

A. M. STEELE.

LIGHTNING-GUARDS FOR OIL-TANKS.

No. 173,512.

Patented Feb. 15, 1873.

Fig 1

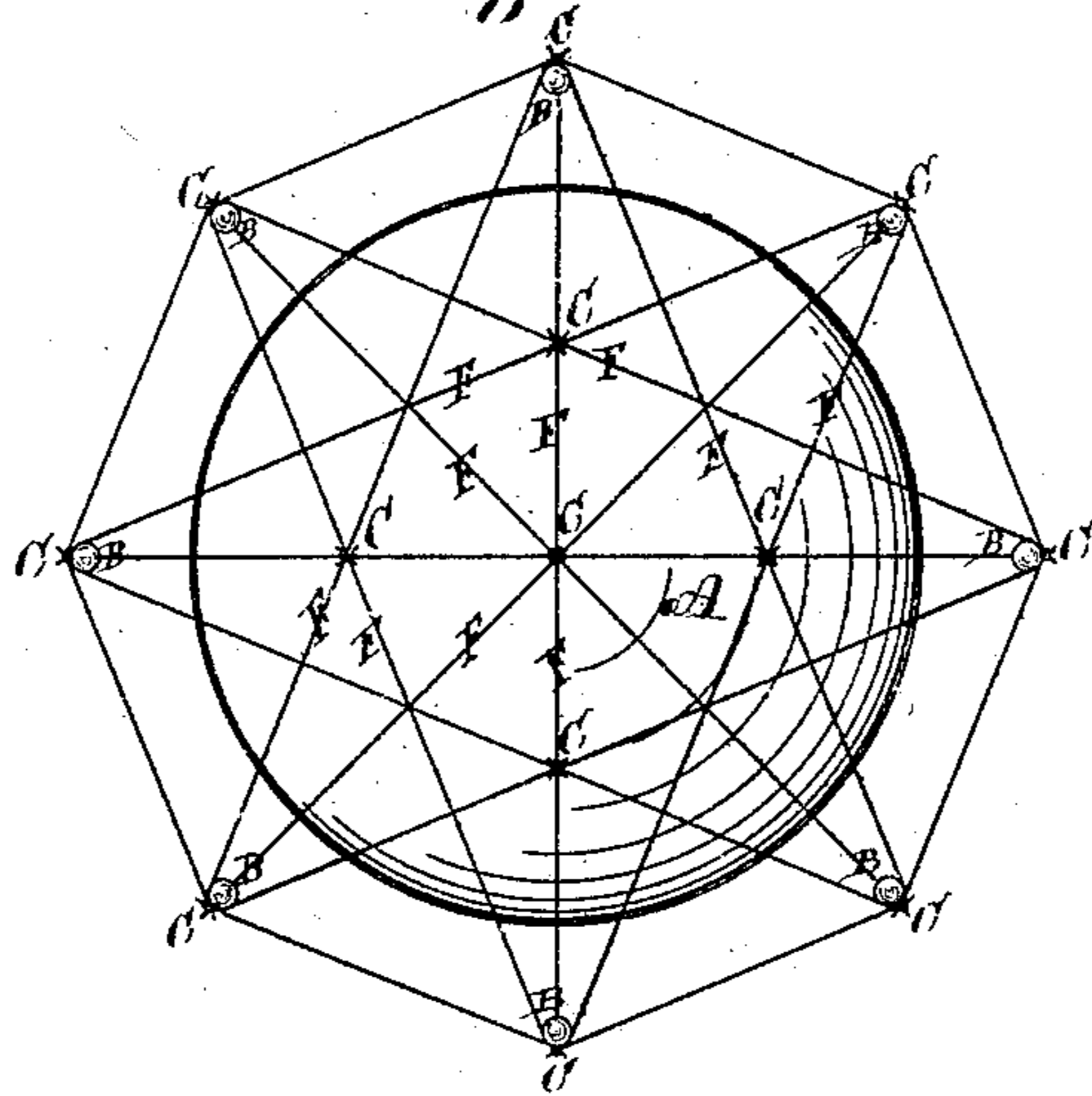
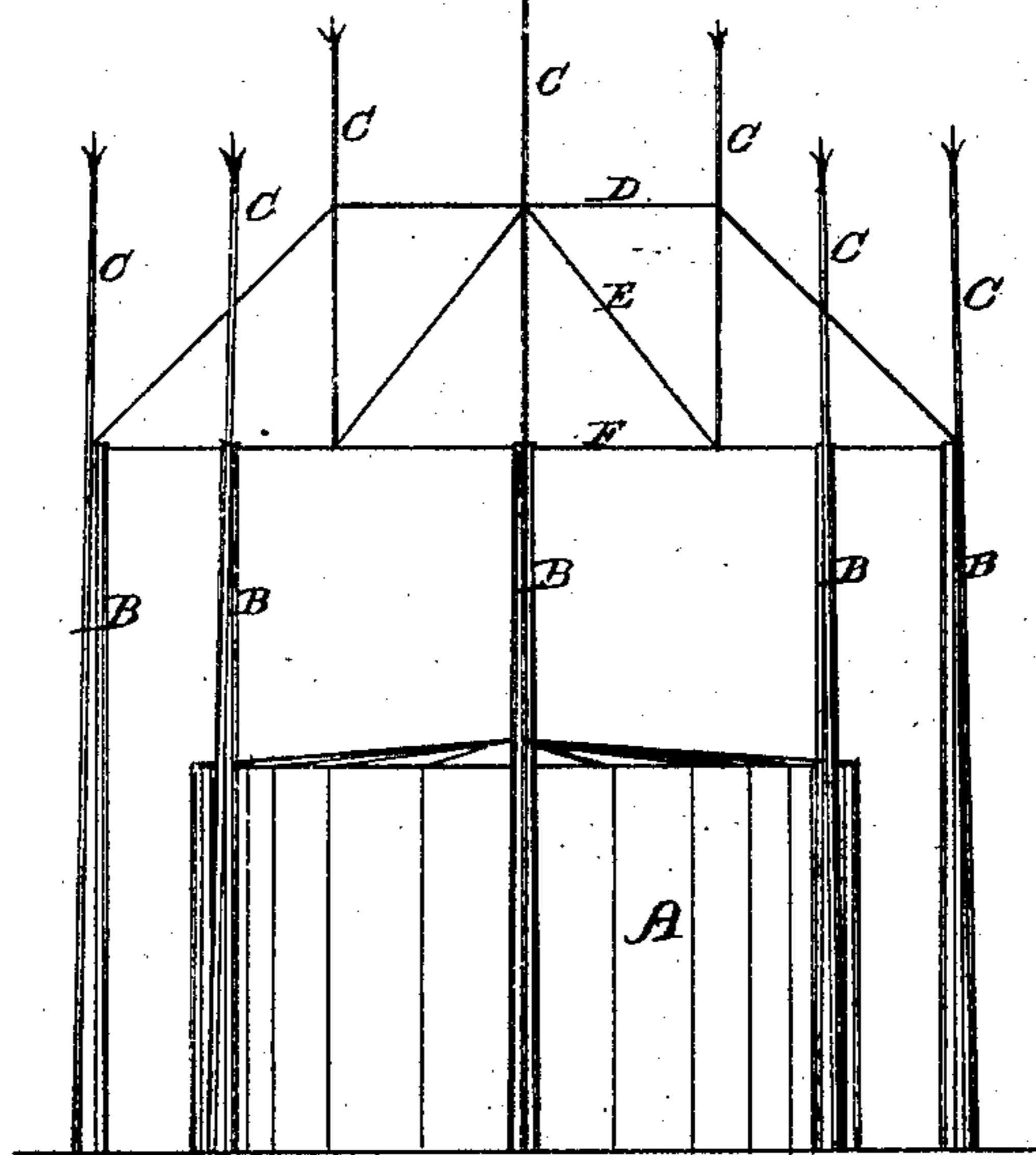


Fig 2



Witnesses
John Willings
Adam Hovey

Inventor
Andrew M. Steele
By James C. Boyce his atty.

UNITED STATES PATENT OFFICE.

ANDREW M. STEELE, OF OIL CITY, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-FOURTH HIS RIGHT TO RICHARD H. MITCHELL.

IMPROVEMENT IN LIGHTNING-GUARDS FOR OIL-TANKS.

Specification forming part of Letters Patent No. **173,512**, dated February 15, 1876; application filed September 14, 1874.

To all whom it may concern:

Be it known that I, ANDREW M. STEELE, of Oil City, State of Pennsylvania, have invented a Lightning-Guard for Oil-Tanks, of which the following is a specification:

The object of my invention is to protect oil-tanks from the danger of being struck by lightning, to which they are peculiarly subject. An ordinary lightning-rod is no protection when affixed to the tank. A gas arises from oil which is not only a conductor of electricity, but also is very susceptible of ignition by the flash. There is also a gas frequently present around oil-tanks, which in certain states of the atmosphere, such as accompanies thunder-storms, sinks to the ground, and lies around the base of the tank. A passage of electricity through either of these gases, unless on some conductor sufficiently large to retain the whole of the charge, would ignite such gases if they were sufficiently mixed with air to be capable of ignition. The point of safety is thought to be about ten feet distant from the tank, where the gas is so diluted with ordinary air as not to be susceptible of ignition. I aim to so surround the tank with good conductors of electricity, connected together by a net-work of wires, as to be practically one conductor, and, together, forming a perfect shield, so that there will be no space where lightning can be attracted to the tank, and these conductors at such a distance from the tank that their reception of electricity, in whatever quantity, cannot set on fire the combustible gases.

In the drawing, Figure 1 represents a view of my invention looking down from above, and Fig. 2 is a view from the side.

A is the protected tank. B B B represent wooden posts extending far above the height of the tank A. This height I would make at least ten feet higher than the tank, or generally about twice the height of the tank A. Of these posts B there should be sufficient number to extend around the tank, not less than three, and there would rarely be need of more than eight. My design in the arrangement of these posts would be to have them of such a number, and so far distant from the

tank, that none of the rods or connecting-wires would be nearer than ten feet to the tank. Upon these posts B B I attach metal rods C, which project above the top of the posts B, and terminate in the air in bright points. Singly they would be ordinary lightning-rods, and would terminate in the ground in moist soil, or in a large quantity of metal, or some other good conductor of electricity. These rods C I connect, by large metal wires F, to each other, each rod C having direct connections to at least five other rods. At each crossing of the wires they should be firmly fastened together with metal, so that the whole top of the tank will be covered, at a suitable distance from it, with a net-work of electrical conductors. At the center of the net-work, and at other points where several wires cross, I erect at least five rods, which terminate in bright points. These project higher than those on the posts B, the center one being the highest of all, and these are fastened and guyed by the wires D and E.

For the rods I recommend one-half inch gas-pipe; for the connecting-wires, the ordinary galvanized telegraph-wire. The points should be nickel-plated or gilded.

I make no claim to the supporting of a lightning-rod on a post separate from the tank to be protected, as such device is old.

I claim as my invention—

1. The combination, with an oil-tank, of a covering and surrounding system of electrical conductors connected to each other, but placed at a distance from the tank, substantially as described.

2. A system of guards of oil-tanks against lightning consisting of metal points suspended in the air far above the tank by a net-work of metal wires, such net-work being connected with, and supported by, rods leading to the earth, the whole furnishing a conductor for electricity in all its parts beyond the line of ignition of the gases from the tank, substantially as described.

ANDREW M. STEELE.

Witnesses:

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A. J. ORMSTON.