

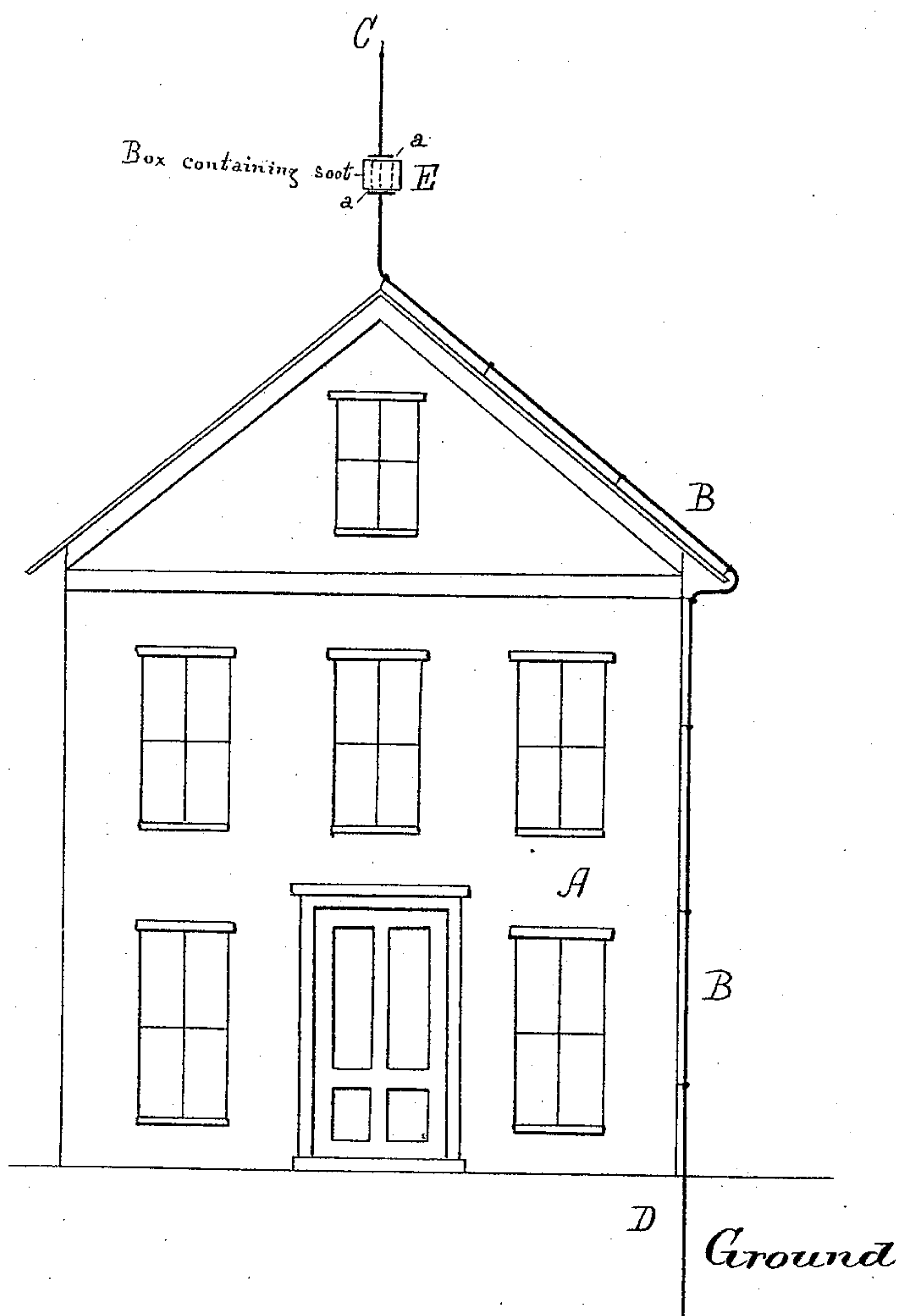
(No Model.)

N. D. C. HODGES.

METHOD OF PROTECTING BUILDINGS FROM LIGHTNING.

No. 443,048.

Patented Dec. 16, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

NATHANIEL D. C. HODGES, OF PLAINFIELD, NEW JERSEY.

METHOD OF PROTECTING BUILDINGS FROM LIGHTNING.

SPECIFICATION forming part of Letters Patent No. 443, C48, dated December 16, 1890.

Application filed September 28, 1889. Serial No. 325,438. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL D. C. HODGES, a citizen of the United States, and a resident of Plainfield, county of Union, and State of New Jersey, have invented certain new and useful Improvements in the Method of Protecting Buildings and other Objects from Lightning and other Electric Discharges, of which the following is the specification.

Heretofore protection has been sought against the destructive effects of electric discharges, principally in the form of lightning, by the use of a metallic conducting-rod, which, being a good conductor of electricity, was applied to the outside of buildings and was expected to take up constantly whatever excess of electricity there might be in the surrounding atmosphere, whether diffused or in the form popularly known as a "bolt," and transmit the same to the earth, where it would be dissipated without doing harm. These rods have been generally extended some distance above the top of buildings, and have passed in an unbroken circuit down the side of the building at some convenient place, and thence into the earth the desired distance. Protection from such rods has proved to be wholly inadequate, and in many cases buildings have been struck by lightning and seriously damaged or destroyed in spite of the presence of such rods.

The object of my invention is to provide an improved method of protection from lightning and other electric discharges, whether in connection with such rods as heretofore used and as an aid to them or as a substitute therefor. It has been noticed repeatedly that in cases where less serious damage has been done, and that unattended with fire, the presence of a strong electric force is indicated by the explosive effects produced, as by blowing open chimneys or the sides of clapboarded houses, and in some cases small metallic objects have been ground to powder without fusion.

It is well known that the potential or striking force of any given quantity of electricity with which a body is charged is very largely dependent upon the surface of said body over which said quantity of electricity is forced to spread itself in charging the same. Thus a given quantity of material in the form of a solid mass when charged nearly to repletion

will exhibit a very high electro-motive force or potential, while if the amount of electricity remains the same and the quantity of material remains the same, but the structure of the material is changed into a granular mass like fine powder, the potential of the electricity there stored practically disappears.

The object of my invention, therefore, is to take advantage of this property of extended surface present in pulverized or comminuted substance, or vapors, and thus without attempting to lead the electric current away from the threatened building or object I place such a substance in the probable path of the electric current in such manner that the electricity will pass into this substance in preference to attacking the said threatened building. In charging this interposed substance, providing the aggregate surface of its parts is sufficiently large, the potential of the most violent bolt of lightning becomes destroyed or so greatly reduced that the current will readily be carried off by the rod or even dissipate itself harmlessly in the surrounding moist air.

My invention consists in an improved method of protecting buildings from electric discharges, which lies in interposing at some part of the lightning-rod as now generally used or in the probable path of the discharge, in lieu of such rod a substance for receiving and absorbing said discharge by virtue of its characteristic structure, preferably a substance in a diffuse or finely comminuted state, whereby the potential of said discharge becomes reduced or destroyed, substantially as and for the purposes specified. There are many forms in which this interposed substance can be applied to the building to be protected. Among those which I prefer are: If used as an auxiliary of the lightning-rod, a thin box made of non-conducting material and filled with soot is interposed in the lightning-rod about six or eight feet above the roof of the building, the rod being broken at that point so that the electricity can pass from that portion of the rod which enters the top of the box to that portion which emerges from the bottom of the box only by passing through the soot. In some way as soon as the electricity enters a substance of this structure its particles fly apart, some or all

of them being charged with portions of the electricity, and thus the potential of the electricity will be greatly reduced and probably no further harm will result. This effect of course would depend largely upon the quantity of soot employed; but a cubic foot would probably be found sufficient for all ordinary cases.

The arrangement just described as one mode of application of my invention is shown in the accompanying drawing, in which—

A indicates the gable end of a dwelling or school house; B, the lightning-rod attached thereto in the ordinary manner and suitably insulated, C being the extreme top of the rod, and D the ground into which the rod penetrates to a sufficient depth to allow the electricity to flow off readily into the earth.

E is a box of soot situated at a suitable and convenient distance above the peak of the gable, the lightning-rod not passing through the box of soot, but spreading into plates on the top and bottom thereof and connected through the soot by fine vertical wires *a*.

If the lightning-rod is discarded and my invention used as the sole protection, I prefer covering the roof with a thin layer of soot or dust or thin metal sheet properly protected from the weather; but I do not wish to be understood as limiting myself to any particular substance or form of substance thus placed in the path of the electric discharge or to any particular part of said path; but I claim to be the first ever to have practically applied the principle of supplying lightning-

and other electric discharges with a substance upon which to expend their force as a protection against their destructive effects instead of attempting to lead the same into the ground.

I claim—

1. An improved method of protecting buildings, &c., from electric discharges, which consists, first, in receiving the atmospheric electricity as it collects in the neighborhood of said building upon a conducting-surface; second, in diffusing said electricity upon a large surface of finely-divided badly-conducting substance; third, scattering said badly-conducting substance and thus reducing the charge, and, lastly, in conducting the residue of said charge to the ground, as and for the purposes specified.

2. An improved method of protecting buildings, &c., from electric discharges, which consists, first, in receiving the atmospheric electricity as it collects in the neighborhood of said building upon a conducting-surface; second, in diffusing said electricity upon a large surface of finely-divided badly-conducting substance, and, lastly, in scattering said badly-conducting substance and thus reducing the charge, as and for the purposes specified.

In testimony whereof I affix my signature in presence of two witnesses.

NATHANIEL D. C. HODGES.

Witnesses:

GEO. SHERWOOD,
DAVID B. HUGHES.