

No. 659,430.

Patented Oct. 9, 1900.

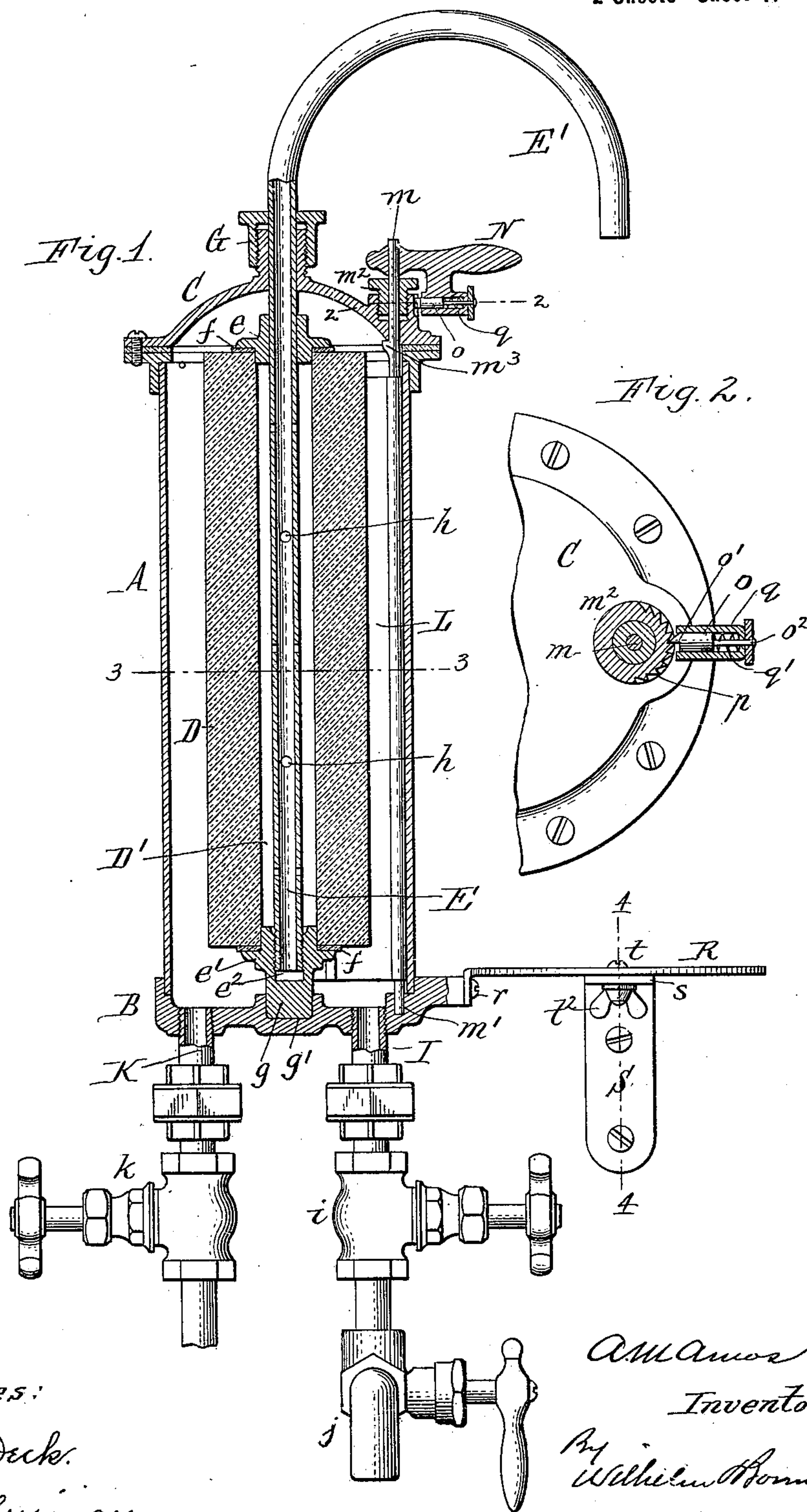
A. M. AMOS.

FILTER.

(Application filed Jan. 24, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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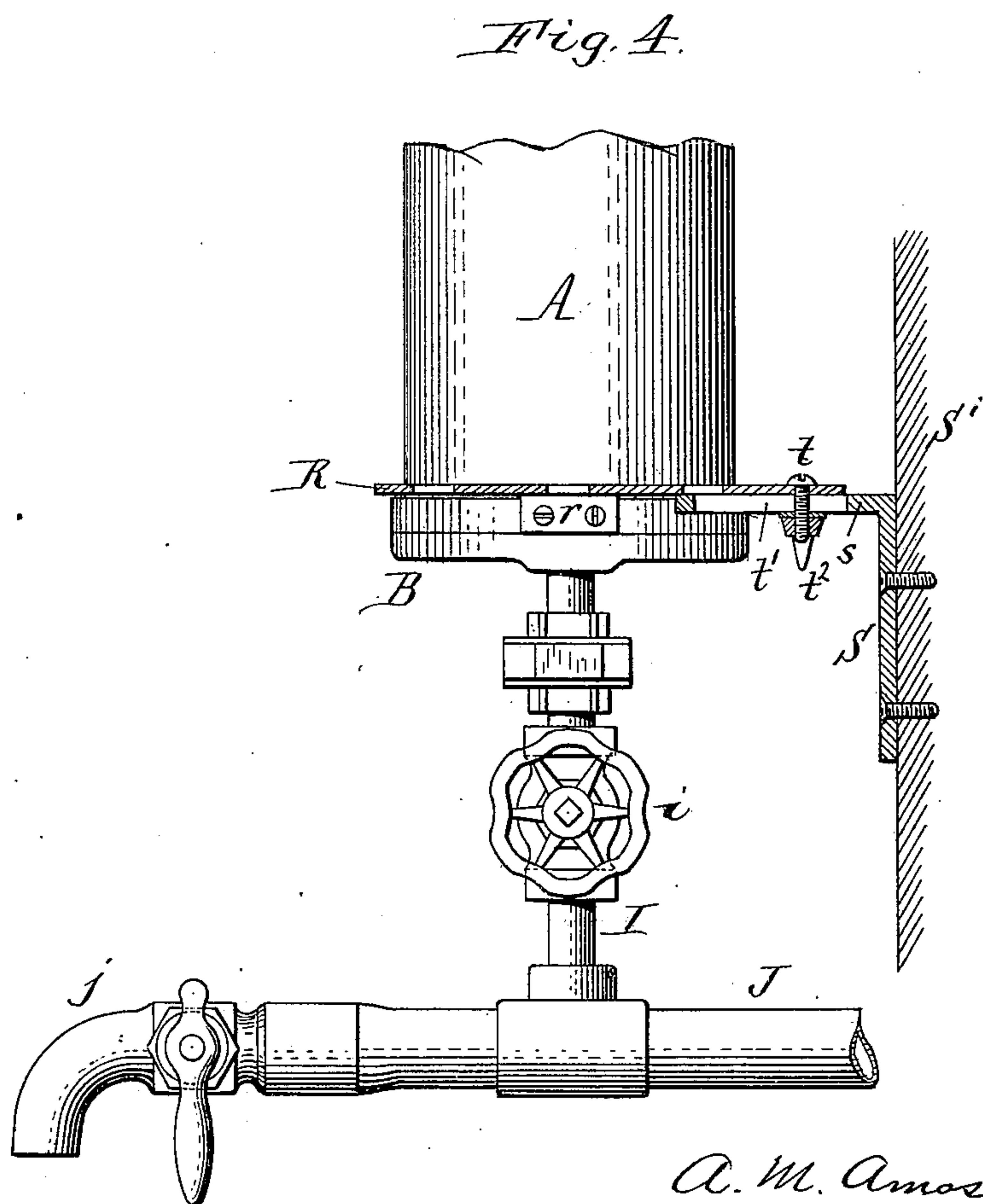
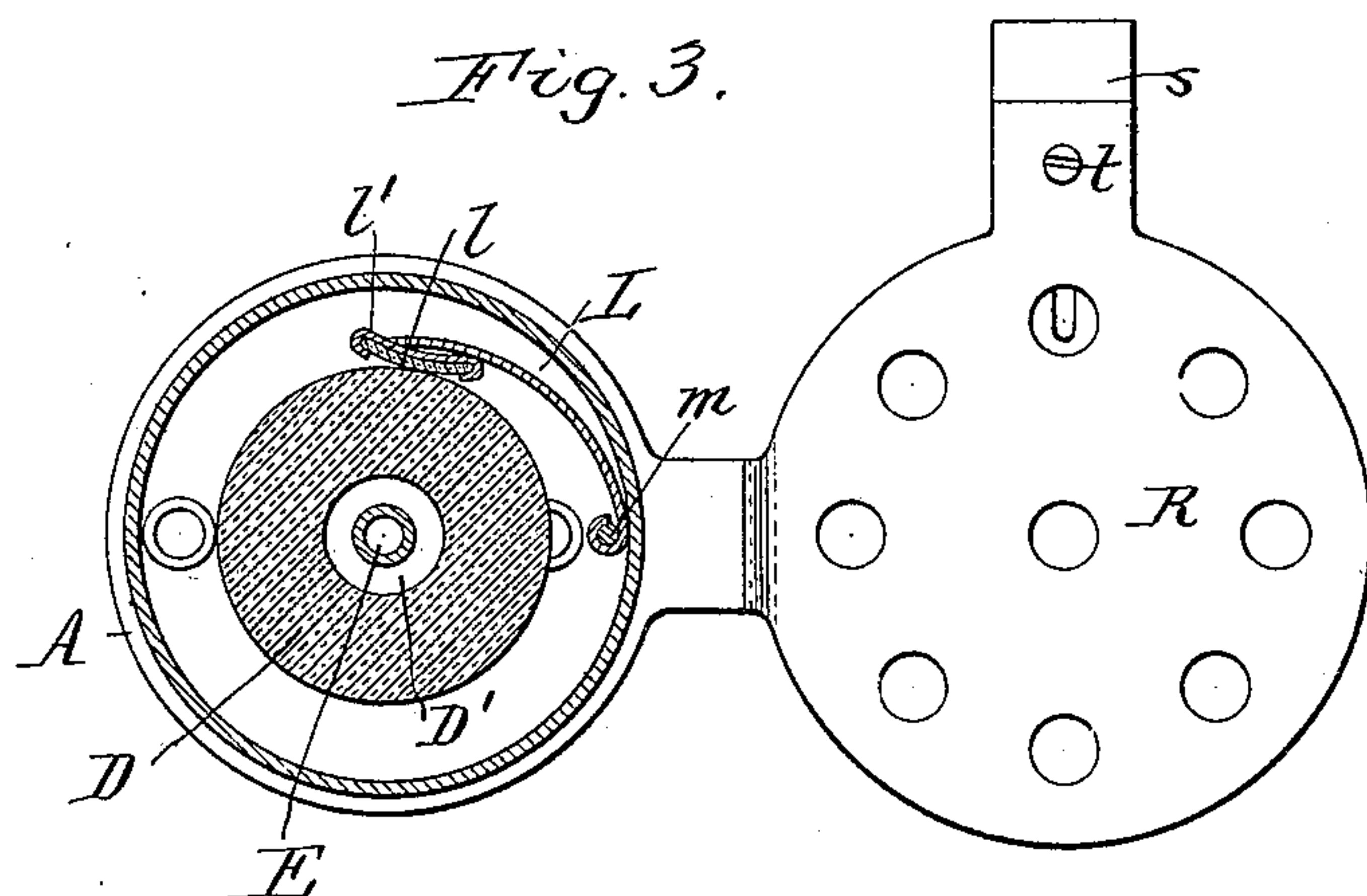
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# UNITED STATES PATENT OFFICE.

ALEXANDER M. AMOS, OF BUFFALO, NEW YORK.

## FILTER.

SPECIFICATION forming part of Letters Patent No. 659,430, dated October 9, 1900.

Application filed January 24, 1900. Serial No. 2,645. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER M. AMOS, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Filters, of which the following is a specification.

This invention relates to that class of filters which comprise a casing, a tubular filtering-block of artificial or natural stone which is capable of turning in the casing and through which the water to be filtered percolates, and a scraper whereby the impurities deposited on the surface of the filtering-block are removed.

One of the objects of my invention is to provide the filter with a scraper which is reliably held in contact with the filter-block at all times and which can be readily adjusted to compensate for the wearing away of the filter-block caused by the friction of the scraper.

Another object of the invention is to provide the filter with an attachment for firmly securing it to a wall or other support adjacent to the service-pipe.

In the accompanying drawings, Figure 1 is a sectional elevation of a filter containing my improvements. Fig. 2 is a fragmentary horizontal section, on an enlarged scale, in line 2 2, Fig. 1, showing the locking-catch of the scraper. Fig. 3 is a horizontal section in line 3 3, Fig. 1. Fig. 4 is a side elevation of the filter, showing its attaching-bracket in section, the plane of the section being in line 4 4, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A is the body of the filter-casing, B its base, and C its removable head or cover.

D is the cylindrical filtering block or medium, arranged concentrically in the casing and composed of a suitable porous stone or a composition of the kind commonly employed in filters of this class. This block is provided with the usual axial water-chamber D'. The filtering-block is mounted on a vertical discharge tube or pipe E, which passes through its central chamber, and the block is firmly

clamped between a flanged hub or collar *e*, secured to the upper portion of said pipe, and a similar hub *e'*, having an internally-screw-threaded socket *e''*, which engages with an external screw-thread formed on the pipe. The hubs *e e'* enter the bore of the filtering-block, and packing-washers *f* are interposed between the flanges of said hubs and the ends of the block for forming water-tight joints at the ends of the central chamber D'. The discharge-pipe E extends through a stuffing-box G, which is arranged on the head C and in which the pipe is capable of turning freely. The lower hub *e'* is provided with an upright journal *g'*, which turns in a bearing *g*, arranged in the base B of the filter. The portion of the discharge-pipe which is arranged outside of the filter-case is bent or curved to form a depending spout E', which also serves as a handle for turning the filter-block in cleaning it. The portion of the discharge-pipe within the chamber of the filter-block is provided with openings *h*, whereby it communicates with said chamber.

I is the inlet-pipe of the filter, which enters the bottom of the filter and is connected with a service-pipe J, having a faucet *j*. The inlet-pipe is provided with a stop-cock *i*.

K is a waste or cleaner pipe also connected with the bottom of the filter and having a stop-cock *k*.

L is the upright scraper, which is arranged in the space between the casing and the surface of the filter-block and which is pivotally supported in the casing in such manner that its free edge is capable of swinging toward and from the filter-block. This scraper preferably consists of a concave or transversely-curved strip of sheet metal provided on the inner side of its free edge with a strip *l*, of rubber or other suitable material, which bears against the surface of the filter-block, and is confined at its edges in a suitable holder *l'*, secured to the metallic strap *l*, as shown in Fig. 3. The scraper is secured at its opposite edge to an upright rock-shaft *m*, which is journaled at its lower end in a bearing *m'*, formed in the base B, and at its upper end in



a bearing or stuffing-box  $m^2$ , arranged on the cover C, the shaft being retained in its bearings by a shoulder  $m^3$ , formed on its upper portion and bearing against the under side of the cover, as shown in Fig. 1.

N is an actuating arm or handle secured to the projecting upper end of the scraper-shaft for turning the same.

o is a locking device whereby the scraper is retained in its operative position against the filter-block. This locking device preferably consists of a spring bolt or catch carried by the handle of the scraper-shaft and interlocking with a toothed segment  $p$ , arranged on the cylindrical bearing or stuffing-box  $m^2$ , as shown in Figs. 1 and 2. The locking-bolt  $o$  slides in a horizontal socket  $q$ , arranged radially on the under side of the handle N, and is projected by a spring  $q'$ , arranged in said socket behind the bolt. The latter is provided at its outer end with a tooth  $o'$ , having an inclined or oblique front face and an abrupt rear face, and the teeth of the segment  $p$  are constructed of corresponding ratchet form, so that upon turning the handle of the scraper-shaft in the proper direction to press the scraper against the filter-block the spring-bolt automatically interlocks with a tooth of said segment in an obvious manner, thereby securely holding the scraper in its operative position. The spring-bolt  $o$  is provided with a reduced stem  $o^2$ , which extends through the rear end of the socket  $q$  and terminates in a knob or button, whereby the bolt can be withdrawn from the teeth of the segment  $p$  for releasing the scraper and swinging it away from the filter-block preparatory to substituting a new block for an unserviceable one.

R is a horizontal plate or shelf arranged underneath the spout of the discharge-pipe E and adapted to support a goblet or other vessel. This shelf is secured at one side to the adjacent side of the filter-base B by a screw  $r$  or other suitable fastening, and its rear portion is adjustably secured to the upper horizontal member  $s$  of a bracket S, which is fastened to a wall or other upright support  $S'$ . This adjustable connection is effected by a vertical clamping-bolt  $t$ , passing through an opening formed in the shelf R, and a longitudinal slot  $t'$ , formed in the horizontal member  $s$  of the bracket and having a thumb-nut  $t^2$ . The filter is supported on the inlet-pipe I, and the shelf R and bracket S serve to steady the filter and also aid in supporting it. The distance between the water connection and the adjacent wall varies in different houses, and the adjustable connection between the shelf R and the bracket S permits the filter to be placed at a greater or less distance from the wall  $S'$ , as conditions may require.

In the normal condition of the filter the faucet of the service-pipe J and the stop-cocks of the inlet and waste pipes I and K are closed.

When it is desired to draw filtered water,

the stop-cock  $i$  of the inlet-pipe is opened, whereupon the water entering the filtering-case percolates through the filter-block D into its central chamber  $D'$  and passes thence through the discharge-pipe E.

When it is desired to cleanse the filter-block, the stop-cocks of the inlet and waste pipes are both opened and the filter-block is turned, whereby the slime and impurities adhering to its surface are removed by the scraper and drained into the waste-pipe. As the block gradually wears away by contact with the scraper the latter is swung inwardly farther to compensate for such wear by turning its shaft by means of the handle N, the scraper being automatically locked in any position to which it may be adjusted by the bolt or catch  $o$ , as hereinbefore described. This construction permits the scraper to be nicely adjusted from time to time as may be necessary and insures an effective scraping of the filter-block, as the scraper when adjusted is reliably locked in place and does not depend for its proper action upon the pressure of the operator's hand, which is unreliable, because a careless attendant sometimes neglects to apply the necessary pressure to the scraper in filters in which the scraper must be held against the filter-block by hand.

The sheet-metal body of the scraper possesses a certain degree of elasticity, which permits the scraper to accommodate itself to any unevenness of the surface of the filter-block.

I claim as my invention—

1. The combination with the filter-casing having an inlet and an outlet and the filter-block arranged in the casing, of a swinging scraper arranged in the casing and bearing at its free edge against the surface of the filter-block, and a locking device for holding the scraper in its operative position, substantially as set forth.

2. The combination with the filter-casing having an inlet and an outlet and a series of locking-teeth, of the filter-block arranged in the casing, an upright rock-shaft arranged in the space between the casing and the filter-block, a scraper secured at one edge to said shaft and bearing at its free edge against the surface of the filter-block, and an automatic locking-catch connected with said shaft and adapted to interlock with the teeth of the casing, substantially as set forth.

3. The combination with the filter-casing having an inlet and an outlet and a ratchet-segment, of a swinging upright scraper arranged in the casing and bearing at its free edge against the filter-block, an upright rock-shaft arranged in the casing and carrying said scraper and provided outside of the casing with an actuating-arm, and a spring bolt or catch carried by said arm and adapted to interlock with said ratchet-segment, substantially as set forth.

4. The combination with the filter-casing,



5 a service-pipe, and a pipe leading from said service-pipe to the filter-casing, of a supporting-bracket arranged on one side of the filter and provided with a horizontal member extending forwardly from the support of the bracket and having a longitudinal slot, a steadying-plate projecting laterally from the filter-case, and a clamping-bolt passing through said steadying-plate and the slot of

said bracket member, substantially as set forth.

Witness my hand this 9th day of January, 1900.

ALEXANDER M. AMOS.

Witnesses:

CARL F. GEYER,

CLAUDIA M. BENTLEY.