Oct. 18, 1932. J. A. STOUGH 1,883,076

TANK ROOF

Filed May 21, 1928

Fig. 1.

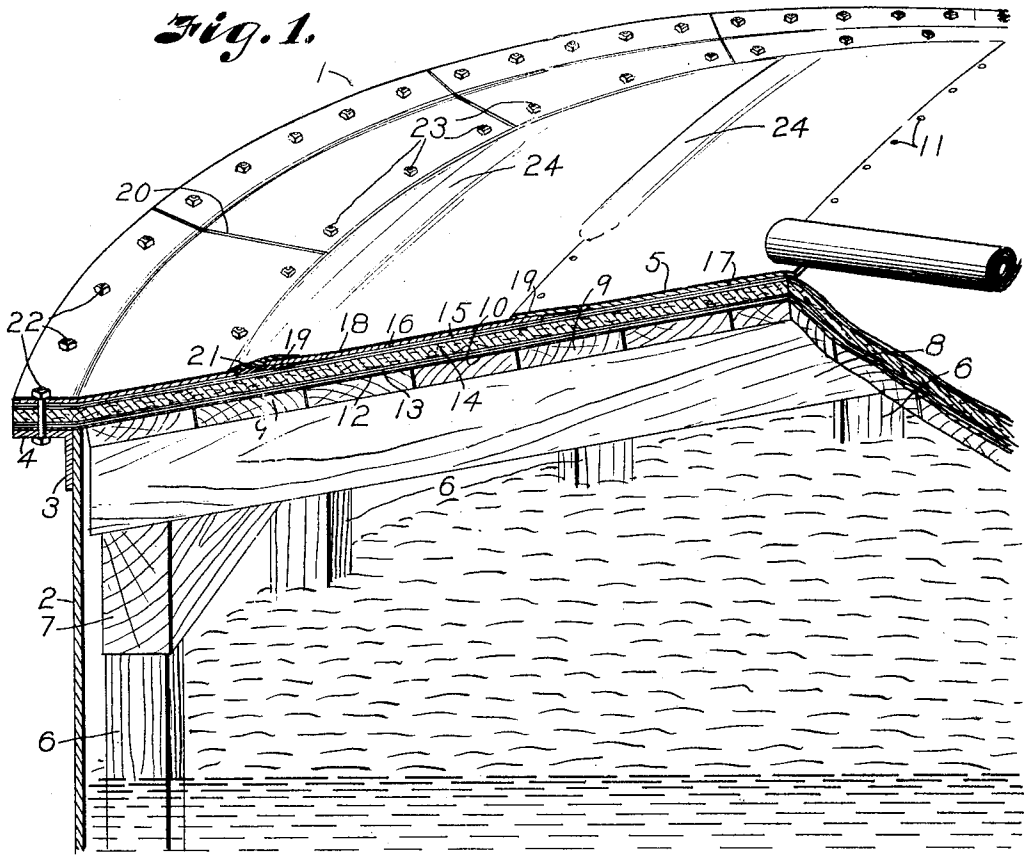
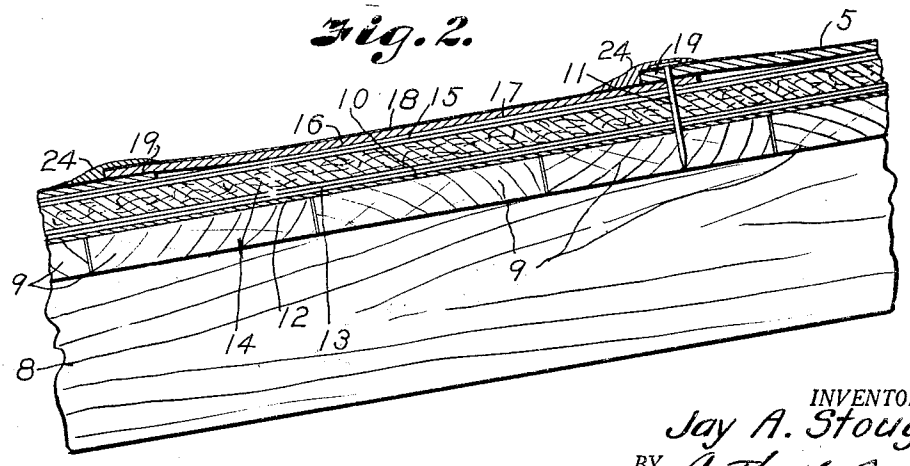


Fig. 2.



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UNITED STATES PATENT OFFICE

JAY A. STOUGH, OF TULSA, OKLAHOMA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE PHILIP CAREY MANUFACTURING COMPANY, A CORPORATION OF OHIO

TANK ROOF

Application filed May 21, 1928. Serial No. 279,389.

My invention relates to oil storage tanks and more particularly to roofs for such tanks, the present invention constituting an improvement over my prior application, Serial No. 245,602, filed January 9, 1928, and having for its object the sealing of the tank against leakage of gases emanating from the contained liquid, and the collection and conductance of static electricity and lightning from the roof, thus preventing ignition of the contents of the tank.

Further objects of the invention are to provide a conductive covering for insulating roof strips, and to connect the edges of metallic strips conductively.

In accomplishing these and other objects of the invention I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawing, wherein:

Fig. 1 is a vertical sectional perspective view of the upper part of a tank wall and a part of the roof structure.

Fig. 2 is an enlarged fragmentary sectional view of the tank roof especially illustrating a metallic conductor connecting the adjoining strips of the upper metallic layer of the roof.

Referring in detail to the drawing:

1 designates an oil storage tank constructed in accordance with common practice and including my improvements hereinafter described.

The tank comprises a metallic side wall 2, fitted at its upper end with an exterior metal ring 3 having an outwardly extending horizontal flange 4 to receive the outer margin of a roof covering 5 including a plurality of layers presently described.

Posts 6 are attached to the inside of the walls 2 for supporting beams 7, and girders 8 are supported from the beams and from a pillar (not shown) located centrally within the tank, the pillar being of greater height than the tank walls for producing a convex roof.

Sheathing 9 laid over the girders 8 provides a convex floor surface 10 extending from the walls 2 to the apex at the center of the tank, and the roof covering 5 supported on and attached to the sheathing by nails 11 is built up in the following order.

A layer of fabric roofing material 12 preferably asbestos, is first superimposed on the sheathing and over the ring flange 4, and a cement coating 13 impervious to water and gases is spread over the fabric element. An overlying layer of insulating material 14, preferably of cellular material, such as celotex, of sufficient thickness to provide insulation from the sun rays, is applied to the cement and thereby sealed to the fabric. A second cement coating 15 similar to the coat 13 is applied to the top surface of the celotex. On the cement coat 15 is applied a preferably composite layer of roofing material 16 comprising parallel strips of asbestos 17 having an outer metallic skin 18, the strips being overlapped as indicated at 19 and sealed to the celotex by the cement 15.

A metallic sectionally constructed annulus 20 overlies the outer portion of the roof covering, the inner portion of the annulus being sealingly connected with adjacent asbestos strips 17 by asbestos fibrated, flexible cement 21, Fig. 1.

The outer portion of the annulus 20 is secured to the flange 4 of the ring 3 and conductively connected therewith by bolts 22; and lag bolts 23 secure the inner portion of the annulus to the sheathing, the bolts 22 and 23 extending through the intervening roof covering elements.

In order to conductively connect the metallic skin surfaces 18 of the strips 17 at their adjoining edges and to connect the strips with the annulus 20, a conductive substance 24, comprising a heavy coat of aluminum or other suitable material is applied over the joints of adjoining strips and over the adjoining edges of the annulus and adjacent strip,

thereby uniting the strips and connecting the annulus conductively thereto, and forming a continuous metallic surface for the tank.

The insulating elements of the roof provide means for retaining gases, fumes and vapors and are respectively adapted for resisting deteriorating influence of sun rays and vapors and are relatively non-conductive to electricity.

The metal covering serves to collect static electricity generated above the roof and to conduct the electricity to the wall of the tank which is conductively connected to the ground, thereby eliminating the danger of ignition of the contents of the tank by lightning, and ignition of escaping gas by static sparks.

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

1. In a tank, a roof for the tank including overlapping metallic strips, a plastic substance conductive to electricity for sealing joints between strips, and means for conductively grounding the strips.

2. In a tank, a roof for the tank including overlapping metallic strips, a plastic substance conductive to electricity for sealing joints between strips, means for conductively grounding the strips, and an insulating covering below the metallic covering for insulating the metallic covering from the interior of the tank.

3. In a tank, a roof for the tank including overlapping metallic strips, a plastic substance conductive to electricity for sealing joints between strips, means for conductively grounding the strips, a cellular material for insulating the metallic covering from the interior of the tank, and means for sealing the cellular material from the contents of the tank.

4. A structure having a roof including sheets of fibrous roofing having a metallic skin, a grounded metallic edging member at the edge of the roof, and a plastic substance conductive to electricity for sealing the joints between adjoining sheets and between the sheets and the edging member.

In testimony whereof I affix my signature.

JAY A. STOUGH.