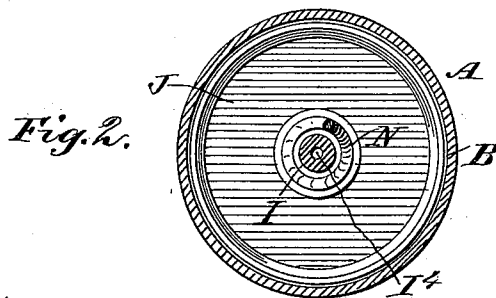
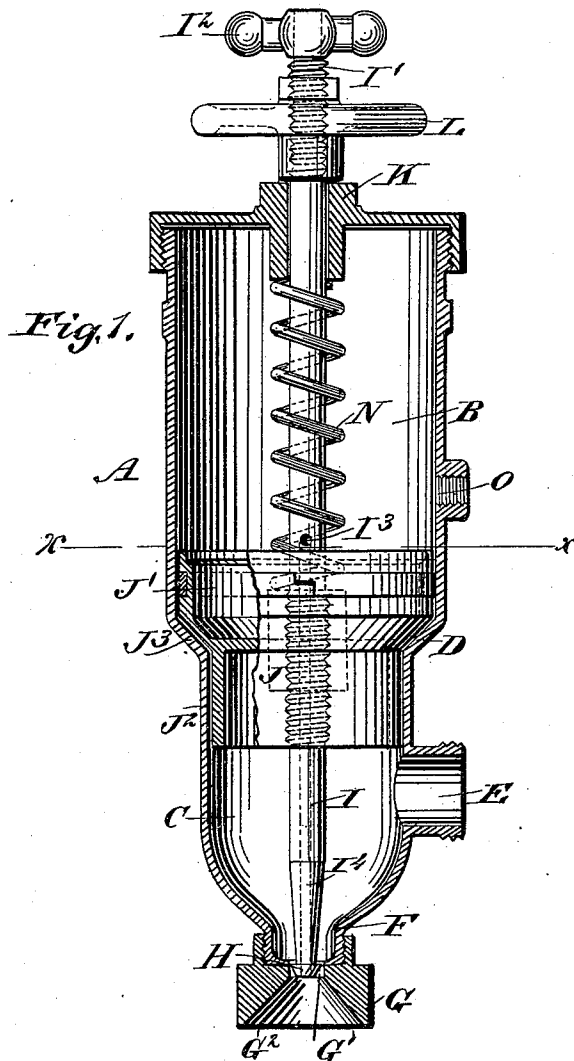


(No Model.)

W. J. RUFF.
SPRAYING DEVICE.

No. 471,141.

Patented Mar. 22, 1892.



WITNESSES:
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UNITED STATES PATENT OFFICE.

WILLIAM J. RUFF, OF QUINCY, ILLINOIS.

SPRAYING DEVICE.

SPECIFICATION forming part of Letters Patent No. 471,141, dated March 22, 1892.

Application filed July 6, 1891. Serial No. 398,514. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. RUFF, of Quincy, in the county of Adams and State of Illinois, have invented a new and Improved Spraying Device, of which the following is a full, clear, and exact description.

The invention relates to spraying devices, such as shown and described in the Letters Patent of the United States No. 453,918, granted to me June 9, 1891.

The object of the present invention is to provide a new and improved spraying device, which is very simple and durable in construction, arranged to facilitate the mixing of the beer or other liquid with the sprayed liquid, and to prevent clogging of the device.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional side elevation of the improvement, and Fig. 2 is a sectional plan view of the same on the line *xx* of Fig. 1.

The improved spraying device is provided with a casing A, formed with a larger upper compartment B and a smaller lower compartment C, the joint between the two being formed by a valve-seat D. The lower compartment C is formed with an inlet-opening E, adapted to be connected with a pipe or other means for conducting the liquid to be sprayed into the casing A.

On the lower end of the compartment C is formed an outlet F, on which is held a nozzle G, formed with a central opening G', leading into the cone-shaped cup G². In the opening G' of the nozzle G is adapted to pass a cone-shaped valve H, somewhat less in diameter than the diameter of the opening G', so that the liquid can pass from the compartment C through the space between the edge of the valve and the inner surface of the opening G' into the cone-shaped cup G², from which the liquid passes in sprays into the air, and is thereby cooled and aerated. The valve H is fastened on the lower end of a valve-stem I, extending through a casing A and fastened to a double piston-valve J, of which the larger

part J' is fitted to slide in the compartment B and the smaller part J² extends into the compartment C. The joint between the two parts J' and J² is formed by a valve J³, adapted to be seated on the seat D, extending between the two compartments, as above described. The large part J' of the piston-valve J is formed with a suitable packing-ring to make a tight connection of the piston in the compartment B. The upper end of the valve-stem I extends loosely through a bearing in the cap K, closing the upper end of the compartment B. The extreme outer end of the valve-stem I is provided with a thread I', on which screws a nut L, resting on the cap K and serving to adjust the stem I within the casing, so as to hold the valve H in the proper position relative to the opening G' in the cup G². A handle I² is secured on the upper end of the valve-stem for conveniently turning the same.

On the valve-stem I is coiled a spring N, pressing with one end onto the piston J and with its other end against the under side of the cap K. An opening I³ is formed in the valve-stem within the compartment B, the said opening leading to a central recess I⁴, extending downward in the valve-stem to open into the cone-shaped cup G². In the compartment B is also arranged an inlet-opening O, adapted to be connected with a steam or water supply to clean the apparatus whenever necessary.

The operation is as follows: When the device is in the normal position, as illustrated in Figure 1, the liquid can flow through the opening E into the compartment C, and from the latter, through the outlet F, past the valve H into the nozzle G to be sprayed, as previously described. In case small particles—such as hops or other substances—pass with the liquid into the compartment C and clog the valve H in the opening G', then a further escape of the liquid from the compartment C is prevented, and consequently the pressure of the entering liquid is exerted against the small part of the piston-valve J, so that the latter is forced upward against the tension of the spring N. It is understood that when the liquid presses against the small part of piston and raises it ever so slightly, the seat of piston J³ will be exposed to the pressure

of the liquid, and the seat being of a larger area than the small part of piston J, it follows that the pressure then exerted on the spring N is greater than it was, which will
 5 compress the spring much quicker and cause the piston to be rapidly thrown upward, withdrawing the valve H at the same time, when the clogging matter will pass out at once with the liquid, (to be sprayed,) thereby quickly
 10 relieving the pressure and causing the piston to seat quickly, as the pressure below is so quickly diminished by the valve opening the orifice wide, caused by the rapid withdrawing of same through increased piston area. As
 15 soon as the liquid flows freely through the opening G' the pressure against the piston-valve J ceases, so that it is returned to its normal position by the action of the spring N. The downward movement of the piston-valve
 20 J moves the valve H back to its normal position in the opening G', and the spraying again proceeds in the manner above described.

As shown in the drawings, the area of
 25 spraying is in a circle; but it can be changed to a quarter or half inch by inserting a stem with the valve H of a different form and changing the form of the nozzle G, which can be easily unscrewed and another put in place. This changing is done where it is
 30 necessary to get close to the edge of the vessel into which liquid is sprayed. By forming the piston-valve with the different-sized parts J' and J² it is forced back quickly to its normal position as soon as the pressure of the liquid within the compartment C ceases, as the area of the upper part J' is so much larger than the area of the lower part J², and is thus more exposed to atmospheric pressure.
 35 Thus a lighter spring N can be employed to assist in returning the piston to its seat.

The valve-stem I is made partly hollow, so that any liquid which may accidentally get into the upper compartment B can quickly
 45 run through the opening I³ and central passage I⁴ to the nozzle G, thereby keeping the apparatus clean and mixing the beer or liquid thoroughly with the other spraying-liquid. The connection of the upper compartment B with the nozzle G by means of the
 50 central passage I⁴ also permits of conveniently cleaning the upper compartment by steam, water, or other means charged into the compartment through the inlet O. The inlet-opening E is also connected with the steam,
 55 water, or other supply, so as to clean the lower compartment simultaneously with the upper

compartment B whenever deemed necessary. The nut L serves for adjusting the stem I and valve H, so that coarser or finer liquid can be
 60 sprayed by the device.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a spraying device, the combination, 65 with a casing formed with two different-sized compartments, of a spraying-nozzle held on the end of the smaller compartment, a spring-pressed piston-valve held in the said casing above the inlet-opening thereof and adapted 70 to be seated on the part of the casing between the two compartments, and a valve carried by the said piston-valve and projecting into the opening of the spraying-nozzle, substantially as described. 75

2. In a spraying device, the combination, with a casing formed with two different-sized compartments, of a spraying-nozzle held on the end of the smaller compartment, a piston-valve held in the said casing above the inlet-opening thereof and adapted to be seated on the part of the casing between the two compartments, a valve carried by the said piston-valve and projecting into the opening of the spraying-nozzle, and a spring pressing on the 85 said piston-valve, substantially as shown and described.

3. In a spraying device, the combination, with a casing formed with two different-sized compartments and a valve-seat between the 90 two compartments, of a spraying-nozzle held on the smaller compartment, a piston-valve held in the said casing and formed with a larger and smaller part, a valve between the two parts and adapted to be seated on the 95 said valve-seat, and a spraying-valve supported from the said piston-valve and projecting into the opening of the spraying-nozzle, substantially as shown and described.

4. In a spraying device, the combination, 100 with a casing having two compartments and provided with a spraying-nozzle, of a piston-valve fitted to slide therein, a stem secured in the said piston-valve and formed with a central passage and opening connecting with 105 the interior of the said casing above the said piston-valve to drain the upper compartment, and a valve on the lower end of the stem and projecting into the opening of the spraying-nozzle, substantially as shown and described. 110

WILLIAM J. RUFF.

Witnesses:

CASPAR RUFF,
 B. AWERKAMP.