

No. 756,852.

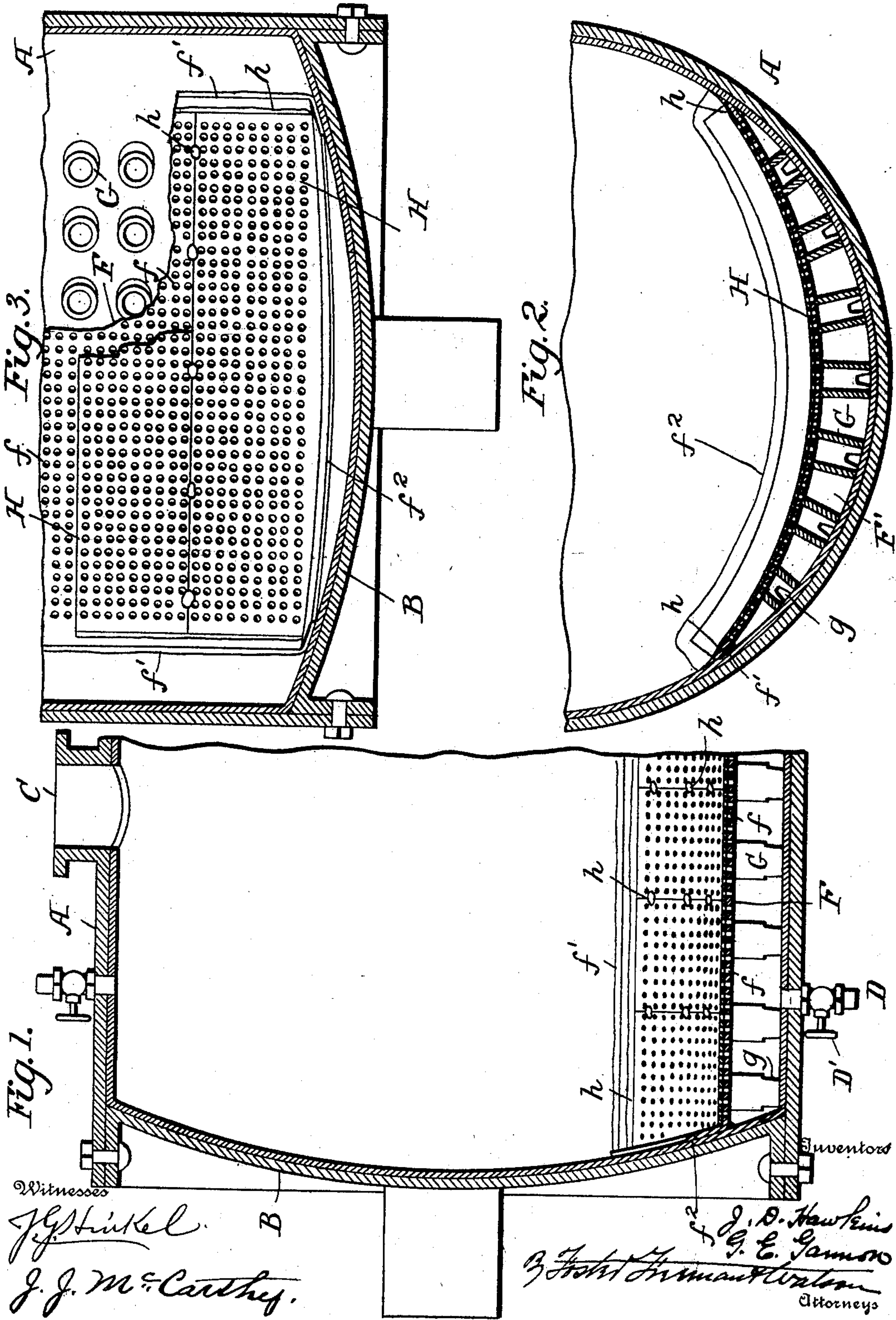
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J. D. HAWKINS & G. E. GANNON.

BARREL FILTER.

APPLICATION FILED AUG. 15, 1903.

NO MODEL.





# UNITED STATES PATENT OFFICE.

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## BARREL-FILTER.

SPECIFICATION forming part of Letters Patent No. 756,852, dated April 12, 1904.

Application filed August 15, 1903. Serial No. 169,612. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN D. HAWKINS, residing at Colorado Springs, and GEORG E. GANNON, residing at Colorado City, El Paso county, Colorado, citizens of the United States of America, have invented certain new and useful Improvements in Barrel-Filters, of which the following is a specification.

Our invention relates to barrel-filters, and has for its object to provide an improved, simplified, and practical construction of such filters; and to this end our invention consists in the various features of construction and in the arrangement of parts having the general mode of operation substantially as hereinafter more particularly pointed out.

Referring to the accompanying drawings, Figure 1 is a longitudinal section of a part of a filter-barrel embodying our invention. Fig. 2 is a transverse section thereof; and Fig. 3 is a plan, parts being broken away.

While our invention may be used for any purpose for which it is adapted and may be modified in details of construction and arrangement to adapt it for various purposes without departing from the spirit of our invention, it is primarily intended for use in connection with chlorination-barrels.

The general purpose of the invention is to provide a simple and cheap structure, such as experience and practical operation have demonstrated to be effective and which occupies relatively little space in the barrel, which when once installed will be practically a permanent fixture and part of the barrel and to which can readily be applied the filtering medium or cloth in such a manner that it can be removed and replaced when worn without disturbing the filter floor or support, and, further, one which will be self-contained within the barrel, requiring no openings or devices extending through the lining or body portion of the barrel.

With these and other objects in view we will now describe the preferred embodiment of our invention and explain the principles thereof as adapted and applied to a chlorination-barrel having a lead lining and provided with the usual manholes and discharge-outlet.

Referring to the accompanying drawings, A represents a filter-barrel, which may be of the usual construction and is provided with heads, one, B, of which is shown, and is also provided with a manhole C and a discharge-outlet D, controlled by a suitable valve D'. The barrel is also usually provided with trunnions to support it, with means for rotating it, (which are not shown herein,) and with a lining E of some resistance material, preferably of lead.

Our improved filter embodies a filter-floor which is concave on an arc of a circle having a radius larger than that of the barrel, and this floor is perforated and preferably made of lead and is burned to the lining of the barrel at its edges and at the ends or heads of the barrel, and when, as preferable, made of sections the sections are burned together at their adjacent edges, so as to form a continuous perforated concave filter-floor securely attached to the lead lining and having a radius larger than the lining of the barrel. Thus in the drawings, F represents the floor, having a series of openings or perforations  $f$  extending practically throughout its surface and being burned to the lead lining at its edges, as at  $f'$ , and to the ends of the barrel, as at  $f''$ , so that it practically forms a part of the lead lining, leaving a meniscus or crescent-shaped space  $F'$  between the floor of the filter and the lining. This lining extends throughout the length of the barrel and, as before intimated, may be made of one piece of metal or of sections burned together, so as to form a permanent structure. While in some instances the concave filter-floor thus constructed may be used without any supports of any kind, it may be provided with additional supporting means, and preferably these are formed as a part of the permanent structure and are interposed between the lead lining and the filter-floor. These supports are shown in the form of legs or nipples G, arranged, preferably, symmetrically in the space  $F'$  and gradually tapering or shortening with relation to each other from the center toward the points of union of the filter-floor and lead lining. While these legs or nipples may be solid and of different shapes,



they are preferably made of tubular form, as in this way we obtain a greater area of support for the floor and less interference with the holes or perforations therein for the amount of metal used. These legs or nipples are also preferably notched, as at *g*, to permit the ready flow of any filtrate which happens to pass inside of the nipples, and in practice we prefer to make these legs or nipples of lead and to burn them to the lead lining and to the filter-floor. In this way we make a filter-floor which is relatively solid and very substantial, capable of long use, and not liable to get out of order, and one which occupies relative little space in the barrel and presents a practically smooth and continuous surface without projections into the barrel. Furthermore, the filter-floor is practically permanently secured to the lining of the barrel, so as to be substantially part thereof, and is held in position without the aid of adjunctive devices requiring openings through the barrel-lining and the body of the barrel itself, which are a source of trouble and inconvenience as well as weakening the structure, and constitutes an ideal and practicable filter device of the character specified.

The filtering medium used in connection with the filter-floor may be varied according to the requirements of any particular case; but we prefer to use what is commonly known as a "lead-cloth" filter, consisting of a sheet or sheets of lead provided with perforations of the proper size, and these are laid upon the filter-floor and secured thereto in any proper manner, preferably by what is known as "tacking," as by bits of solder or similar material. Thus in the drawings, *H* represents the filtering-cloth, preferably of lead, which is laid upon the floor, conforming substantially thereto in shape and secured thereto by tacking it, as at *h*, which tacks may extend along the edges and ends of the cloth, holding the cloth in position on the floor, but permitting it to be readily removed or replaced when worn, as this is the part of the filter which is subjected to the greatest amount of wear and tear.

While we have thus described and illustrated the preferred embodiment of our invention, it will be understood that we are not limited to the specific details shown, as they may be varied by those skilled in the art without departing from our invention, and in place of the nipples or legs shown other well-known supporting means may be used when found desirable; but in general practice we prefer to use a construction substantially as shown and described.

This construction is exceedingly simple and inexpensive and at the same time constitutes a practically permanent structure occupying relatively little space in the barrel and avoiding projections or extensions into the barrel-space, and the filtering medium can readily be replaced when desired without disturbing the filter bed or floor, and, furthermore, it embodies no material in its structure which will interfere with the chemicals used, as is common in chlorination-barrels, all the parts preferably being of a resisting material, such as lead.

What we claim is—

1. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and means interposed between the floor and the lead lining for supporting the floor, substantially as described.

2. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and supporting-legs interposed between the floor and lining, substantially as described.

3. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and hollow supporting-legs interposed between the lining and the floor, substantially as described.

4. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and hollow supporting-legs interposed between the lining and the floor and having notches, substantially as described.

5. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor having a larger radius than that of the barrel, and hollow supporting lead legs having notches at their bottoms and burned to the lining and floor, substantially as described.

6. A barrel-filter, comprising a barrel having a lead lining, a concave filter-floor, and a filtering medium of perforated lead-cloth tacked to said floor, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN D. HAWKINS.

GEORG E. GANNON.

Witnesses as to signature of John D. Hawkins:

WM. O'BRIEN,

E. J. LINNARD.

Witnesses as to signature of Georg E. Gannon:

GEORGE W. McMAHON,

LEONARD E. CURTIS.