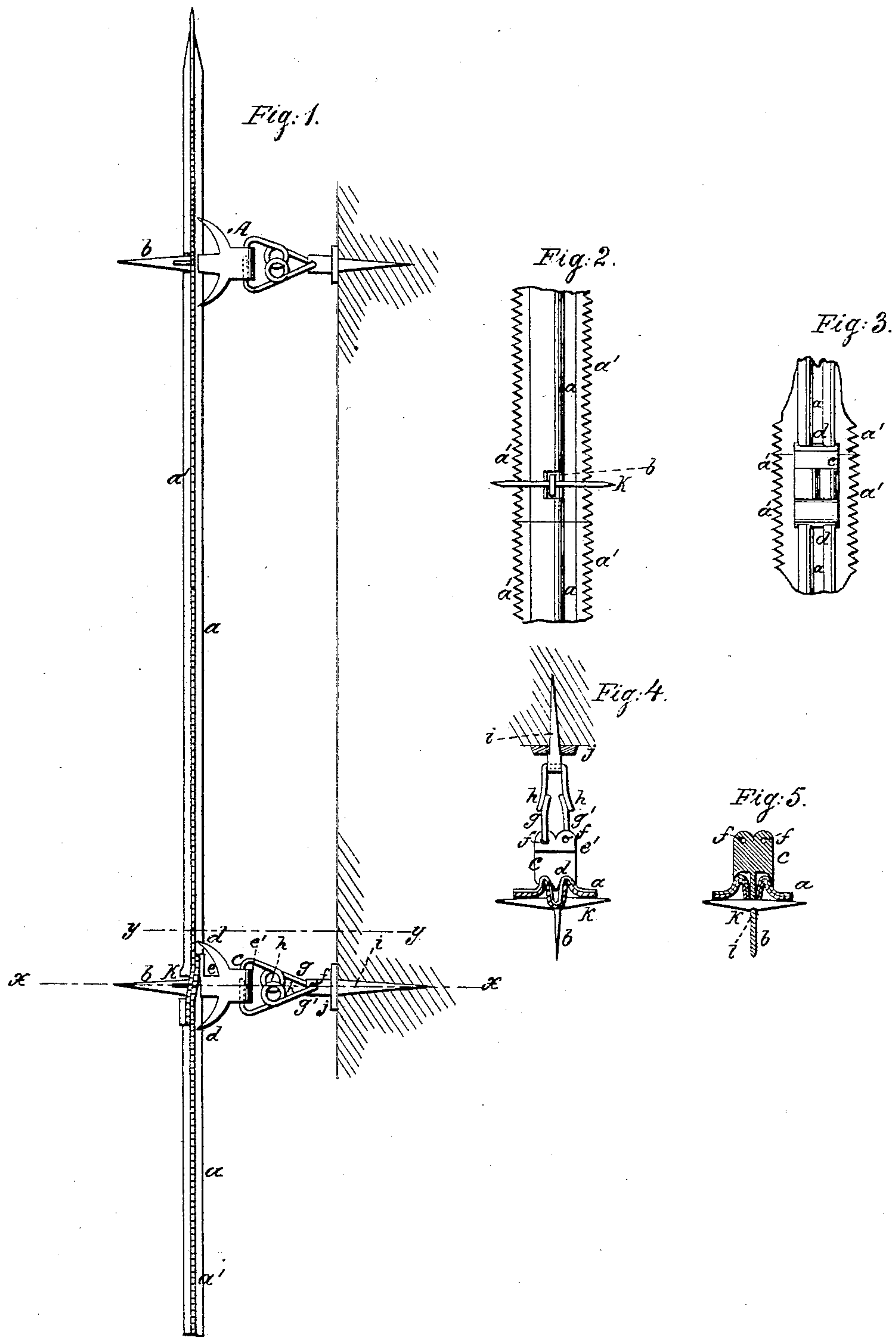


J. B. ELLIOTT.

Lightning Rod.

No. 18,963.

Patented Dec. 29, 1857.



# UNITED STATES PATENT OFFICE.

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## IMPROVED DEVICE FOR ATTACHING LIGHTNING-RODS.

Specification forming part of Letters Patent No. 18,963, dated December 29, 1857.

*To all whom it may concern:*

Be it known that I, J. B. ELLIOTT, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Lightning-Conductors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my invention. Fig. 2 is an enlarged front view of a portion of same. Fig. 3 is an enlarged back view of a portion of same. Fig. 4 is a horizontal section of same, taken in the line *yy*, Fig. 1. Fig. 5 is a horizontal section of same, taken in the line *xx*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to so connect the conductor to the building as to insure a firm support, due provision being made against the casual detachment of the conductor through atmospherical changes—viz., heat and cold—and a good insulator also obtained.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

I construct the conductor of copper strips *a* of suitable lengths. These strips are cut or formed from sheet-copper, may be of any desired width, and are corrugated longitudinally, as shown clearly in Figs. 4 or 5. The strips may be swaged or rolled to form these corrugations, the object being to obtain a requisite degree of stiffness with thin plate, and also to present as great an area or surface as possible with a moderate width. The edges of the strips *a* are serrated or notched, so as to form horizontal saw-toothed projections, as plainly shown at *a'* in Figs. 2 and 3. The ends of the strips *a* are connected as follows: The adjoining ends of the strips are made to overlap each other a short distance, and a taper or wedged shaped tang, *b*, passes through the overlapped ends. The tang *b* is connected to the center of the concave side of a curved copper head, *c*, the ends of which are notched or serrated, so that the whole of their surfaces—that is, of their ends—

will bear against the back sides of the strips *a*, as shown in Figs. 3 and 4 at *d d*, one end bearing against one strip, *a*, and the opposite end against the other or adjoining strip. The head *c* has horizontal portions *e e'* projecting at equal distances from it, one portion, *e*, projecting from the concave, and the other, *e'*, from the convex, side of the head. The tang *b* is connected with the portion *e*, the edge of which is fluted so as to correspond inversely in form with the corrugations of the strips *a*, and thereby cause the whole of its surface to be in contact with the surface of the back of the strip *a*. The other portion, *e'*, has two holes, *f f*, made through it to receive the ends of wires *g g'*, which are so bent that each has a coil, *h*, to give it a requisite degree of elasticity. (See Figs. 1 and 4.) The two wires *g g'* are both formed of a single piece, are of equal length, but their ends are bent in reverse directions, so that the end of one wire, *g*, will pass into the upper surface of the portion *e'*, and the other, *g'*, into the under surface. The two wires *g g'* are secured in the head of a malleable cast-iron spike or nail, *i*, which is driven into the building, and this spike or nail may be cast around the wire. The wires *g g'* are formed of ordinary iron wire, which, being a worse conductor than copper, prevents the fluid from passing into the building.

On the shank of the nail or spike there is placed a piece of gutta-percha, *j*, to prevent moisture from working in around the spike.

Through the tang *b* a copper key, *k*, passes. This key has a notch, *l*, made in its outer edge at its center to allow the portion of the tang *b* at the front edge of the hole through which the key passes to fit therein, and thus retain the key in proper place, the elasticity of the strip *a* pressing the key forward. This will be understood by referring to Fig. 5. Three connections may be used between the joints of the conductor for connecting the rod to the building, (see Fig. 1,) in which *A* represents one serving that purpose only.

The wires *g g'* allow the conductor to expand and contract without affecting in any degree the close contact of the joints.

I do not claim forming a conductor of cor-



rugated metal strips or plates, for they have been previously used. Neither do I claim serrating or notching the edges of the strips which form the conductor. Nor do I claim the manner of connecting said strips; but,

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

Connecting the conductor to the building by means of the wires *g g'*, bent as shown, and secured in the head of the spike or nail *i*, for the purpose herein set forth.

J. B. ELLIOTT.

Witnesses:

STEPHEN F. MILLER,  
C. S. WHITE.