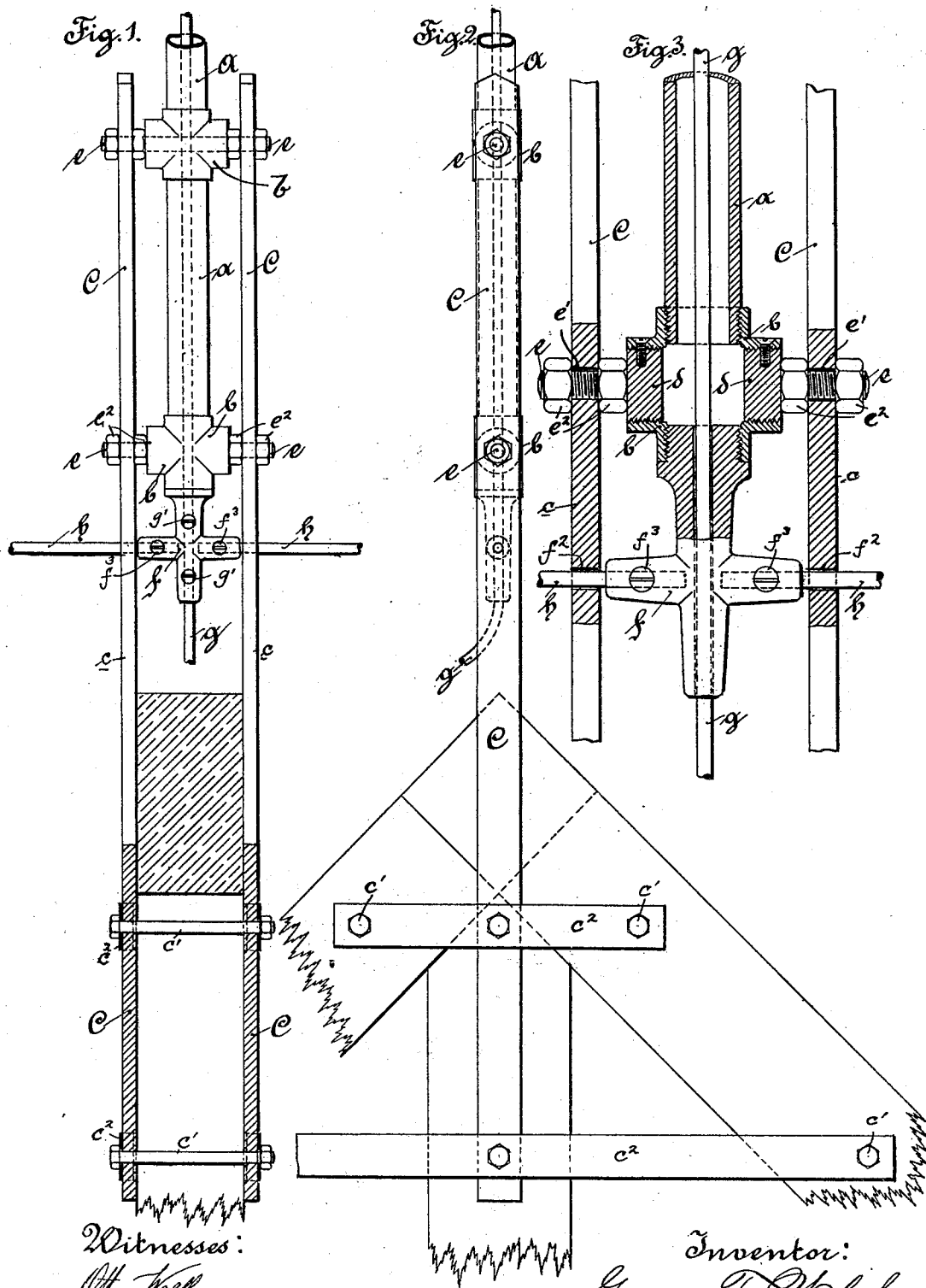


G. T. WALCH.
LIGHTNING CONDUCTOR.

No. 508,068.

Patented Nov. 7, 1893.



Witnesses:

Wm. T. Cook

Aug. A. Zimmer

Inventor:

Gustav T. Walch.

by his attorney Wm. E. Coulter

(No Model.)

2 Sheets—Sheet 2.

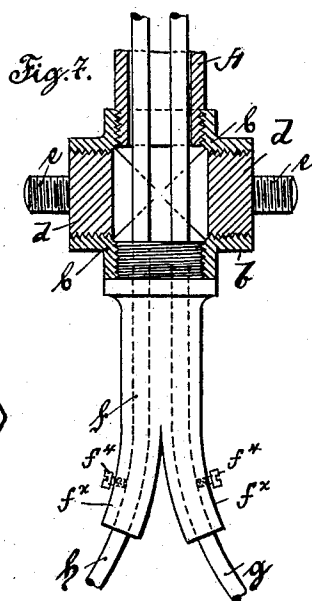
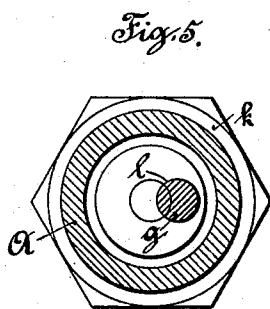
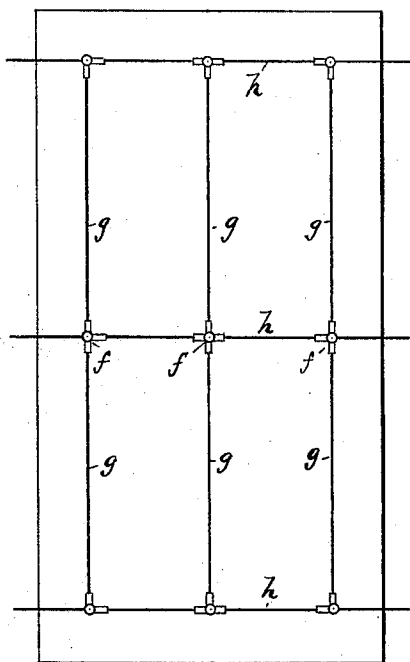
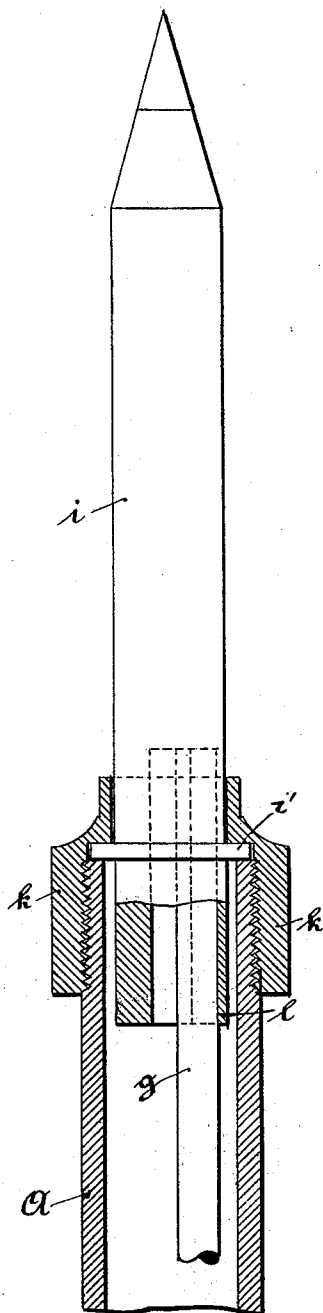
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Fig. 4.

Fig. 6.



Witnesses:

Wm. H. Hoff
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Gustav T. Walch.
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UNITED STATES PATENT OFFICE.

GUSTAV THEODOR WALCH, OF KAUFBEUREN, GERMANY.

LIGHTNING-CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 508,068, dated November 7, 1893.

Application filed February 21, 1893. Serial No. 463,193. (No model.) Patented in England January 6, 1893, No. 336; in Switzerland January 16, 1893, No. 6,117; in Belgium January 31, 1893, No. 102,889; in Italy February 1, 1893, No. 33,389/366; in Spain February 20, 1893, No. 14,139, and in France March 28, 1893, No. 226,941.

To all whom it may concern:

Be it known that I, GUSTAV THEODOR WALSH, a subject of the King of Bavaria, residing at Kaufbeuren, in the said Kingdom of Bavaria, German Empire, have invented certain new and useful Improvements in Lightning Conductors, (for which Letters Patent have been obtained in France, No. 226,941, dated March 28, 1893; in Belgium, No. 102,889, dated January 31, 1893; in England, No. 336, dated January 6, 1893; in Switzerland, No. 6,117, dated January 16, 1893; in Spain, No. 14,139, dated February 20, 1893, and in Italy, No. 33,389/366, dated February 1, 1893,) of which the following is a full, clear, and exact description.

My invention has relation to lightning conductors, and among the objects in view is to provide an inexpensive and simple lightning conductor which is adapted to be readily applied to any building or other structure, and when so applied will be exceedingly strong and durable; also, to provide a lightning conductor which is adapted to protect the ridge of a roof for example; also, to provide improved means for securing the point to the upper end of the conducting wire by which a large contact surface between the two is secured and oxidation prevented, and with the above and certain other objects in view.

The invention consists in the peculiar construction, arrangement and combination of parts, all as hereinafter fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings: Figure 1 is an elevation, partly in section, of a portion of my improved conductor and illustrating the same applied to a structure. Fig. 2 is an edge view of the same. Fig. 3 is an enlarged view in vertical section showing the connection between the conducting wires, casing and supporting frame. Fig. 4 is a like view partly in elevation showing the connection between the point and the conducting wire. Fig. 5 is a horizontal sectional view of Fig. 4 taken through the point of connection. Fig. 6 is a diagram illustrating different methods of con-

necting the wires, and Fig. 7 is an enlarged sectional elevation showing the manner of arranging and connecting double conducting wires.

Referring to the above-described drawings, and more particularly to Figs. 1, 2, and 3, A indicates a casing which by preference consists of a number of tubular sections or sleeves *a*, which are joined together by means of suitable unions or sleeves *b*, which are cross-shaped, as shown. The sections *a*, may be formed from ordinary gas piping, while the sleeves *b*, may be purchased in the market ready for use, thus giving to my invention the advantage of cheapness. The length of the sections *a*, may of course be varied to suit the requirements of each case. Each of the arms of the cross-sleeves *b*, is threaded internally and into the vertical arms thereof are screwed the threaded ends of the sections *a*, as shown.

C indicates a suitable supporting frame, comprising the vertically-arranged side pieces or bars *c*, which are adapted to be secured to the roof girders by any suitable means, as for instance, by means of the connecting bolts or rods *c'*, and plates or rods *c''*, as shown in Figs. 1 and 2. For the purpose of securing the casing A to the supporting frame, I employ preferably the means shown more plainly in Figs. 1 and 3 and which consist of blocks *d*, which are threaded externally and are screwed into the horizontal arms of the cross sleeves *b*, each of said blocks being provided with the threaded bolts or pins *e*, which pass through openings *e'* in the side bars of the frame C, and are secured thereto by the nuts *e''*. Thus it will be seen that the various parts of my device are detachably secured together and to the structure, and adapted to be readily taken apart and removed from the said structure for any purpose.

g indicates the main conducting wire which passes freely through the sections *a*, and connecting sleeves, and for the purpose of connecting the ends of a number of wires when this is necessary, I employ unions or sleeves *f*, preferably of copper, the number and posi-

tion of the arms of which will vary with the number and position of the conducting wires to be secured thereby, said sleeves f , being threaded externally at their upper ends and screwing within the lower arms of the sleeves b .

As shown in Fig. 1, the ends of the conducting wires g to be connected, pass through the vertical arms of the sleeves f and are secured therein by screws g' , and if desired solder may be used also, to further secure the wires. If, however, there is but one conducting wire it is passed through the sleeve as shown in Fig. 3, the provision of any securing screws being here rendered unnecessary.

If it be desired to employ branch conducting wire or wires for the protection of the ridge of a roof, I pass such wire or wires, such as h , through the horizontal arms of the sleeves f , and secure them by screws f^3 , and I also pass said wires through openings f^2 in the side arms c , of frame C . Where there is no special conducting wire for a ridge of a roof required, as for example in the case of towers or spires, the horizontal arms of the sleeves f , are dispensed with.

For securing the point i , to the casing A , the latter is screw-threaded externally at its upper end and upon it is screwed a nut k which latter serves to engage and secure a shoulder i' of the point, between it and the upper edge of the casing. For establishing a connection between the point i , and the conducting wire so as to obtain a large contact surface between the two, and at the same time prevent oxidation I form within the lower end of the point and adjacent to the central perforation thereof a second perforation l , located to one side of or eccentrically to the said central perforation, and merging into or joining it, as seen more plainly in Fig. 5, and the conducting wire after being passed through the sleeves b, f , is forced into the perforation l , and is thereby secured.

The object of the second perforation l , arranged eccentrically to and merging into the central perforation is to enable the wire g , to be easily inserted in the point, which would however, be a rather difficult operation were said second perforation not provided, for in that case the usual twisted wire would in being driven into the central opening be apt to bulge and thus not be driven far enough into the point. Or, it would be necessary to employ a wire having a smaller diameter which however, would prevent the wire and point from coming into contact at all points, as they should. By the aid of the perforation l , I am enabled to employ a comparatively thick wire and easily insert the same into the partly-open eccentric perforation and secure a large contact surface on the closed side of the said perforation.

In Fig. 7 I show a sleeve f , secured to a sleeve b , said sleeve f , being provided with two branches f^x through one of which passes the main wire g , and through the other passes

the branch wire h , each wire being secured by a screw f^4 .

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

1. In a lightning conductor, the combination with a casing, and a main conducting wire passing through said casing, of a branch conducting wire in electrical connection with said main wire, and a frame to which said casing is secured, as described.

2. In a lightning conductor, the combination with a casing, and a main conducting wire passing vertically through said casing, of a branch conducting wire in electrical connection with said main wire, and a frame to which said casing is detachably secured.

3. In a lightning conductor, the combination with a casing composed of a number of sections, sleeves connecting said sections, a supplementary sleeve connected to one of the said sleeves a main conducting wire passing through the said sections, and a branch conducting wire passing through the supplementary sleeve as described.

4. In a lightning conductor, the combination with a conducting wire, and a casing therefor, of a cross-shaped sleeve, for the purpose specified.

5. In a lightning conductor, the combination of a casing composed of a number of sections, cross-shaped sleeves connecting said sections, a conducting wire passing through the casing sections, a supporting frame, and means for connecting said cross-shaped sleeves to said frame, as described.

6. In a lightning conductor, the combination with a casing composed of a number of sections, cross-shaped sleeves having threaded vertical and horizontal arms, and into the vertical arms whereof the said sections are screwed, a supporting frame, a conducting wire passing through the sections and connecting sleeves, and means for connecting the casing to the said frame consisting of blocks screwing within the horizontal arms of the sleeves, and provided with threaded pins passing through the frame, and nuts screwing upon the said pins, as described.

7. In a lightning conductor, the combination with a casing composed of a number of sections, cross-shaped sleeves having threaded vertical and horizontal arms and into the vertical arms whereof the said sections are screwed, a supporting frame, a conducting wire passing through the sections and connecting sleeves, and means for connecting the casing to the said frame consisting of blocks screwing within the horizontal arms of the sleeves and provided with threaded pins passing through the frame and nuts screwing upon the said pins, of cross-shaped supplementary sleeves screwing within the lower threaded arms of one of the aforesaid sleeves, and branch conducting wires secured within said supplementary sleeves, as described.

8. In a lightning conductor, the combina-

tion with a conducting wire, of a point provided with a central perforation in its lower end and a second perforation adjacent to the first perforation and into which said conducting wire is secured.

9. In a lightning conductor, the combination with a conducting wire and a casing therefor provided with an externally-threaded upper end, of a point within which said wire is secured, and provided with a shoulder, and a nut screwing upon the upper end of

the casing and adapted to engage the said shoulder, as and for the purpose specified.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

GUSTAV THEODOR WALCH.

Witnesses:

OTTO WOLFF,

Patent Agent, Dresden.

HUGO DUMMER,

Engineer, Dresden.