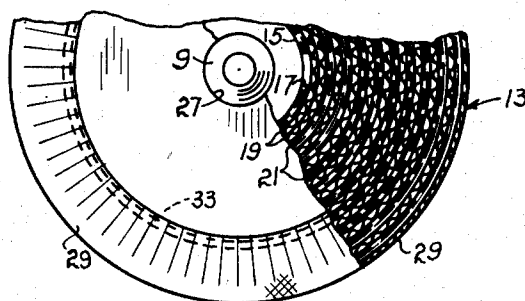
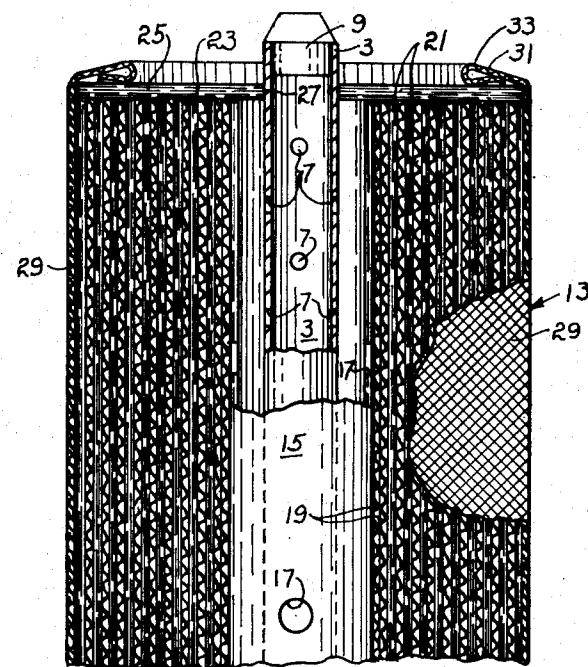
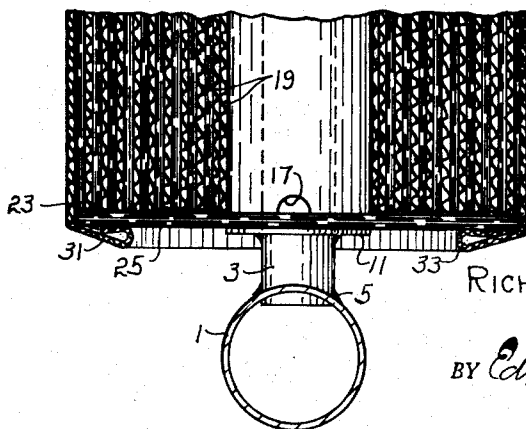


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DEHYDRATOR CARTRIDGE
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DEHYDRATOR CARTRIDGE

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1 Claim. (Cl. 210-169)

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This invention relates to a dehydrator cartridge. More specifically, it relates to a cartridge for removing water and also dirt from petroleum products, particularly turbine oil.

The cartridge herein disclosed is primarily intended to be used in a turbine oil conditioner, oil passing from the turbine through the cartridge and back to the turbine.

It is therefore an object of this invention to provide a cartridge which will separate water from oil.

It is also an object of this invention to provide a dehydrator cartridge which will also remove dirt from oil.

It is another object of this invention to provide a dehydrator cartridge which will not channel.

It is another object of this invention to provide a dehydrator cartridge which is relatively cheap so that it can be discarded when it becomes ineffective.

It is still another object of this invention to provide a cylindrical filter cartridge convolutely wound and sealed at both ends.

It is yet another object of this invention to provide a dehydrator cartridge which can be concentrically installed in sealing relation to a fixed tube in connection with an outlet header.

These and other objects will become apparent from a study of this specification and the drawings which are attached hereto and made a part hereof and in which:

Figure 1 is a view of the cartridge looking down on the top and is partially in section.

Figure 2 is an elevation in section of the cartridge shown in Figure 1.

Referring to the drawings the numeral 1 designates a header pipe with a tube 3 inserted through a hole on the top side and welded in position as shown at 5. A series of holes 7 are drilled through the tube from four sides near the top and a plug 9, which tapers upward, seals the top end of the tube. A washer 11 encircles the tube a short distance above the header pipe and is welded or brazed to the tube.

The cartridge, generally designated by the numeral 13, is cylindrical in shape. It has a hollow, perforated, cylindrical core 15 which forms a liquid collection chamber and is provided with numerous holes 17 through the wall on four sides and at regular intervals the full length of the tube. The core shown is made of wound paper held together by an adhesive that is impervious to oil and water. This core could easily be supplanted by a screen, a Bakelite tube,

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or a cylinder of any other suitable material as desired.

Two full convolute turns of 8-mesh, cotton fiber cloth 19 are wound around the core and followed by alternate layers of 6-ply creped paper wadding 21 and the fiber cloth, all convolutely wound, with the outside wrap being of the creped paper.

When the wrapping is completed both ends of the roll thus formed are dipped in a phenolic resin solution or other suitable adhesive 23 which is impervious to oil and water. Circular cardboard discs 25, also impervious to oil and water, having a central hole 27 which is smaller than the outside diameter of the tube 3, are placed concentrically on the ends and clamped between heating elements to dry and cure the adhesive.

A knit cotton stocking 29 having a hem 31 at either end to encircle a drawstring 33 is rolled over the paper cartridge and extends over both cardboard discs 25, after which the drawstrings at the ends are pulled tight and tied.

The assembly is then forced down over the tube 3, the holes 27 expanding to form a liquid tight fit around the tube until the bottom disc 25 contacts the washer 11. The tapered end of the plug facilitates installation of the cartridge on the tube.

The knit stocking acts as a primary water stripper and also catches the largest particles of dirt, such as scale, etc. The creped paper strips and absorbs water from the oil, the stripped water dropping into a container for the cartridge (not shown) whence it may be drained off by manual or automatic means. The cloth supports the creped paper and prevents its matting down.

If desired, the cotton stocking may be omitted and the last two wraps around the cartridge be made of the cloth.

Operation

One or more of the cartridges are mounted as shown on a common header and immersed in a tank of oil. One end of the header is capped and the other end connected to a vacuum pump. Float controls connected to the switch on the vacuum pump motor or other means may be included in the tank to maintain the level of oil in the tank slightly above the top of the cartridges.

With the tank filled to its required level and a source to replenish the liquid drawn out of the tank, the vacuum pump is placed in operation, which will draw the oil through the cartridge and header. It will be noted that due to the

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convolute construction the oil cannot channel through the cartridge. It will be noted also that the inlet into the tube 3 through the holes 7 is near the top of the cartridge, which insures functioning of the entire cartridge, for the space between the tube 3 and inside the core 15 must be filled to the level of the holes 7 before the oil can pass to the header.

The outside layer of creped paper and the stocking strip out the bulk of the water found in the oil and also the dirt, the small particles of water being coalesced into larger particles until they drop down on the outside of the cartridge. The inner layers of creped paper absorb any water not stripped by the outer layer and also catch and retain finer particles of dirt escaping the first layer. The paper also absorbs water and the absorption of water continues until such time as the paper becomes saturated, when the cartridge is removed and discarded and a new one installed in its place.

It is obvious that various changes may be made in the form, structure and arrangement of parts without departing from the spirit of the invention. Accordingly, applicant does not desire to be limited to the specific embodiment disclosed herein primarily for purposes of illustration; but instead, he desires protection falling fairly within the scope of the appended claim.

What I claim to be new and desire to protect by Letters Patent of the United States is:

In a dehydrator cartridge, the combination of a cylindrical core pervious to liquids and forming

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a liquid collection chamber, a dehydrating material wound in layers about said core to form a roll, supporting means for said material between said layers, centrally perforated, yieldable means for sealing the ends of said roll and chamber and a discharge tube entering said chamber from the bottom, frictionally and sealingly entered in said central perforations, said tube having inlet passages only near the top of the chamber.

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