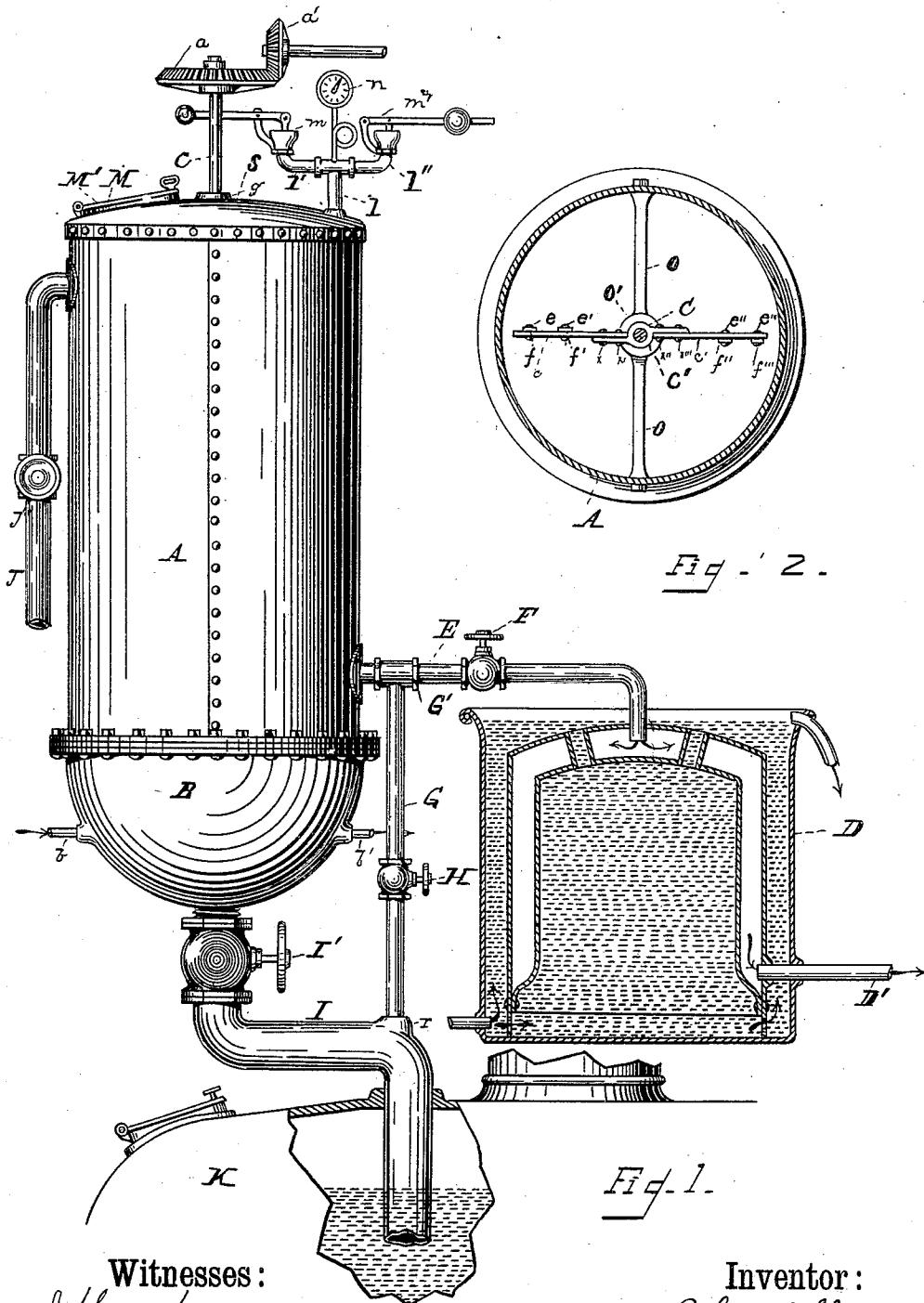


J. IRLBACKER.
APPARATUS FOR EXTRACTING HOPS.

No. 428,101.

Patented May 20, 1890.



Witnesses:

W. H. Hook
Frank L. Lee

Inventor:

John Irlbacher
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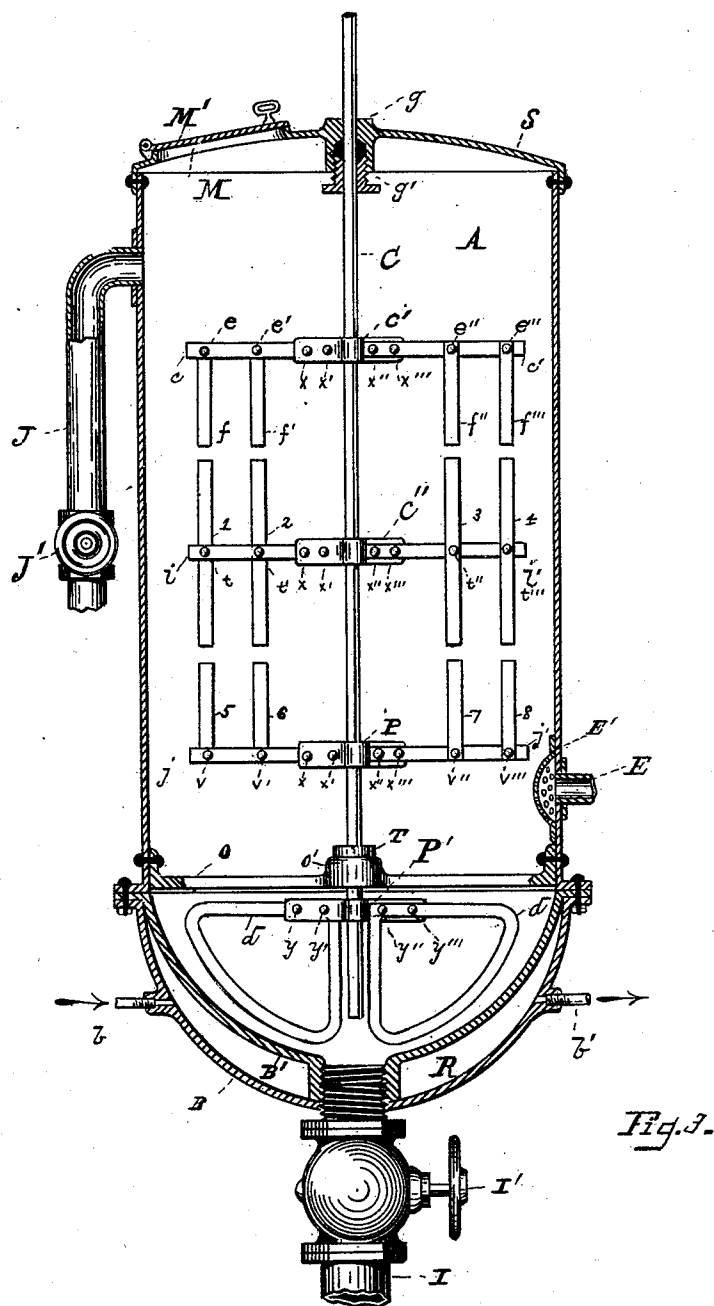


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN IRLBACKER, OF BUFFALO, NEW YORK.

APPARATUS FOR EXTRACTING HOPS.

SPECIFICATION forming part of Letters Patent No. 428,101, dated May 20, 1890.

Application filed June 10, 1889. Serial No. 313,663. (No model.)

To all whom it may concern:

Be it known that I, JOHN IRLBACKER, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Apparatus for Extracting Hops; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention has general reference to improvements in hop-extractors; and it consists in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already mentioned, which serve to illustrate my said invention more fully, Figure 1 is a front elevation of my device, showing the same as connected to the boiling-kettle and extract-cooler. Fig. 2 is a transverse sectional elevation of the extractor. Fig. 3 is a vertical central section of the extractor.

Like parts are represented by corresponding letters of reference in all the figures.

The object of this invention is the production of an efficient extractor for the extraction of the flavors, aromas, and other soluble matters from hops.

To attain this result I construct my device as follows:

A in the drawings represents the shell of my device, preferably being of cylindrical shape, said shell being provided at its lower end with a semi-spherical drum B, being provided with another drum B' in its interior, said drums being bolted or riveted together, thereby forming an annular chamber or steam-space R within the same, said chamber R being provided with inlet and outlet passages b b' for steam, respectively. From the interior of the drum B leads a pipe I, as hereinafter described, the said drum B being fastened to the shell A by bolts or rivets, as shown in Fig. 1. Near the lower end of the shell A leads a pipe E for conveying the soluble products of the hops. At the mouth of said pipe within the shell A is placed a strainer E' to prevent the hops from entering said pipe.

Near the upper end of the said shell leads a pipe J to convey the wort or water used for leaching the hops. The upper end of the shell A is closed by a head S, said head being provided at one side with a pipe l, having branches l' l'', at the ends of which are placed a vacuum-valve m and safety-valve m', respectively. From the center of said branches leads a pipe, at the end of which is placed a pressure-gage n, the said head being also provided with a man-hole M for conveying the hops into the extractor, said man-hole having a hinged cover-plate M', said cover-plate being securely fastened to the man-hole when the extractor is in operation. At the center of the head S is located a bearing g, having a stuffing-box and following to prevent the escape of the soluble products, &c., of the hops. Within said bearing a shaft C is journaled.

C is a shaft, journaled near its upper end in the bearing g and near its lower end in the bearing O' of the cross-bar O, said shaft having a collar T, bearing with its lower surface against the upper surface of the bearing O', the purpose of this collar being to support or uphold the shaft C, said shaft having at its upper end a bevel-gear a, said gear meshing with a bevel-pinion a', the object of which being to enable the shaft to be revolved when desired.

C' is a cross-bar having a hole through its center, said cross-bar being adapted to fit over the shaft and to be fastened to the same.

c' is an extension-bar securely fastened to the cross-bar at one end by bolts or rivets x'' x''', while the other end is provided with two downwardly-pendent bars f'' f''', said bars being fastened to the bar c' by bolts or rivets e'' e'''.

c is another extension-bar similar to bar c', and also having two downwardly-pendent bars f f', fastened to said bar c by bolts or rivets e e', said bar c being fastened to the cross-bar C' at the opposite side from the extension-bar c'.

C'' is also a cross-bar, having two extension-bars i i' arranged opposite to each other, said bars having bars 1 2 3 4, said bars being centrally fastened to the extension-bars by bolts or rivets t t' t'' t''', one half of each bar extending above the extension-bar and the other half below, this cross-bar and attach-

ments being located on the shaft just below the cross-bar C' and its attachments.

P is a cross-bar placed below the cross-bar C' on the shaft C, said cross-bar being provided with two extension-bars *j j'*, arranged opposite to each other and fastened to the said cross-bar by bolts or rivets *x' x'' x'''*, said extension-bars, having upwardly-projecting bars 5 6 7 8, being fastened at their lower ends to the extension-bars by bolts or rivets *v v' v'' v'''*, the whole forming an efficient paddle or agitator.

O is a cross-bar extending across the interior of the shell and fastened to the same by means of bolts or rivets, said bar having a bearing O' at the center for the reception of the shaft C, the object of this bar being to provide a bearing for the shaft in the lower end of the shell.

P' is a cross-bar placed on the shaft below the bearing O', said cross-bar being provided with two triangular paddles, said paddles being cut out in the center, for obvious reasons, said paddles being fastened to the said cross-bar by bolts or rivets *y y' y'' y'''*, the outer sides of said paddles being made to conform with the shape of the inner surface of the drum, as shown in Fig. 3.

D is a cooler for the soluble products, essences, spirits, &c., from the hops, said cooler being only used when it is desired to preserve the extracts for future use, instead of using the same immediately.

E is a pipe leading from the lower end of the shell A into the cooler D, said pipe having a strainer E' at its head to prevent the hops from entering the pipe.

F is a valve, which when closed turns the flow of the extracts, &c., into the pipe G.

G is a pipe leading from the pipe E, by means of the T G', into the pipe I, said pipe G being used when it is desired to use the extracts, &c., in brewing the beer.

H is a valve, which when closed will turn the extracts into the cooler D in an obvious manner.

I is a pipe leading from the bottom of the extractor into the boiling-kettle K, said pipe being used for the purpose of conveying the hops, wort, &c., into the said boiling-kettle after the same have been operated upon, said pipe having a valve I', which is closed when the extractor is in operation, for obvious reasons, said pipe I having an aperture *r* for the reception of the end of the pipe G, whereby the soluble products, &c., of the hops are conveyed into the boiling-kettle to be mixed and boiled with the wort.

J is a pipe leading into the upper part of the shell A, and is used for conveying the wort or water to be boiled with the hops for obtaining the extracts, &c., of the same, said pipe being provided with a valve J', which is closed when in operation to prevent the escape of the volatile products, &c.

K is the boiling-kettle, (shown only in part, as it may be of any desired form,) in which

the wort is boiled and from which it is drawn into the extractor.

In operation, the interior of the shell being filled with hops, the hot wort or water is admitted into the said shell, (the latter being only used when it is desired to obtain the extracts, &c., for future use,) whereupon the steam is admitted into the steam-chamber R, thus boiling the hops and the wort or water, as the case may be. The paddles or agitators are then started, thus bringing the hops and the wort in much more intimate contact, and consequently resulting in the liberation of more of the soluble products, essences, aromas, &c., of the hops than ever before, at the same time the operation being performed in a much more expeditious manner on account of the paddles or agitators revolving, and, as hereinbefore described, bringing the hops and wort into more intimate contact, it being a well-known fact that the passage of the wort through the hops dissolves all soluble salts, as well as liberates the volatile and aromatic essences and spirits, the latter passing through the pipe E into the pipe G, and thence into the pipe I, from whence it passes into the kettle K, while the hops and liquor pass out through the pipe I also into the kettle K, where the extracts, &c., commingle with the wort and are boiled together previous to fermentation, the hops being led into the kettle merely for filtering, after which they may be thrown away.

When it is desired to obtain the extracts, &c., for future use, water may be admitted into the extractor after the same has been filled with hops, after which the steam is admitted into the chamber R and the paddles started as before. When the extracts, soluble products, &c., have been thoroughly liberated from the hops, the said extracts are conveyed through the pipe E into the cooler D. When the said extracts, &c., are cooled, they may be drawn from the cooler by means of the pipe D'.

It will now be seen that the device hereinbefore described possesses many decided advantages over any with which I am acquainted, owing to the fact of the revolving of the agitators or paddles hastening the liberation of the essences, aromas, &c., of the hops, and consequently enabling the brewer to make more and better beer in less time than before.

It will be further observed that this device has another advantage—that of being enabled to make the extract and cooling the same for future use.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. In a hop-extractor, the combination, with the shell A, of the pipe E, communicating with the cooler D, the valve F in said pipe, the cooler D and its outlet-pipe D', the pipe G, having valve H, and connecting the pipe E with pipe I, said pipe I and its valve I', and the kettle K, into which the pipe I dis-

charges, substantially as and for the purposes described.

2. In hop-extractors, the combination, with the shell A, drums B B', steam-chamber R, 5 having inlet and outlet pipes *b b'*, pipe I, valve I', pipe E and valve F, the pipe G and valve H, the pipe J and valve J', and the head S, man-hole M, and cover M', of a shaft C, journaled in a bearing *g* and stuffing-box *g'* 10 near its upper end, and in a bar O and bearing O' near its lower end, said shaft having two bevel-gears *a a'* at its upper end to drive the same, said shaft having a collar T bearing against said bearing O', the said shaft 15 also having cross-bars C' C'' P, said bars being provided with extension-bars, the said extension-bars having pendent bars and a cross-bar P', said bar having two paddles arranged opposite to each other, the outer sur- 20 face of which being made to correspond to the inner surface of the drum, substantially as described.

3. In hop-extractors, the combination, with

the shell having drums B B', a steam-chamber R, steam inlet and outlet *b b'*, an outlet- 25 pipe I and valve I', said pipe communicating with kettle K, a pipe E and valve F, a pipe G and valve H, said pipe communicating with pipe E and I, the head S, having steam and vacuum valves and pressure-gage, a man-hole 30 and cover, a bearing and stuffing-box for shaft C, the shaft C and its paddles, as described, said shaft having a collar T bearing against the upper surface of the bearing O', in which the shaft is journaled, the cross-bar O, hav- 35 ing the bearing O', the cooler D, having the outlet-pipe D', and the kettle K, as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have hereto set my hand in 40 the presence of two subscribing witnesses.

JOHN IRLBACKER.

Attest:

MICHAEL J. STARK,
WM. O. STARK.