Opinion of the court.

IN RE S. D. CUSHMAN. APPEAL FROM REFUSAL TO GRANT PATENT.

PATENTABILITY—"SUFFICIENTLY USEFUL AND IMPORTANT."—Under the seventh section of the act of 1836, one of the conditions necessary to the granting of the patent is that upon the examination thereby directed, "the Commissioner shall deem it [the invention] to be sufficiently useful and important."

SM—LIGHTNING RODS.—When an alleged invention—which in this case consisted in surrounding the part of a lightning-rod embedded in the earth with a galvanic battery to facilitate the discharge of the electricity—appears to be on principle wholly incapable of effecting the desired result: *Held*, That the application should be rejected as not sufficiently useful and important.

(Before MORSELL, J., District of Columbia, January, 1858.

MORSELL, J.

The claim as set forth in the amended specification is in these words: "Having thus described my invention, what I claim as new, and desire to secure by letters-patent, is surrounding that part of the lightning-rod which is embedded in the earth with a galvanic-battery, in the manner and for the purposes set forth." The nature of the invention is stated thus: "To facilitate the discharge of the electricity from the conductor to the earth is the object of my present invention, and it consists in surrounding that part of the lightning-rod embedded in the earth with plates of dissimilar metals, arranged in such manner as to constitute an open galvanic-battery. Electro-motive power will divide the electricity on the metallic plates, and as they are uninsulated they will act as a condenser of the electricity that is opposite to that of the air. Should there be a high electrical tension of the air, by this means the electrical fluid conducted through the rod is more readily discharged by uniting with the opposite electricity as it accumulates on the surface of the plates. When the discharge flows from the earth to the air, then the rod conducts from the plates such electricity as is opposite to that of the air."

On the 3d of June, 1857, the Commissioner decided, refusing to grant the patent for reasons filed. The reasons alluded to appear to be contained in a report made by Examiner Baldwin, directed

to the Commissioner, in these words: "In the revision of the application of S. D. Cushman for a patent for alleged improvements in lightning-rods, I have the honor to report that the invention consisted in surrounding that part of the lightning-rod embedded in the earth with plates of dissimilar metals, to constitute an open galvanic-battery for the purpose of facilitating the discharge from the lightning-rod to the earth. The claim was, surrounding that part of the lightning-rod which is embedded in the earth with a galvanic-battery, in the manner and for the purposes described. Practical science has long since determined that to guard buildings against the destructive effects of lightning, it is necessary to provide a continuous line of conduction beyond the point of danger through which the electrical discharge may be transmitted, and it is well known that the building is rendered secure in proportion to the power of the conductor to transmit the electrical current. In Harris on Thunder Storms numerous examples are given to increase the security to buildings by extending the surface of the rod at its termination, and even directions are given to connect it there with conducting channels. For example, at page 97 it is said: 'It (the rod) should terminate under ground' in two or more branches passing out in any convenient direction, 'and if convenience permit, these branches should be connected with springs of water or drain or some other conducting channel.' At page 105, same book, a clear view is given of the effect of the extension of surface in the power of conduction in the rod. At page 125 a drawing shows the forked termination of the rod; and at page 127 the description of the rod on the Nelson monument mentions its termination connected with three pointed branches under the surface of the ground, while at page 134 is noticed the views of M. Le Roy in 1790, who proposed to protect the ship from the effects of lightning by terminating her conductors on the copper on her bottom. The modern experience with iron ships also shows that their large mass of conducting surface gives them almost a perfect immunity from the effects of lightning. In my opinion the application was properly rejected, for the use of plates of metal in which to terminate the rod for augmenting its security was not the invention of the applicant, and making this termination in plates of different metals could at most have but effected an infinitesimal action in the

power of conduction, and even this the Office cannot readily perceive any precise mode of verifying by experiment, and can therefore only receive it as a possibility; but not even then can I regard it as presenting a doubt, of which the applicant should be allowed the benefit. I am, for these reasons, of opinion that the patent should be refused."

This report and opinion was approved by the Commissioner on the 1st of June, 1857. From which decision said Cushman appealed, as before said, and filed his reasons of appeal, which are: First. Because the Office has failed to give references to show that the devices employed by the applicant were old or well known. Secondly. Because the Office has not shown that the invention is useless. Thirdly. Because the Office has failed to show that it is prejudicial to the morals of the community. Fourthly. Because the Commissioner had no right to reject the case on the ground that he could not perceive any precise mode of verifying by experiment the invention; and lastly, because wherever there is a doubt the applicant should receive the benefit of it.

The Commissioner's reply to these reasons consists, in the first part, of an historical account of the proceedings in the first stages of the application, then of the object of the invention and the nature of the subject generally, and of the references to Harris on Thunder Storms, substantially as stated in the Commissioner's reasons for the decision. He proceeds then to say: "The only thing, then, that his claim has to rest on is the galvanic action arising from the use of copper and zinc as the metals of the plates, and this is what the claim is strictly limited to. The reason which the Office gives for refusing a patent for this is simply that the intensity of the action arising from either the copper or zinc, or both, in the earth, is thousands of times too small to be sensible as compared with that of any flash of lightning. The latter has force enough to strike through hundreds or thousands of feet, or sometimes through miles of air. The former has not force enough to strike through the thousandth part of an inch. These are well-known facts, and the thing must be utterly without practical effect. The applicant has not shown the slightest reason to believe in any effect. It has been attempted to be shown by some theoretical notions, but there is no occasion to resort to

theory. In a practical point of view it is well known what the galvanic action of copper and zinc does and what it does not do, as it regards such a question as the one now before us, and fanciful theories cannot have any weight against well-known practical facts. The fact above mentioned of the infinitesimal degree of the galvanic force of copper and zinc, or any other two metals, stands out in almost every good elementary treatise on electricity and galvanism, and would be readily testified to by any person well read upon the subject of electricity. Such, for instance, as Professor Henry, of this city. And the Office has, therefore, not thought it necessary to make citations in regard to it from any particular authors or works on electricity. Another point in the case is the uncertainty as to the direction in which the auxiliary galvanic force, even if it were sensible in quantity, in comparison with that of the atmospheric electricity, would be wanted, since the stroke may be either from the cloud to the earth or from the earth to the cloud, according as the latter is positive or negative. Another point is the fact, well known as a practical fact, independent of all theory, that in the use of both copper and zinc these metals tend mutually to neutralize the effect which either might have by itself, though that is infinitesimal, as above stated."

The original papers, with the Commissioner's decision, the reasons of appeal, and the said report in writing in answer thereto, were laid before me on the day and at the place previously appointed by me, and according to due notice given for the hearing of said appeal; at which time and place an examiner appeared on behalf of the Office, and the appellant by his attorney, and the said party having desired to examine said officer appearing on behalf of the said Office, was permitted so to do, according to the provisions of the act of Congress on said subject, and the oath duly administered by me accordingly.

Most of the questions and answers under that examination are of a general nature, without any special application in any material particular to the alleged invention.

It is contended in the argument of the appellant's counsel that the fact of the novelty of the invention is thereby further established. Further, that the answer to the thirteenth interrogatory refutes the idea in the report as to the insufficiency of the battery in its operation to meet an electrical stroke which might take

place from the earth to the cloud, said battery being confined in its operation to that of the latter; and further, that the answers to the fourteenth and fifteenth interrogatories show contradictory statements made by the Examiner as to the matter above alluded to.

For a more particular notice to the answers, I refer to the examination itself.

In the argument it is further contended that the fact of novelty being so established, the sole question is as to the utility; and that as to the position of the Office—"that the degree of beneficial effect produced is so small that the Office does not deem it patentable"—it is not nor cannot be sustained by any authority; but on the contrary, the practice of the Office and rulings and decisions of the court are against it. To support the position, a reference is given to Curtis, section 28. It is there stated that "the doctrine in relation to utility being in this country that the subject-matter of a patent must not be injurious or mischievous to society, or frivolous or insignificant, it follows that every invention for which a patent is claimed must be to a certain extent beneficial to the community. It must be capable of use for some beneficial purpose. But when this is the case, the degree of utility, whether larger or smaller, is not a subject for consideration in determining whether the invention will support a patent. But it is obvious that the capability of use for some beneficial purpose is a material element in determining whether there is a sufficiency of invention to support a patent, the force of the word 'useful,' introduced into the statement in connection with the epithet 'new,' being to determine whether the subject-matter upon the whole is capable of use for a purpose from which any advantage can be derived to the public. General rules will not decide this question in particular cases, but the circumstances of each case must be carefully examined under the light of the principles on which general rules are founded."

It will be proper here to remark that the aforegoing is the rule which is laid down in cases where a patent has issued, and where it becomes necessary to sustain it when its validity is impeached in a court of law. With respect to the rule more immediately applicable to the present case, it will be found in the seventh section of the act of 1836, where one of the conditions necessary to

the granting the patent is that upon the examination thereby directed "the Commissioner shall deem it [the invention] to be sufficiently useful and important," &c.

The question to be decided is whether the alleged invention of an improved mode of protecting objects from the effect of lightning, by surrounding that part of the lightning-rod which is embedded in the earth with a galvanic-battery, as described in the specification, is capable for said purpose in a patentable point of view. There having been no experiment made by the applicant in this case to test his invention, the solution of the question must depend upon received and approved scientific principles. The subject appears to have undergone thorough investigation in the Patent Office by the Commissioner and several of his learned examiners—the result of whose investigation, both upon reason and authority, appears to be as hereinbefore stated; from which it appears that in their judgment the alleged invention was in fact wholly incapable of answering practically any such purpose. This authority justly claims very high respect. Upon my own investigation, and from the best lights I have been able to obtain, I am satisfied that galvanic electricity is not intense, but, on the contrary, quite feeble; for instance, a sheet of copper and a sheet of zinc, each from eighty to one hundred and twenty square feet of surface, have been rolled up together and immersed in a large tub of acid, giving a current so feeble in intensity as to be quite insensible to the feeling. I am satisfied that the action arising from the galvanic-battery in this case would be incomparably small when compared with that of any flash of lightning, so much so as to be of no beneficial use.

I think, therefore, that the Commissioner was correct in refusing to grant the patent.

P. Hannay, for the appellant.

IN RE LITTLEFIELD. APPEAL FROM REFUSAL TO GRANT PATENT.

NOVELTY—AFFIDAVITS AS TO.—The alleged invention examined in connection with affidavits offered to show that the consequences of the proposed