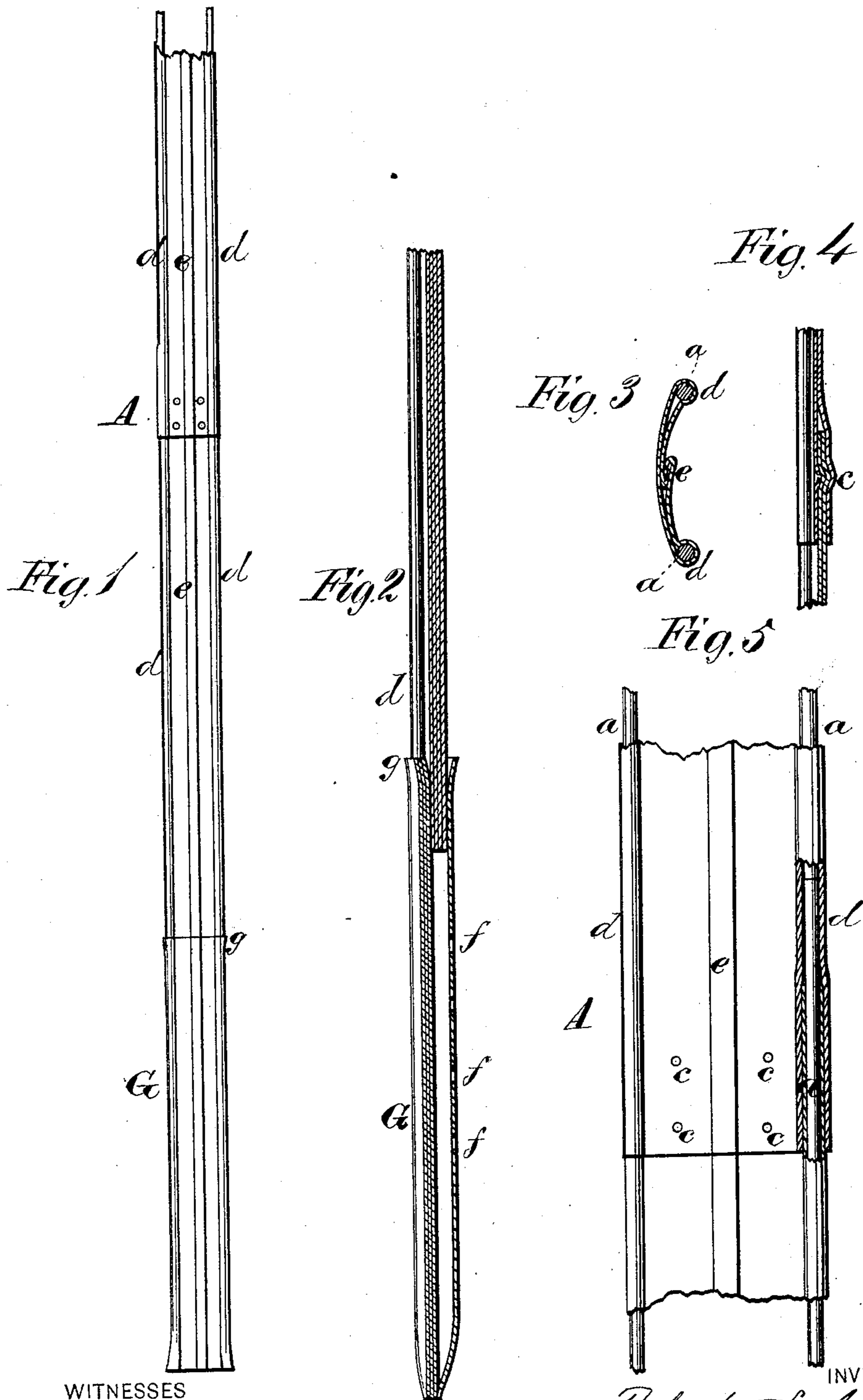


R. S. COLE.  
LIGHTNING-ROD.

No. 175,933.

Patented April 11, 1876.



WITNESSES

*Robert Everett*  
*George C. Upshaw.*

INVENTOR

*Robert S. Cole.*  
*Gilmore Smith & Co.*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

ROBERT S. COLE, OF MOUNT PLEASANT, IOWA.

## IMPROVEMENT IN LIGHTNING-RODS.

Specification forming part of Letters Patent No. **175,933**, dated April 11, 1876; application filed February 12, 1876.

*To all whom it may concern:*

Be it known that I, ROBERT S. COLE, of Mount Pleasant, in the county of Henry and State of Iowa, have invented a new and valuable Improvement in Lightning-Rods; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of my lightning-rod, and Fig. 2 is a vertical sectional view of the same. Figs. 3 and 4 are transverse sectional views thereof, and Fig. 5 is a plan view, part sectional.

This invention has relation to lightning-conductors for buildings, which are made of sheet metal; and the nature of my invention consists, first, in a lightning-conductor made in sections, of sheet-iron, bent and folded so as to present two thicknesses, of a concavo-convex form in cross-section, and provided with a central rib, wires, and end tubes, the sections being connected by slip-joints, as hereinafter more fully set forth. My invention further consists in the employment, in connection with the lightning-conductor above described, of a ground-sheath, provided with a funnel-shaped mouth for the reception of the section of the conductor above it, and perforations, as will be hereinafter more fully set forth.

My lightning-conductor is composed of sections of sheet metal, of any suitable length, united by means of sheath or slip joints A, and re-enforced by means of wires *a* applied in the tubular edges of the sections. When the sections are slipped together they are held fast by indenting them, as shown at *c*, which can be readily done by means of a blunt-pointed tool. Each section of the conductor is composed of a single strip or ribbon of sheet metal, of proper thickness, bent, by means of suitable machinery, so as to present a convex exterior surface and a concave posterior side. The tubes *d* are formed at the edges of the conductor, and the edges of the strip are brought together and lapped or seamed, as shown at *e*, which forms a strengthening-rib. This central rib, together with the tubes *d* at the edges of the conductor, and the concavo-convex form of the same, affords great strength and stiffness, but does not pre-

vent the turning of cornices or chimney-ornaments. *G* designates a sheath, which may be made of any suitable metal, and which is designed to be sunk any desired depth in the ground, the upper flaring or funnel-shaped end *g* of which will be above the surface of the ground. This metal sheath is perforated, as indicated at *f*, for the purpose of allowing the escape and entrance of water, and into the upper funnel-shaped end of the sheath or ground-section the lower end of the conductor is introduced.

In practice, the lower end of the sheath or ground-section *G* may be shut; but this is not absolutely necessary, for the reason that the clay will, if the sheath be left open at its lower end, shut this end, and prevent an escape of water thereat.

If the metal of which the conductor is made is very thin, wires may be inserted into the tubes *d* their entire length; but when the sheet metal is thick this will not be necessary.

It will be seen, from the above description, that I insert the lower end of the conductor into a water-receiving casing or sheath, which, by means of perforations, is in free communication with the surrounding earth, thus establishing a good electrical connection therewith. The funnel-shaped sheath will catch the water which flows down the conductor.

What I claim as new, and desire to secure by Letters Patent, is—

1. The lightning-conductor, made of sheet-iron, bent and folded so as to present two thicknesses of a concavo-convex form in cross-section, and having a rib, *e*, tubes *d*, wires *a*, and slip-joint A, substantially as described, and for the purpose set forth.

2. In combination with the conductor herein described, the ground-sheath *G*, made of sheet-iron, bent and folded so as to present two thicknesses of a concavo-convex form in cross-section, and provided with a funnel-shaped mouth, *g*, for the reception of the section of the conductor above it, and perforations *b b*, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ROBERT S. COLE.

Witnesses:

JOHN F. ACKER, Jr.,  
GEORGE E. UPHAM.