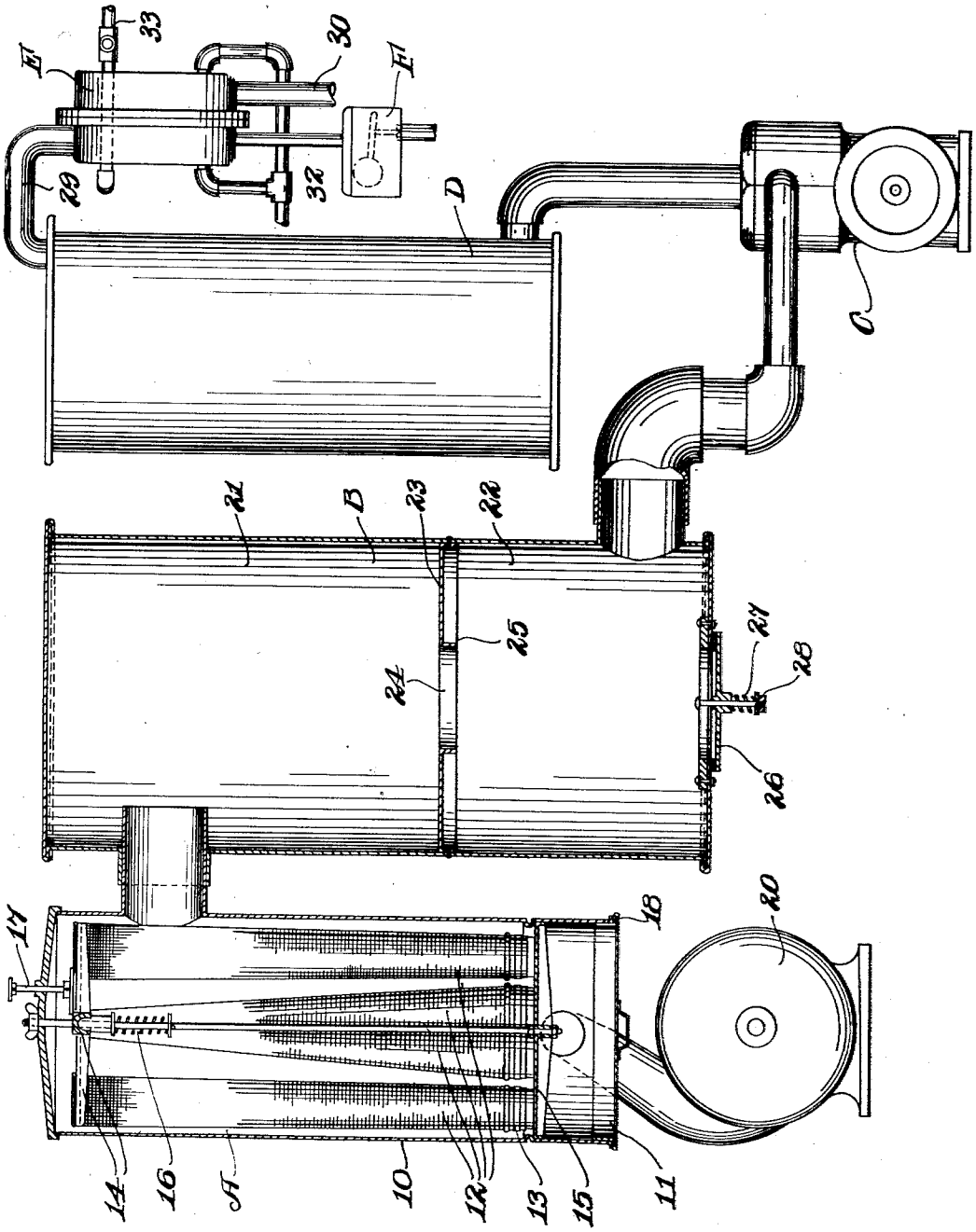
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SYSTEM FOR CLEANING, COMPRESSING, AND DRYING AIR

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Inventor

Richard Ruemelin

By Howard Richey

Attorney

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RICHARD RUEMELIN, OF MILWAUKEE, WISCONSIN

SYSTEM FOR CLEANING, COMPRESSING, AND DRYING AIR

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My invention relates to the system for cleaning, compressing and drying air which is applicable to air lines such as are used for sand blasting and similar purposes.

A feature of the invention resides in the system for cleaning the air, providing a storage for the clean air between the air cleaning member and the compressor, and after the air has been compressed into the compressed air tank, also providing a means of drying the air automatically as it is used out of the compressed air tank.

The invention includes a means of compensating for the unloading of the air compressor to overcome any back pressure in the clean air receiver and prevent any oily film or mist from being carried back to the cleaner in the method of cleaning the air, compressing it and automatically drying it as it passes to use.

The invention consists in the system for introducing air through a cleaner, having a series of cleaning tubes made of textile or other material which are adapted to clean all of the dust and fine particles out of the air, and a blower may be used to assist in introducing the air into the cleaner if desired. From the cleaner the air passes into the clean air receiver and this is provided with a baffle plate disposed in the lower portion of the same above the outlet opening. In the bottom of the clean air receiver is placed a relief valve which is adapted to drain all of the oil picked up by the air within the compressor cylinder when unloading, and is made with a spring operated valve which is adjustable to the desired tension to give a virtually zero pressure. The system operates by passing the air from the clean air receiver to the compressor and from the compressor to the compressed air tank and then through the automatic air drier which is made in a manner to cause the excess moisture to be extracted from the air as it passes through the drier.

The general features and principles of the system will be clearly and definitely set forth in the specification and claims.

The drawing illustrates a diagrammatic side view showing for convenience the air cleaner, clean air receiver, compressor, compressed air tank, air drier and automatic check drain valve for the air drier. The drawing is for the purpose of more clearly defining the method.

In the drawing I have illustrated for convenience the air cleaner A which is of a cylindrical nature having a cylindrical casing or body 10, a clean-out cover 11 in the bottom of the same, and a series of tubular textile cleaners 12 having their lower ends secured at 13 to suitable collars which keep the lower ends of the tubular cleaners open while the upper ends are folded over the cross supporting arms 14.

The cleaning tubes 12 are continuous, and extend from the bottom to the top of the cleaner, over the cross supporting arms 14 and back down to the bottom of the cleaner, the ends being secured to two collars which are carried by the base plate 15. The cross supporting arms 14 are caused to be held up under tension of the spring 16 and a shaker rod 17 which projects through the top of the cleaner A permits the jarring of the tubes 12 when it is desired to shake the dust off the same into the bottom reservoir 18, and by means of the cover 11 the dust may be taken out of the lower reservoir 18.

To overcome the resistance of the textile tubes 12 I provide a suitable blower 20 which may be used if desired to blow the air into the tubes 12 of the cleaner.

In carrying out my system I employ a clean air and receiver tank B which has an upper air receiving compartment 21 and a lower air receiving compartment 22. The compartments 21 and 22 are divided from each other by the horizontal baffle 23 which is formed with a central opening 24 around which a depending flange 25 extends. In the bottom of the chamber 22 I provide a relief or drain valve 26 which is held by the spring 27 in closed position, and an adjusting nut 28 permits the adjustment of the spring 27 to the desired tension. It is desirable that this spring and valve be set so that the tension is for virtually zero pressure. This valve acts to drain any oil which may be carried over from the compressor C when the same is un-

loading. The method includes the compressing of the air by the compressor C which is only illustrated diagrammatically and forcing the compressed air into the tank D.

The compressed air is forced out through the pipe 29 and the system includes an air drier E which is diagrammatically illustrated, and which is adapted to receive the air in at the top and pass it out through the bottom through the pipe 30. The drier is provided with a drain check valve F which operates automatically to drain off any moisture which is collected by the drier E as the air passes through the same. The drying of the air is carried on automatically as the air passes through the drier E.

The drier E may be cooled by a water inlet line such as 32 and water outlet 33 which is designed to carry a circulation of water around the drier E. This cools the air and automatically drys it as it passes through the drier E.

My system is simple in operation but very important and effective in providing a means of supplying fresh clean dry air to be used with sand blasting equipment or for other purposes where fresh clean air is desired. The compressor and other equipment of devices of this nature are worn out both more readily by the indraft of bad air which is full of dust and grit and this is particularly true where air is being compressed in and around sand blasting equipment or in other places where the outer atmosphere is quite dirty. The dirt in the air gives considerable trouble to say nothing of the wear on the equipment to which the air is used.

My system operates to carry the air through a cleaner to extract all dust and grit and dirt, then introduce the air into a receiver which is provided with means for preventing any oil film or spray of oil being carried back into the air cleaner. Any oil on the cleaner tubes 12 would kill the function of the same for the reason that the dust would adhere and clog the bag or air tubes.

The system is carried out by providing the baffle which prevents the rising of the oil in the clean air receiver tank and the relief or drain valve which is set at zero pressure, permitting the unloading of the compressor to be carried off through the drain valve. Then as the air is compressed into the compressed air tank as the reservoir for compressed air, the continuation of carrying out the method includes the air drier which automatically drys the air as it passes from the compressed air tank. By this method I provide an effective means of supplying clean dry compressed air of a uniform consistency virtually at all times irrespective of the outer atmospheric conditions for either dirt or moisture. This is very important in the handling of air for certain uses and purposes.

The drawing illustrates only a means of indicating the manner in which my method can be carried out and obvious means of carrying out the system may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. An apparatus for cleaning, storing, compressing and drying air comprising, an air cleaner, a storage reservoir, a relief valve in the clean air storage reservoir, an air compressor, a storage tank for compressed air, means for removing moisture from the compressed air, and means for connecting the various elements together in the sequence mentioned.

2. An apparatus for cleaning, storing, compressing and drying air comprising, an air cleaner, a storage reservoir connected thereto, a relief valve in said storage reservoir to prevent rise of pressure therein, a compressor adapted to be supplied from said storage reservoir, a compressed air storage tank connected with said compressor, means for removing moisture from the compressed air, and means for delivering said air from said compressed air tank.

3. An air cleaning apparatus including, a dust arrester, a storage reservoir for air connected thereto, an unloading valve in said reservoir and an air compressor connected to said reservoir for compressing the air therefrom.

4. An air cleaning apparatus including, a cloth screen air cleaner, a clean air storage reservoir, a compressor connected to said reservoir adapted to compress air therefrom and an unloading valve in said reservoir to relieved pressure caused by the unloading of the compressor.

5. An air cleaning apparatus including, a cloth screen cleaner, a compressor for compressing the clean air connected thereto, a relief unloading valve interposed between said cleaner and said compressor to relieve unloading pressure of said compressor, and a storage tank for air compressed by said compressor.

6. An air cleaning device including, a cloth screen cleaner, a compressor for compressing the clean air connected thereto, a relief unloading valve interposed between said cleaner and said compressor to relieve unloading pressure of said compressor, and means for removing the moisture from air compressed by said compressor.

7. An air cleaning apparatus including, an air cleaner, a clean air storage tank, a baffle in said tank dividing the same into separate parts connected by a restricted passage, means for connecting one of said parts with said air cleaner, an air relief valve in the other of said parts, a compressor, and means for connecting said compressor to said other part, tending to restrict unloading pressure from said compressor to said other part.

8. An apparatus for cleaning and compressing air comprising, an air cleaner, an air compressor connected therewith, and an unloading oil and pressure relief interposed between said cleaner and said compressor to prevent oil and air unloading from said compressor from contacting said cleaner.

9. An apparatus for cleaning and compressing air comprising, an air cleaner, an air compressor connected therewith, baffle means between said cleaner and said compressor for retarding the flow of unloading pressure from said compressor to said cleaner, and an unloading valve interposed between said compressor and said baffle means.

RICHARD RUEMELIN.