ABSTRACT: A device for automatically expelling water from air lines, the device including an air paddle in front of an air intake tube, the paddle being mounted upon a needle valve stem that is vertically movable as the paddle is rotated, the valve stem having at its bottom a water exhaust orifice, and when the valve stem is lifted, the water in a bowl is allowed to flow from the bowl and into the atmosphere.
AUTOMATIC WATER FILTER VALVE FOR AIR LINES

This invention relates generally to valves. More specifically it relates to water ejecting valves.

A principal object of the present invention is to provide a valve which will automatically expel water from air lines.

Yet another object of the present invention is to provide a valve for automatically expelling water from air lines and which incorporates a rotatable paddle rotated by air from an intake tubing, the rotating paddle causing a needle valve stem integral therewith to be lifted from a valve seat and allow water to be drained through an orifice opened by the lifted valve stem.

Other objects of the present invention are to provide an automatic water filter valve for air lines which is simple in design, inexpensive to manufacture, rugged in construction, easy to use and efficient in operation.

These and other objects will be readily evident upon a study of the following specification and the accompanying drawing wherein:

FIG. 1 is a side view of the invention shown partly in cross section of an assembly incorporating the present invention; and

FIG. 2 is a cross-sectional view of the needle valve unit thereof.

Referring now to the drawing in detail, the reference numeral 10 represents an automatic water filter valve for air lines according to the present invention wherein there is a cup unit 11 that is mounted to intercept an air line, the cup unit 11 accordingly having an air intake tube 12 and an air exhaust tube 13 communicating therewith. The cup unit includes a downward extending vessel 14 crowned by a cap 15 through which the tubes 12 and 13 extend and communicate with an interior compartment 16 within the vessel 14.

The air intake tube 12 extends downward a relatively greater distance, the lower end thereof being turned at right angle so to direct an air stream against a paddle 17 mounted upon the upper end of a needle valve stem 18.

The needle valve stem 18 and paddle 17 comprise elements of a needle valve unit 19 shown in greater detail in FIG. 2 of the drawing.

The needle valve unit 19 includes a threaded plug 20 which threadingly engages within an opening 21 in the bottom of the vessel 14, the plug having an upwardly extending sleeve 21 integral therewith within which the needle valve stem 18 is rotatable and vertically slidable. A vertically extending orifice 22 through the plug 20 and at the bottom thereof communicates with a transverse extending opening 23, the upper portion of the orifice 22 forming a seat 24 for the lower end of the needle valve stem 18 which thus seats off the upper end of the orifice 22.

The needle valve stem is provided with a sidewardly extending or radically extending cam following peg 25 which rides upon the upper edge 26 of the sleeve 21, the upper edge 26 being configured into a cam as shown in FIG. 2 of the drawing in greater detail. One end of a tension coil spring 27 is connected to the peg 26, the opposite end of the spring 27 being secured to the side of the sleeve 21. The tension spring 27 comprises a return spring.

In operative use, the valve works as follows:

The incoming air strikes one side of the air paddle. This causes the paddle and the attached needle valve stem to rotate. As the stem rotates, the cam following peg rides up the cam face on the upper end of the sleeve. As the following peg rides up the raceway, it lifts the valve stem up a needle valve seat. Thus a communication is provided between the orifice 22 and the transverse opening 23, it being readily evident from FIG. 1 that the opening 23 communicates with a lower portion of the chamber 16 where water is likely to collect by dropping from the intake sleeve. Thus a means is provided for the water to be discharged outwardly of the cup, and it is to be noted that the spring 27 keeps the valves stem from rotating a full 360°. Instead the stem will rotate only about 60° to the top of the raceway or cam face, thus causing the spring to pull the peg back to its original starting position after the air pressure is shut off. As indicated by the phantom lines 28 in FIG. 1 of the drawing, a possible filter installation may be installed within the cup unit if preferred.

I claim:

1. In an automatic water filter valve for air lines, the combination of a cup unit intercepting an air line, said cup unit including a cup shaped vessel surmounted by a cap, the ends of said air line extending through said cap and into said vessel, one said end of said air line comprising an air intake tube and the other said end of said air line comprising an air exhaust tube, said air intake tube extending relatively further downwardly for extending sleeve, said sleeve supporting slidably and rotatably free therewithin a needle valve stem, and said needle valve stem having an air paddle integral therewithin upon the upper end thereof, said air paddle being in alignment with the end of said air intake tube for being rotated by air discharge thereof.

2. The combination according to claim 1 wherein said plug is provided with a vertically extending centrally positioned orifice, said orifice communicating with a transverse extending opening within said plug, said transverse opening communicating with a central chamber within said vessel, a valve seat being formed at the upper end of said orifice, said valve seat being engaged by a lower end of said needle valve stem for closing off communication between said orifice and said transverse opening.

3. The combination according to claim 2 wherein an upper edge of said sleeve comprises a cam face, said needle valve stem having a radically extending peg integral therewith, said peg being slidable along the upper side of said cam face, and spring means for returning said needle valve stem downwardly for engaging a lower end of said needle valve stem upon said valve seat.