

G. KÜCHMANN.
BEER FILTER.

(Application filed June 13, 1900.)

(No Model.)

2 Sheets—Sheet 2.

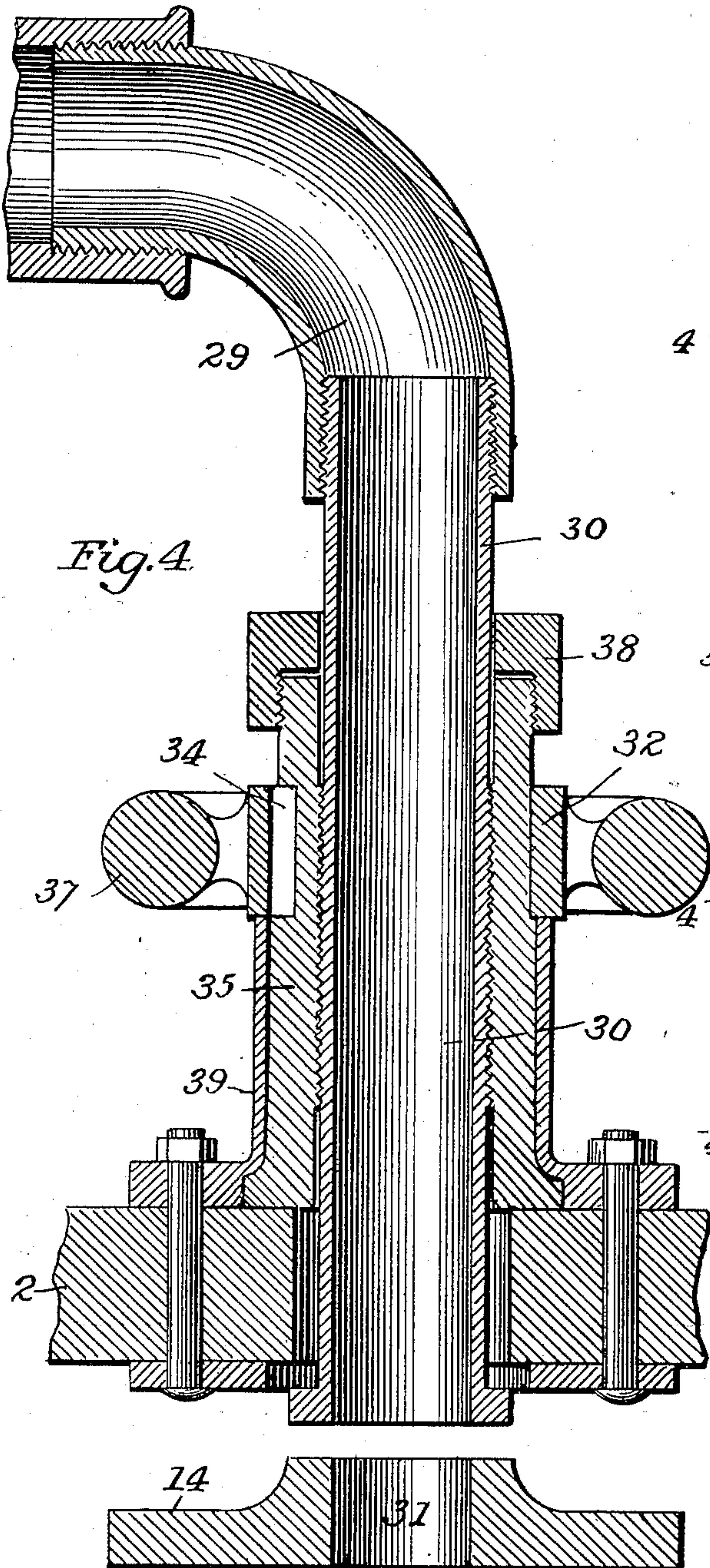


Fig. 5.

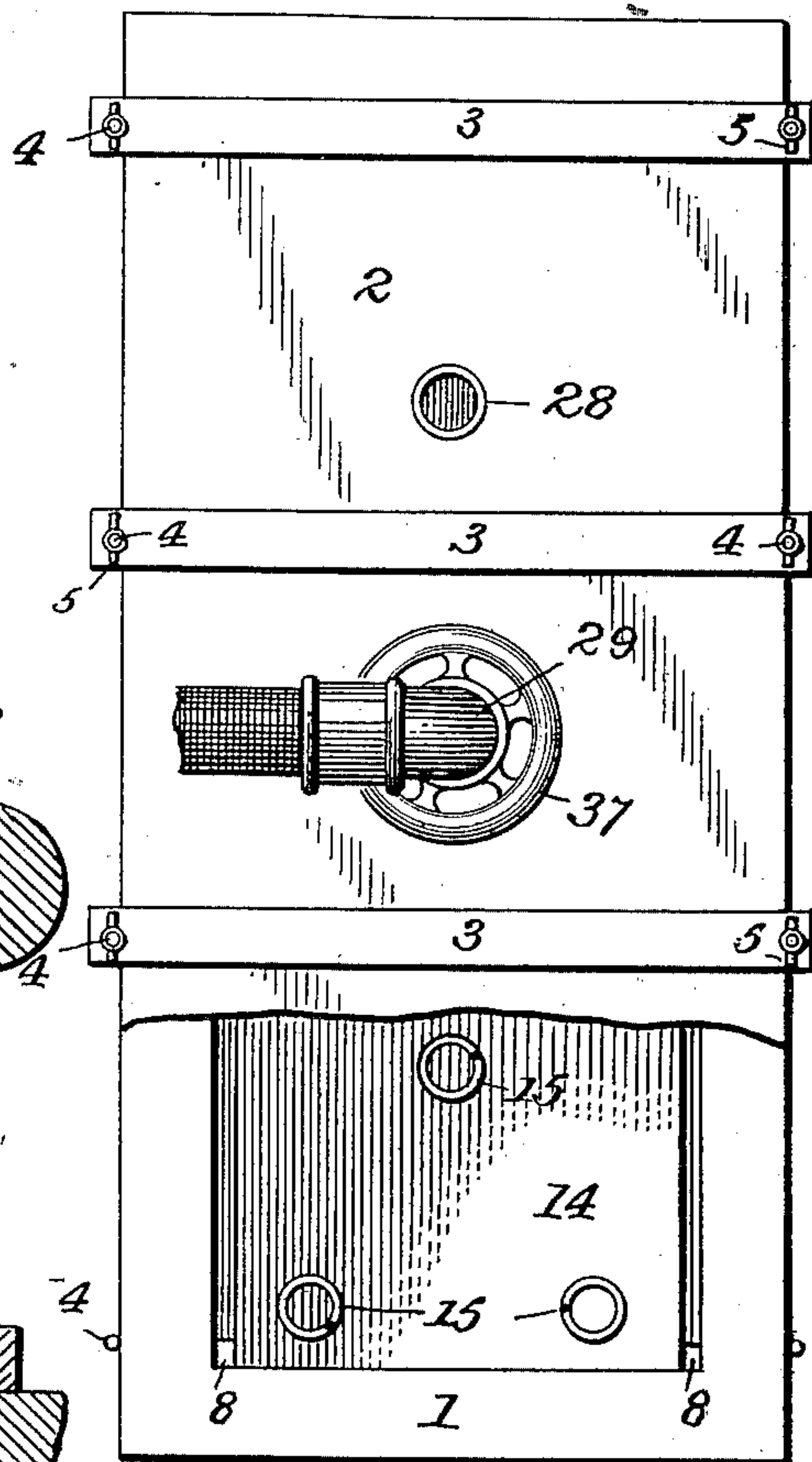
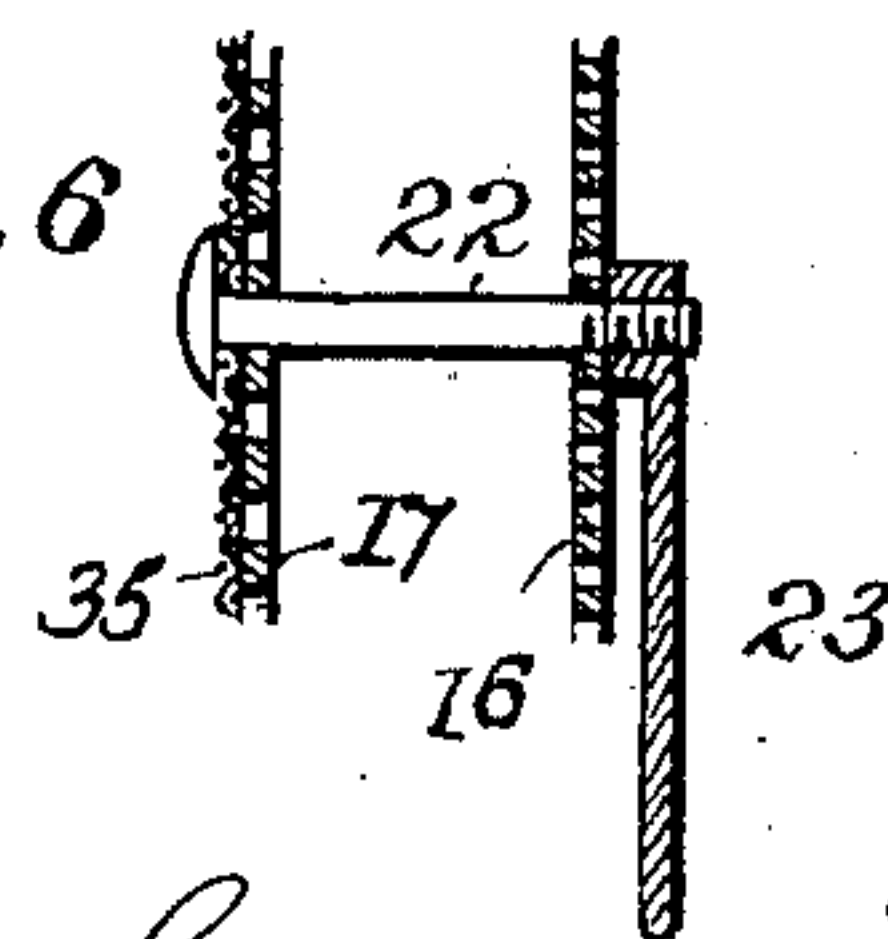


Fig. 6.



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GEORGE KÜCHMANN, OF WILKES-BARRÉ, PENNSYLVANIA.

BEER-FILTER.

SPECIFICATION forming part of Letters Patent No. 663,765, dated December 11, 1900.

Application filed June 13, 1900. Serial No. 20,181. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KÜCHMANN, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Filters, of which the following is a specification.

My invention relates to a new form of apparatus for filtering liquors or other liquids; and it consists in the construction and arrangement hereinafter described.

In the accompanying drawings, which illustrate the invention, Figure 1 is a vertical section through the center of the filter. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a detail isometric view showing the arrangement of the filtering-pans. Fig. 4 is a section through the outlet apparatus. Fig. 5 is a top plan view of the filter, partly broken away; and Fig. 6 is a view showing the means for securing the opposite sides of the filter-pans together.

Referring to the drawings, 1 indicates a flat rectangular box or casing having a removable top 2, which is normally secured in place by means of a series of clamping-bars 3, which extend across it. These bars are formed with openings in their ends adapted to fit over the upwardly-projecting ends of a corresponding series of bands 4, which extend around the sides and bottom of the casing, and said bars are forced downward by means of wing-nuts 5, as shown, to make the top fit tightly. The casing may be made of wood or other suitable material, lined with block tin or copper. Within the interior of the casing, on each side of the center, are vertically arranged a pair of parallel filter-boxes 6 and 7, said boxes extending from end to end of the casing and being held in position by stops 8, 9, and 10, arranged upon the bottom of the casing, stops 8^a and 9^a upon the ends, and stops 12 and 13 upon a removable block-tin cover-plate 14, which is normally pressed against the tops of the filter-boxes by springs 15. Each filter-box consists of two flat block-tin plates 16 and 17, having perforations of suitable size, the edges 18 and 19, respectively, of said plates being turned at the right angle and arranged to telescope with each other. The inner plates 17 are also covered by a copper screen 35 of

fine mesh to keep the fine material from passing through with the liquid. The filter-boxes 7 are filled with coarse and rather loose filtering material, and a series of block-tin pins 20 are secured to the plates and project inwardly in order to hold the material in position and prevent its sagging and falling to the bottom. These boxes remove the greater part of the sediment from the liquid. The inner casings 6 are narrower and are filled with a finer and more compact material for the purpose of removing the sediment which remains after the passage of the liquid through the outer boxes. The opposite sides of each filter-box are held together by means of bolts 21, arranged in the corners of the boxes, and a central bolt 22. Instead of providing nuts on these bolts I provide a rod or lever 23 for each bolt, having a threaded opening which fits over the bolt and by means of which the opposite sides of the filter-boxes may be drawn toward each other. (See Fig. 6.) These rods or wrenches are provided for convenience in taking the filter-boxes apart for the purpose of cleaning or refilling. For this purpose the cover and top plate may be removed and any one of the filter-boxes may be taken out separately, and when laid upon its side the plates may be taken apart by unscrewing the levers 23 from the bolts.

In order to preserve tight joints between the filter-boxes and the stops, rubber packings 24 are inserted around the edges of the boxes, between the stops, as shown. At the opposite ends of the filter-casing, between the inner boxes 6, I provide a series of wedges 25, 26, and 27 for the purpose of forcing the ends of the inner boxes against the stops, thereby making tight joints. By forcing the central wedge-piece downward it will be obvious that the other wedge-pieces will be forced outward, compressing the ends of the filter-boxes.

In operation the beer or other liquor enters through an inlet-opening 28 in the top of the filter, flows over the opposite edges of the removable cover 14, and thence downward along the sides of the outer filter-boxes, from whence it passes through the filter-boxes to the clarified-liquid spaces 28. From this space the liquid flows upward and outward

through an outlet-pipe 29, which has a vertically-adjustable section 30, registering with an opening 31 in the top of the removable cover-plate 14. Whenever liquid is admitted through the inlet-pipe, the air within the filter must escape before the clarified liquid can pass out, and if no means were provided for permitting this air to escape rapidly it would first pass through the filtering material and in that way retard the operation of the filter. I therefore arrange to lift the section 30 off of the cover 14 in starting the filter. The liquid then being permitted to pass into the filter will fill the casing and the air will pass out through the outlet-pipe. As soon as the casing is filled and the liquid commences to pass through the outlet-pipe the section 30 is screwed down tight upon a suitable valve-face surrounding the opening in the cover 14, thereby causing the liquid to pass through the filter-boxes and preventing anything but the clarified liquid from the central space from entering said pipe.

In Fig. 1 the section 30 is screwed down upon the cover, while in Fig. 4 this section is raised. The pipe-section may be raised and lowered in various ways. As shown, said section is operated by means of a hand-wheel 37, the hub 32 of which is secured by means of a key 34 to a sleeve 35, which is fitted within a fixed collar 39. The interior of this sleeve is screw-threaded and engages corresponding screw-threads upon the section 30, so that as the sleeve is rotated by means of the hand-wheel the pipe-section will be raised or lowered. A stuffing-box 38 is secured to the top of the sleeve and fits around the pipe-section.

A drainage-pipe 36 is fitted into the bottom of the central space for the purpose of drawing off the liquid from said space, together with any sediment which may accumulate therein, when desired.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A filter comprising a casing, filter-boxes disposed on opposite sides of said casing, leaving a central space, said boxes fitting liquid-tight against the casing along their ends and lower edges and being separated from the side walls of the casing to provide passage-ways for the inflowing liquid, a cover-plate fitting liquid-tight against the upper edges of said filter-boxes, an outlet-opening in said cover-plate communicating with the central space, and an outlet pipe registering with said opening, said casing having an opening for the admission of the liquid, substantially as described.

2. A filter comprising a casing, filter-boxes disposed on opposite sides of said casing, leaving a central space, said boxes fitting liquid-tight against the casing along their ends and lower edges and being separated from the side

walls of the casing to provide passage-ways for the inflowing liquid, a cover-plate fitting liquid-tight against the upper edges of said filter-boxes and having an outlet-opening communicating with the central space, an outlet-pipe having a section adjustable toward and from said opening, said casing also having an opening for the admission of the liquid, substantially as described.

3. A filter comprising a casing, filter-boxes disposed on opposite sides of said casing, leaving a central space, said boxes fitting liquid-tight against the casing along their ends and lower edges and being separated from the side walls of the casing to provide passage-ways for the inflowing liquid, a cover-plate fitting liquid-tight against the upper edges of said filter-boxes, and having an outlet-opening communicating with the central space, an outlet-pipe having a section adjustable toward and from said opening, said casing having an inlet-opening above the cover-plate.

4. A filter comprising a casing, filter-boxes within said casing and disposed on opposite sides thereof, leaving a central space, stops arranged around the ends and lower edges of said boxes, wedges at the opposite ends of said casing within the central space, said wedges being arranged to force the filter-boxes against the stops, a spring-pressed cover-plate having stops fitting over the upper edges of the boxes, an outlet-opening in said cover-plate communicating with the central space, and an outlet-pipe registering with said opening, said casing also having an opening for the admission of the liquid, substantially as described.

5. A filter comprising a casing, a pair of filter-boxes arranged within the casing on each side thereof, said filter-boxes being separated from the side walls of the casing to provide a passage-way for the inflowing liquid, stops arranged along the ends and lower edges of said boxes, wedges arranged at the opposite ends of the casing within the central space and adapted to force the inner boxes against the stops, a spring-pressed cover-plate having stops fitting over the upper edges of said boxes, said cover-plate having an opening communicating with the central space, and an outlet-pipe having a section adjustable toward and from the opening, said casing having an opening for the admission of the liquid, substantially as described.

6. A filter-box comprising two flat perforated plates having overturned edges fitting telescopically together, and a series of bolts passing through said plates.

7. A filter-box comprising two flat perforated plates having overturned edges fitting telescopically together, pins secured to said plates and projecting into the interior of the box to support the filtering material, and a series of bolts passing through said plates and securing them together.

8. A filter-box comprising two flat perforated plates having overturned edges fitting telescopically together, a series of bolts passing through said plates, and levers projecting
5 parallel with the plates and having threaded openings fitting onto the threaded ends of said bolts.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE KÜCHMANN.

Witnesses:

WM. F. GABRIEL,
W. L. RAEDER.