

C. C. BURKE.
PRESSURE FILTER.

No. 499,515.

Patented June 13, 1893.

Fig. 1.

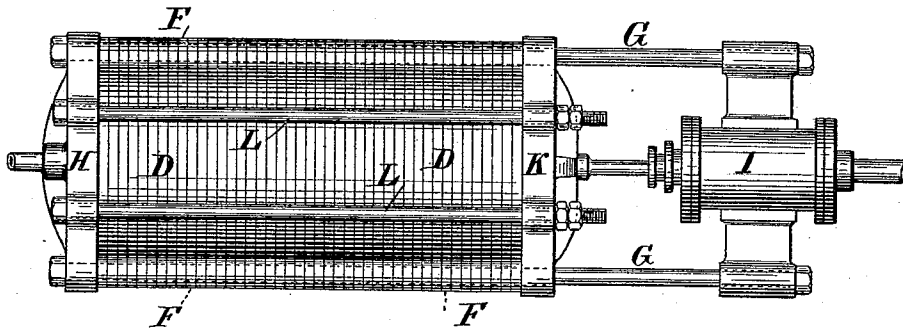
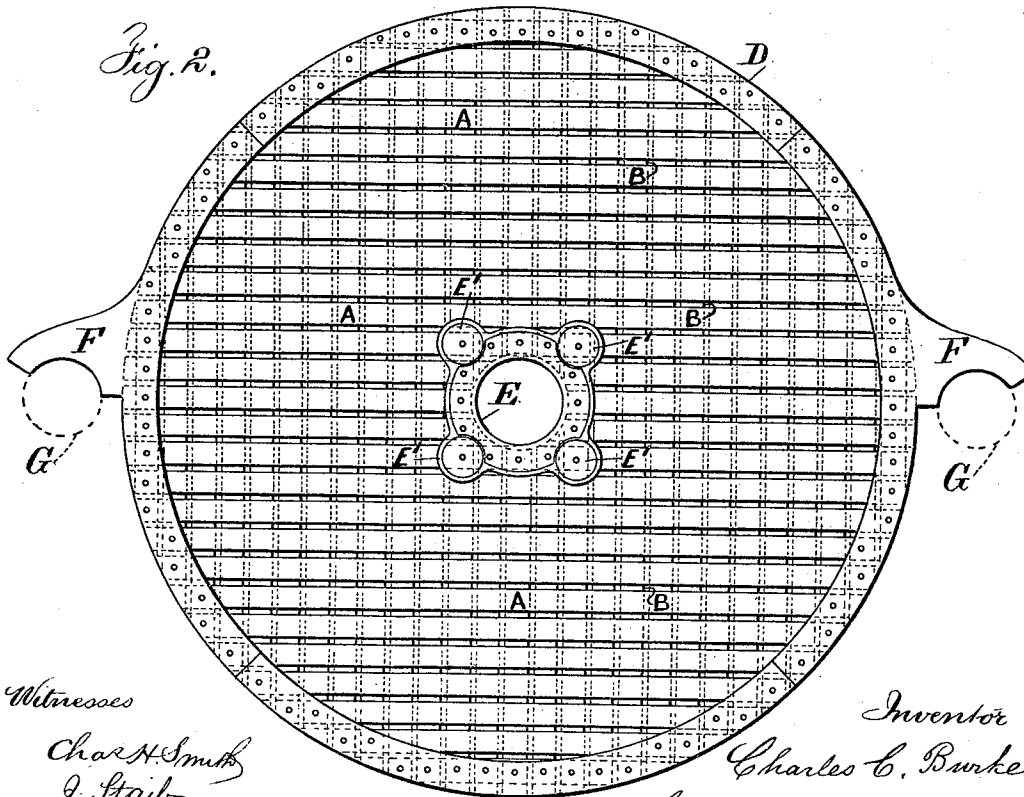


Fig. 2.



Witnesses

Char H. Smith
J. Strick

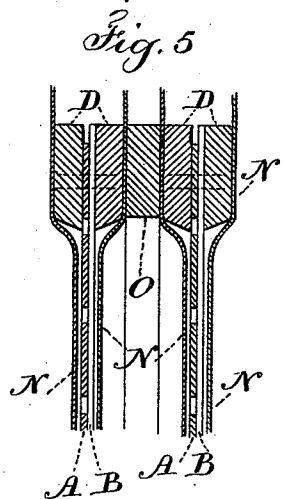
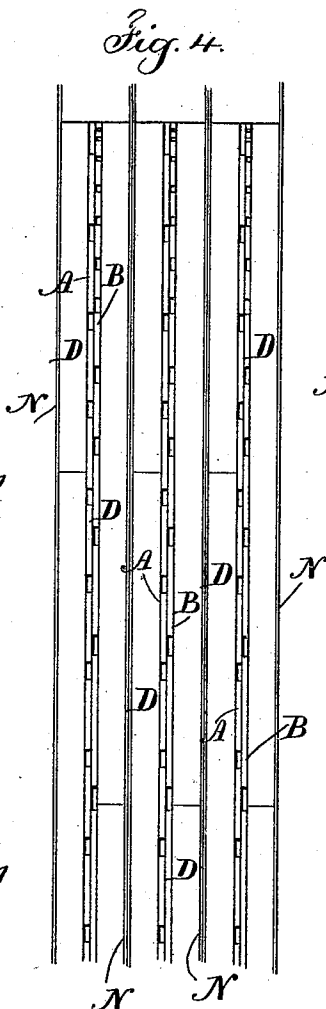
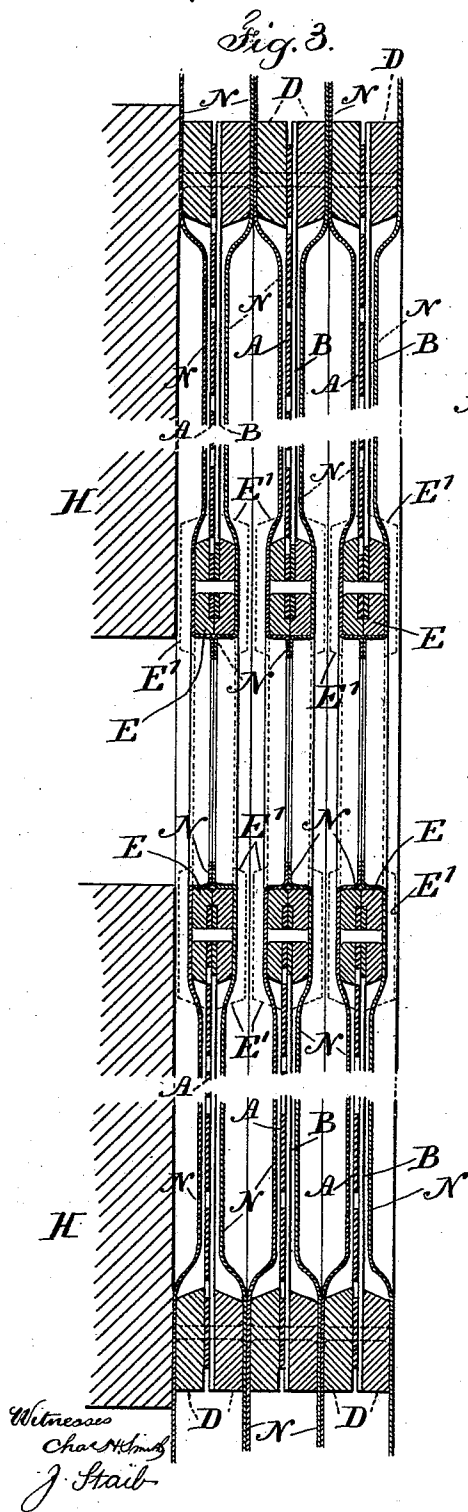
Inventor

Charles C. Burke
per Samuel W. Searell
Att'y.

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Charles C. Burke
per
Lemuel W. Serrell
Att'y.

UNITED STATES PATENT OFFICE.

CHARLES CLINTON BURKE, OF NEW YORK, N. Y.

PRESSURE-FILTER.

SPECIFICATION forming part of Letters Patent No. 499,515, dated June 13, 1893.

Application filed February 2, 1893. Serial No. 460,684. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CLINTON BURKE, a citizen of the United States, residing in the city and State of New York, have invented an Improvement in Pressure-Filters, of which the following is a specification.

Filters have heretofore been made of a series of supporting plates with central openings and filter bags of woven or other fabric with central holes cut in them and united together around such central openings in pairs, and these have been placed together with or without spacing washers and supported by side bars and clamped by the operation of a hydraulic press and screw rods, and the paraffine oil or similar material has been passed through the central openings of the plates and the paraffine has deposited between the fabrics forming the bags and the oily portion has passed through the fabric of the bags. A patent for a press of this character was granted February 3, 1891, to P. R. Gray and P. R. Gray, Jr., No. 445,890. In pressure filters of this character the plates have been perforated and such plates have sometimes been made of wood and sometimes of metal, and where they have been of wrought iron three thicknesses have been riveted together, the central plate being solid and the outer plates perforated with a large number of holes, and flexible rims of several thicknesses of canvas have been employed, and these plates, with the cloths between them, act as strainers for retaining the paraffine or other solid material in the recesses and allowing the oily and more liquid portions to pass off. In these presses there has not been a free delivery for the oily or more liquid portions, and it has been necessary to employ a heavy pressure to force the paraffine oil into the pressure filter. Hence the operation has been necessarily slow and the parts are liable to injury. Where attempts have been made to use woven wicker work or wire, the openings are necessarily as wide as the thickness of the wire or wicker and the canvas is not properly supported, and there is no smooth surface against which the canvas can be clamped to make a tight joint and the interwoven material is liable to break under the pressure and also in handling.

My improvement relates to the combination

with the bags of canvas or similar material, of intermediate septums formed of slats sufficiently close together for supporting the canvas or duck and at the same time forming channels for the free delivery of the oily materials, and in carrying out this invention I employ exterior rims so that the septums can be packed closely together with their intermediate bags and the proper spaces will be formed for the reception of the paraffine or similar material.

In the drawings, Figure 1 is a general plan view illustrating the complete apparatus. Fig. 2 is an elevation of one of the septums. Fig. 3 is a section in larger size of several septums and bags placed together. Fig. 4 is an exterior view of the edges of the septums showing the openings between the slats. Fig. 5 is a section showing a rim or rings introduced between two of the septums.

The septums may be made of any suitable material that is sufficiently strong. I prefer to employ band or hoop iron to form the slats and these may be laid together singly but I prefer to cross the slats, as represented in Fig. 2, the slats A A crossing the slats B B, and they may be secured at the intersections if desired, but usually it is only necessary to secure them at the exterior rims D and interior rims E, and the interior rims E surround the central openings or holes through which the liquid passes as it is pumped into the pressure filter. The exterior rims D are provided with hook-shaped projections or flanges F which rest upon the supporting bars G which are provided in the press between the head block H and the arms or connections upon the hydraulic press I, and the follower K is acted upon by the ram of the hydraulic press to set up the septums and bags closely together when these are aggregated in the press; and it is convenient to employ the tie rods L between the follower K and the head block H to firmly connect the parts and resist the pressure in filtering the material.

The bags N of canvas, duck or similar material are of ordinary character and they are in the form of disks having central openings and are sewed together in pairs around the central openings, so that one septum lies between a pair of disks forming one filter bag, as represented in Fig. 3, and where the exte-

rior rims D are sufficiently thick, as represented in Fig. 3, the disks forming the filter bags come together between the exterior rims and are firmly pressed and the necessary space is left between one septum and the next for the accumulation of the paraffine or other material forming the cakes, and after such spaces have become filled the bolts are released and the septums separated and the cakes removed, and when desired spacing washers or rings O may be used in addition between the exterior rims of the septum, as represented in Fig. 5. Under all circumstances the slats A B of the septums allow the free discharge of the oily or liquid materials that pass through the canvas bags, because the spaces or channels between the slats are open at their ends between the respective exterior rims D, and such channels are sufficiently narrow to prevent the canvas being injured by the pressure, and I find it advantageous to employ upon the interior rims E projections E' which come adjacent to each other at the outer sides of the canvas bags and serve to support the septums in the proper position and in line, so as to avoid injury to the central portions of such septums by undue accumulation of paraffine wax or similar material between any two or more of the septums. By this construction the filter is very much improved in its action and greater rapidity is obtained, and there is much less risk of injury to the parts of the press than in the pressure filters heretofore employed, and the septums are much lighter in weight and more easily handled and much less costly to manufacture and keep in repair than those heretofore constructed.

It is advisable to make the exterior rims in sections that can be put together, the sections on one side breaking joints with those on the other side, so as to maintain uniformity of strength all around the respective septums.

The sections in the rims of the septums are represented in Fig. 2 as four in number and the relative positions of the joints between the sections are represented in Fig. 4. In all instances the surfaces of the rims are substantially flat and equidistant or parallel, so that the filter fabrics are clamped between

the rims and separate when the septums are taken apart for the removal of the paraffine.

I claim as my invention—

1. The septums for a pressure filter composed of slats closely adjacent to each other, the intermediate spaces opening out at the edges of the septums, and rims around the outer ends of the slats for holding the slats in their proper relative positions, the surfaces of such rims being flat and equi-distant, in combination with filter canvas or similar material extending out between and clamped by the rims and capable of separation for the removal of the paraffine or other material between the filter canvas substantially as specified.

2. The septum for a pressure filter formed of two ranges of slats closely adjacent to and crossing each other and rims around the edges by which the ends of the slats are held in position, and central rims uniting the slats at the central opening through the septum, substantially as set forth.

3. The combination in a septum for a filter press, of two ranges of slats crossing each other and closely adjacent, a central rim around the opening through the slats and projections upon such central rim, an exterior rim formed of two parts, one at each side of the crossing slats and by which such slats are permanently held at their outer ends, there being projections or hooks by which the septums are supported in the filter press, substantially as set forth.

4. The combination with the bags of canvas or similar material formed of disks with central openings united in pairs by stitching around the openings, of septums having central openings for the bags, slats having narrow channels between them united at their inner ends to the rim around the central opening, and exterior rims by which the outer ends of the slats are supported, substantially as set forth.

Signed by me this 30th day of January, 1893.

CHARLES CLINTON BURKE.

Witnesses:

JAMES GRAHAM,
J. F. GRAHAM.