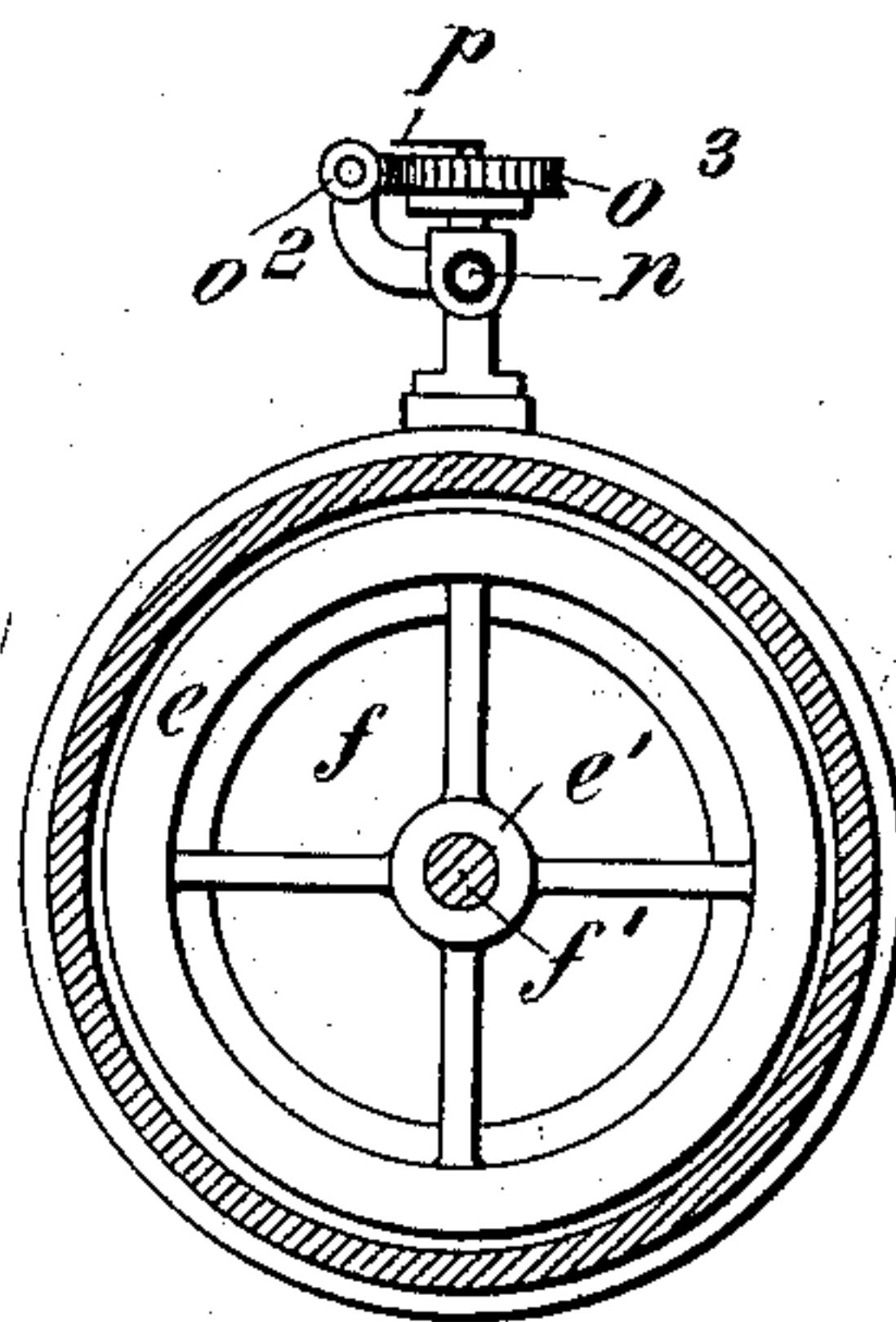
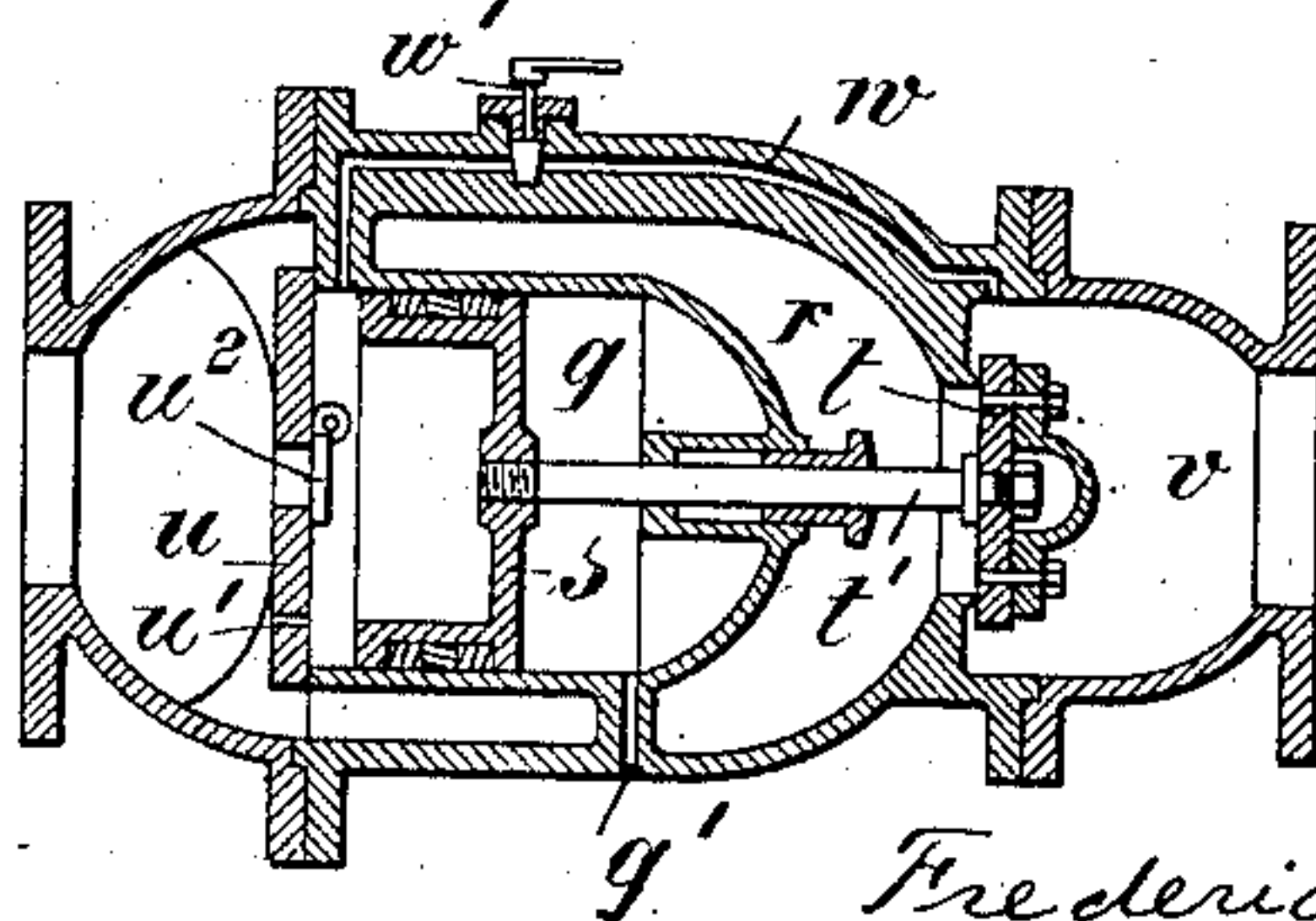


FIG. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

FREDERICK WILLIAM A. WIESEBROCK, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE EMERGENCY VALVE COMPANY, A CORPORATION OF NEW YORK.

CUT-OFF APPARATUS FOR GAS OR LIQUID SUPPLY PIPES.

SPECIFICATION forming part of Letters Patent No. 746,425, dated December 8, 1903.

Application filed April 11, 1903. Serial No. 152,135. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM A. WIESEBROCK, a citizen of the United States, residing at New York city, (Bronx,) county
5 and State of New York, have invented certain new and useful Improvements in Cut-Off Apparatus for Gas or Liquid Supply Pipes, of which the following is a specification.

This invention relates to an apparatus for
10 controlling gases or liquids under pressure in supply-pipes in such a manner that in case of breakage or leakage in the pipe-line the supply of the gas or liquid is automatically cut off. The apparatus is so constructed that
15 the supply of the gas or liquid under normal conditions is not impaired and that in case of accident the supply is cut off without subjecting the device to a violent shock.

In the accompanying drawings, Figure 1 is
20 a vertical longitudinal section of my improved cut-off apparatus; Fig. 2, a cross-section on line 2 2, Fig. 1; Fig. 3, a cross-section on line 3 3, Fig. 1; and Fig. 4, a longitudinal section of a modification of the apparatus.

25 The letter *a* represents a flanged inlet-pipe and *b* a flanged outlet-pipe arranged on opposite sides of a housing *c* and adapted to be fitted into a length of pipe-line *d*. This pipe-line conveys steam, water, or other gas or
30 liquid under pressure from a boiler or reservoir to the place of consumption.

Intermediate the inlet *a* and housing *c* is arranged a threaded flange *a'* for the reception of a threaded ring *e*, which constitutes a
35 valve-seat. Against this seat is adapted to bear a disk-shaped outlet-valve *f*, arranged within the inlet *a* and provided with a valve-stem *f'*, which is guided within a bearing *e'* of ring *e* and a bearing *g'* of a rest *g*.

40 Upon the housing *c* is mounted a cylinder *h*, containing a piston *i*, that has a larger surface area than the valve *f* and is provided with a rod *i'*, guided at its upper end within the hood *h'* of cylinder *h*. The housing *c* is
45 divided from the cylinder *h* by a partition *j*, having a central opening for the passage and guidance of the lower end of piston-rod *i'*. To this lower end of the piston-rod is pivoted at *i²* the upper end of a link *k*, which passes

through a slotted part *f²* of stem *f'*, Fig. 2. 50 The lower end of link *k* is pivotally connected by links *l* to rest *g* and by a link *m* to stem *f'*. The partition *j* is provided with a duct *j'*, of small diameter, for establishing communication between the housing *c* and the lower 55 part of cylinder *h* beneath piston *i*. The partition *j* is further provided with openings *j²*, controlled by upwardly-opening clack-valves *j³*, located within the cylinder beneath the piston. The upper end of cylinder *h* 60 above piston *i* has a discharge pipe or opening *h²* for carrying off leakage and permitting the escape of air.

The inlet *a* or pipe-section in front of the valve *f* communicates with cylinder *h* beneath 65 piston *i* by a channel *n*, which is of larger diameter than the duct *j'*. This channel is provided with a cock *o*, by which the flow of gas or liquid from the inlet to the cylinder may be controlled. Preferably the cock *o* is 70 operated by a handle *o'*, having worm *o²*, that engages a worm-wheel *o³*, fast on the cock-spindle, so that a slow movement only can be imparted to the cock. An index *p* permits the position of cock *o* to be readily ascer- 75 tained.

In use the apparatus is secured within the pipe *d*, preferably in close proximity to the boiler, reservoir, &c., so that the pressure from the boiler, &c., tends to close the valve 80 *f* against its seat *e*. To turn on the supply, the cock *o* is opened, when the steam, &c., will be admitted into the cylinder *h* beneath piston *i*. A small portion of the steam will escape through duct *j'* into housing *c*; but the 85 main body of the steam will force the piston *i* upward. As the area of the piston *i* is larger than that of valve *f*, the upward movement of the former will through links *k l m* open the latter against the boiler-pressure. The steam 90 will now be free to flow through the open valve *f*, housing *c*, and outlet *b* into the service-pipe, the cock *o* being closed as soon as this flow has been established. During the normal operation of the parts the steam es- 95 caping upwardly through the clack-valves *j²* will hold the piston in its raised position, and thus hold the valve *f* open. If owing to break-

age or leakage in the service-pipe the pressure in housing *c* is diminished, the full pressure still operating against valve *f* will be in excess of the reduced pressure against piston *i*, and consequently the valve will be closed against its seat. This closing of valve *f* is accompanied by a descent of piston *i*, such descent being permitted by the escape of the steam from the lower part of cylinder *h* into the housing *c* through duct *j'*, the clack-valves *j*² being closed through lack of pressure. By the means described a slow descent only of the piston can take place, and consequently a correspondingly slow closing of the valve is effected, so that sudden shocks or jars to the apparatus or pipe are avoided.

In Fig. 4 the cylinder *q* is arranged within the housing *r*, and the piston *s* is mounted upon the stem *t'* of the disk valve *t*. The partition *u* has the duct *u'* and clack-valve *u*², as above described. The inlet *v* connects

with the cylinder *q* back of the piston by the channel *w*, having cock *w'*. The escape of air from the forward part of cylinder *q* is permitted by a pipe or vent *q'*. The operation is the same as described in relation to the main construction.

What I claim is—

In a cut-off apparatus, the combination of an outlet-valve with a housing, a cylinder, an inclosed piston connected to the valve, a partition between housing and cylinder having a duct and an opening, and with a clack-valve within the cylinder adapted to control said opening, substantially as specified.

Signed by me at New York city, (Bronx,) New York, this 6th day of April, 1903.

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Witnesses:

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