No. 827,389. PATENTED JULY 31, 1906.

J. T. H. PAUL.

FILTER.

APPLICATION FILED OCT. 14, 1905.

2 SHEETS—SHEET 1.

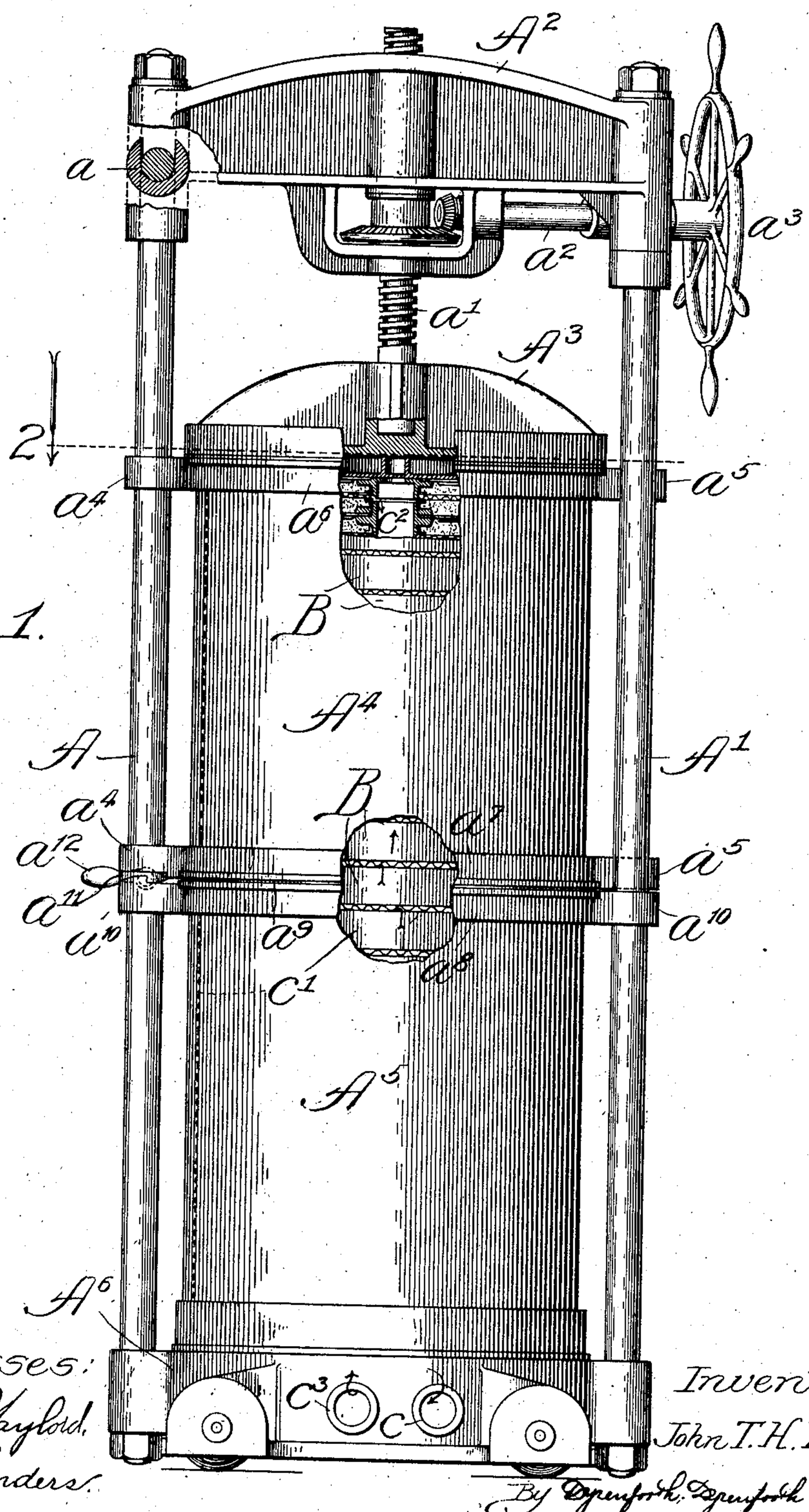

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

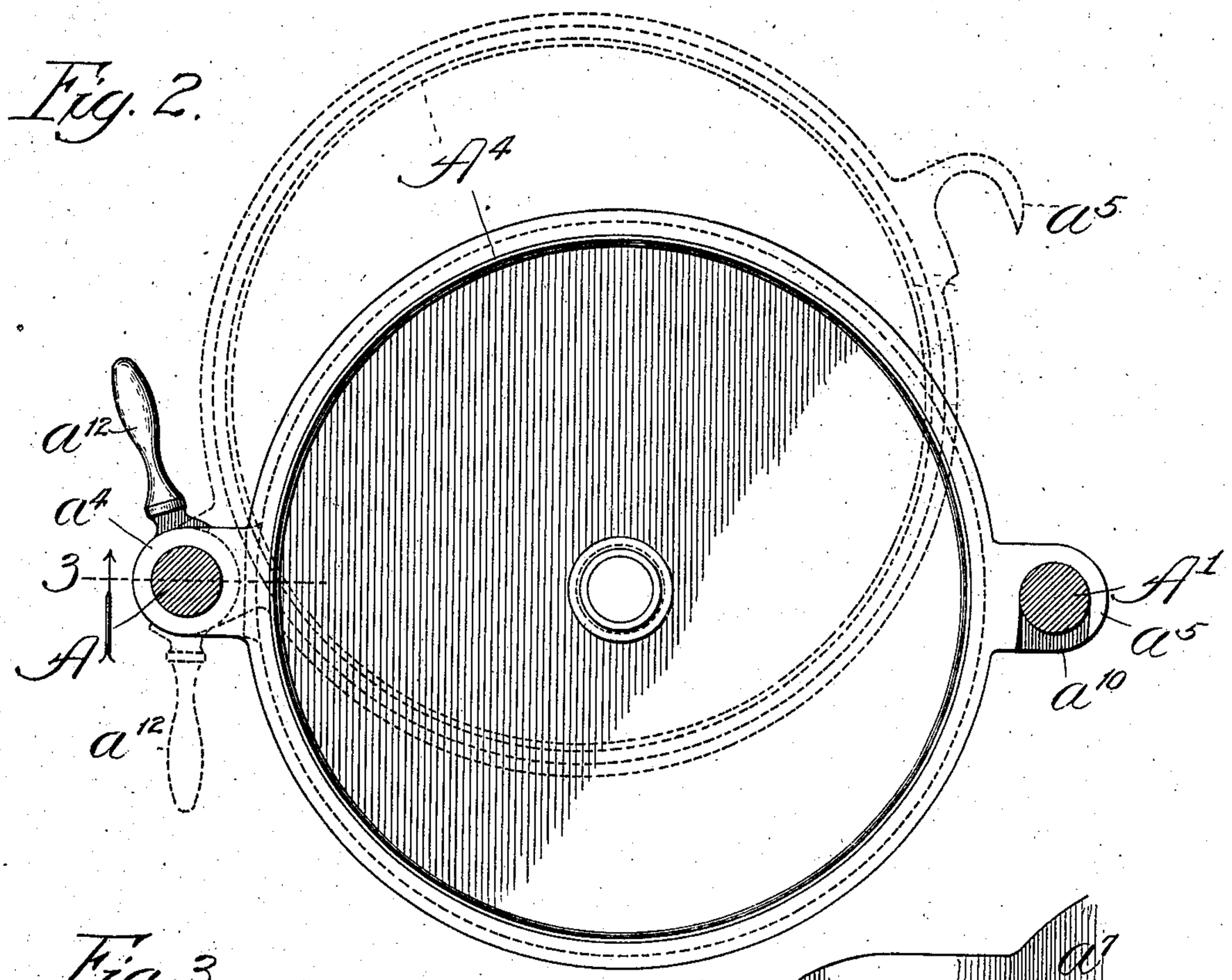


Fig. 3.

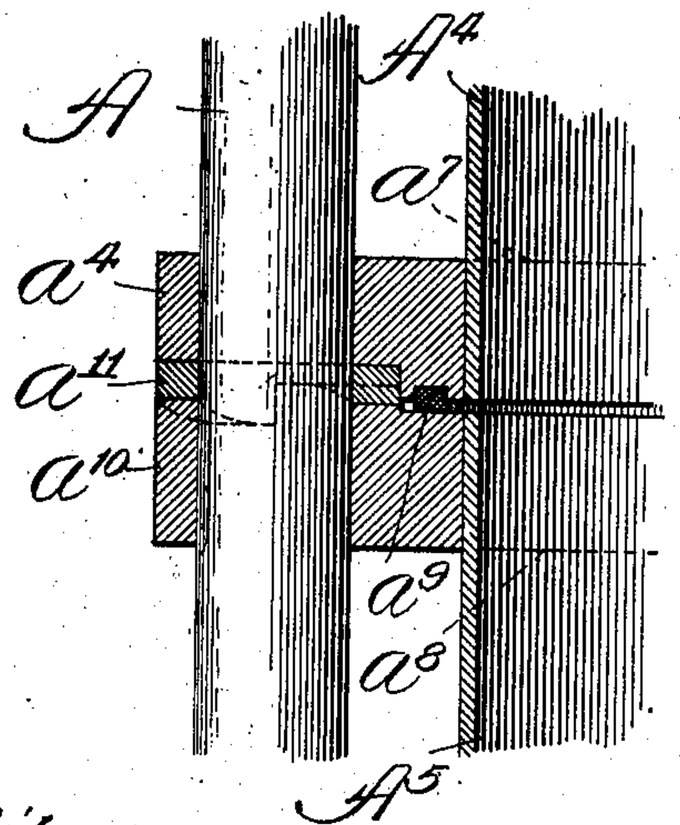
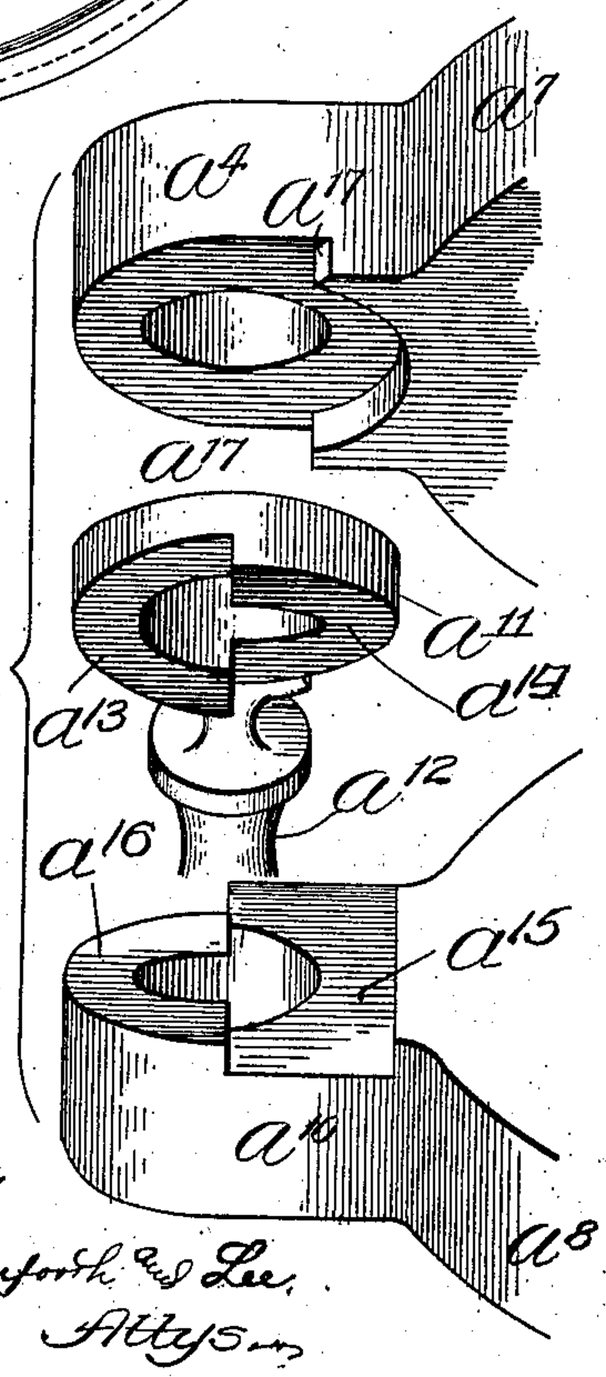


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN T. H. PAUL, OF CHICAGO, ILLINOIS, ASSIGNOR TO E. GOLDMAN & COMPANY, A CORPORATION OF ILLINOIS.

FILTER.

No. 827,389. Specification of Letters Patent. Patented July 31, 1906.

Application filed October 14, 1905. Serial No. 282,757.

To all whom it may concern:

Be it known that I, JOHN T. H. PAUL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Filters, of which the following is a specification.

My invention relates particularly to filters for use in filtering beers and other liquors; and my primary object is to provide a construction enabling the number of cells to be increased indefinitely within reasonable limits, to the end that absolutely clear liquor may be obtained regardless of the initial character of the liquor.

The present invention constitutes an improvement on filters employing a casing and superposed cells confined within the casing, as illustrated, for instance, in my application Serial No. 277,896, filed September 11, 1905; and the gist of the invention lies in the employment of relatively swinging sections forming the casing, whereby easy access for the purpose of insertion and removal of cells is provided.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 represents an elevational view of my improved filter, a portion being shown in section; Fig. 2, a horizontal sectional view taken as indicated at line 2 of Fig. 1, the casing-top being removed; Fig. 3, an enlarged broken vertical section taken as indicated at line 3 of Fig. 2, and Fig. 4 a perspective view showing the relation of certain pivotal parts.

In the construction shown A A′ represent standards carrying a cross-bar A^2, with which is adjustably connected a casing-top A^3, A^4 A^5 casing-sections supported on a base A^6 and connected with the standards, and B removable cells located within the casing and confined between the top and base thereof.

The bar A^2 is mounted to swing upon the standard A′, one end of the bar being disengageably connected with the standard A in a well-known manner, the hook formation of the swinging end of the bar being indicated in section at *a*. The bar supports a top-actuating screw *a′*, which in turn is actuated by a shaft a^2 and hand-wheel a^3 in a well-known manner.

The casing-section A^4 is equipped with pivotal lugs a^4, connected with the standard A, and has hooks a^5 engaging the standard A′. These members may be formed integrally, with rings a^6 a^7, joined to the upper and lower ends of the section. The section A^5 is equipped at its upper end with a ring a^8, between which and the ring a^7 is confined a gasket a^9. The ring a^8 is provided with perforate lugs a^{10}, fitting upon the standards. Between the perforate lug a^{10}, and the adjacent pivotal lug a^4 is confined a cam-ring a^{11}, which is rotatable within limits upon the standard A and is equipped with an actuating-handle a^{12}. The lower side of the cam-ring has inclines or cam-surfaces a^{13} a^{14}, which bear, respectively, upon cam-surfaces a^{15} a^{16}, with which the upper side of the lug a^{10} is provided. The handle a^{12} has a movement limited by stops a^{17}, with which the lower side of the adjacent lug a^4 is provided. The arrangement is such that when the handle a^{12} is moved from the position of the full lines to the position of the dotted lines shown in Fig. 2 the upper casing-section will be lifted clear of the lower section, enabling the upper section to be swung upon its pivot.

Pressure is transmitted from cell to cell of the filter from top to bottom. The liquor enters at the base through an inlet *c* and passes into the annular chamber *c′*, between the casing and the peripheries of the cells, from whence it passes through the cells to the central conduit c^2 and thence to the outlet c^3 in the manner described in the above-designated application. Thus it will be understood the sectional casing serves as a continuous casing, and the cells are built up from bottom to top, the operation of the filter being the same as though the casing were of integral formation.

When it is desired to remove the cells, the top is raised and swung to one side. The cells are then removed down to or below the junction plane of the upper and lower casing-sections, and the upper casing-section then is raised and swung in a direction to balance the top, enabling the lower cells to be readily reached. The reverse of these operations accomplishes the assembling of the parts, the gasket a^9 furnishing a liquid-tight joint between the casing-sections.

I do not limit myself to details of construction.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a filter, the combination of a casing comprising relatively swinging casing-sections having vertical pivotal connection, and

filter-cells contained in the casing-sections, for the purpose set forth.

2. In a filter, the combination of superposed relatively swinging casing-sections, a swinging casing-top, and superposed cells located within the casing-sections and confined between the top and bottom of the casing, for the purpose set forth.

3. In a filter, the combination of a stationary lower casing-section, a superposed casing-section, a gasket confined between said casing-sections, a vertical pivot for the upper section, means for raising the upper section to permit it to be swung on its pivot, a casing-top, and a vertical pivot for the casing-top, for the purpose set forth.

4. In a filter, the combination of a lower casing-section, opposite standards rising above the same at the sides thereof, a swinging upper casing-section pivoted on one of said standards, and a swinging casing-top pivoted on the other of said standards, for the purpose set forth.

5. In a filter, the combination of two superposed casing-sections, pivotal connection between said sections at one side, and a cam located at the pivotal connection and serving to elevate the upper casing-section, for the purpose set forth.

6. In a filter, the combination of a lower casing-section, standards arising from opposite sides of the same, an upper casing-section having a pivotal lug connected with one of said standards, a cam-ring supported beneath said pivotal lug and equipped with an actuating-handle, and a casing-top adjustably connected with said standards.

7. In a filter, the combination of a lower casing-section, standards arising at opposite sides thereof, a stationary cam on one of said standards, a coacting cam-ring supported thereon, a casing-section having at one side a pivotal lug supported on the cam-ring and at the other side a hook engaging the opposite standard, a vertically-adjustable casing-top having a supporting-bar pivoted on the last-named standard and provided with a hook engaging the other standard, and nuts serving to secure the bar to the tops of said standards, for the purpose set forth.

8. In a filter, the combination of a base, a series of filter elements, surrounded partly by a stationary drum and partly by a movable drum swinging around a vertical axis.

JOHN T. H. PAUL.

In presence of—
L. HEISLAR,
J. H. LANDES.