March 21, 1933. F. G. D. MULLER 1,902,258

FLAME ARRESTER

Filed Sept. 12, 1930 3 Sheets-Sheet 1

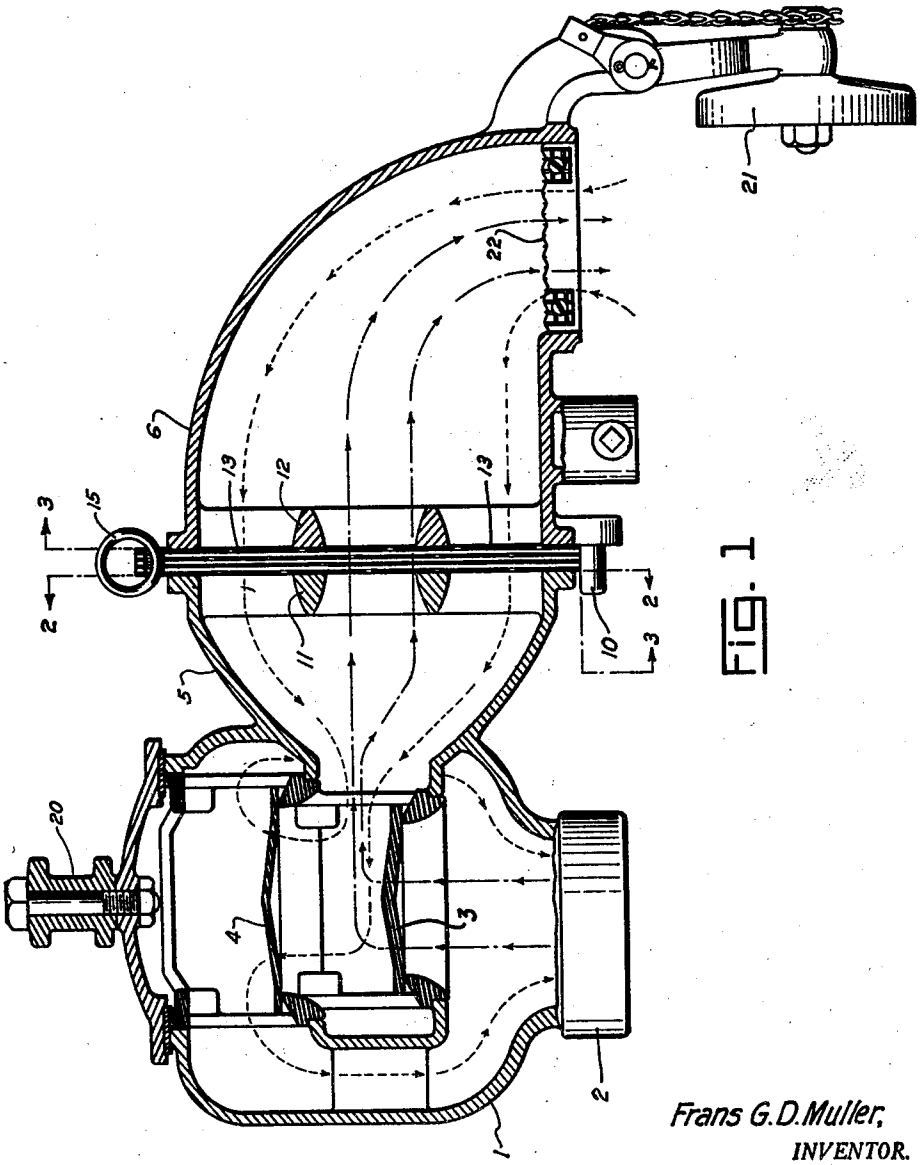


Fig. 1

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FLAME ARRESTER

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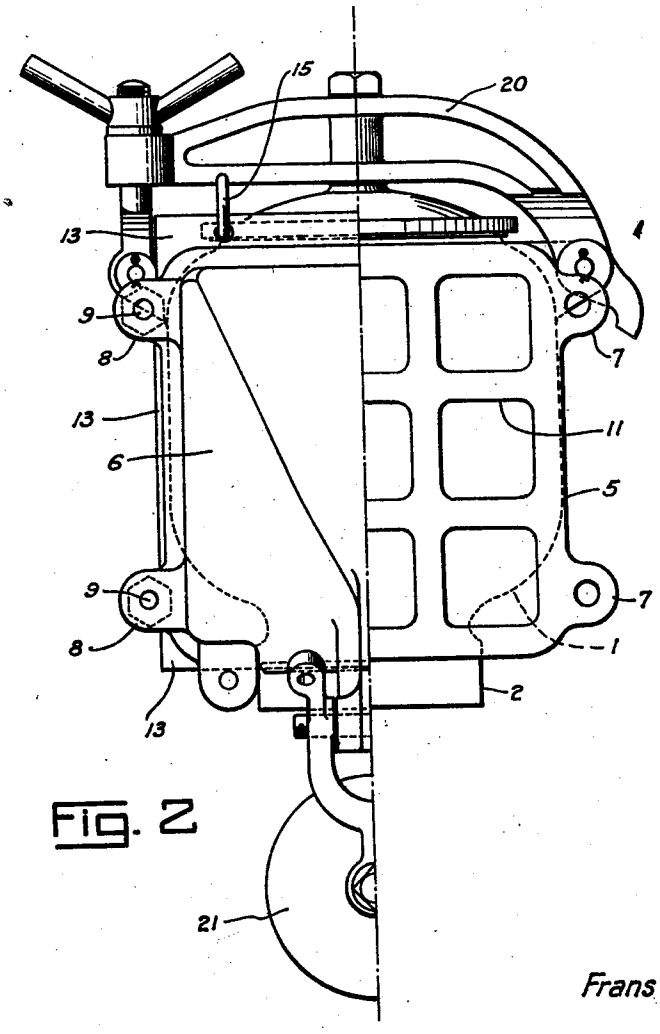


Fig. 2

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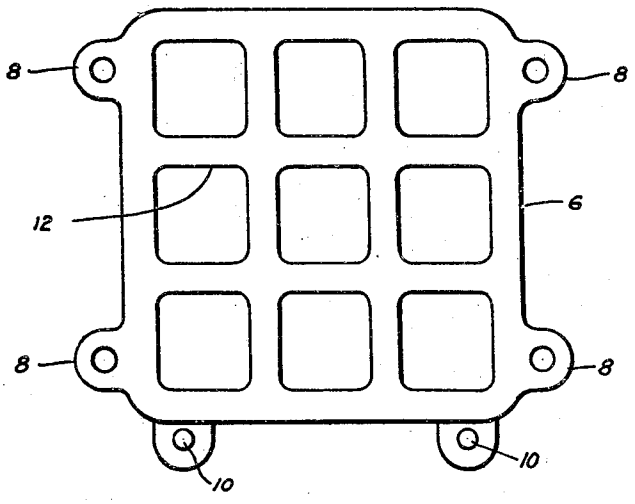


Fig. 3

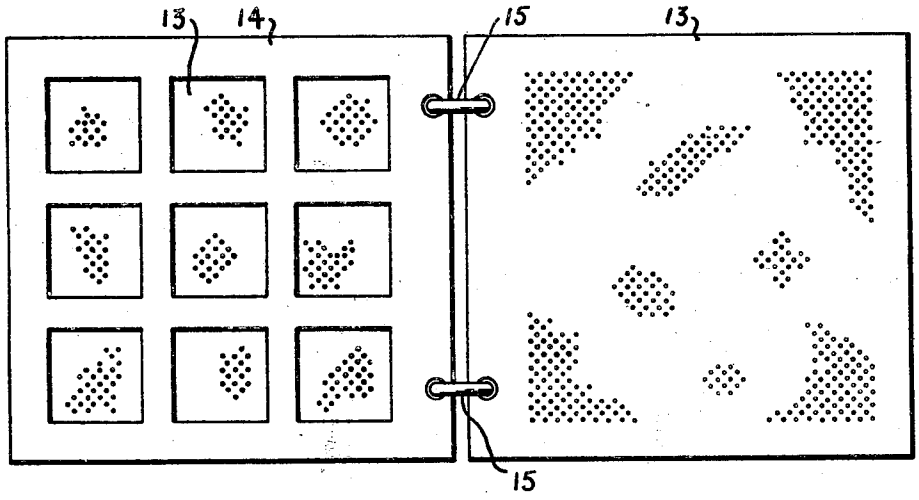


Fig. 4

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Patented Mar. 21, 1933

1,902,258

UNITED STATES PATENT OFFICE

FRANS G. D. MULLER, OF HOUSTON, TEXAS, ASSIGNOR TO THE STAYTITE COMPANY, OF HOUSTON, TEXAS, A CORPORATION OF TEXAS

FLAME ARRESTER

Application filed September 12, 1930. Serial No. 481,507.

This invention relates to flame arresters of that general type adapted for use on oil tanks, and the like, to prevent the propagation of flames thereinto.

The conventional flame arrester embodies a plurality of spaced flame arresting elements comprising screens, shown by United States Letters Patent to Schmidt, et al., #1,628,199, or perforated plates, hereinafter illustrated. These elements are subjected to great heat when gases adjacent thereto are ignited.

The elements and spacers therein must be cleaned and it is important that they be replaced so that one spacer is positioned between each pair of elements. Should two elements be positioned in contact with each other, the free flow of gas through the elements would be greatly impaired or altogether stopped.

This invention has for its general objects the provision of a new and improved arrester embodying flame arresting elements having a high conductivity and melting point, capable of withstanding corrosion, assembled with spacers, and mountable in the arrester so that the elements and spacers may be removed easily and quickly to be cleaned, but can not be mounted in the arrester in other than the proper relative positions.

Other objects will hereinafter appear.

The preferred embodiment of the invention is illustrated by the accompanying drawings, of which Fig. 1 is a sectional elevation of the arrester; Fig. 2, an end elevation thereof, partly in section taken on the line 2—2 of Fig. 1; Fig. 3, a view of the inner end of the outer section of the flame arrester casing taken on the line 3—3 of Fig. 1; and Fig. 4, a detailed view of the plate and spacer assembly.

The arrester is shown in combination with a conventional breather valve housed in a casing 1, the lower end 2 of which is mounted upon and communicates with the interior of the tank, or the like, to which the apparatus is applied. The valve 3 permits the escape of gases from the tank when the pressure thereof is greater than atmospheric pressure. The valve 4 permits the entrance of air into the tank when the pressure of the gases within the tank becomes less than atmospheric pressure. The movement of gases is indicated quite clearly by the arrows. The valve casing cover 20 may be opened to permit access to the valve.

The flame arrester casing comprises the separable sections 5 and 6, the meeting ends of which are substantially square in cross sections (Figs. 2 and 3), and are provided with ears 7 and 8 through which pass screws 9 to hold the sections together. Carried by the section 6 are pins 10 (Figs. 1 and 3) by which the plates and spacers hereinafter described are supported. The outer end of section 6 is open and a coarse screen 22 is placed therein to prevent the entry of foreign matter.

Disposed within the meeting ends of sections 5 and 6, and cast therewith, are grids 11 and 12, respectively, which prevent buckling of the plates at high temperatures and pressure, and function to dissipate their heat, as hereinafter set forth.

The perforated plates 13 and spacers 14 are movably connected together by rings 15 (Figs. 1, 2, and 4). These plates and spacers are clamped between the grids 11 and 12, and the openings in the spacers are coincident with the openings in the grids.

The gases within the section 6 may become ignited by lightning or otherwise, and it is essential that the plates be not heated thereby to such a high temperature as to permit the propagation of flames into the tank. To effect rapid dissipation of the heat the plates 13 and 14 are made of copper, the conductivity and melting point of which are high, and the grids 11 and 12 are made integral with the sections 5 and 6, respectively. The heat, therefore, passes quickly out of the plates and spacers through the grids to the radiating surface of the sections. To prevent corrosion the plates and spacers are coated with lead. As hereinabove pointed out, if two plates are in contact with each other between the grids, the assembly will not function properly. Workmen in the field cannot be relied upon

to place one spacer between each pair of plates. This invention, therefore, provides a plurality of plates and spacers connected together with the rings 15 in the form of a book, which may readily be removed from the arrester and opened for cleaning, as indicated by Fig. 4; but when the book is closed and placed in the arrester, the plates and spacers are necessarily in the proper positions with respect to each other.

After the screws 9 have been loosened the book is placed between the sections 5 and 6 and is supported therebetween by the pin 10. When the screws 9 are tightened the flame arrester is ready for use. When the screws 9 are loosened the book may be removed by the rings 15. The removal and replacement of the book may, therefore, be accomplished quickly and easily.

Flames in the section 6 may be extinguished by closing the conventional snuffer valve 21.

I claim:

1. A plurality of flame arresting elements, spacing means therefor, and a ring by which said elements and means are movably connected together so that they may be moved apart and cleaned.

2. A flame arrester assembly in the form of a book comprising a plurality of perforated plates, spacers for said plates, and a pair of rings passing through said plates and spacers to movably connect the same together so that the book may be opened and cleaned.

3. A flame arrester casing having a pair of sections separably connected together, each of said sections having a grid cast with that end connected to the other of said sections, and a flame arresting element between said grids.

4. A flame arrester casing having a pair of sections, each of said sections having a grid cast with that end adjacent to the other of said sections, a flame arresting element between said sections, and screws connecting said sections and holding said element between said sections.

5. A flame arrester casing having a pair of sections, each of said sections having a grid cast in that end adjacent to the other of said sections, a plurality of flame arresting elements and spacers for said elements between said sections, a ring movably connecting said elements and spacers, and screws connecting said sections and holding said elements and spacers together between said sections.

In testimony whereof, I hereunto affix my signature.

FRANS G. D. MULLER.