No. 733,663. PATENTED JULY 14, 1903.

V. LAPP.

FILTERING PRESS.

APPLICATION FILED MAR. 19, 1903.

NO MODEL.

Fig. 1

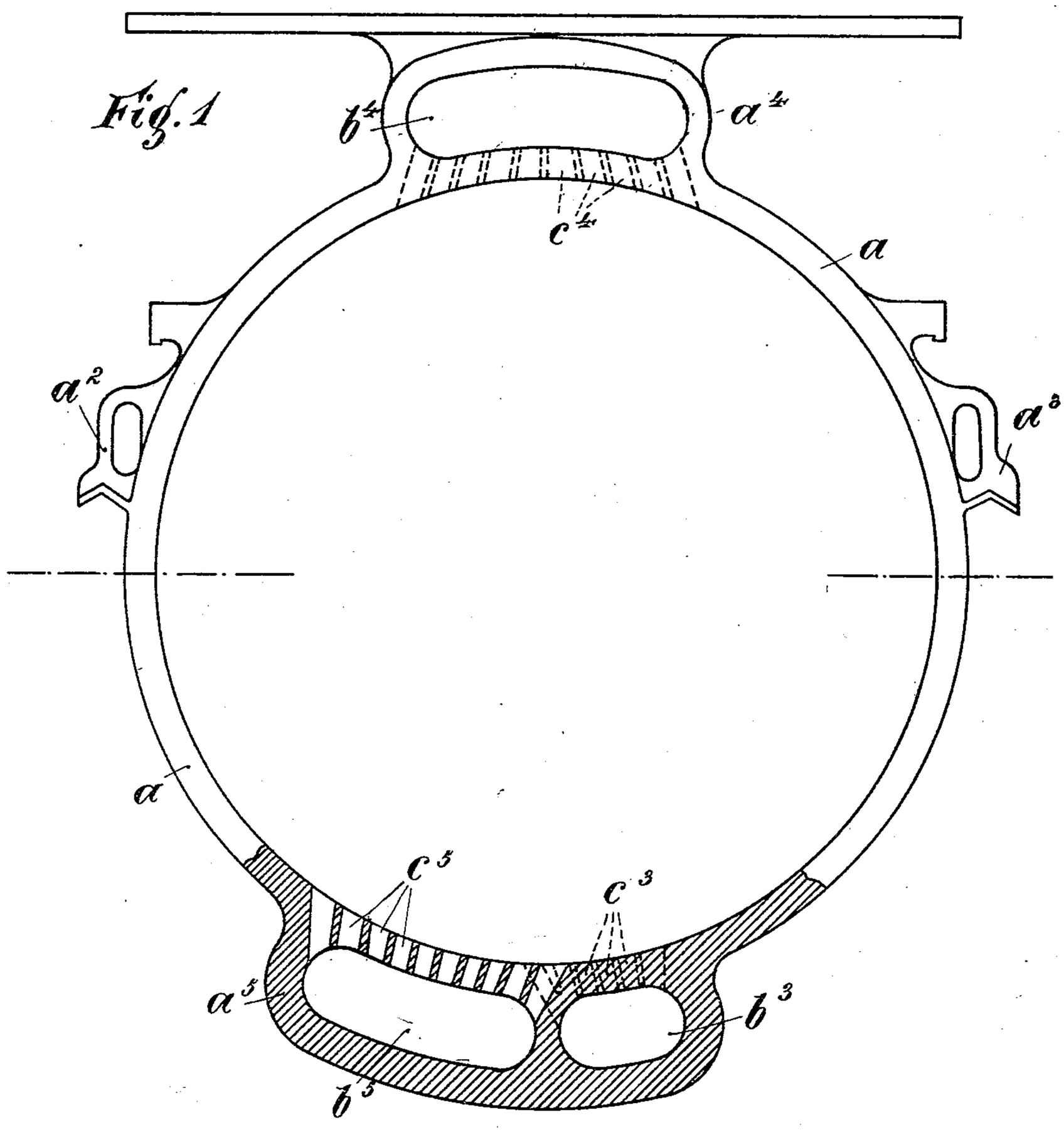
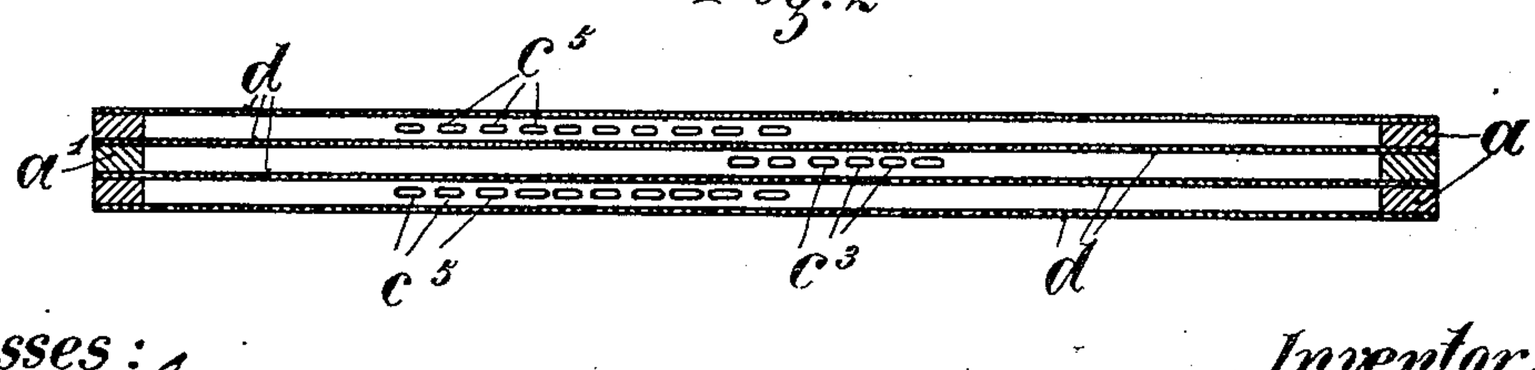


Fig. 2



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By

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No. 733,663. Patented July 14, 1903.

UNITED STATES PATENT OFFICE.

VALENTIN LAPP, OF LEIPZIG, GERMANY.

FILTERING-PRESS.

SPECIFICATION forming part of Letters Patent No. 733,663, dated July 14, 1903.

Application filed March 19, 1903. Serial No. 148,572. (No model.)

To all whom it may concern:

Be it known that I, VALENTIN LAPP, a subject of the King of Saxony, residing at No. 2 Georgiring, Leipzig, in the Kingdom of Saxony, German Empire, (whose post-office address is in the same place,) have invented certain new and useful Improvements in Filtering-Presses, of which the following is a specification.

This invention relates to a filtering-press by which brewer's mash is separated into its component parts—*i. e.*, liquor or wort and solid residues or exhausted malt-meal.

The particular object of the invention is to treat large quantities of mash in a short time; and I attain that object by means of an arrangement of channels or conduits provided in the trays of the press, all as is fully described hereinafter.

In order to make my invention clear, I refer to the accompanying drawings, in which similar letters denote similar parts throughout both views, and in which—

Figure 1 is an elevation of a tray constructed according to my invention, and Fig. 2 is a horizontal section through three trays placed side by side.

Each tray consists of a preferably circular frame a, having the usual lateral projections a^2 a^3, by which it is supported on the framing of the filtering-press. From the upper part of the frame a projects an oblong ring a^4 and from the lower part an oblong double ring a^5. The spaces b^3 b^4 b^5 inclosed by these parts a^4 a^5 form channels when the trays of a press are located side by side and are firmly as well as tightly connected with each other.

There are trays a and trays a', Fig. 2, which are perfectly alike with regard to the points above mentioned. A difference resides in the fact that the spaces inclosed by the trays a communicate with the channels b^4 and b^5, but not with the channel b^3, and that the spaces inclosed by the trays a' communicate with the channel b^3, but not with the channels b^4 and b^5. The channel b^4 serves for leading the mash to be filtered or separated to the trays a, the communication being effected by apertures c^4. The channel b^3 serves for conducting the filtered wort away from the trays a', the communication being effected by apertures c^3, and the channel b^5 serves for introducing water under pressure into the trays a, the communication being effected by apertures c^5.

A particular point of my invention resides in the position or configuration of those of the apertures c^3 which are situated nearest the channel b^5 and in the position or configuration of those of the apertures c^5 which are situated nearest the channel b^3. Suppose a vertical line be drawn across a tray a or a'. The apertures c^3 extend beyond that line to the left and the apertures c^5 extend beyond that line to the right—*i. e.*, they extend in either case beyond the lowest point of the space inclosed by that tray a or a', so that the liquor or the solid parts present at that point are certainly either conducted away through the channel b^3 or washed away by the water issuing from the channel a^5, as the case may be.

The trays a and a' are separated from each other by filtering-cloths d.

The mash particularly adapted to be separated in and by my improved filtering-press is not an ordinary brewer's mash; but the malted grain is preferably supposed to have been turned into meal before the mashing, as before indicated in the first paragraph of this specification. The residues retained by and between the filtering-cloths consist, therefore, not of coarse particles, but of a wet powder, which may be again mixed with and, so to say, dissolved in water. Now it is well known that the malt during the mashing process or during the process of turning the mash into wort is mashed and boiled not one time only, but several times, and after each time the mash is separated into its component parts. This separation is effected every time by means of my improved filtering-press, and the water introduced by the channel b^5 and the apertures c^5 into the trays a is no other than the fresh mashing-water employed for mashing the malt-meal the second or third time. In other words, to transport the mashed and separated malt-meal back from the filtering-press into the boiling-vat water is forced through the channel b^5 and the apertures c^5 into the trays a, which are filled with the malt-meal. The water penetrates the latter, escapes finally through the apertures c^4 into the then empty channel b^4, and carries the malt-meal successively with

it until all the meal has been carried back to and into the boiling-vat, it being understood that the latter and the channel b^4 are connected with each other. When the mashing has been completely finished, the residues of the malt-meal are driven out of the press by forcing water either again from the channel b^5 to the channel b^4, as before, or reversely, as the arrangement and connection of the pipes and valves used in connection with the press may allow.

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

1. In a filtering-press, the combination, with a series of trays having sloping lower portions, and interposed filtering-cloths, of two channels communicating alternately with the bottoms of the trays in the series, and a channel communicating with the upper portion of alternate trays.

2. In a filtering-press, the combination, with a series of trays having sloping lower portions, and interposed filtering-cloths, of two channels located side by side and communicating alternately with the bottoms of the trays in the series, and a channel communicating with the upper portion of alternate trays.

3. In a filtering-press, the combination, with a series of trays having curved lower portions, and interposed filtering-cloths, of two channels communicating alternately with the bottoms of the trays in the series, and a channel communicating with the upper portion of alternate trays.

4. In a filtering-press, the combination, with a series of trays having curved lower portions, and interposed filtering-cloths, of two channels located side by side and communicating alternately with the bottoms of the trays in the series, and a channel communicating with the upper portion of alternate trays.

5. In a filtering-press, the combination, with a series of trays, and interposed filtering-cloths, of two channels communicating alternately with the lower portion of the trays in the series, the area of communication between the lower portion of the trays and the alternate channels overlapping a vertical plane coinciding with the axis of the series of trays.

6. In a filtering-press, the combination, with a series of trays, and interposed filtering-cloths, of two channels communicating alternately with the lower portion of the trays in the series, the area of communication embracing a line coinciding with the lowermost portion of the several trays.

7. In a filtering-press, the combination, with a series of trays, and interposed filtering-cloths, of two channels located side by side and communicating alternately with the lowermost portion of the trays in the series, the area of communication overlapping for a considerable distance a vertical plane coinciding with the axis of the series of trays, and a channel communicating with the upper portion of alternate trays.

8. In a filtering-press, the combination with a set of trays, of another set of trays, the trays of one set alternating with those of the other, and filtering-cloths located between the various trays, each tray having a sloping lower portion, an upper elongation forming a portion of a channel, and a lower elongation forming a portion of two channels; the trays of the one set communicating with the upper channel and at their bottoms with one of the lower ones, the trays of the other set communicating at their bottoms with the other of the lower channels.

9. In a filtering-press, the combination with a set of trays, of another set of trays, the trays of one set alternating with those of the other, and filtering-cloths located between the various trays, each tray having an upper elongation forming a portion of a channel, and a lower elongation forming a portion of two channels located side by side, the trays of the one set communicating with the upper channel and one of the lower ones, the trays of the other set communicating only with the other of the lower channels, and the neighboring communications of the two lower channels overlapping each other with respect to a vertical plane containing the axis of the combined trays.

In witness whereof I have hereunto set my hand in presence of two witnesses.

VALENTIN LAPP.

Witnesses:
RUDOLPH FRICKE,
OTTO ULLRICH.