(No Model.)

# G. G. SMITH.

## PROTECTING OIL TANKS FROM LIGHTNING.

No. 255,043. Patented Mar. 14, 1882.

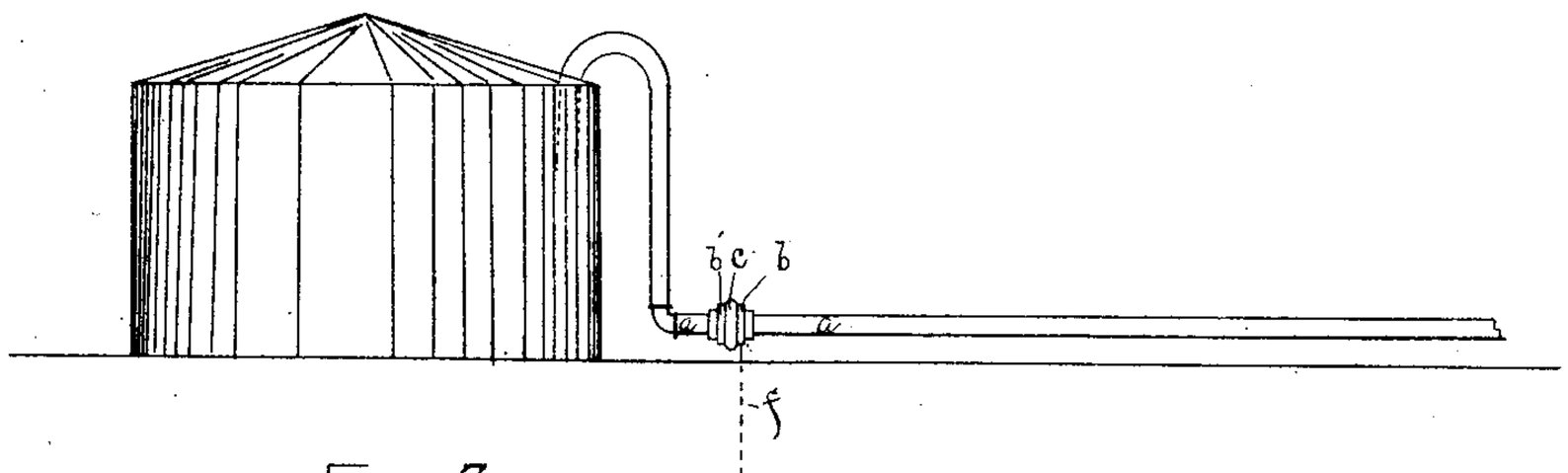


Fig 2

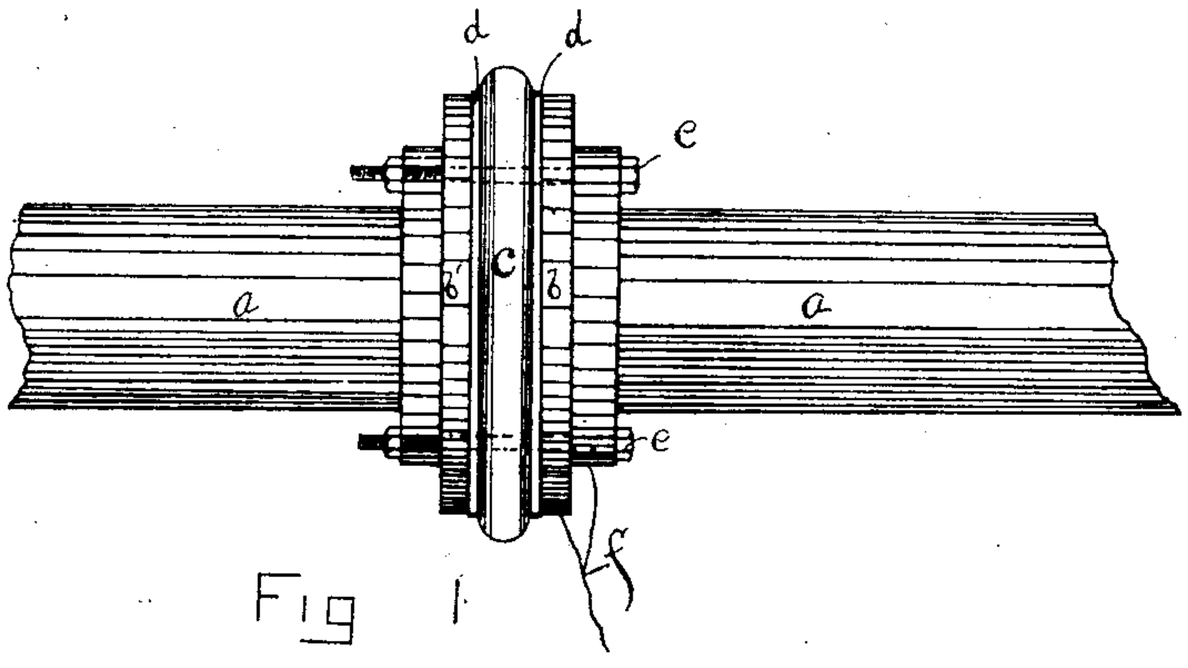


Fig 1

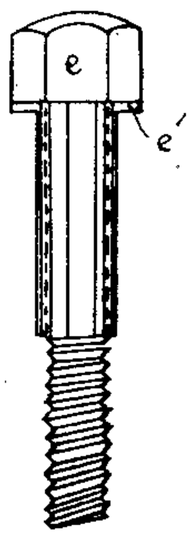


Fig 3

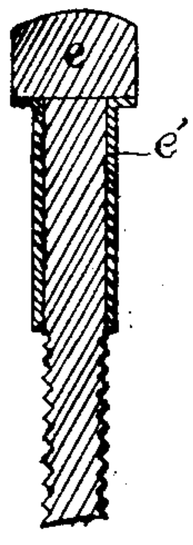


Fig 4

WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE G. SMITH, OF CLEAR CREEK, NEW YORK.

## PROTECTING OIL-TANKS FROM LIGHTNING.

SPECIFICATION forming part of Letters Patent No. 255,043, dated March 14, 1882.

Application filed May 31, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE GRANTHAM SMITH, a citizen of the United States, residing at Clear Creek, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Devices for Protecting Oil-Tanks 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to devices for the protection of oil-tanks from the effects of lightning.

Heretofore the efforts of inventors have been directed to the tank alone, and not to its pipe-line connections. I have discovered from observation that the danger from lightning striking the tank itself is very small, and that the real danger lies in the pipe-line connections. The tank is filled with oil from one or more pipes leading from the wells or other sources of supply. These pipes usually discharge the oil into the tank at the top thereof, where the gases are generated. During a thunder-storm these supply-pipes become charged with electricity, which passes along the pipes to the tank. These pipes are generally loosely fitted where they project into the tank, leaving a space between the pipe and the tank-cover, across which the electric fluid passes, producing a spark, which ignites the collected gases, causing the destruction of the tank and its contents. I propose to obviate this difficulty by insulating each tank from its pipe-line connections, and the device which I have herein shown as embodying my invention consists of a glass insulator in the form of an ordinary washer. It is to be inserted between the flanged couplings at the tank-connection and secured thereto by means of insulated bolts. The electric fluid is conducted into the ground from the apparatus by means of a suitable conducting rod or rods attached to the pipe or its coupling and extending to moist earth.

In the drawings, Figure 1 is a side elevation of my improved device. Fig. 2 shows the application of my device to an oil-tank and its connections. Fig. 3 is a view of one of the insulated bolts, and Fig. 4 is a central longitudinal section of the same.

Referring to the drawings, *a a* are the meeting ends of a pipe-line. These ends are secured together by means of the flanged couplings *b b'*, of usual form. Between these couplings *b b'*, I insert my insulating device, (shown at *c*,) as a washer of glass or other well-known insulating material. *d d* are usual rubber washers used as packing. The flanged couplings *b b'* and insulator *c* are secured together by insulated bolts *e e*.

A form of insulated bolt which I propose to use with my device is shown in Figs. 3 and 4. The bolt is coated with any well-known insulating material—such as glass, porcelain, &c.—as shown at E'. It will only be necessary to coat that portion of the surface of the bolt which would come in contact with the flanged couplings.

At or near the coupling *b*, I attach one or more conductors—such as one or more rods or wires, *f*—to convey the electric fluid into the ground, thus preventing it from reaching the tank and igniting the gases generated therein.

It is obvious that a metallic washer coated with insulating material could be used in place of the washer herein shown and described without departing from the spirit of my invention, or even the couplings themselves might be coated with an insulating material and the insulating-washer dispensed with with equally favorable results.

I do not herein broadly claim as new a means for protecting oil-tanks from the effects of lightning, a pipe insulated at a point near the tank and provided with a suitable conductor or conductors, whereby the electric fluid is arrested and conveyed away.

I claim—

1. In an insulating device for protecting oil-tanks from lightning, the combination of the flanged couplings with the insulator secured thereto by insulated bolts, the coupling being provided with a suitable conductor or conductors, substantially as shown and described.

2. The combination of an oil-tank, its metallic pipe-line, and one or more conducting rods or wires connected to said pipe-line and extending to moist earth, substantially as and for the purpose described.

GEORGE GRANTHAM SMITH.

Witnesses:
P. CURTISS DENNING,
W. T. MILLER.