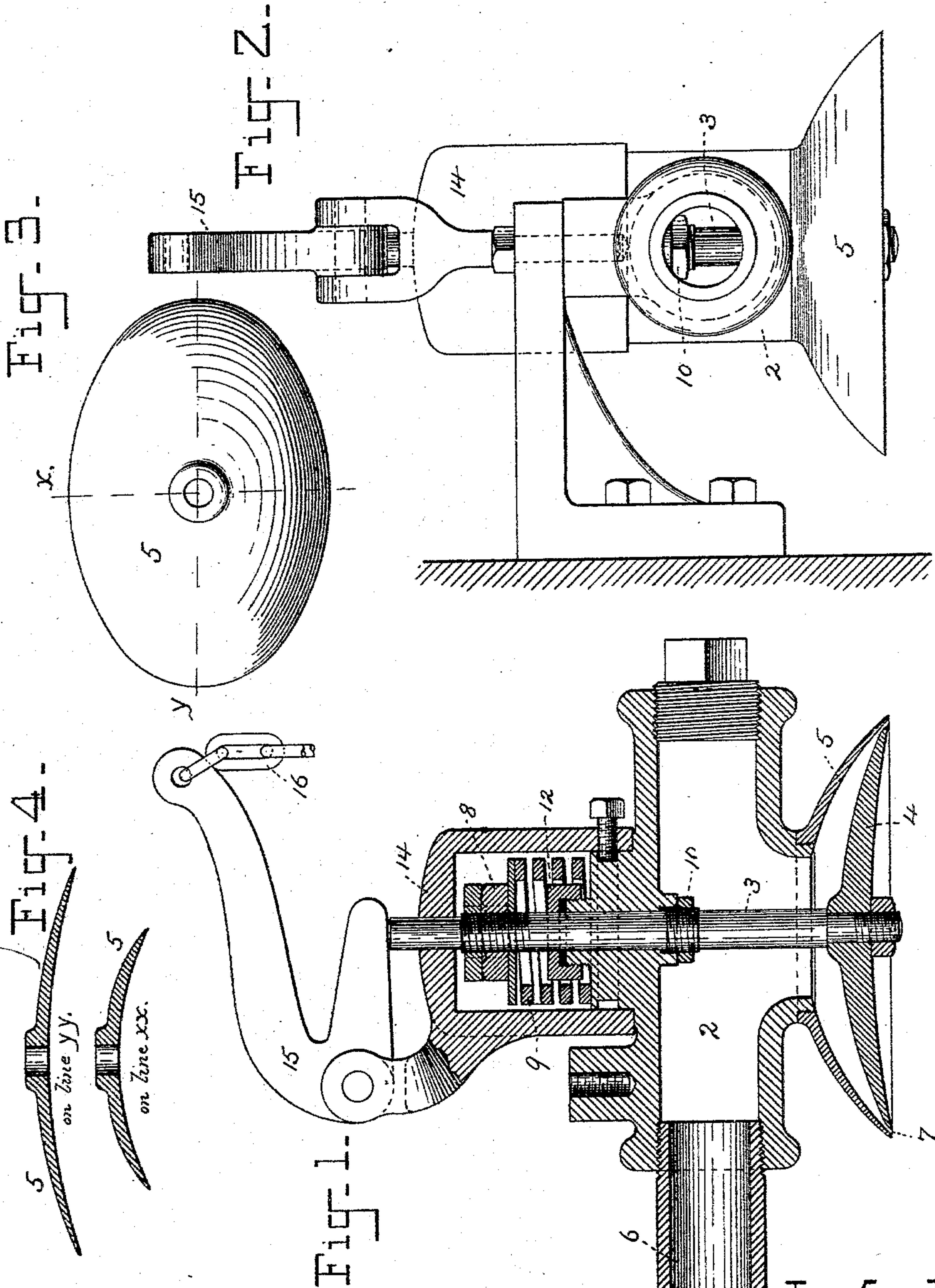


(No Model.)

M. HANFORD.
ATOMIZER.

No. 515,491.

Patented Feb. 27, 1894.



Witnesses.
John F. Nelson.
Fred C. Blossom.

Inventor.
Melancthon Hanford.
by H. C. Lodge Atty.

UNITED STATES PATENT OFFICE.

MELANCTHON HANFORD, OF MALDEN, MASSACHUSETTS.

ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 515,491, dated February 27, 1894.

Application filed April 28, 1893. Serial No. 472,161. (No model.)

To all whom it may concern:

Be it known that I, MELANCTHON HANFORD, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Atomizers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to apparatus for delivering a liquid under pressure in the form of a fine spray.

The apparatus embodying my invention is intended for application particularly in the treatment of malt liquors, and said apparatus is used in connection with a pipe, which is intended to convey from the hop-jack, so called, to the atomizer the wort which is delivered in the form of fine spray, and is subsequently collected in a vat or reservoir for further treatment. This act of delivering the wort or liquid under pressure to the atmosphere, not only cools it rapidly, but likewise aerates it and the process of brewing is expedited.

The object of my invention is to produce an apparatus which is adapted to deliver a continuous fine spray; further it is to be of variable capacity and likewise constructed to deliver a spray of large volume, while the form of the spray may be varied to suit the size and shape of the receiving vats. Other peculiar and characteristic features will be fully hereinafter described.

The drawings represent in Figure 1. a vertical sectional elevation of an atomizer embodying my invention. Fig. 2 is an end elevation showing the same in place and attached to the wall. Fig. 3 is a plan of a deflector plate, and Fig. 4 sections on lines $y y$, $x x$ showing the different convexity of the deflector plate.

The object of this invention is more particularly as above premised for use in aerating beer worts, and it consists in a short length of pipe 2 in the form of a T casting bored transversely to receive a rod 3 equipped

at one end with a disk 4 adapted to co-operate with a cup-shaped plate 5 termed the deflector plate. This latter is removably attached to the under side of the pipe 2, which preferably is closed at one end, and interiorly screw-threaded and united at the other end to a supply pipe 6 leading from the pumps (not shown). The deflector plate is made removable in order that plates of different sizes or forms may be attached; in this way the size and capacity of the atomizer may be altered to suit not only vats of different shapes but the size of the brewing plant.

To enable the atomizer to direct the spray in particular directions, I provide the deflector plate in shape with variable convexity or with different inclinations, as shown in Fig. 4. Thus the ends may have an angle of thirty degrees from the horizontal, while the sides may be at forty five degrees, hence the spray can be directed into oblong vats. If the latter were circular the convexity of the plate would be the same at all points and the shape of the plate would be circular also.

One of the peculiar features is to provide for a variable but predetermined size of discharge orifice shown at 7 and the construction is to prevent the contact of the deflector-plate with its interior co-operating disk. In this way when the apparatus is properly adjusted no variation can occur in the said discharge orifice and the best results are obtained, while in addition this disk is capable of movement to enlarge the discharge orifice in order that the apparatus may be flushed at any moment. This is frequently necessary in order to allow foreign particles as pieces of hop leaves or other sediment which may collect at this point and obstruct the orifice to pass away.

To provide for proper movement of the regulating disk 4 and to enable it to resist the tendency of the liquid under pressure to move it, and at the same time to maintain it at a suitable distance from the deflector plate, I have screw-threaded the upper extremity of the disk rod 3, and placed thereon a nut 8, which regulates the tension of a coiled spring 9 loosely about said rod. This spring bears against the casting 2 and tends to draw the regulating disk against the plate, while a stop is provided to prevent the discharge orifice from closing. This stop consists of a collar 10

adjustable upon the rod and bears against a boss, which serves to prevent the escape of liquid about the rod. However in the present instance I have fitted a packing gland 12 exteriorly of the casting.

As before mentioned in the active operation of this atomizer it frequently happens that foreign particles and sediment obstruct the discharge orifice and it is necessary to enlarge said orifice temporarily; moreover the supply pipe and atomizer are usually located at the top of the compartment or room. Hence I have placed a revoluble annular sleeve or cap 14 above the casting 2, and inclosing the coiled spring; said sleeve is secured to the casting by a holding screw which engages an annular slot. In addition I have pivoted a forked arm 15 to said sleeve, and arranged the end of the shorter arm to rest upon the upper extremity of the disk rod 3, while a chain 16 is affixed to the long arm; hence a pull upon the latter, which extends to one side of the room and hangs within convenient reach of the workmen enables the latter to pull it, when desired. Such act rocks the short arm and depresses the rod 3 and disk 4 thereby enlarging the discharge orifice. Release of the chain allows the coiled spring to return the regulator disk to its proper position, the adjusting collar 10 coming in contact with the boss in the casting. It is understood that the tension of the coiled spring must always exceed the pressure in the supply pipe in order to prevent the regulator disk from being moved except when the act of flushing is to be performed.

The purpose of the revoluble sleeve is to allow the forked arm to be positioned at any angle across the pipe and this is very necessary owing to the proximity of other pipes or objects, which otherwise might prevent proper

action, and in this way allows the flexible connection or chain to be conducted to any portion of the room.

What I claim is—

1. In apparatus for atomizing liquids, a tubular casting, a pendent cup-shaped deflector plate removably attached, combined with a movable rod transversely through the casting, a regulator disk upon its lower extremity, an adjustable collar upon said rod to change the position of the disk, and a spring to hold said disk immovable against liquid pressure, substantially as set forth and stated.

2. In apparatus for atomizing liquids, the combination with a tube to receive liquid under pressure, a removable concave deflector plate, a similar shaped regulator disk there-within, a movable rod adapted to carry said regulator disk, the plate and disk to co-operate but not to touch, mechanism for holding said disk fixed against the pressure of the liquid, and means to cause the disk to retreat from the deflector plate to flush the apparatus, substantially as described.

3. An atomizer composed of a tube for liquid pressure, a pendent deflector plate attached thereto and having portions of its circumference of different convexities, mechanism for holding said disk stationary against liquid pressure, and means for operating the disk manually to enlarge the discharge orifice and flush the atomizer, substantially as stated and explained.

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

MELANCTHON HANFORD.

Witnesses:

H. E. LODGE,

ISAAC H. RUSSELL.