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R. H. KINGDON

AIR SEPARATOR

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FIG. 1

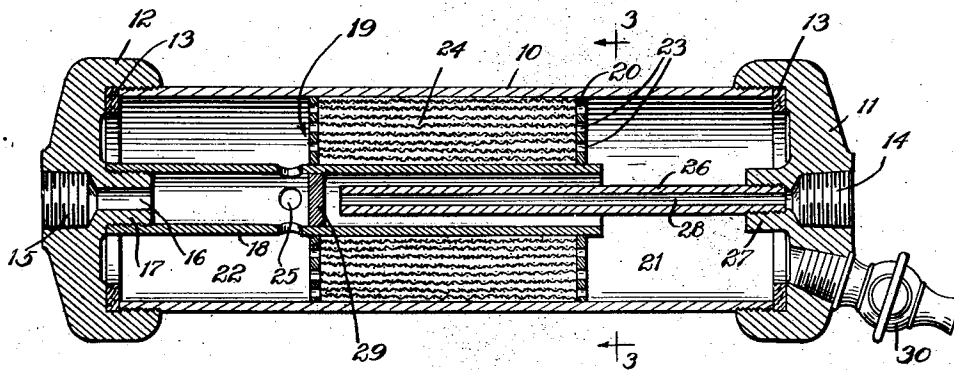
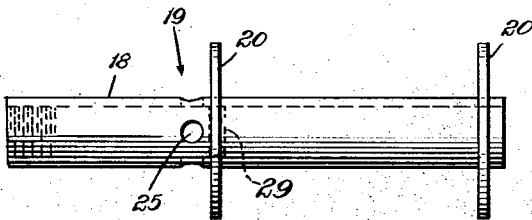


FIG. 2

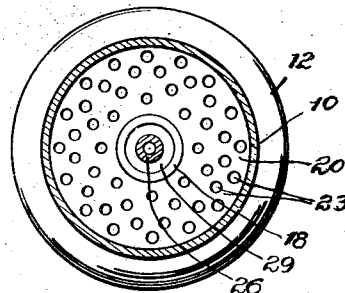


FIG. 3

Inventor
Ralph H. Kingdon
By *Lincoln Barker & Carlson*
Attys

UNITED STATES PATENT OFFICE.

RALPH H. KINGDON, OF CHICAGO, ILLINOIS, ASSIGNOR TO SEARS, ROEBUCK AND CO.,
OF CHICAGO, ILLINOIS, A CORPORATION OF NEW YORK.

AIR SEPARATOR.

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The invention relates to an improved separator for removing foreign substances such as particles of oil, water and other foreign substances from air, and its primary object is to provide a light, portable separator of the above character which can be connected directly into the compressed air supply line such as a flexible hose leading to a device requiring dry and clean air, for example, a pneumatic paint brush.

A further object is to provide an inexpensive air separator which is sturdy and simple in construction, which is not readily injured by rough usage, and which can be easily cleaned and assembled.

Another object is to provide a separator which is small and compact and yet highly efficient.

Further objects and advantages will become apparent as the description proceeds.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of an air separator embodying the features of my invention.

Fig. 2 is a detail view showing the strainer spool.

Fig. 3 is a view taken in the plane of line 3-3 of Fig. 1.

While my invention is susceptible of various modifications, I have illustrated in the drawings and will herein describe in detail the preferred embodiment, but it should be understood that I do not thereby intend to limit the invention to the detailed illustration, but aim in the subjoined claims to cover all modifications and alternative constructions falling within the scope of the invention.

Referring to the drawings, 10 represents an elongated cylinder or shell, preferably made of seamless steel tubing, the opposite ends of which are closed by heads 11 and 12, threaded thereon. Leather gaskets 13 positioned between the heads and the end edges of the cylinder 10 serve to make the connections air tight. The head 11 is provided with a threaded intake passage 14, and the head 12 is provided with a threaded exhaust passage 15 to which the severed or separated ends of the air hose (not shown) may be attached.

The exhaust passage 15 connects at its inner end with a restricted passage 16 extending through a cylindrical lug 17 formed

on the inner side of the head 12. The lug 17 is threaded into the end of a tube 18 which extends centrally through approximately two-thirds of the length of the cylinder 10, and which forms part of a strainer spool 19. Rigidly mounted on the tube 18 are two spaced disks 20, which form two free chambers 21 and 22 in opposite ends of the cylinder 10. Each disk 20 fits snugly within the cylinder 10, and is provided with a large number of small perforations 23. The space between the disks is filled by a screen 24, comprising in the present instance, a strip of copper wire cloth wound around the tube 18. A screen of this character efficiently removes all foreign substances suspended in the air, and can be easily cleaned, as by burning off said substances or by washing the screen in a suitable cleaning fluid. The chamber 22 communicates with the interior of the tube 18 and the passage 16 through a plurality of openings 25 formed in the wall of the tube.

Air from the intake passage 14 passes into the cylinder 10 through an elongated intake nozzle 26 threaded into a lug 27 formed on the inner side of the head 11. The nozzle 26, which is provided with a small restricted air passage 28 extends centrally into the open end of the tube 18 to almost the remote end of the screen 24. A plug 29, preferably made of brass, is soldered or otherwise secured in the tube 18 just beyond the free end of the nozzle 26, and serves to sharply deflect the air leaving the passage 28 outwardly around the nozzle 26 into the chamber 21. The condensate within the cylinder may be removed through a cock 30 threaded through the head 11.

Upon leaving the restricted passage 28, the compressed air is suddenly expanded with the result that its temperature is lowered and a portion of the entrained liquids and vapors are condensed. The sudden impact against the plug 29 and the subsequent sharp turn of the air, effect a further precipitation of the moisture suspended therein. From the chamber 21, the air passes through the perforations 23 in the disks 20 and through the mesh screen 24 into the chamber 22, whereby any remaining moisture and all other particles of foreign substances are completely removed.

It will be apparent that I have provided

an improved air separator which can be easily and quickly connected into a compressed air line, which is portable and can be alined with the flexible air hose in any position and which efficiently and thoroughly removes all particles of liquid, vapor, or other foreign substances which may be entrained in the air.

I claim as my invention:

- 10 1. An air separator having, in combination, a cylindrical shell, heads closing the ends of said shell, a high pressure intake nozzle having a long restricted passage and supported by one of said heads, a tube sup-
15 ported by the other head and surrounding said nozzle, a plug closing said tube positioned to intercept the flow of air at a point just beyond the end of said nozzle, a pair of spaced perforated disks mounted on said
20 tube, a screen filling the space between said

disks, and an air exhaust passage in said last mentioned head.

2. An air separator having, in combination, a shell, a pair of heads closing opposite ends of said shell, said heads each having a hollow tubular projection on their inner faces communicating respectively with the inlet and outlet passages, a pair of tubes secured to said projections and communicating with said passages, said tubes telescoping loosely and one tube having a narrow restricted admission passage, a plug mounted in the outer tube directly before said passage, an aperture in said outer tube communicating with the outlet passage beyond said plug, and spool means having an air filter mounted on said outer tube.

In testimony whereof, I have hereunto affixed my signature.

RALPH H. KINGDON.