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MECHANISM TO ABSTRACT LIQUID FROM GAS

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Fig. 1.

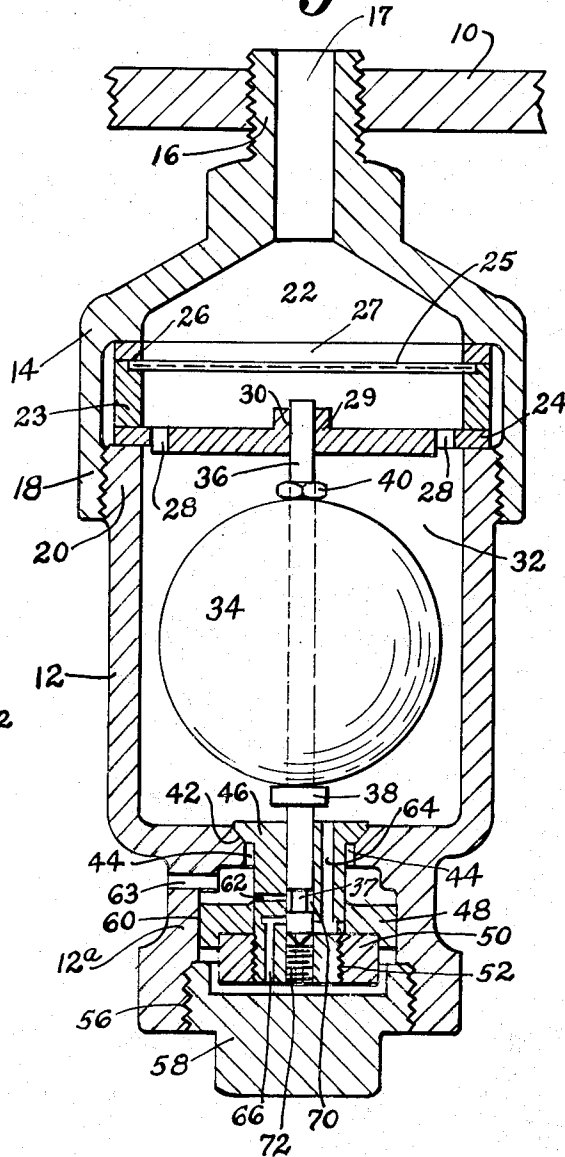
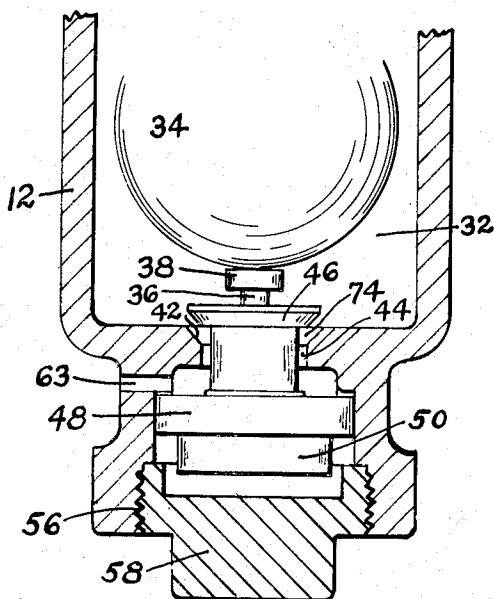


Fig. 2.



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MECHANISM TO ABSTRACT LIQUID FROM GAS

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1 Claim. (Cl. 137—204)

This invention relates to mechanism to abstract a liquid, such as water, from a gas, such as compressed air.

In the operation of air-compressing mechanisms such as air brakes, water collects and interferes with the functioning of the mechanism, thereby presenting a problem of disposal of the water without loss of compressed air.

One of my objects is to provide improved mechanism to automatically dispose of said water without loss of air or gas, that is compact and uses a minimum number of parts.

Another object is to provide an improved construction that enables a direct and simple connection with an air reservoir, and an arrangement that permits liquid to flow directly downward from the time it enters my mechanism until it reaches a point ready for discharge.

The foregoing and other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, combination and arrangement such as is disclosed by the drawings. The nature of the invention is such as to render it susceptible to various changes and modifications, and, therefore, I am not to be limited to the construction disclosed by the drawings nor to the particular parts described in the specification; but am entitled to all such changes therefrom as fall within the scope of my claim.

In the drawings:

Figure 1 is a vertical, sectional view of my water abstracting mechanism, shown enlarged, and with the valve in closed position.

Figure 2 is a front elevational view, partly in section, of my water abstracting mechanism with the upper part broken away, and showing the valve in open position.

As illustrated, 10 designates a portion of an air reservoir to which my water abstracting mechanism is connected. Said mechanism has a main body 12 and a head member 14 directly above and connected to it. Said head 14 has a threaded neck 16 which makes a screw-threaded connection with said air reservoir 10, thus establishing communication of the latter with my mechanism. This neck 16 has a port 17 extending there-through which communicates with an interior chamber 22 of said head portion 14. The lower portion of said head 14 is interiorly screw-threaded as at 18 to connect with the screw-threaded upper portion 20 of said main body 10.

Within said chamber 22 is spacer apparatus which has a sleeve 23 and a collar 24 on which said sleeve 23 rests and which in turn rests on the top surface of said main body 10. A filter 25 rests on a shoulder 26 formed by making a recess in said sleeve 23, and said filter is held in position by a retainer 27, forming part of said spacer apparatus, and which rests on the top surface of said sleeve 23. This filter 25 may be made of fine mesh, brass wire fabric or other suitable material. Said collar 24 has holes 28 therein and at the center is a neck portion 29 having a hole 30 therethrough to slidably receive a shaft 36, later described.

Within said main body 12 is a float chamber 32 in com-

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munication with said holes 28, and in which a float 34 is movably housed, which float is shown as a hollow, metal ball, although it could be made of other suitable materials. Said float 34 is mounted on said shaft 36, which latter has a reduced lower end 37 to permit liquid to flow beyond it when in open position. It is movable in said hole 30 as said float is raised or lowered in said chamber 32. This float rests on a collar 38 attached to said shaft 36 and is held in predetermined position on said shaft with the aid of a nut 40 on top of it.

Within a valve space provided in the lower portion of said main body 12, a valve seat 42 is formed that closes an opening 44 below it, and, on which, a valve 46 is adapted to seat when in closed position as shown in said Figure 1. Said shaft 36 movably extends into said valve and moves upwardly and downwardly therein and in said hole 30, as said float 34 moves. A piston 48 surrounds the lower part of said valve 46 and is held in position in said valve space by a screw-threaded valve plate 50 screw-threadedly connected to the threads 52 at the lower part of said valve 46. Movement of said piston 48 up or down causes said valve 46 to open or close respectively.

The lower portion 12a of said main body is screw-threaded internally as at 56 and has a screw-threaded bottom closure plug 58 which screw-threadedly connects with said screw-threads 56 to close said valve space at the bottom.

Said valve 46 has a horizontal port 62 therein which communicates through said valve space with a horizontal discharge port 63 extending through said main body lower portion to the outside. Said valve 46 also has an upper vertical port 64 communicating with said float chamber 32, and has a lower, vertical port 66 that communicates with the portion of said valve space that is below said plate 50 and valve 46 and extends to a point directly below said piston 48. Opposite said horizontal port 62 an exterior groove 70 is formed in said shaft 36 which communicates with said port 62 and, when said valve is open only, with said port 64.

Within said valve 36 an adjusting screw 72 screw-threadedly enters at the lower central end thereof which extends upwardly to the lower end of said shaft 36, thus enabling one to correctly position the shaft 36 in operable position.

As water passes from the said air chamber 10 through port 17, chamber 22, filter 25, and through said holes 28 into said float chamber 32 it runs into the conduit 64 in said valve 46 until the space below it is full. Then as the water rises in said float chamber 32 the float 34 rises together with said shaft 36, the lower portion of which rises above said conduit 66, so that the water flows from conduit 64 into said conduit 66 and into the valve space under said piston 48. This causes said piston 48 to rise, thus carrying with it said valve 46 which rises off said seat 42 to thereby provide an escape opening 74, shown in said Figure 2, through which water flows out of said float chamber 32 into said opening 44 and through said valve space and said port 63 and discharges outside my mechanism. Likewise water passes through said port 64 and into said groove 70 and said port 62 and out said port 63.

As the water flows out of said float chamber 32 said float 34 descends, thereby closing said valve 46. Thus no gas or air can escape.

What I claim is:

Mechanism to abstract liquid from gas comprising a main body having a float chamber therein and a valve space below said chamber and having a discharge port extending to the outside of said body in communication with said valve space, a head connected to said body and having a chamber therein, said chamber having

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means adapted to establish communication with an outside supply of gas comprising a port in communication with said head chamber, spacer apparatus in said head chamber supported between said main body and head and having an opening therein in communication with said float chamber, a float within said float chamber, a valve movably mounted in said main body and extending into said valve space and adapted to close an opening between said valve space and said float chamber when in closed position, a shaft attached to said float and slidably extending into said spacer apparatus and into said valve, said valve being so positioned that liquid may be received in said valve space when said valve is open and be discharged through said discharge port outside said main

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body, said valve having a screw-threaded opening in its lower portion, and a screw adapted to enter said opening and screw-threadedly connect with said valve and contact the lower end of said shaft whereby the position of said shaft may be adjusted.

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