(No Model.) 2 Sheets—Sheet 1.

D. O'BRIEN.

LIGHTNING ARRESTER FOR PROTECTING OIL TANKS.

No. 367,435. Patented Aug. 2, 1887.

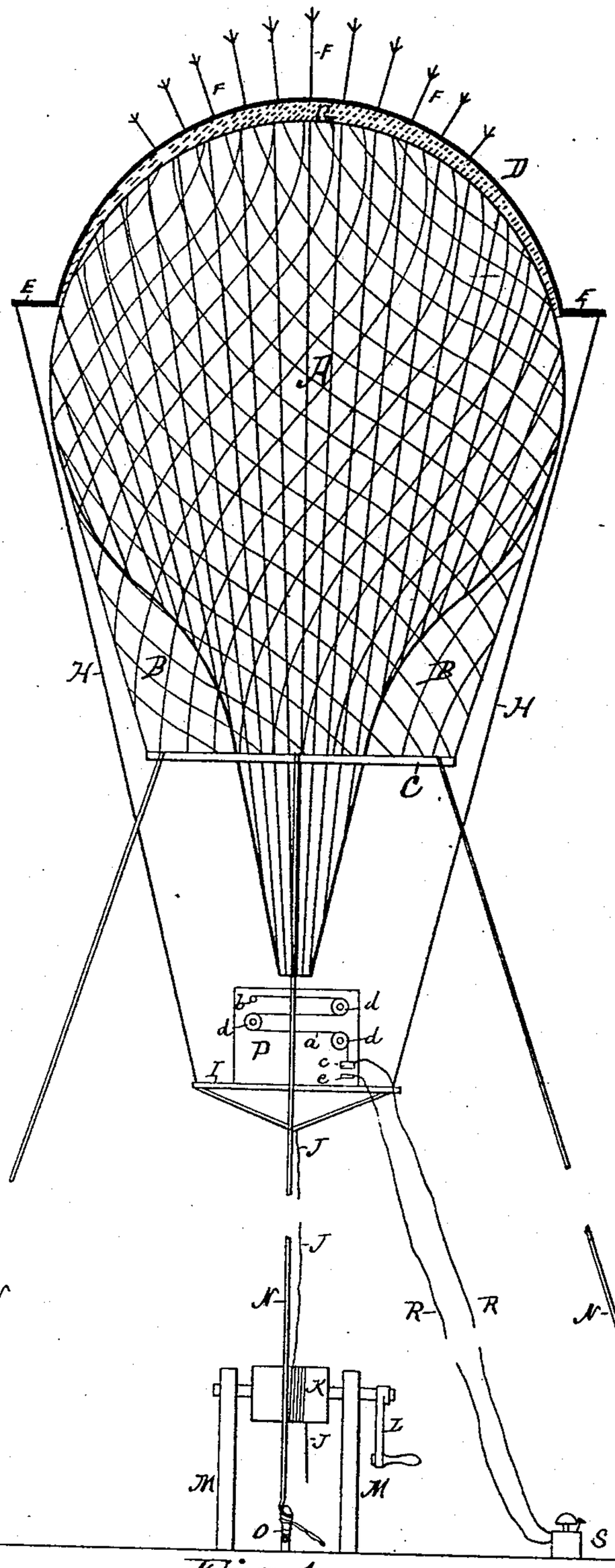

Fig. 1.

WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

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No. 367,435. Patented Aug. 2, 1887.

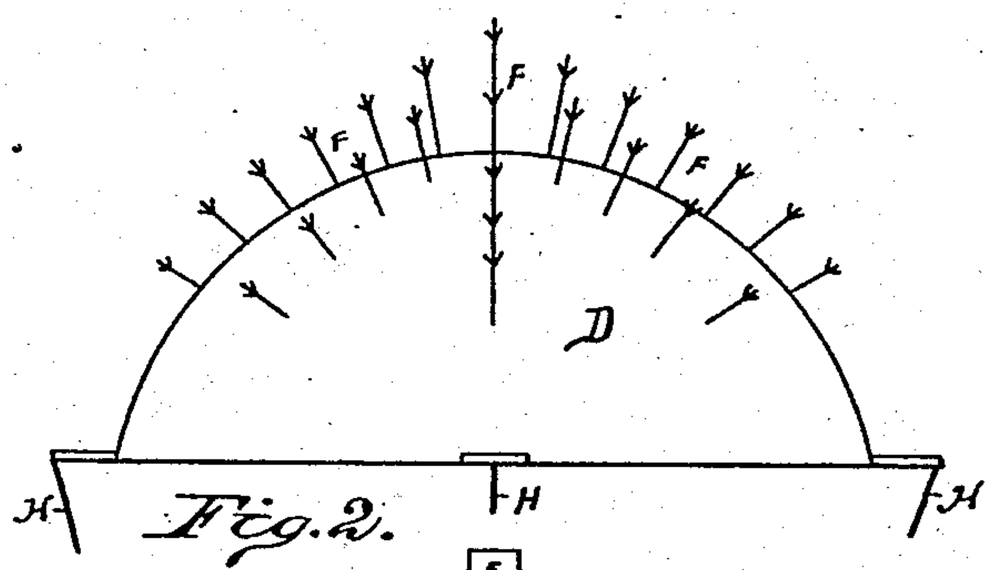

Fig. 2.

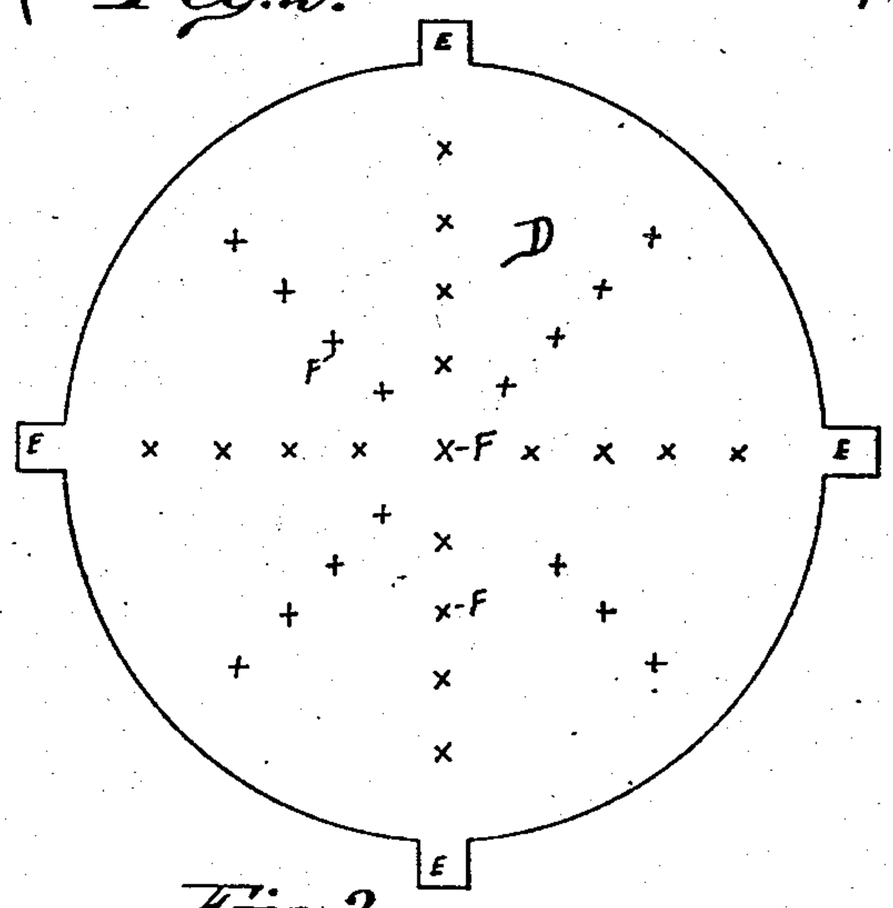

Fig. 3.

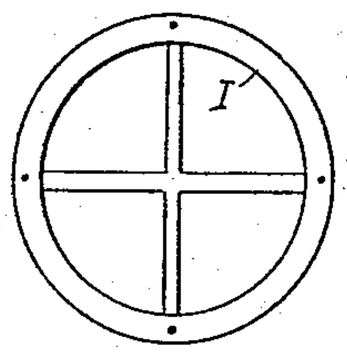

Fig. 5.

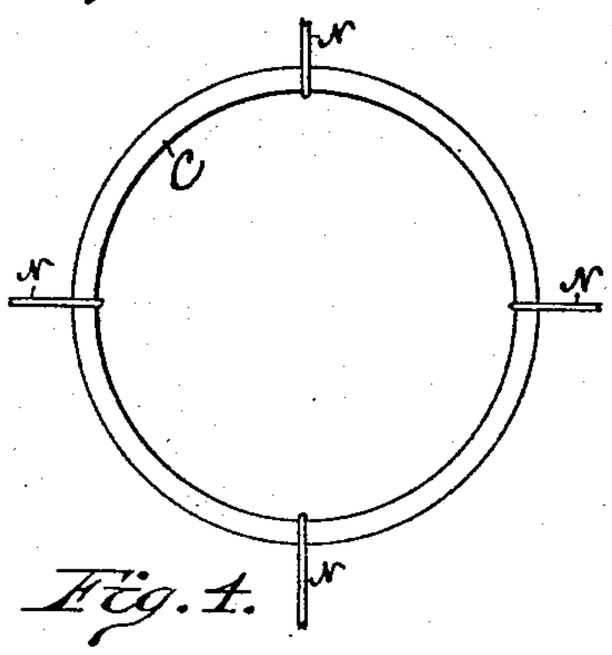

Fig. 4.

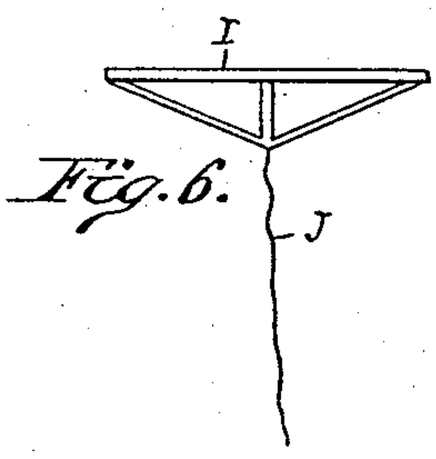

Fig. 6.

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UNITED STATES PATENT OFFICE.

DAVID O'BRIEN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO JOHN O'BRIEN AND EPHRAIM E. WEAVER, BOTH OF SAME PLACE.

LIGHTNING-ARRESTER FOR PROTECTING OIL-TANKS.

SPECIFICATION forming part of Letters Patent No. 367,435, dated August 2, 1887.

Application filed March 8, 1887. Serial No. 230,105. (No model.)

To all whom it may concern:

Be it known that I, DAVID O'BRIEN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Lightning-Arresters for Protecting Oil-Tanks, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to furnish a device for protecting oil-tanks, &c., from lightning; and my invention consists of a balloon inflated with some suitable gas and provided with suitable terminals for collecting the lightning and conductors for carrying it off, and my balloon is further furnished with a hygrometer for indicating the moisture in the air, and with four or more guy-ropes for holding it in position.

In the drawings, Figure 1 is a side elevation of a balloon furnished with my lightning collectors and conductors, the metal plate on top of the balloon being shown in section; Fig. 2, a side view of the metal plate and terminals; Fig. 3, a plan of Fig. 2; Fig. 4, a plan of ring to which the netting and guy-ropes are attached; Fig. 5, a plan of ring to which the main conductors are attached, and Fig. 6 a side view of Fig. 5.

Similar letters refer to similar parts in the several views.

A is the balloon, which is constructed in the ordinary manner, and which is inflated with any suitable gas.

B is the netting of the balloon, which is attached to a ring, C, of some non-conducting material.

D is a metallic plate, which is placed upon the top of the balloon, and which is preferably furnished with several projections, E, to which the main conductors are secured.

F are terminals riveted to plate D, the points of which are gold-plated.

G is some non-conducting material—asbestus, for instance—which is placed between balloon A and plate D.

H are the main conductors, consisting of heavy wire, preferably copper, which lead from the projections E on plate D to a ring of some conducting material, I.

J is a conducting-wire, which leads from ring I to a drum, K, around which it passes. This drum K is furnished with a crank, L, and is supported upon an axle which is held in metal bearings M, through which the electricity is conducted to the ground.

N are cables, one end of which are attached to the non-conducting ring C, and the other ends of which are secured to cleats or rings O in the ground.

P is a hygrometer, which may be carried by or suspended from either of the rings C or I.

R are wires connecting hygrometer P with a call-bell, S.

The balloon is placed so that it is above the tank or tanks to be protected, and is held in position by four guy-ropes, N. The balloon is raised until it is in a damp atmosphere, which is indicated by the hygrometer P through the electric wires R and bell S. Any form of hygrometer may be used. When the balloon is in a damp atmosphere the bell S does not ring; but should the atmosphere become dry the bell rings, when the balloon is raised until said bell ceases to ring.

The hygrometer illustrated in the drawings consists of a cord, *a*, one end of which is fastened to a pin, *b*, and the other end of which carries a weight, *c*, to which one of the wires R is attached. The cord *a* passes over pulleys *d*. *e* is a contact-point to which the other wire R is attached. In a dry atmosphere the cord *a* stretches and a contact between point *e* and weight *c* is made, causing bell S to ring. In a damp atmosphere the contact is broken and the bell ceases to ring.

The conducting-wire J, which leads from ring I, passes around drum K. When the balloon is lowered, the slack of wire J is wound upon this drum.

I claim—

1. The herein-described device for protecting oil-tanks from lightning, consisting of a balloon carrying lightning collectors and conductors leading to the earth, and furnished with guy-ropes, substantially as set forth.

2. The combination of balloon A, netting B, and ring C, plate D, with terminals F, non-conducting substance G, conductors H, ring I, conductor J, and guy-ropes N, substantially as and for the purposes set forth.

3. The combination of balloon A, netting B, and ring C, plate D, with terminals F, non-conducting substance G, conductors H, ring I, conductor J, drum K, crank L, supports or bearings M, and guy-ropes N, substantially as set forth.

4. The combination of balloon A, netting B, and ring C, plate D, with terminals F, non-conducting substance G, conductors H, ring I, conductor J, guy-ropes N, hygrometer P, wires R, and bell S, all substantially as and for the purposes set forth.

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

DAVID O'BRIEN.

Witnesses:
CHAS. H. KLINE,
JOHN COYLE.