

(No Model.)

D. HORAN.

STILL.

No. 333,464.

Patented Dec. 29, 1885.

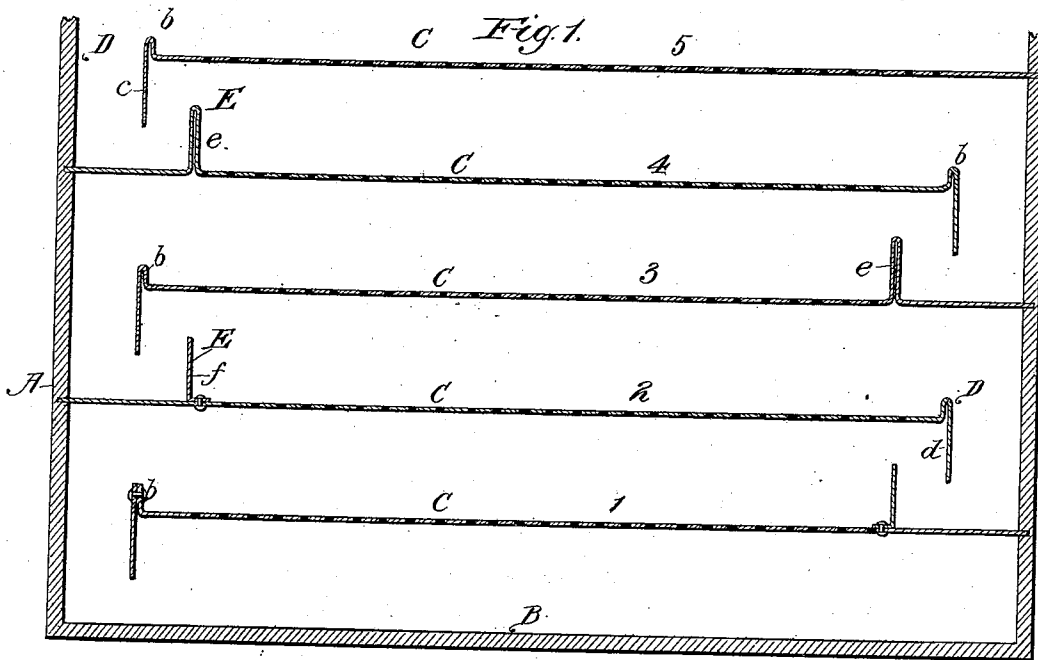
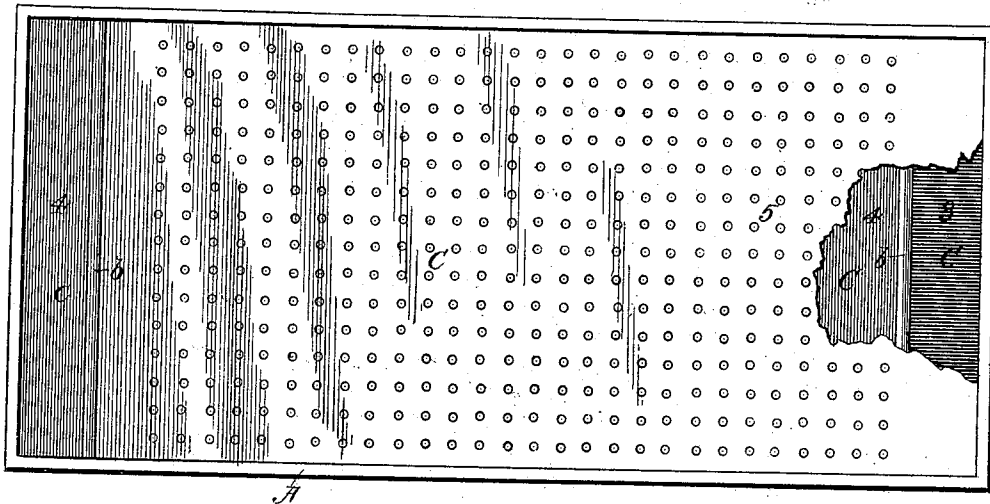


Fig. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

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STILL.

SPECIFICATION forming part of Letters Patent No. 333,464, dated December 29, 1885.

Application filed April 28, 1885. Serial No. 163,696. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HORAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stills, of which the following is a specification.

This invention relates to improvements in what are known as "continuous stills" for the distillation of spirituous liquors from beer mash or wort, and in which there are a series of floors or shelves, arranged one above the other and perforated, over which the mash flows and through which steam ascends, which said floors are connected by short pipes opening at a point above the next lower floor and arranged at the same end of the still, but separated by an upright division plate or diaphragm extending to not quite the opposite end of the still, the escape of the steam upwardly through said pipes being prevented by a water seal formed by a weir and one end and the intermediate sides of the still and diaphragm.

Stills of the character above described necessarily have quite a number of floors, each requiring a tube, which, for effective operation, must closely fit a corresponding perforation in the floor, and provided with a shoulder, by means of which the upper end of the tube is projected slightly above the plane of the floor and the weirs, which weirs are formed separate and then secured in position after the floors are laid.

Another objection to such stills is the necessarily circuitous flow of the mash after it is discharged upon a floor before it finally escapes therefrom, which results in retarding its flow, and causing an accumulation in the end of the still opposite the inlet and outlet pipes, which is not desirable, and, besides, the pipes themselves are liable to become clogged to an extent decreasing, if not entirely stopping, the operation of the still.

The essential object of this invention is to entirely avoid the necessity of employing the downtake-pipes for the mash, and at the same time provide floors of such arrangement and construction that the flow of the mash will not be unnecessarily retarded, and that there will be no liability of the downtake becoming clogged.

A further object is to have all of the advantages of common perforated floors and a water seal for preventing the escape of steam through the downtakes, and at the same time have such a still simple and cheap in construction to a minimum degree.

A still further object is to provide a simple and effective formation of the downtake-passage and the weir, all as hereinafter shown and described in the accompanying drawings, in which—

Figure 1 represents a central longitudinal section of a still embodying my invention; Fig. 2, a plan view of the same with the cover of the still removed and parts broken away to show a number of floors.

Similar letters of reference indicate the same parts in the several figures of the drawings.

To fully understand my invention it is not necessary to show the cover of the still or the supply-pipes for the admission of steam at the bottom or the mash at the top, because they are of the ordinary character employed in various stills, and are therefore omitted from the drawings. The walls A and bottom B of the still are of the ordinary construction, and may be of any construction to form a close receptacle and support the series of floors. The series of shelves C may be of any number and arranged, one above the other, the usual distance apart, and are each secured at their sides to the walls in such a manner as to form a close joint therewith, but have only their alternate ends and one end secured in the end walls of the still, and are provided with perforations *a* over their entire surface, except at points directly over the water-seal chamber on the floor next below. These floors are usually, and preferably, constructed of sheet metal, and have such a length that there is sufficient metal for bending to form a flange, *b*, slightly above the plane of the floor, to regulate the desired depth of mash which shall continually remain thereon, and one wall, *c*, of a downtake-passage, D, as shown in the shelves numbered 3, 4, and 5; but the flange *b* and wall *c* may be formed, if desired, by securing at the forward end of the shelf in any suitable manner a separate plate, *f*, projecting above and below the floor to form said flange and wall. The metal sheet may also contain additional metal sufficient to form a weir, E,

by bending the metal upon itself, as shown at *e* on the shelves numbered 3 and 4; or, instead thereof, a separate plate of metal, *f*, may be riveted or otherwise secured upon the floor, as shown on floors numbered 1 and 2. The free end edges of the wall or flange *c* and the weirs are in different planes—that is to say, the weir projects above the end of the flange a distance sufficient that when the chamber *D* is filled on a level with the upper edge of the weir a perfect water seal is formed, which prevents the rising steam from passing up between the ends of the shelves or floors, while at the same time the steam is free to pass through the perforations and have the desired effect upon the mash.

By the construction described it will be observed that a large outlet or communication is provided between the floors, and that the flow of the mash is in a direct line, and hence is not retarded nor liable to form eddies and accumulations, common in stills before described, and as a result I am not only able to obtain an effective operation, but a more rapid one, and with a simpler construction, while at the same time utilizing all of the advantages common to such prior stills.

In practice I think it will be found desirable to make stills embodying my invention of much greater length than is common in the stills now employed, and thereby acquire all of the advantages due to an increased travel by a re-

turn-flow of the mash upon the same floor without any of the disadvantages such a floor involves.

Instead of setting the edges and one end of the floors in the walls of the still, said edges and ends may have upturned flanges and be secured by flanges or angle-irons of any character suitable for that purpose.

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

1. A still having perforated floors provided with alternate end openings extending the width of said floor, in combination with a water seal in each of said openings, substantially as described.

2. A still having a perforated floor of sheet metal bent across its end to form one wall of an escape or downtake passage, and a flange extending above the plane of the floor for determining the depth of mash thereon, substantially as described.

3. A still provided with perforated floors of sheet metal bent upon itself at one end to form a weir, and at its other end bent upon itself to form one side wall of a passage for the mash, and the flange for determining the depth of mash upon the floor, substantially as described.

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Witnesses:

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