

No. 639,769.

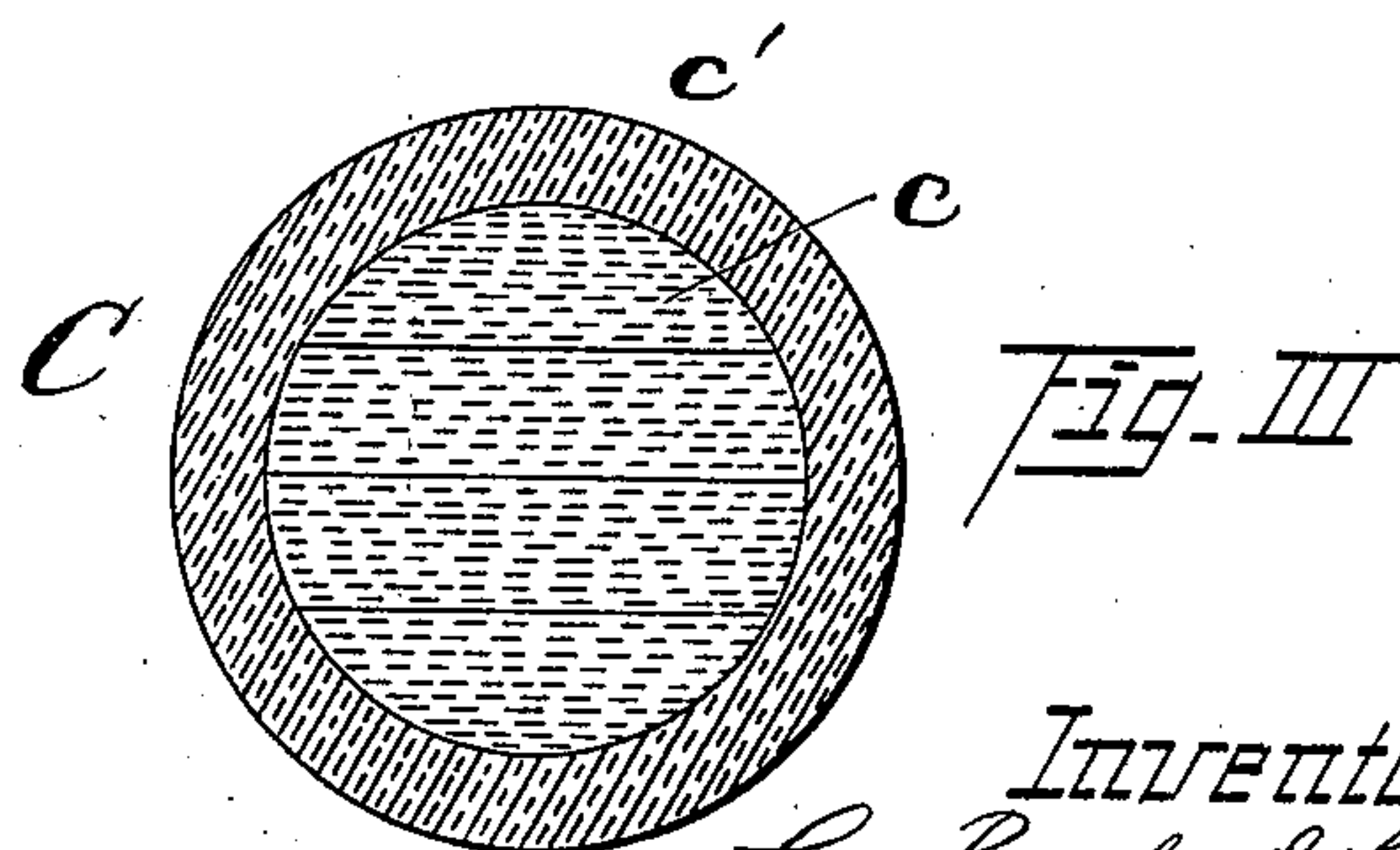
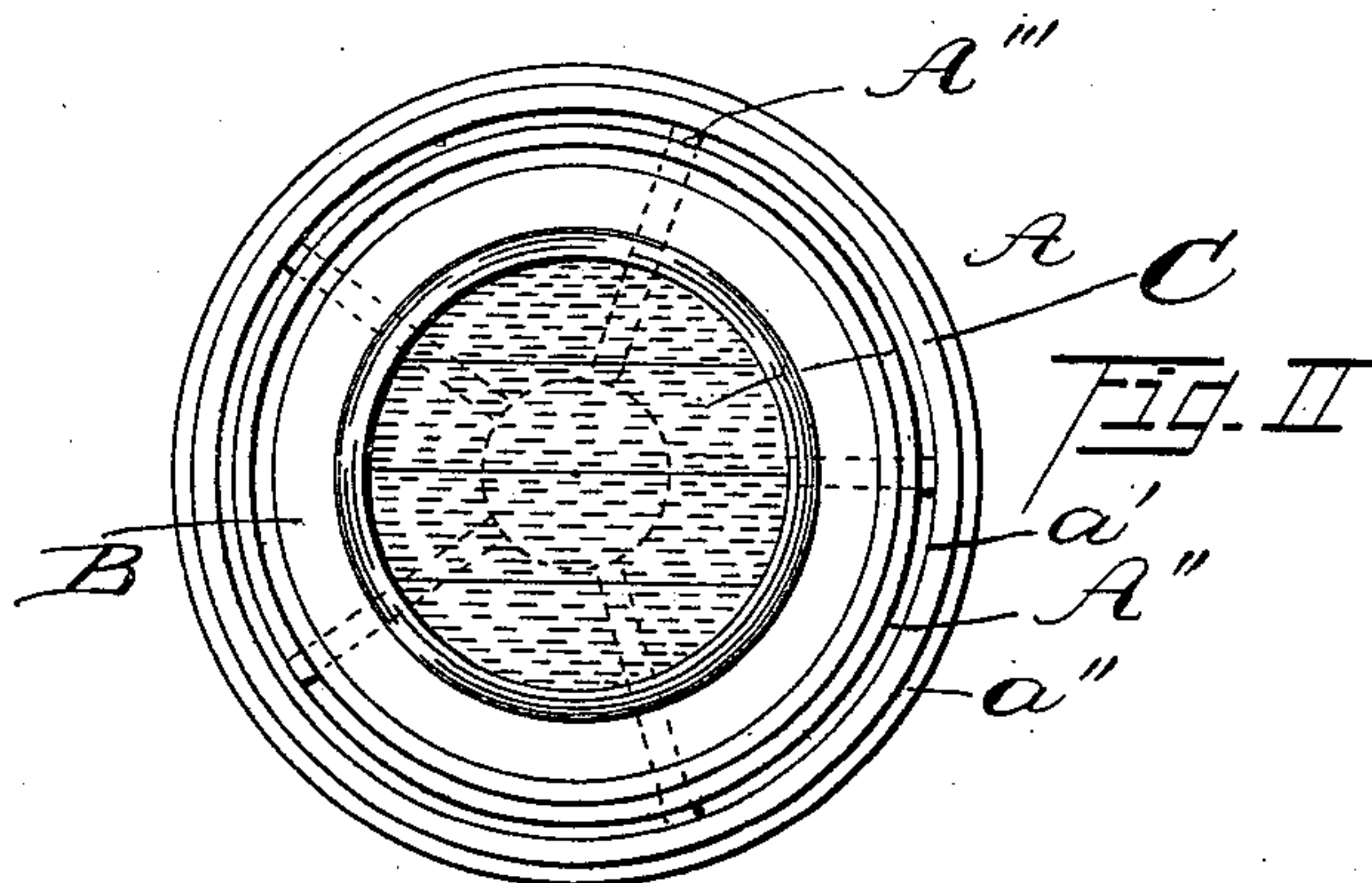
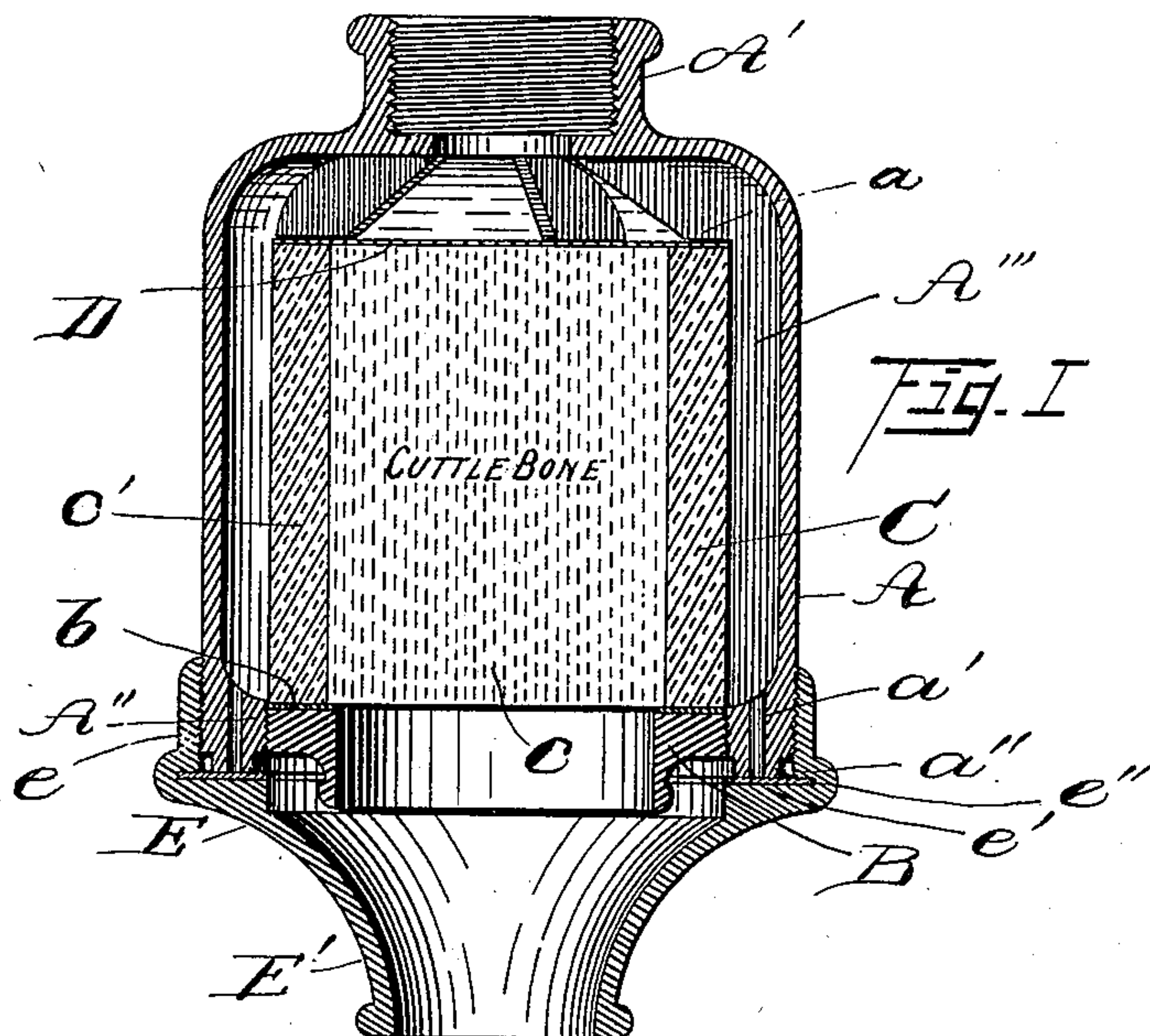
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G. RAAB & L. S. GROSSMAN.

FILTER.

(Application filed Sept. 8, 1898.)

(No Model.)



Witnesses:
H. Griswold
Tos. Carr.

Inventors:
G. Raab & L. S. Grossman,
by Jm. Lecher
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE RAAB AND LORENZ S. GROSSMAN, OF CLEVELAND, OHIO, ASSIGNORS,
BY MESNE ASSIGNMENTS, TO GEORGE W. CLEVELAND, TRUSTEE, OF SAME
PLACE.

FILTER.

SPECIFICATION forming part of Letters Patent No. 639,769, dated December 26, 1899.

Application filed September 8, 1898. Serial No. 690,545. (No model.)

To all whom it may concern:

Be it known that we, GEORGE RAAB and LORENZ S. GROSSMAN, citizens of the United States, and residents of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Filters, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents an axial section of our improved filter; Fig. II, a bottom view of the casing of the same with nozzle-cap removed, and Fig. III a transverse section of the filtering-block.

The casing A of the filter is formed with a neck A' at its upper end, which neck is adapted to be screwed upon the nozzle of a water-distributing faucet. The lower rim of the casing is externally screw-threaded and forms an inwardly-extending ring A'', which is braced by longitudinal internal ribs A''' upon the sides and top of the casing. Shoulders a are formed at the upper ends of the straight side portions of the ribs. The ring of the casing is cut through by an annular port-slot a', which opens through an annular seat a'' upon the lower face of the ring. The ends of the ribs bridge the port-slot and hold the otherwise-severed parts together. The inner concave face of the ring is screw-threaded, and an externally-threaded ring B fits in the ring of the casing. A cylindrical filter-block C has its upper end bearing against the shoulders of the ribs and is forced against said shoulders by means of the removable threaded ring B. A foraminated strainer D is preferably placed over the upper end of the block and held clamped between the latter and the shoulders of the ribs. A gasket b is preferably placed between the ring and the block. The block is formed by a filtering-core c of cuttlebone, preferably cemented together in longitudinal layers and cylindrically shaped,

and an impervious shell c' molded around the core to leave both ends of the block open. Said shell may be formed from any suitable material impervious to water and capable of being molded, numerous forms of which are well known and the composition of which forms no part of our present invention, such as hard rubber or any other similarly-adapted composition. A cap E has a contracted nozzle E', and an internally-threaded flange e, which fits upon the external screw-thread of the rim of the casing, and a shoulder or seat e', covered by a gasket e'' and bearing against the annular port-seat of the casing.

When the filter is screwed upon the nozzle of a faucet by means of its neck and the faucet is opened, the water will be forced through the cuttlebone core of the filter-block and pass out through the nozzle with all mechanical impurities removed. If the filter becomes obstructed by impurities collected upon the top of the filtering element, the annular port is opened by more or less unscrewing the nozzle-cap, when the water will rush over the top of the filtering element, washing the impurities with it, and will rush down the sides of the block and out through the annular port and nozzle, flushing the filter and cleaning the same. Impurities stopped by the filtering element will be spread by the current of water entering the filter when the latter is in use, and the impurities will tend to collect in the space between the casing and the block, whence they may be washed by opening the annular by-pass valve, the annular space between the casing and the block, and the annular slot forming a by-pass for the water through the filter. Said by-pass may be advantageously used when the water is drawn for mechanical purposes, where purity is not the object, when a freer stream may be obtained than can pass through the filtering element. When filtered water is desired, the by-pass is closed and the water is forced through the filtering-block.

The filtering-block may be removed and another inserted by unscrewing the nozzle-cap and the detachable locking-ring, removing the old block and inserting a new block, and replacing the ring and nozzle-cap. The core of cuttlebone for the filtering-block provides

a filtering material which on account of its finely-laminated structure, with the interstices filled with a porous substance, will admit of a comparatively unobstructed passage
 5 of the water, while still preventing all impurities, organic or inorganic, living or dead, from passing through with the water. The natural structure of the cuttlebone particularly adapts it for a filtering material, and the shell
 10 of the block forms an inclosure in which the bone may be firmly held without being disintegrated by the force of the passing water. The bone is placed in layers, and preferably with the laminae running longitudinally of
 15 the block, and the pieces of bone are suitably cemented or held together. The approximately cylindrical core is then placed in a mold and the impervious jacket or shell molded around it. The layers or pieces of
 20 cuttlebone are thus bound together to form the filtering-core. The block is simple and inexpensive, and the three parts of the filter-casing may be easily and cheaply cast and the screw-threads cut into and upon the same
 25 with very little trouble or expense.

The filter may easily be kept clean, and a free flow of unfiltered water may be had without removing the filter from the faucet.

Other modes of applying the principle of
 30 our invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus disclosed, provided the principles of construction set forth, respectively, in the following claims
 35 are employed.

We therefore particularly point out and distinctly claim as our invention—

1. In a filter, the combination of a casing open at one end and having means at the
 40 other end for securing it to the supply and having internal shoulders at said end and formed with an opening at the rim of its open end, a filtering-block having one end bearing against the shoulders and supported to have
 45 a space between itself and the casing, a locking-ring secured in the open end of the casing to hold the block against the shoulders, and a cut-off for the opening at the rim of the casing, substantially as set forth.

50 2. In a filter, the combination of a casing open at one end and having means at the other end for securing it to the supply and having internal shoulders at said end and formed with an opening at the rim of its open end,
 55 a filtering-block having one end bearing against the shoulders and supported to have a space between itself and the casing and formed with pervious ends and impervious sides, a locking-ring secured in the open end
 60 of the casing to hold the block against the shoulders, and a cut-off for the opening at the rim of the casing, substantially as set forth.

3. In a filter, the combination of a casing formed with an open end having an annu-
 65 larly-slotted rim forming a port-slot and with

an inlet-neck at its other end and formed with longitudinal internal ribs upon its sides forming shoulders at the upper ends, a filtering-block fitted between said ribs and with one
 70 end bearing against the shoulders and formed with pervious ends and impervious sides, a locking-ring detachably fitted in the open end of the casing to bear against the end of the filtering-block, and a nozzle-cap movably se-
 75 cured over the open end of the casing and having a valve-surface which covers and may be removed from the port-slot, substantially as set forth.

4. A filtering element composed of cuttlebone, substantially as set forth. 80

5. A filtering element consisting of a core of cuttlebone contained in an inclosing shell, substantially as set forth.

6. A filtering element consisting of a core of cuttlebone contained in an impervious in- 85 closing shell formed with openings for the passage of the liquid, substantially as set forth.

7. A filtering element consisting of cuttlebone having its laminae presented in the di- 90 rection of the flow, substantially as set forth.

8. A filtering element consisting of a core of cuttlebone having its laminae presented in the direction of the flow, and an impervious shell open at the ends of the laminae, sub- 95 stantially as set forth.

9. A filtering element consisting of a core formed from layers of cuttlebone cemented together to have their laminae presented in the direction of the flow, and an impervious 100 shell molded around said core and open at the ends of the laminae, substantially as set forth.

10. A filter consisting of a filtering element composed of a core of cuttlebone presenting the laminae in the direction of the flow and 105 an impervious shell open at the ends of the laminae, and a casing provided with inlet and outlet and with means for holding said filtering element and for packing against one end of the shell to force the liquid to pass through 110 the element, substantially as set forth.

11. A filter consisting of a filtering element composed of a core of cuttlebone presenting the laminae in the direction of the flow and 115 an impervious shell open at the ends of the laminae, and a casing provided with inlet and outlet and with means for holding said filtering element and for packing against the discharge end of the shell to force the liquid 120 to pass through the element, and with a controllable by-pass around said element, substantially as set forth.

In testimony that we claim the foregoing to be our invention we have hereunto set our hands this 1st day of August, A. D. 1898.

GEORGE RAAB.

LORENZ S. GROSSMAN.

Witnesses:

WM. SECHER,

J. J. MAYER.