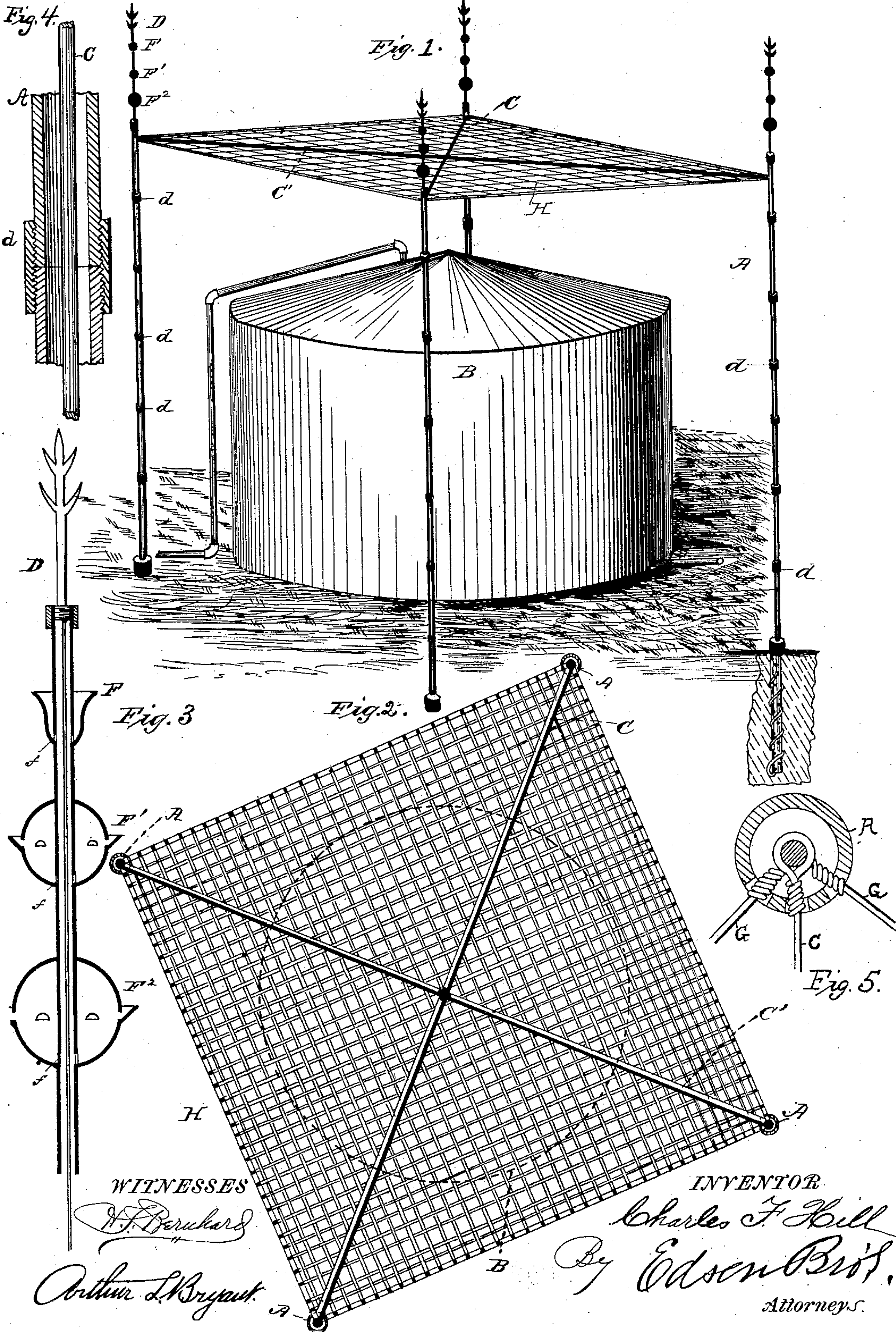


(No Model.)

C. F. HILL.
SYSTEM OF PROTECTION FROM LIGHTNING.

No. 407,660.

Patented July 23, 1889.



WITNESSES

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SYSTEM OF PROTECTION FROM LIGHTNING.

SPECIFICATION forming part of Letters Patent No. 407,660, dated July 23, 1889.

Application filed November 16, 1888. Serial No. 291,024. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. HILL, a citizen of the United States, residing at Hazleton, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in System for Protecting Receivers of Inflammable Substances from Lightning; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to systems for protecting receivers of inflammable or explosive substances from lightning; and it consists of the novel combination and arrangement of parts, as will be hereinafter fully described and claimed.

The object of my invention is to protect oil-tanks and receivers of inflammable substances from the danger of being struck by lightning, to which they are peculiarly subjected, owing to the surrounding atmosphere within a number of feet of the tank being saturated with the inflammable vapors which escape from the tank, and which surrounding atmospheric belt is peculiarly subject to ignition or explosion by the passage through it of the electric spark or of a stroke of lightning from a storm-cloud.

In the accompanying drawings, Figure 1 is a perspective view showing my system applied to an oil-tank. Fig. 2 is a plan view thereof, showing the tubular poles in cross-section. Figs. 3, 4, and 5 are detail views.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates a cordon of vertical tubular metallic poles, which are located at suitable intervals around an oil-tank B, of any suitable well-known construction, it being understood that the invention is applicable to receivers of all kinds of explosive or inflammable materials, liquid, solid, or gaseous, such as powder magazines and mills, oil-tanks, or derricks, and other structures for storage of such substances. This cordon of surrounding tubular poles is located some distance from the tank or other structure, outside of the surrounding atmospheric belt which is permeated with the inflammable vapors that escape from the tank,

and the poles extend some distance above the tank.

C designates a metallic conductor or cable which is extended upward from the ground through one of the tubular metallic posts to the upper extremity thereof, and is then passed horizontally across and some distance above the tank or other structure to the pole on the opposite side of the tank, and then through said pole to the ground. C' is another metallic conductor or cable, which is likewise arranged across and some distance above the tank and then passed through two of the tubular poles to the ground in the same manner as the conductor C. These conductors C C' cross or lap each other some distance above the middle of the tank, and they are electrically connected together by soldering or otherwise, (see Figs. 2 and 4,) and the lower ends of the conductors are extended through the lower extremities of the tubular poles and wrapped or coiled exteriorly around said poles, as indicated in Fig. 1, to secure a good earth-connection. A finial D is fixed in the upper end of each of the tubular metallic poles, and to the finials are connected the conductors or cables.

Each of the tubular poles is made of a number of sections, preferably of galvanized gas-pipe, which sections are suitably coupled together by the ordinary couplings *d*, (see Fig. 4,) and the lower section of each pole, which is inserted in the ground, and around which the conductor or cable is coiled, is made of greater diameter and provided with lateral perforations.

To effect the moistening of the earth around the base of the poles, and thus secure a good earth-connection of the conductors or cables, which will enable them to conduct and discharge electricity to better advantage, I have provided each of the tubular poles with a series of water-collecting vessels F, F', and F². (Shown more clearly in Fig. 3.) The vessels communicate by suitable openings *f*, made in the tubular post, with the interior space or chamber of the post, and they are thereby enabled to discharge the moisture, dew, or rain collected therein into the post, from which the water escapes through the open lower end and the lateral perforations to moisten the surrounding earth in which the

pole is embedded. No novelty, however, is herein claimed for the water-collecting vessels, as the same form in part the subject-matter of a prior patent, No. 361,520, granted to me April 19, 1887.

I also contemplate the employment of another cable or conductor G, which passes horizontally from one pole to another of the cordon of surrounding poles and is connected with the conductors C C', this conductor G being located outside of the vertical plane of the tank and in the same horizontal plane as the conductors C C'. (See Fig. 5.)

To further divert and neutralize a stroke of lightning, and thus in a greater measure afford protection to the tank or other structure, I provide a metallic net H, which is arranged some distance above the tank, immediately over the same. This net is made of a series of metallic wires, which are woven intimately together and the edges thereof bound or secured in a substantial manner, and the net is secured to and supported by the series of conductors or cables C C' G, as shown in Figs. 1 and 2. This horizontal net is of greater area than the diameter of the tank, so that the latter is located completely within the edges of the net, and, if desired, the net may be connected to the tubular poles, so as to be further strengthened and relieve the cables or conductors from undue strain.

It will be observed that the surrounding cordon of poles, the several conductors or cables, and the metallic net supported by the latter are located at some distance from and above the tank and are completely isolated therefrom, whereby an electric discharge from a storm-cloud directed toward the tank

or other structure will be completely taken up by the metallic net and the conductors and carried or discharged into the earth without injury to the tank.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A system for protecting receivers of inflammable or explosive substances from lightning, consisting of a cordon of poles located some distance from the structure and having their upper ends extended above said structure, a metallic net suspended horizontally above the structure by the poles, and conductors connected to said net and embedded at their lower extremities in the earth, substantially as and for the purpose described.

2. A system for protecting receivers of inflammable or explosive substances from lightning, consisting of a cordon of tubular metallic poles located some distance from the structure, a series of conductors arranged horizontally some distance above the tank and passing longitudinally through the poles from end to end thereof and having their lower ends coiled exteriorly around the lower embedded ends of said poles, and a metallic net connected to and supported by the horizontal portions of the conductors, said net being located some distance above and entirely isolated from the structure to be protected, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES F. HILL.

Witnesses:

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