

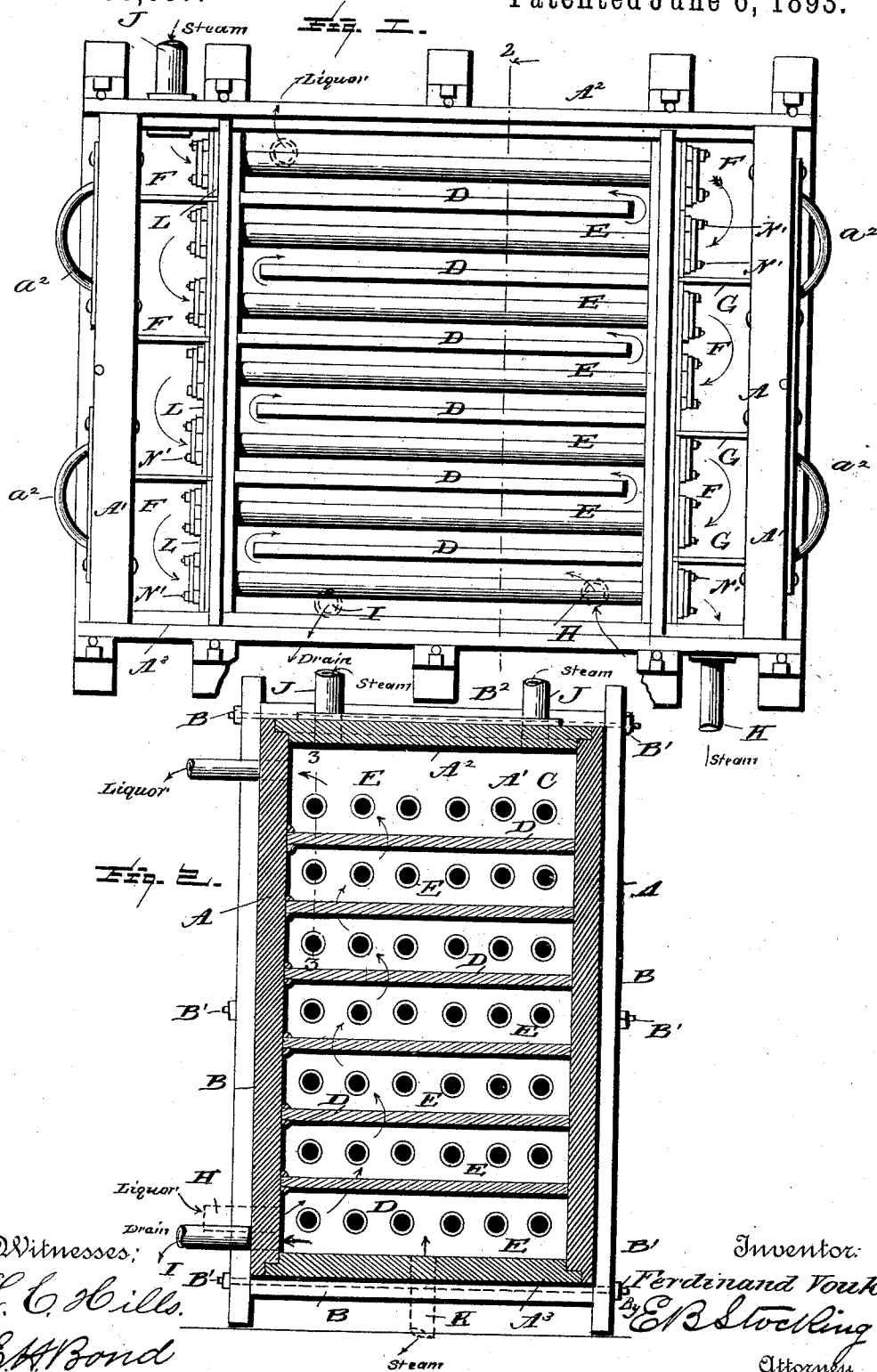
(No Model.)

2 Sheets—Sheet 1.

F. VOUK.
TAN LIQUOR HEATER.

No. 499,067.

Patented June 6, 1893.



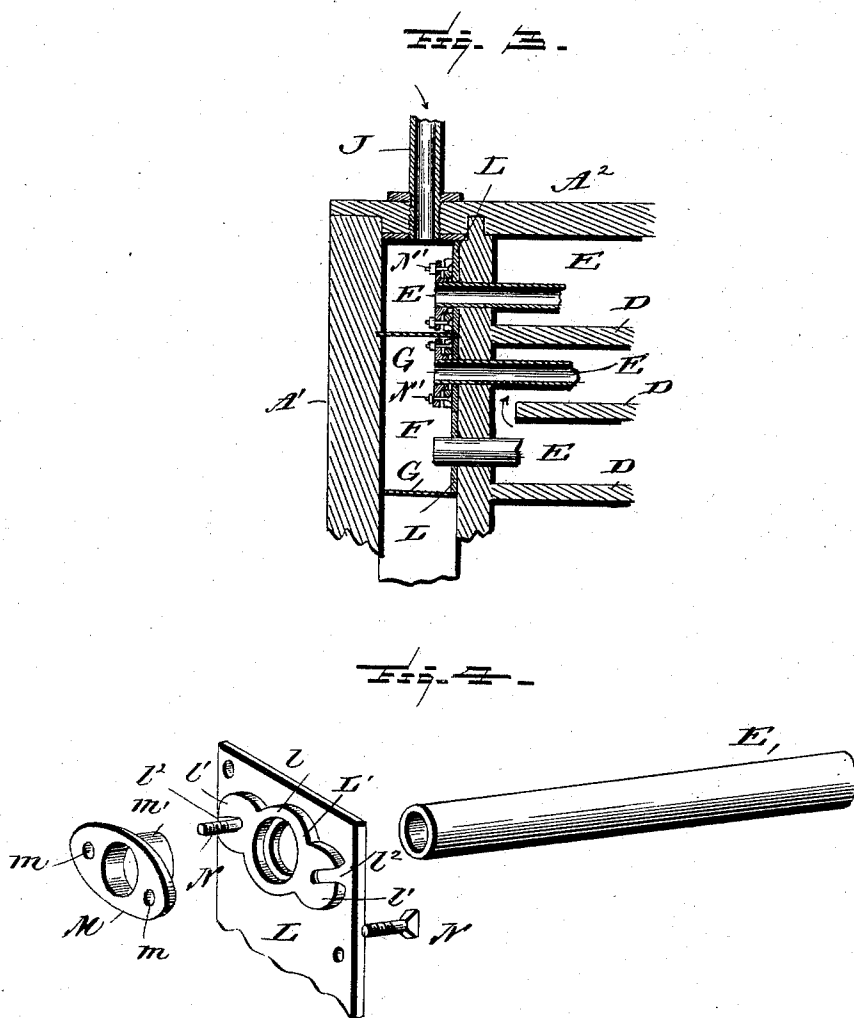
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TAN LIQUOR HEATER.

No. 499,067.

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Witnesses
L. C. Hills
E. H. Bond

Inventor:
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Attorney

UNITED STATES PATENT OFFICE.

FERDINAND VOUK, OF EMPORIUM, PENNSYLVANIA, ASSIGNOR TO A. F. VOGT, OF SAME PLACE.

TAN-LIQUOR HEATER.

SPECIFICATION forming part of Letters Patent No. 499,067, dated June 6, 1893.

Application filed January 31, 1893. Serial No. 460,329. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND VOUK, a citizen of the United States, residing at Emporium, in the county of Cameron, State of Pennsylvania, have invented certain new and useful Improvements in Tan-Liquor Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in devices for heating tan liquor, and it has for its objects among others to provide an improved device for this purpose by which better results are attained, 15 which can be readily cleaned or taken apart for repairs, and in which any one pipe can be removed without disturbing the others. Steam is caused to pass through the heater in one direction and the liquor passes through 20 the device in the opposite direction in a circuitous passage. I avoid elbows which are liable to become clogged with sediment, and employ straight pipes or tubes for the steam and alternately arranged partitions to cause 25 the liquor to take a circuitous path in its passage through the heater. I employ novel means for holding the pipes in position, the bolts, instead of being fast in the plate, being held in dovetail grooves or notches so if a bolt should break it can be easily withdrawn and another put in its place without trouble 30 or danger of loosening the other parts.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined 35 by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part 40 of this specification, and in which—

Figure 1 is a side elevation of my improved tan liquor heater, with one side removed. Fig. 2 is a vertical cross section through the line 2—2 of Fig. 1. Fig. 3 is a detail in vertical section, the same being on the line 3—3 45 of Fig. 2. Fig. 4 is a perspective detail of the stuffing box with the parts separated.

Like letters of reference indicate like parts throughout the several views.

50 Referring now to the details of the drawings by letter, A designates the sides and A'

the ends, A² the top and A³ the bottom of the heater. These are preferably rabbeted together as seen in Figs. 2 and 3 and may be otherwise constructed to form tight joints. 55 They are bound together by the bars or plates B and bolts and nuts B' in such a manner that any one of said parts may be readily removed when desired. The ends are provided with handles a² to facilitate handling thereof 60 as seen in Fig. 1.

Within the outer case thus formed there is arranged an inner receptacle formed of the end pieces C which are rabbeted into the top, bottom and sides of the outer receptacle as 65 seen in Fig. 1 to form tight joints, and within this inner receptacle are arranged horizontal partitions D which are secured at alternately opposite ends to the end pieces C so as to leave a passageway at the end of each parti- 70 tion but the said passageways are arranged at alternately opposite ends of the device as clearly shown in Fig. 1. The partitions are held to the sides in any suitable manner, as for instance as shown in Fig. 2, and between 75 these partitions are passed the horizontal steam pipes E which afford communication between the compartments formed between the end pieces C and the ends of the outer receptacle as seen best in Fig. 1. There may 80 be as many of these pipes as may be deemed necessary. They are simply straight pipes without bends or elbows and their ends are secured in position in a novel manner which will soon be described. 85

The compartments F between the end pieces and the ends of the outer receptacle are subdivided by the partitions G held in place at their inner ends between the plates employed for holding the ends of the pipes as seen in 90 Figs. 1 and 2 and at their other ends held in place in any suitable manner.

H is an inlet for the liquor. It is arranged near the bottom and passes through the outer receptacle into the lowermost compartment 95 and is caused to take the circuitous course indicated by the arrows, passing under the lower partition to the passageway at the end, thence back and through the passageway at the opposite end of the next partition, and so 100 on, passing out at the top.

I is an outlet near the bottom as seen in

Figs. 1 and 2 for the purpose of draining the tank when desired. It should be closed by a plug or some other suitable means. The steam enters at the top through a suitable pipe or pipes J connected with a boiler or some other suitable source of steam, (not shown,) said pipe communicating with the uppermost compartment F and thence passes through the uppermost pipes to the opposite compartment, thence returning by the next lower pipe to the second compartment F and thence so on back and forth through the pipes and compartments and out at the bottom as seen in Fig. 1, the steam thus passing in a direction opposite to the liquor and taking also a circuitous route as indicated by the arrows so as to heat the liquor at all points evenly. The outlet K for the steam is shown as at the diagonally opposite corner from that at which the steam enters.

The pipes are secured in position in the following manner: L are plates which are secured to the outer sides of the end pieces C in any suitable manner. They are arranged to hold the partitions G between them as above described and as seen in Figs. 1 and 3, and each plate has rigid therewith a socket-plate or portion L' as seen best in Fig. 4 which is provided with an annular shoulder l and with oppositely-disposed lugs l' which are provided with the slots l'' which are undercut as shown and M is a flanged piece provided with openings m for the reception of the bolts and with a tubular portion m' fitting the socket of the plate L' and adapted to engage the shoulder thereof. The bolts N have tapered heads adapted to enter the slots of the socket plate. In assembling the parts the plates are secured to the end pieces, the pipes are placed in position, the bolts are inserted in place with their heads engaged in the slots of the socket plate and then the piece M is placed in posi-

tion and the nuts N' screwed up on the bolts to draw the parts together as seen in Fig. 3.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as new is—

1. The combination with the inner receptacle with its partitions and steam pipe with independent removable fastenings located outside said receptacles, of the outer receptacle having independent removable ends with fastenings and with partitions held at their inner ends between the said pipe fastenings, substantially as specified.

2. The combination with the inner receptacle with its horizontal pipes and alternately arranged interspersed partitions, of the plates having removable fastenings for holding the ends of the pipes, the outer receptacle having removable ends and the partitions dividing the space between the two receptacles and having their inner ends between and held by two additional plates of the pipe fastenings, substantially as specified.

3. The combination with a plate with pipe-socket and undercut slots, and a pipe of the plate with tubular portion fitting the socket, and bolts having heads fitted to the undercut slots substantially as described.

4. The combination with the plate with socket with shoulder and lugs with undercut slots, of the pipe, the plate with tubular portion, and the removable bolts having tapered heads fitted to the under cut slots and nuts for tightening the parts, substantially as specified.

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

FERDINAND VOUK.

Witnesses:

W. L. THOMAS,
J. D. LOGAN.