

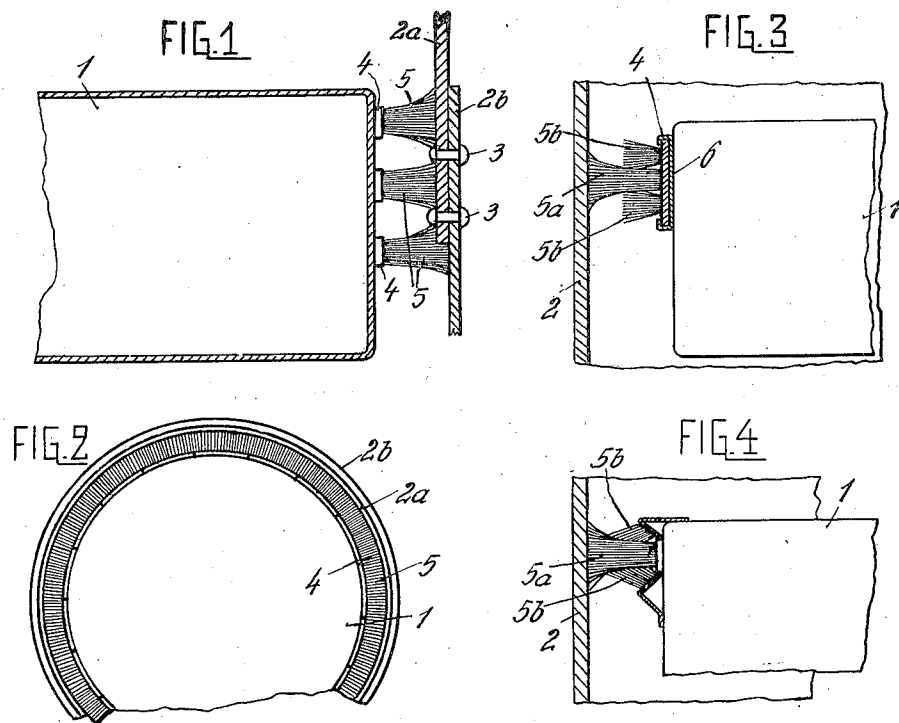
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PERIPHERAL SEALING MEANS FOR TANKS

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PERIPHERAL SEALING MEANS FOR TANKS

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1 Claim. (Cl. 220—26)

This invention relates to a sealing means for the floating tops of tanks employed for storing certain liquids, such as liquid fuels.

Tanks of this nature usually comprise a circular metallic structure forming the tank proper, and are furnished with a floating top forming either a rigid structure or made up of numerous sections, this top rising and falling within the circular structure dependent on the level of the liquid within the tank.

If now the liquid, for example, is a fuel, considerable loss will be incurred by evaporation at all points at which the liquid is able to escape into the air, this applying quite particularly to the peripheral portion, where a certain amount of clearance requires to be allowed between the top and the tank. Moreover the vapors escaping into the atmosphere at this point, being of a highly inflammable nature, would obviously represent a considerable source of danger to persons or property in the immediate vicinity, so that special precautions require to be taken, primarily at the point between the top and the tank, to preclude as far as possible any escape whatsoever of the contents of the tank into the surrounding atmosphere.

For this purpose I have found that brushes disposed about the peripheral face of the floating top have proved to be extremely effective in obtaining a perfectly tight seal between the top and the inner wall of the tank, inasmuch as these brushes, if made of suitable material, not only act as an excellent conductor for heat, but also adapt themselves very readily to any irregularities in the wall of the tank represented by rivet heads, overlapping seams or other protuberances.

The bristles of the brushes may be made of phosphor bronze, Monel metal, or of any other material possessing the necessary resiliency and capable of withstanding any undesirable effects which the contents of the tank may tend to exert thereon.

In a simple form of embodiment a series of wire brushes are disposed in close proximity about the periphery of the floating top, these brushes, which are not subject to any limitation as regards their size and may be made to vary in their actual expanse as may be found convenient or desirable, having for example flat metallic heads, to which the bristles, in addition to being tufted in the usual way, may also be soldered for the sake of additional strength, and being secured by means of these heads to the peripheral face of the top by welding, riveting, or in other convenient fashion.

A suitable method of securing the brushes has been found to reside in the use of a strip of metal secured firmly to the peripheral face of the top and having its ends doubled over to grasp the flat metallic head of the brush. By folding back the one end the brush may be removed and replaced by another brush, whereupon the said end of the metallic strip is again doubled over into its original position, so that in this way worn or defective brushes may be replaced with a minimum of trouble.

To increase the general resiliency of the brushes, the wires or bristles of any particular brush may be made of different lengths. Thus, for example, there may be provided a series of long wires which, when the brush is positioned on the top, are disposed horizontally along the periphery, whilst above and below these long wires there are situated tufts of shorter wires. Upon the movement of the floating top either in an upward or downward direction the longer wires will sweep or trail over the inner wall of the tank, forming an effective seal. At their bases, however, they will be supported by the shorter and consequently stiffer wires, which are approximately half the length of the longer wires, and will accordingly prevent the longer and more flexible wires from yielding to an excessive extent.

In an additional form of embodiment the brushes may be mounted to swing to a certain extent upwards and downwards coincident with the upward or downward movement of the floating top, or they may be carried within recesses or cavities in the top and be pressed against the inner wall of the tank by means of springs, so that any wear on the wires will be more or less taken up automatically, as the more the wires are worn at the ends the more they will be advanced out of their recesses by means of the springs.

The invention will now be described more fully with reference to the accompanying drawing, in which—

Fig. 1 is an elevational view, partly in section, of one form of embodiment of the brushes.

Fig. 2 is a plan view showing the disposal of the brushes about the periphery between the floating top and the tank.

Fig. 3 is an elevational view of a modified form of embodiment of the brushes,

Fig. 4 being a further modification.

Referring now to Figs. 1 and 2, 1 is the floating top, which may be of any desired construction. To better illustrate the advantage of the brush

seal according to the invention the floating top 1 is shown opposite to a portion of the wall of the tank where there is a horizontal seam, the two parts of the tank 2a and 2b being held together by means of rivets 3. On the peripheral face of the top 1 there are secured brushes comprising flat heads 4, for example of metal, having closely set tufts of wires 5, which may be of phosphor bronze, Monel metal or any other desired material suitable for the purpose. The tufts of wires extend as closely as possible toward the edge of the brush so as to preclude any intermediate spaces which are not filled out by wires, and as shown in Fig. 2 the brushes for the same reason are set as close together as possible about the periphery so as to form a continuous seal. As clearly disclosed by Fig. 1, the wires 5, owing to their resiliency and flexibility, will thrust against the wall 2a, 2b of the tank irrespective of any irregularities, such as seams, rivet heads or the like which the wall of the tank may reveal. In this form of embodiment I have shown three series of brushes about the periphery of the top. Obviously, however, there is no limitation with regard to the number of rows employed, and in certain instances one peripheral row of brushes will be sufficient.

The brush heads 4 may be secured to the top 1 in any desired fashion, for example by means of rivets or by welding or, with a view to readily exchanging the brushes, in the manner shown in Fig. 3. In this figure 1 is the floating top, and 2 the wall of the tank. The head 4 of the brush is held by a clamping member 6 secured permanently to the periphery of the floating top 1. This clamping member comprises a strip of metal which is secured with its middle portion, for example by welding, to the top 1, and is doubled over at its ends to grip the edges of the head 4. To exchange a brush it is merely necessary to bend back the one end of the member 6, where-

upon the brush may be readily removed. After a new brush has been placed in position, the end of the member 6 is again doubled over and the brush is securely held.

Fig. 3 also shows a modified form of the brush itself. In this case the brush comprises three series of wires, viz., a middle row of relatively long, thin and soft wires 5a, and upper and lower rows of short and preferably stiffer wires 5b. In this manner a more elastic brush is obtained, which will adapt itself very readily to irregularities in the wall of the tank. The shorter wires 5b support the longer wires 5a, preventing them from yielding to an excessive extent and holding them in the correct position, and may also perform sealing themselves.

In Fig. 4 the arrangement of the wires is similar to that in Fig. 3, with the exception that the shorter wires 5b are directed obliquely towards the longer wires 5a in order to increase their supporting action.

It will be obvious that no limitation is made to the particular forms of embodiment illustrated in the drawing, and that numerous modifications are quite possible without departing from the spirit of the invention. Thus, for example, the invention is not limited to circular tanks, but may be employed equally well for tanks of other form.

What I claim as new and desire to secure by Letters Patent is:

A floating top for tanks employed for storing liquids, comprising a plurality of relatively movable and interconnected floating sections adapted as a whole to the form of the tank and sealing brushes disposed about the periphery of the said roof comprising a middle series of relatively long thin and soft bristles and upper and lower rows of short and stiffer bristles supporting the said long bristles.

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