D. WOOSTER.

Lightning Rod.

No. 29,933. Patented Sept. 4, 1860.

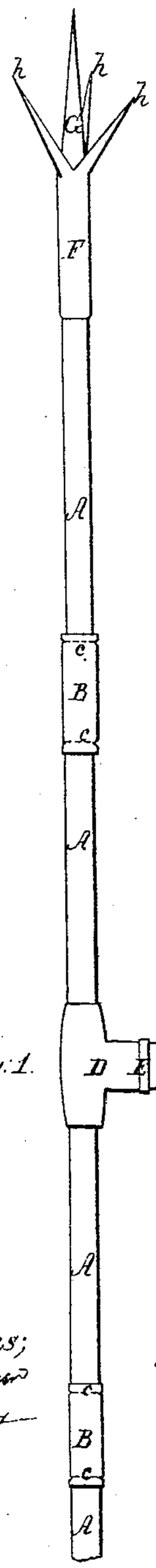

Fig. 1.

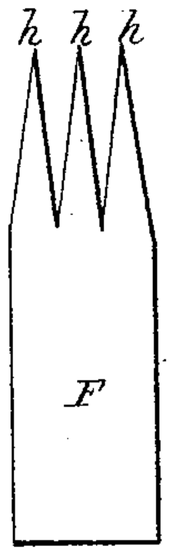

Fig. 2.

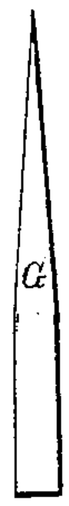

Fig. 3.

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UNITED STATES PATENT OFFICE.

DAVID WOOSTER, OF SEYMOUR, CONNECTICUT.

IMPROVEMENT IN LIGHTNING-RODS.

Specification forming part of Letters Patent No. **29,933,** dated September 4, 1860.

To all whom it may concern:

Be it known that I, DAVID WOOSTER, of the town of Seymour, in the county of New Haven and State of Connecticut, have invented a new and Improved Mode of Connecting Together the Joints of Hollow Lightning-Rods and of Constructing the Points thereof; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention can be easily understood by reference to the accompanying drawings.

Figure 1 represents a hollow copper lightning-rod complete from the point at the top to the point at the bottom, where the rod enters the earth.

A A A represent hollow copper tubes of any required diameter.

B B represent short pieces of copper tubes, the inside diameters of which are just equal to the outside diameter of the main rod A. Within this short tube or sleeve B is the joint of the main rod A.

In order firmly to hold together the rods A A, the ends thereof are slipped into the short tube or sleeve B until said ends meet in the center of sleeve B. Then, by means of a pair of pinchers of proper construction, a groove near each end of said sleeve B is made, so that the ridge formed by groove upon the inside of sleeve is pressed into the surface of the main rods A A. The grooves thus formed are represented by *c c* in Fig. 1. This forms a very strong and durable connection, and can be made much cheaper and better than by soldering or screwing the rods together.

D in Fig. 1 represents the connection which I use in fastening a branch rod to the main rod at any desired angle. The connection or clip D is made of cast brass or copper, and is formed in two parts exactly alike, each of which parts surrounds just one-half of a given length of the main rod A and one-half of a given length of the end of the branch rod, so that when the two parts of the clip D are placed upon the main and branch rod, as shown in Fig. 1, said parts nearly or quite come in contact with each other through their entire length. The ring E is then slipped over the ends of the clip D and driven down upon it far enough to make a firm and strong joint. It will be seen that by this arrangement a branch rod can be secured to any part of the main rod in a very simple and expeditious manner.

F and G in Fig. 1 represent the points which I use in connection with lightning-rods. These points are made in two separate parts.

Fig. 2 represents the manner in which the part F of said point is made, which is done by taking a piece of sheet copper or brass of the required length and of a width equal to the outside circumference of the rod A. It is then cut into the form shown in Fig. 2 and then formed into a tube, when the points *h h h* can be bent to any angle desired. It is then plated and slipped onto the top of the rod A. A hollow pointed and plated tip (shown at Fig. 3) is then fitted into the top of the part F, as shown in Fig. 1, when the points of the rod are complete.

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

1. Firmly securing together the ends of the rod A and the sleeve B by means of the grooves *c c*, as described.

2. The treble-pointed piece F, when made out of sheet metal, substantially as described.

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