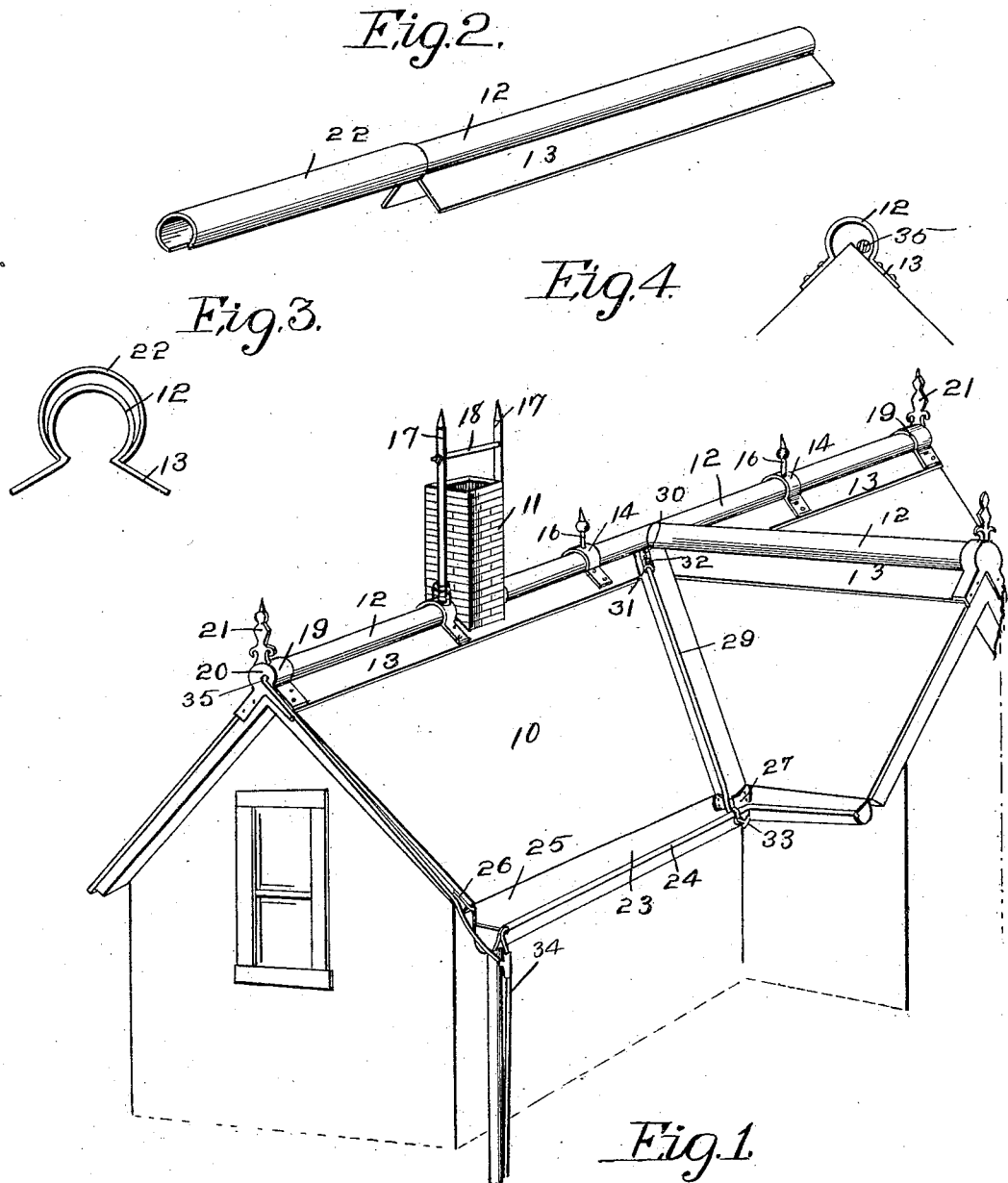


J. P. A. ANDERSON.
 LIGHTNING PROTECTOR FOR BUILDINGS.
 APPLICATION FILED MAR. 12, 1906.

951,411.

Patented Mar. 8, 1910.
 2 SHEETS—SHEET 1.



Witnesses
 C. A. Hague
 J. B. Smutney

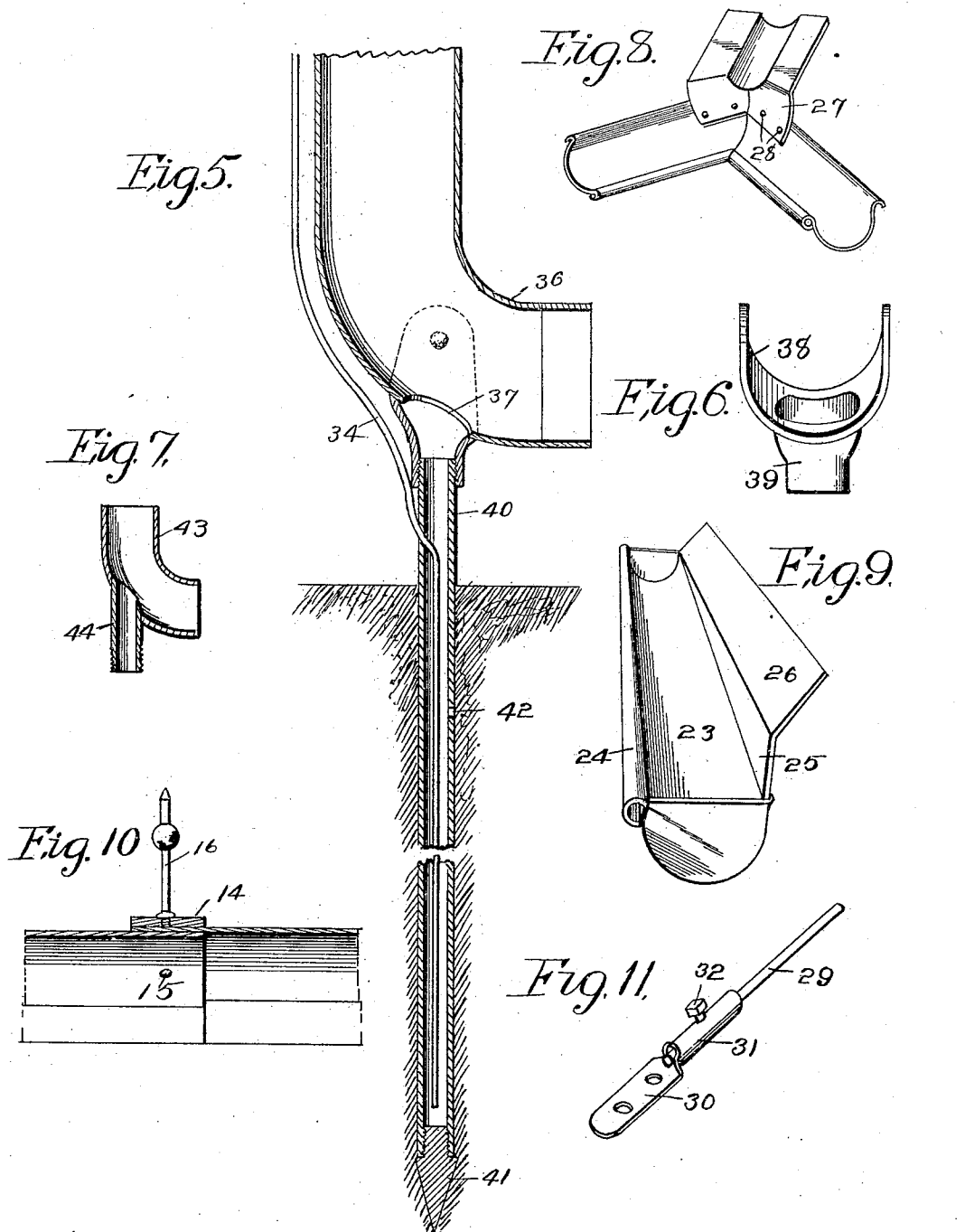
Inventor J. P. A. Anderson
 by *Quigley & Co.*

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 by Currier & Lane Attys

UNITED STATES PATENT OFFICE.

JOHN P. A. ANDERSON, OF MADRID, IOWA.

LIGHTNING-PROTECTOR FOR BUILDINGS.

951,411.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed March 12, 1906. Serial No. 395,583.

To all whom it may concern:

Be it known that I, JOHN P. A. ANDERSON, a citizen of the United States, residing at Madrid, in the county of Boone, in the State of Iowa, have invented a certain new and useful Lightning-Protector for Buildings, of which the following is a specification.

My object is to provide metallic roof hips, valleys, eaves troughs, and spouts so arranged and constructed that they will perform their ordinary functions and at the same time serve as lightning protectors for the buildings to which they are applied, and further to provide conducting wires or cables arranged to co-act with the combs, valleys, troughs and spouts to increase the electrical conducting efficiency thereof and to strengthen and support said parts.

A further object is to provide improved means, connected with a spout, for forming an electrical ground.

My invention consists in certain details in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 shows a perspective view of a building equipped with appliances embodying my invention. Fig. 2 shows a detail perspective view of a roof comb of ordinary construction and a reinforcing piece connected therewith for increasing the electrical conductivity. Fig. 3 shows an end elevation of same. Fig. 4 shows a detail end view of a portion of a roof with an ordinary metallic comb plate thereon inclosing a conducting cable. Fig. 5 shows an enlarged detail, sectional view of a portion of the lower end of a rain spout having my improved grounding device applied thereto. Fig. 6 shows a detail perspective view of the coupling device for connecting the grounding tube with a rain spout. Fig. 7 shows a sectional view of the modified form of same. Fig. 8 shows a detail perspective view of a roof valley and an eaves trough connected therewith to form an electrical conductor. Fig. 9 shows a detail perspective view of an improved form of the eaves trough especially designed for use as a lightning conductor. Fig. 10 shows an enlarged detail sectional view of two sections of roof comb plates connected with each other and provided with a light-

ning rod, and Fig. 11 shows a detail perspective view of one of the devices for connecting an electric cable with a metallic roof member.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate a portion of the building shown and 11 a chimney thereon. At the top of the roof are the comb plates made of metal and comprising rounded central portions 12 and side edges 13 projecting outwardly and downwardly, the latter are secured to the roof by means of nails in the ordinary way. Where two of these sections are connected, I arrange them in overlapping portions, as shown in Fig. 10, and place a metal strap 14 over them, the strap and two sections being connected by rivets 15. I also utilize these straps for the purpose of supporting the upright rods 16, as shown in Fig. 10. In cases where a chimney projects through a roof at the comb thereof, I place two upright rods 17 on opposite sides of the chimney and connect them by a brace 18. At the ends of the combs I provide a supporting strap having a plate 20 at its outer end and an ornamental rod 21 projecting upwardly therefrom.

In cases where the metallic comb pieces of buildings do not form sufficient electrical conductors for the purpose of protecting the building from lightning, I use a reinforcing piece 22 shaped in cross section substantially cylindrical, with its adjacent edges slightly spaced apart and I place these parts over the circular top portions 12 of the ordinary comb pieces where they are held by their own resiliency. These reinforcing pieces 22 are made of copper or of metal having good electrical conducting qualities.

I have provided an improved form of eaves trough especially designed for use as a lightning protector and comprising a trough portion 23 of ordinary shape having the hollow rib 24 at its outer edge and, on its inner edge, I extend the side of the trough upwardly at 25 and then laterally at 26, thus dispensing with the use of supporting straps or wires for the trough and utilizing the part 26 to secure the trough to the building. In case a metallic roof valley is connected with the trough, I connect the projecting lower end 27 of the valley with the trough by means of rivets 28, as shown in Fig. 8.

In cases where there is not sufficient metal

in the valley plates, I provide a metallic cable 29 and attach it to a strap 30 by placing it in a socket 31 on said strap and clamping it therein by a set screw 32, as shown in Fig. 11. The strap is then riveted to the comb plate and extended downwardly in the valley to the spout to which it is clamped by a set screw 33.

In places where the spouts themselves do not contain sufficient metal for electrical conductors of this class, I extend an electrical cable 34 through the hollow rib 24 at the outer edge of the eaves spout. In this way a good contact is had between the spout and the cable and no fastening devices are necessary to hold it in place. The cable coacts with the spout and serves to reinforce it.

If the comb pieces of the buildings do not form sufficient electrical conductors, I extend a cable 35 through the hollow top piece 12, as shown in Fig. 4, and at the ends of the building, these cables 35 extend downwardly along the edge of the roof and connect with the cables 34 of the spouts. I provide for grounding the cable 34 at the spout and also for grounding the spout itself as follows: At the bottom of the spout 36, I form an opening 37 and place a coupling device on the spout at this point. The coupling device comprises a curved body portion 38 to fit around the outside of the spout and a downwardly projecting tube 39 to cover the opening 37. A pipe 40 is screwed into the tube 39 and in its lower end is a metal plug 41 pointed at its lower end. A pipe is provided at a point near its upper end with a drain opening 42. The cable 34 runs down parallel with the spout and enters the pipe 40 and extends to a point near its lower end.

In the modified form shown in Fig. 7, the lower end of the spout is indicated by the numeral 43 and the short tube 44 is connected with it and extends straight downwardly.

By arranging the pipe 40 on a spout as shown, it is obvious that during a rain storm, water descending in the spout will enter the pipe 40 and fill it and after it is full, the water will run off through the spout in the ordinary way. The pipe 40 will remain full of water up to the drainage opening 42 and the water in the pipe 40 above the drainage opening will pass out through the opening and thoroughly saturate the ground adjacent to the pipe. In this way a good electrical ground is provided on account of the moisture around the pipe and it is not necessary to securely fasten the cable in the pipe because the water in the pipe forms a good electrical connection between the cable and the pipe at all times.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, therefor is—

1. In a lightning protector for buildings, a metallic roof comb formed in sections arranged in overlapping positions, metallic straps overlapping said parts at their adjacent ends and riveted thereto and a lightning rod supported in said strap.

2. In a lightning protector for buildings, a metallic comb plate having a tubular top portion and sides projecting downwardly and outwardly and a cap for the end of the comb plate comprising a body portion to fit the tubular portion, an end plate and a lightning rod fixed to the cap and projected upwardly.

3. In a lightning protector for buildings, the combination of a comb plate having a tubular top portion widest at a point above its under portion and a metallic cap tubular in shape formed with springing sides designed to be retained by their own resiliency in position overlapping the tubular portion of the comb plate.

4. A lightning protector for buildings comprising metallic comb plates having tubular ribs at their tops, a metallic valley connected with the comb plates, a metallic eaves trough connected with the valley and formed with a tubular rib at its outer edge, a metallic spout connected with the eaves trough and a cable extended through the tubular portion of the comb plate and connected with the lightning spout, a cable extended through the tubular portion of the eaves trough and connected with the spout and a cable electrically connected with the valley and the eaves trough.

5. A lightning protector for buildings comprising metallic comb plates having tubular ribs at their tops, a metallic valley connected with the comb plate, a metallic eaves trough connected with the valley and formed with a tubular rib at its outer edge, a metallic spout connected with the eaves trough and a cable extended through the tubular portion of the comb plate and connected with the rain spout, a cable extended through the tubular portion of the eaves trough and connected with the spout, a cable electrically connected with the valley and the eaves trough and an open-topped pipe communicating with the spout and having said electric cable inserted in it.

Des Moines, Iowa, February 6, 1906.

JOHN P. A. ANDERSON.

Witnesses:

S. F. CHRISTY,
J. RALPH ORWIG.