

who testify to seeing or using Drawbaugh's talking-machine, and some of whom identify particular exhibits as the instruments which they saw or tried. No doubt is entertained that Drawbaugh was experimenting at an early period with telephones or phonographs. He knew about the phonograph or phonautograph of Scott as early as in 1863. The membrane diaphragm excited by sonorous waves, and the mechanism of the phonograph were not novelties, and, among the diversity of inventive possibilities, had probably attracted his interest. Prior to the issue of Bell's patent, Dr. Van De Weyde had made public experiments with the Reis telephone at the city of New York, and others had made like experiments elsewhere. In May, 1869, a full description of the instrument and of the experiments was published in the newspaper, *The Manufacturer and Builder*, treating it as a highly interesting curiosity which contained the germ of great practical purposes. Whether other newspapers noticed the experiments or not is not shown, nor is it shown that Drawbaugh saw the article in *The Manufacturer and Builder*. It would be difficult to prove the circumstances if he did see it. Some such publication probably stimulated him to experiment. If he made a sketch of the mechanism at the start the material for it was at hand. As is stated by Mr. Benjamin, it has been asserted of the Reis instrument that certain sounds of the human voice can be transmitted by it; but in truth these are merely fragmentary reproductions of vocal sounds, and the transmission of articulate speech could not be effected because it was constructed on the make and break principle, instead of on that of the undulatory unbroken current.

It is not strange to any reader of the autobiography that Drawbaugh should have taken up the telephone. That he and those about him should have treated it as a talking-machine is entirely natural. That his talking-machine, as late as in 1876, bore a striking resemblance to the Reis telephone is shown by Mr. Shapley's testimony, a witness who noticed the resemblance, and loaned Drawbaugh a copy of the *Scientific American* describing it.

There is enough here to explain Drawbaugh's declarations to his neighbors about the talking-machine he was inventing, and to excite the curiosity of the community. A careful reading of the proofs renders it easy of belief that the witnesses who testify about casual visits to his shop, which occurred many years before their testimony was delivered, and to cursory tests of his instruments on those occasions, have confused the fragmentary and incoherent articulation of such an apparatus, with the hearing of distinct words and sentences. When witnesses undertake—as many of them do—to give the exact words or sentence heard in the instrument five or ten years before, when their attention was not called to the subject afterwards, no hesitation is felt in rejecting such statements as utterly incredible. It may be charitably inferred that such a witness has confused his recollection with more recent impressions. As will hereafter be shown,

the proofs demonstrate that most of the witnesses who testify to having heard distinctly and coherently through the talking-machine—all those who indicate the Exhibits B, F, and C as the instruments—are mistaken, if they are truthful. If Drawbaugh was a charlatan, he may have assisted in deluding them; and the proofs show that between 1872 and 1874 a string telephone was in his brother's shop in the village. The fact that he never attempted to exhibit his machine outside of his shop, where it could be used between points some considerable distance apart, and where its real capacity could be readily observed, is significant in this connection.

The more important testimony is that by which it is sought to identify the several exhibits and show their existence at times consistent with the theory of the natural evolution of the invention. The identification of particular exhibits as seen by the witnesses among the various objects of curiosity at Drawbaugh's shop several years before they testify, is necessarily unreliable when it is attempted by observers who had no knowledge of the mode of operation or of the internal organization of the instruments. Such witnesses could not appreciate what they saw, even if they examined the instruments. Most of the witnesses belong to this class. Indeed, the greater proportion of them do not profess to identify the exhibits positively. Some are more certain than others that particular exhibits are the instruments they saw. Exhibits F, B, and C are fragmentary remains of instruments, and their value depends upon Drawbaugh's description of the operative parts that no longer exist. Scores of witnesses testify to seeing the tumbler device resembling Exhibit F, and the tin-can device resembling Exhibit B, but the identification of the other exhibits prior to the date of Bell's patent is comparatively feeble. The appearance of Exhibits F, B, and C is sufficiently peculiar and distinctive to impress the memory of those who saw them. On the other hand, the other exhibits are not of this character, and all that ordinarily the witnesses can safely say of them is that five years or more before testifying they think they saw or used a small walnut box externally resembling I, or A, or E, or D.

It may be said generally of all the testimony of the witnesses who attempt to identify exhibits, that it is mainly valuable when it proceeds from those who used the instruments which they think they remember, and obtained results. They must remember the results obtained much better than the minor differences of appearance presented by the instruments. Granting that Exhibits F, B, and C would be likely to be remembered, what shall be said of the value of the testimony of scores of witnesses who state that they tested these instruments, or saw others test them, and they articulated perfectly, when it appears by the most authentic test that these instruments were incapable of such articulation?

In March, 1882, after most of the proofs in the case had been taken, a test was made of the capacity of the exhibits to transmit speech in

the presence of the counsel and the experts for the respective parties. It is not accurate to say a test was made of the exhibits, but reproductions of F, B, and C were made by Drawbaugh, and as rehabilitated by him were used for the test. Whether these were honest reproductions no one can tell; but, such as they were, they were experimented with by Drawbaugh before they were subjected to the test. Whatever else that test demonstrated, it proved that articulate speech could not have been practically communicated through Exhibits F, B, and C at Drawbaugh's shop, under similar conditions, and that only fragmentary or incoherent speech could be occasionally and exceptionally rendered by the reproduced instruments, which had been experimented with privately before the public test. The proofs show that all along to 1878 Drawbaugh exhibited his earlier instruments, F and B, to spectators, and used them as his talking-machine, sometimes showing or using both together, and sometimes one of them. The testimony of the defendants' witnesses, Springer, Moore, Musser, and Bayler, is pertinent upon this point, and has been referred to. How is it to be explained that he used these crude instruments in 1875 and 1876 as his talking-machine, if he had the better instruments, especially such instruments as E and D? But, in view of the fact now shown, that these earlier exhibits are incapable of satisfactory articulation, what confidence can be placed in the rest of the testimony produced to identify exhibits? If the witnesses are mistaken in identifying these very characteristic instruments, and in recalling the results obtained through them, little reliance can be placed upon the identification of other instruments, or upon the statement of the results which the witnesses think were obtained through them. If these witnesses are mistaken in the dates which they fix for the occasions they speak of, their testimony can be reconciled with all the probabilities of the case. And the reasonable explanation of their testimony is that those witnesses who really saw or used the later exhibits did so in 1876, 1877, 1878, and later, instead of on earlier occasions.

The proofs on both sides lead to the general conclusion that Drawbaugh was not an original inventor of the speaking telephone, but had been an experimenter, without obtaining practical results until the introduction of the instruments into Harrisburg. It is very probable that after reading in the *Scientific American*, loaned to him by Mr. Shapley in October, 1876, the article purporting to describe Bell's telephone, but which really describes better the Reis apparatus, he undertook to improve his old devices. At that time, or after he had examined the telephone instruments at Harrisburg and carried one of them home to study, he may have altered the organization of his instrument and made the intermediate exhibits between F and D. If he exhibited them at his shop, and was able to transmit speech through them, this fact will account for the testimony of the witnesses who identify these exhibits, and may be mistaken as to the time they

saw them. The real history of his talking-machine is known only to himself, and it will not be profitable to conjecture when he made the advanced instruments which he claims to have made in February, 1875, and the later instruments. It may be that in discrediting his narrative, and rejecting the theory of the facts which rests upon it, the value of the corroborative testimony has been underestimated. However this may be, no doubt is entertained as to the conclusion which should be reached upon the proofs. Succinctly stated most favorably for the defendants the case is this: One hundred witnesses, more or less, testify that on one or more occasions, which took place from five to ten years before, they think they saw this or that device used as a talking-machine. They are ignorant of the principle and of the mechanical construction of the instruments, but they heard speech through them perfectly well, and through one set of instruments as well as the other. This case is met on the part of the complainants by proof that the instruments which most of the witnesses think they saw and heard through were incapable of being heard through in the manner described by them; and further, that the man who knew all about the capacity of his instruments never attempted to use them in a manner which would demonstrate their efficiency and commercial value, but, on the contrary, for ten years after he could have patented them and for five years after they were mechanically perfect, knowing all the time that a fortune awaited the patentee, and with no obstacles in his way, did not move, but calmly saw another obtain a patent, and reap the fame and profit of the invention. Without regard to other features of the case it is sufficient to say that the defense is not established so as to remove a fair doubt of its truth; and such doubt is fatal.

The observation of an eminent commentator may be quoted as apposite to the case:

"No form of judicial evidence is infallible, however strong in itself; the degree of assurance resulting from it amounts only to an indefinitely high degree of probability; and perhaps as many erroneous judgments have taken place on false or mistaken direct testimony as on presumptive proof." Best, Ev. § 468.

A decree is ordered for complainant.

DUFF and others v. ST. LOUIS WOODEN-WARE WORKS and others.²*(Circuit Court, E. D. Missouri. October 31, 1884.)*

PATENTS--LETTERS PATENT No. 6,673 FOR IMPROVEMENT IN WASH-BOARDS.

Reissued letters patent No. 6,673 granted to R. P. Duff for an improvement in wash-boards, *held*, not infringed by the manufacture of wash-boards made in accordance with the description contained in letters patent No. 201,658 granted to Charles Everts.

In Equity.

This is an action for infringement of reissued letters patent No. 6,673, granted October 5, 1875, for improvements in wash-boards to the complainant as assignee of Westly Todd. The original patent bears date February 7, 1871. The specifications of the reissue state that the nature of the invention "consists in the construction of a sheet-metal wash-board with a rubbing face longitudinally and transversely corrugated or ribbed, whereby such rubbing surface shall be made up of a series of projections, bounded by a series of horizontal, vertical, and angularly shaped grooves. The rubbing face somewhat resembles the face of a rasp or file in general appearance, though the projections are less sharp and angular."

There are three claims in the reissue which are as follows:

"(1) A sheet-metal wash-board, having a series of raised projections, B, each bounded by longitudinal and transverse grooves or depressions, substantially as set forth; (2) in a sheet-metal wash-board the projections, each bounded by grooves or depressions, in combination with raised projections, C, in the bottoms of the interlying grooves, substantially as set forth; (3) as a new article of manufacture, a sheet-metal wash-board, having a rubbing face longitudinally and transversely ribbed or corrugated, substantially as set forth."

Complainants' boards are known in the trade as the "Globe," and are so stamped. Defendants' boards are known in the trade as the "New Era," and the "Great Western," and are so stamped. The pattern of the Great Western is simply an enlargement of the pattern of the New Era. Defendants' boards are made in accordance with the description contained in letters patent No. 201,658, dated March 26, 1878, granted to Charles Everts, one of the defendants, which description is as follows:

"The object of this invention is to furnish an improved wash-board, the zinc rubbing plate of which shall be so formed as to give a great amount of friction to the clothes rubbed upon it, and at the same time shall be so formed as not to injure the said clothes.

"The invention will first be described in connection with the drawing, and then pointed out in the claim. A represents the wooden frame of the wash-board, which is constructed in the usual way. B is the zinc plate, which is secured to the frame, A, in the usual way. The plate, B, has transverse ridges, C, made with inclined sides formed across it, one of which sides may be made with a steeper inclination than the other. Upon the plate, B, and at right

¹ Reported by Benj. F. Rex, Esq., of the St. Louis bar.