April 26, 1960 R. E. SAMPSON 2,933,917

TANK FIREPROOFING

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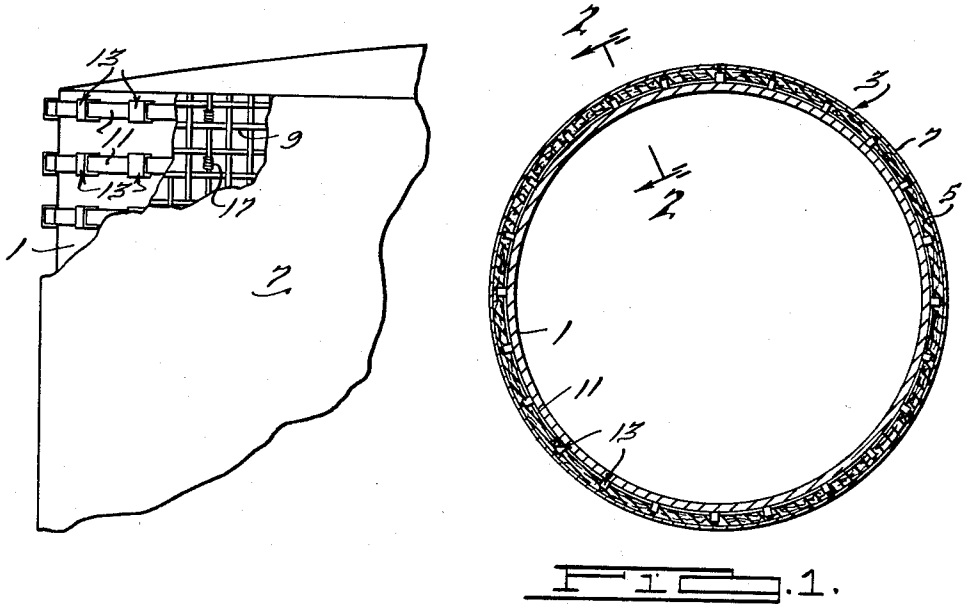


FIG. 1.

FIG. 5.

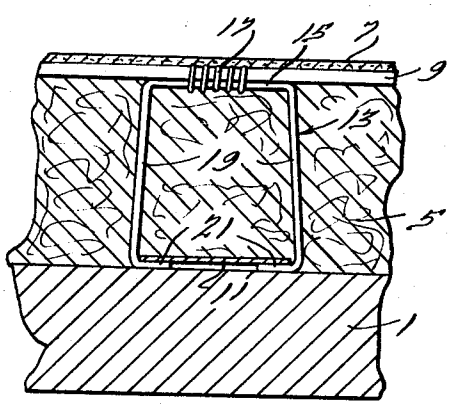


FIG. 2.

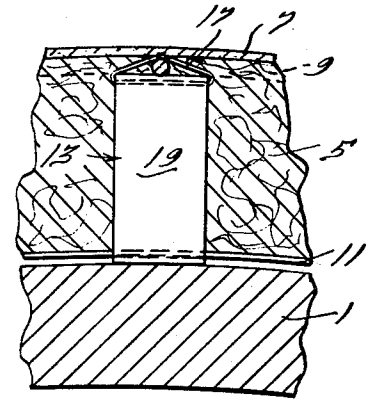


FIG. 3.

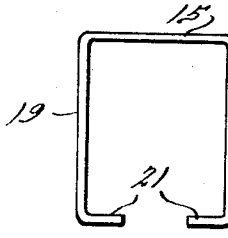


FIG. 4.

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TANK FIREPROOFING

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1 Claim. (Cl. 72—14)

This invention relates to fireproofing for a low pressure gas storage tank or the like and, in particular, refers to an improved means for securing the insulating material to the storage tank.

In recent years there has been a good deal of interest in the fireproofing of low pressure gas storage tanks inasmuch as insurance rates can be materially lowered when suitable insulation is applied to the tanks. A highly satisfactory form of insulation consists in an insulating refractory layer applied on the outside surface of the tank. This is normally sprayed on by pneumatic guns and since it is in a relatively fluid condition when applied to the tank, the problem arises of providing a means to properly support the refractory and to prevent gravity flow. This problem has been met in conventional fashion by the use of wire mesh which is attached by suitable means to the outside of the tank and spaced a slight distance outwardly of the surface of the tank. The wire mesh is embedded in the gunned-on refractory and does a satisfactory job of holding it in place until the refractory has hardened enough to be self-sustaining. Furthermore, the wire mesh acts as a reinforcement for the refractory material after it is hardened.

It is the object of this invention to provide an improved means for attaching the wire mesh around the outside of the tanks.

According to the invention circumferential bands are strapped around the tank and these carry a series of U-shaped clips which in turn support the wire mesh. The U-shaped clips are designed so that they are held under spring tension to the circumferential band and this makes it possible for the clips to be mounted on the band before the band is wrapped around the tank. As a consequence of this arrangement whereby the clips are applied to the band and then the combination of band and clips is applied to the tank, the cost of installing the fireproofing insulating refractory is reduced over methods known heretofore.

The invention is illustrated in connection with a preferred embodiment which is shown in the accompanying drawings wherein:

Figure 1 is a cross section through a typical storage tank which may employ fireproofing of the type to which the invention relates and shows the insulating refractory and the supporting means for it attached to the exterior of the tank;

Fig. 2 is an enlarged cross section through a part of the tank taken on the line 2—2 of Fig. 1;

Fig. 3 is a side elevation of the structure shown in Fig. 2;

Fig. 4 is a detail view of one of the clips used for attaching the wire mesh to the circumferential strap; and

Fig. 5 is an enlarged side elevation, with parts broken away, of the tank of Fig. 1.

The tank shown in Figs. 1 and 5 is typical of various types of installations on which the present invention may be used and has a steel shell 1. As is well known, the steel shell 1 may be of large diameter, it being understood

that a major use for fireproofing of the type to which this invention relates is in connection with large storage tanks. Applied around the outer surface of the storage tank 1 is a fireproofing and insulating layer 3. From the standpoint of insulating and fireproofing value the main constituents of the layer 3 are the thick stratum 5 of insulating concrete, of a type available on the open market, which is applied preferably by means of a pneumatic gun, and then on the outside of this a relatively thin stratum 7 of weatherproofing compound such as an asphaltic emulsion type material or a polyvinyl acetate type compound. In order to support the insulating refractory or concrete 5, a wire mesh 9 in the form of a road mesh is attached to the shell 1 at a distance spaced outwardly from the outside surface of the shell. In order to firmly attach the mesh 9 to the shell 1 a series of circumferential bands 11 are placed around the outside of the shell 1 and the bands 9 carry the U-shaped spacer clips 13. The bands 11 are tightened up around the outside of the shell 1 and clinched with standard tools and attachments such as now used in the banding of crates, barrels, and so on, this art being well known at the present time. In a typical installation the bands 11 would be spaced apart parallel to each other along the length of the tank 1 on about two foot center spacings though, of course, other arrangements can be used as necessary or desired. The wire mesh 9 is secured to the bight 15 of the clip 13 by means of tie wires 17 which are wrapped around in a number of turns underneath the bight 15 and over the top of a strand of the wire mesh 9 as clearly seen in Figs. 2 and 3.

It is a particular feature of the present invention that the clips 13 are secured to the band 11 by spring tension. By comparison of the clip 13 in its natural state before assembly which appears in Fig. 4 and its assembled state as shown in Fig. 2, it will be seen that the spacing between the side legs 19 of the clip 13 is slightly less than the width of the band 11. Consequently, in order to attach the clip 13 to the band 11 so that the inturned flanges 21 will lie on the concave side of the band, pressed against shell 1, it is necessary to increase the spacing between the legs 19. The clips 13 are constructed of material having a suitable resiliency or spring action so that the legs 19 will tend to move toward each other with sufficient spring force to cause them to tightly grip the side edges of the band 11, thereby holding the clip securely in position at the point where it was attached to the band. Because of this arrangement all of the clips 13 can be attached to the band 11 while the latter is laid out prior to attachment around the periphery of the tank 1. While the spacing of the clips 13 from one another is dependent largely upon the installation involved, for a typical installation they would be spaced apart on approximately one-foot centers. The bands 11, with clips 13 attached, are then wrapped around and clinched to the shell 1 and the refractory layer applied as indicated above.

I claim:

In a large gas storage tank or the like, an exterior insulating and fireproofing coating comprising a plurality of circumferential bands spaced lengthwise apart from each other and wrapped around the tank and firmly secured thereto, each of said bands having a plurality of U-shaped clips attached thereto with side legs having inwardly turned flanges clamped by the band between the band and the outside surface of the shell of the tank, the bases of said U-shaped clips being spaced outwardly from the surface of the tank, a wire mesh attached to the bases of said U-shaped clips, insulating refractory material on the periphery of said tank and extending to a depth at least equal to the spacing of the mesh from the surface of the tank so that the mesh is embedded in the

refractory material, in free state prior to assembly the legs of said clips being spaced from each other by a distance less than the width of said bands whereby in the assembled condition said legs grip the edges of the band with spring action.

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