AMERICAN BELL TEL. CO. *ET AL. V.* AMERICAN CUSHMAN TEL. CO. *ET AL.*

Circuit Court, N. D. Illinois. July 21, 1888.

PATENTS FOR INVENTIONS—WHO ENTITLED TO—TELEPHONES—CUSHMAN DEVICE.

It appearing that Dr. Cushman did, with the and of others, in 1851, construct a device containing magnetic coils, substantially identical in principle, construction, and working with the Bell telephone, through which he transmitted articulate sounds short distances, but that the transmission was faint, the words difficult to hear, and the attempts to talk through it often failures; that the proof of its operation at a distance greater than the ordinary acoustic

telephone would carry depended on the uncorroborated testimony of Dr. C; that the device was set up in Racine, Wis., in a public place, where any one could use it, but that it attracted no attention, nor did it suggest to any one its practical value; that in 1854 and 1855 attempts were made to improve it, without substantial success; that it was exhibited in 1867 to several wealthy and intelligent men with a view to patent and render it available, but the experiments were unsatisfactory; that the device was given to an electrician to experiment with and patent, but he died, and the device cannot now be found; that no contemporaneous newspaper accounts appear of these experiments; and that it was not until after Dr. C. had seen the Bell telephone operate and become familiar with it, that be claimed that he was the first Inventor; *held,* that what was done by Dr. C. must be treated as an abandoned experiment.

In Equity. Bill to restrain infringement of letters patent, and for an accounting.

West & Bond, for complainants, C. D. F. Smith, and J. L. High, for defendants.

BLODGETT, J. This is a bill in equity to restrain the alleged infringement of two letters patent granted to Alexander Graham Bell,—the first being No. 174,465, dated March 7, 1876, for an "improvement in telegraphy;" and the second being No. 186,787, dated January 30, 1877, for an "improvement in electric telegraphy,"—of which patents the complainants are now owners, and no question is made as to their title thereto. Infringement is charged of the fifth claim of the 1876 patent, and of the third, fifth, sixth, seventh, and eighth claims of the 1877 patent. These are the same patents, and the same claims in each patent, involved in the "*Telephone Cases,*"[1] decided by the supreme court at the last term, where the validity of the patents and of these claims was fully discussed and sustained. The defendants in this case do not deny the granting of the complainant's patents now in question, nor deny complainant's title thereto, nor the fact that their telephones infringe the claims in question, but base their defense solely upon the allegation that Bell was not the first inventor of the speaking telephone covered by these two patents, but insist that the defendant S. D. Cushman in fact invented and put into practical use an electro-magnetic telephone at Racine, Wis., in the year 1851, which transmitted articulate speech, and was put into practical use for that purpose during the year 1851, and that such use was continued for several years after such invention. Cushman, as appears from the proof, is now about 70 years old. In his early manhood he studied, and afterwards for a short time practiced, medicine; but in 1848, or about that time, he became interested in telegraphy, and abandoned his profession, and has since followed the occupations of telegraph operator, constructor of telegraph lines, manufacturer Of lightning-rods, and manufacturer and patentee of divers devices, mainly, if not all, pertaining to the application and control of the electric current. His own account of the alleged invention of the telephone by himself is that, in the spring of 1851, he was engaged in constructing a telegraph line from Racine westward to Beloit and other towns,

and his attention had also been attracted to a device called a "lightning arrester," intended to prevent the atmospheric electricity from passing over the telegraph wires and injuring the relay wires and other working apparatus of the telegraph office; and in order to indicate the presence of the atmospheric electricity upon the wires of the telegraph line, and thereby test the value and efficiency of this "lightning arrester," he constructed an apparatus consisting of an electric horseshoe magnet, with a permanent magnet placed between the legs, and connected at the bend with the electro-magnet, and these magnets, so arranged with relation to each other, were placed in a wooden box, with the wires leading outwardly from the electric coils, and with the open ends of the magnets extending upward; and to the under side of the cover of the box, directly over the ends of the magnets, was attached a thin piece of sheet-iron, so located that when the magnets were heavily charged with the electric current this sheet-iron plate would be drawn down in contact with the end of the permanent magnet, and there held until released by hand. Two boxes or sets of this apparatus were made, one of which was placed under a bridge in a swamp some distance west of Racine, one of the wires from the magnets being connected with the telegraph wire passing the vicinity of the bridge, with the other wire serving as a ground wire, and the other box was placed in the office of the telegraph company in Racine, and one wire from the magnets connected with the telegraph wire in the office, and the other with the ground. And soon after these magnet boxes were so placed he discovered that he could hear in the office the peeping of frogs, or sounds like the peeping of frogs, in the swamp; and after the discovery of this fact, experiment, as he says, showed that the sounds of rapping on the lid of the box in the swamp could be heard in the office, or rapping upon the lid of the box in the office could be heard at the box in the swamp, so that messages or communications could be interchanged between the two boxes by rapping, so as to indicate the Morse alphabet; and, as is claimed, some further experiments resulted in transmitting articulate words from one box to the other. He also states that, soon after the discovery of these phenomena, he, with the assistance of his brother, W. P. Cushman, and one B. T. Blodgett, constructed four boxes substantially like those he had used to test the lightning arresters on the telegraph line; that is, each box contained two coil electro-magnets, the lower ends of which were connected by a bar of soft iron between these electro-magnets, and connected with the soft iron cross-piece was placed a permanent steel magnet, the upper ends of all these magnets being in the same plane and reaching nearly to the under side of the cover of the box. A small hole was made in the cover of the box directly over the upper end of the permanent magnet, and attached by one end only to the under side of this box cover, and in close proximity to the upper ends of the magnets, was a plate of thin sheet-iron, so located as to be interposed between the permanent magnet and the hole in the lid of the box. The wires from these electro-magnets extended to the outside of the boxes, so as to connect them with a

transmitting wire and the ground wire. These boxes were fastened upon two boards, one box

upon each end of the boards. With these boxes, he says, they (that is, himself, W. P. Cushman, and B. T. Blodgett) made experiments upon the telegraph wires on the line west of Racine, and succeeded in obtaining the transmission of articulate speech so as to be understood for a distance of from half a mile to three miles. Afterwards, and during the summer of 1851, a wire was put up extending from the telegraph office in Racine to Thomas Wright's carpenter's shop, a distance of about 300 feet, and one of these boxes connected to each end of this wire, and, as is claimed, articulate words were transmitted through these boxes between the shop and the rear room of the telegraph office; the method of using the boxes being to speak into the hole in the cover through a funnel of stiff paper, or tin, so as to vibrate the sheet-metal plate which he called the "vibrator," which was located over the tops of the magnets; and while this wire was in use between the telegraph office and Wright's shop some experiments were made by one Oren White with "vibrators" of different form and material, to, if possible, secure the transmission of louder sounds through the boxes. After a while the end of this wire, which had terminated in the telegraph office, seems to have been changed from the telegraph office to the watch repair shop of Oren White, which was located in Howland's book-store, about the same distance from Wright's shop as the telegraph office, and it is claimed that this wire and boxes continued to be used to transmit conversation, seemingly wholly to gratify the curiosity of whoever wished to use them, for many months after they were thus put in position.

It is further claimed that in the summer of 1853 W. P. Cushman lived on a farm about six miles west of Racine, and Blodgett had a shop in some part of the city of Racine, and as a telegraph line from Racine passed close to W. P. Cushman's house, one of these "talking boxes," as they were called, was placed in one of the rooms of Dr. Cushman's house and another in Blodgett's shop, and a third in a building near the dwelling-house of Cushman on his farm, and these boxes were connected with the wire of the telegraph line, and that these boxes were used when the telegraph line was not in use for telegraphic purposes during the summer of 1853 to talk between Dr. Cushman's house and W. P. Cushman's house, and between Blodgett's shop and the two Cushman houses; that intelligible orders or requests by articulate words were sent from the farm through these boxes to Dr. Cushman's house for the purchase of groceries and family supplies, for the repair of farm implements, and the interchange of the usual social and family inquiries; that in the summer of 1854 Dr. Cushman, Oren White, and others were engaged in the manufacture of wire cable for lightning-rods, in the city of Racine, and had a rope-walk for such manufacture, the extremities of which were several hundred feet apart, and these talking boxes were used to transmit orders by articulate words from one end of this rope-walk to the other. It is also claimed that further experiments were made with these boxes some time in 1855, by Josiah B. Cushman, a nephew of Dr. Cushman, and some changes

made in the vibrator, so that better results were obtained, and that these talking boxes continued to be used

in two rope-walks, one in the south part and the other in the north part of Racine, where this wire lightning-rod cable was made; that in the fall of 1857 Dr. Cushman removed from Racine, and some part of his goods were shipped to New Lisbon, Ohio, among which were two of these "talking boxes;" that he went into the lightning-rod business in Cleveland, Ohio, where he remained a few years, and thence removed to South Bend, Ind., and from there he moved to New Lisbon, in 1865, and from 1865 to 1867 he was engaged in inventing, perfecting, and putting into practical use a system of electric fire-alarm apparatus in different cities, among which were Cleveland and Detroit. In 1867, or about that year, Dr. Cushman states that he met J. G. Chamberlain, Ira A. Chase, and some other persons, who had capital for which they were seeking investment, and whom the doctor was desirous of interesting in his fire-alarm business, and other business connected with the development of his patents; and among other things he suggested the utilization of his "talking boxes" as part of the apparatus of his fire-alarm system. With a view to such utilization, the doctor had the old boxes, which had been sent with his goods from Racine to New Lisbon in 1857, repaired, and made an exhibition of their capacity to transmit articulate speech to Chamberlain, Chase, and others, in Leetonia, Ohio. The result of this exhibition was not such as to satisfy Mr. Chamberlain and the other persons who witnessed it that these were adaptable to use in any way which could be made profitable, and none of them took any interest in the device. Not far from the time of this exhibition at Leetonia, Dr. Cushman gave some lectures on the Subject of electricity at Malvern, Ohio, and there exhibited these boxes, and, as it is stated, articulate words were transmitted through them. The testimony further shows that soon after this exhibition at Leetonia several companies or corporations were formed for the purpose of manufacturing and putting into use the fire-alarm apparatus, and other patented devices in which Dr. Cushman was interested, or which he had invented, and the business of these companies finally concentrated at Cleveland, Ohio,—Dr. Cushman going there to reside, and taking the boxes with him; and soon after that he put the boxes into the hands of Mr. George B. Hicks, an electrician of well known ability and experience, to experiment with and improve upon them, if he should be able to do so, with the understanding that, if he succeeded in making the desired improvements, Hicks was to patent the apparatus, and own one-half the patent. Hicks died in May, 1873, without having reported to Dr. Cushman or the companies any improvements in these talking boxes, and so far as known he made none, and the boxes were never returned to the doctor, nor received by him, and, as the proof shows, they have never been able to find them in the hands of those representing the Hicks estate or elsewhere. Some time in 1879, after Dr. Cushman had seen the Bell telephone operate, and became familiar with its mode of operation by using and experimenting with it, he began to give out and intimate by articles in newspapers

and in interviews with reporters of the press that he was the first inventor of the device covered by the Bell telephone patents, and has

since that time, with more or less detail as to particulars, asserted himself to be the first inventor, and now the defendant company, which bears Dr. Cushman's name, and in which he is presumably largely interested, relies upon the proof it has adduced in this case of the doctor's invention to invalidate the Bell patent.

The questions presented are purely questions of fact. If Dr. Cushman did actually produce and put in use, to the full extent claimed by him, the apparatus constructed as he describes his apparatus, so as to transmit articulate speech to a distance by means of an electric current, then I think there should be no doubt that such fact should defeat the Bell patents, as the apparatus described by Cushman is conceded to be substantially identical in principle, construction, mode of operation, and result, with the Bell devices. It is conceded that in order to defeat a patent by proof of prior knowledge and use of the device covered by the patent, such proof must be so clear and satisfactory as to leave no room for reasonable doubt. *Washburn* v. *Gould,* 3 Story, 122; *Wood* v. *Mill Co.,* 4 Fish. Pat. Cas. 550; *Coffin* v. *Ogden,* 18 Wall. 120; *Manufacturing Co.* v. *Haish,* 10 Biss. 65; *Telephone Co.* v. *Telephone Co.,* 22 Blatchf. 531, 22 Fed. Rep. 309; *Cantrell* v. *Wallick,* 117 U. S. 689, 6 Sup. Ct. Rep. 970. It is not my purpose to go into a complete analysis of the voluminous proofs in this case. It is sufficient to say that there is no proof in the record, save from Dr. Cushman himself, of the construction and use of the first apparatus described by him through which he heard, in the office at Racine, the peeping of frogs in a swamp several miles away, and which, as he says, led up to the experiments by which he, with the assistance of his brother, W. P. Cushman, and B. T. Blodgett, made the operative telephones of 1851. The evidence in this case is quite convincing that such an apparatus as he describes his lightning tester to have been would not transmit the peeping of frogs or articulate speech, as the glass plate which he says covered the top would have entirely excluded the sounds from the magnets. Both W. P. Cushman and B. T. Blodgett, who, it is claimed, aided in the construction of the four talking boxes in the summer of 1851, are dead, and the only witnesses, aside from Dr. Cushman himself, who testify to the operation of these boxes prior to their being put into the short line terminating at Wright's shops, are workmen said to have been employed in putting up the telegraph line from Racine westward; and, waiving all inference from the proof in the case that the memories of these witnesses have been trained by artful suggestions from persons interested to manufacture testimony in this case, I think there is nothing shown by their testimony to have been accomplished by these experiments which could not be attributed to the action of a device operating as an acoustic telephone, or the ordinary relay telegraph instrument then in use to transmit signals by clicks. That some kind of experiments were made in the presence of these witnesses is probably true, as I cannot believe that these men would intentionally swear falsely upon the subject; but I do seriously doubt whether

they witnessed at that time all the results to which they now testify. After these experiments upon the line, we have the line from the back room of the Racine

telegraph office, and from Oren White's watch repair shop to Wright's carpenter's shop, and the experiments there. That such a wire was run from one or both of these places to Wright's shop I cannot doubt, from the testimony adduced in that regard; and I think it possible that some words may have been transmitted from one end to the other of this wire; but this result can easily be accounted for by the action of the device as a simple acoustic telephone, as the line ran direct from one point to the other, and the distance was only about 300 feet; and the same may be said of the exhibitions made at Searle's tavern, which are referred to in the proof. The next alleged use is that of the wires between Dr. Cushman's house in Racine, and the farm of W. P. Cushman, six miles away. The proof as to this use rests upon the evidence of Dr. Cushman alone, as I do not think the attempted corroboration of his testimony by Josiah B. Cushman's testimony is reliable. The practical use of these talking boxes in the factories where the lightning-rod cable was made in 1854 and 1855 does not show results which may not have been obtained by the acoustic telephone, or these boxes and wires operating upon the acoustic principle alone; and the proof shows that before the boxes were used they could hear the man at the extreme end, 500 feet away, talking to himself, and the fact of so hearing suggested the use of the talking boxes for signal purposes. The uses of the old boxes sent from Racine in 1857 to New Lisbon, Ohio, at Leetonia, Malvern, and New Lisbon, show about the same results obtained in these experiments or exhibitions as were shown in the same boxes at Racine. It does not appear that the boxes had been in any degree improved in their structure, or mode of operation changed, from the time the boxes left Racine. It is true, they were repaired by one Burns, but no new feature seems to have been introduced into them; and after such repair an exhibition of their talking capacity was made in the presence of Mr. Chamberlain at New Lisbon, and no words could be heard through them.

My conclusion from a careful reading and consideration of this mass of testimony is that Dr. Cushman did make, with the and of W. P. Cushman and B. T. Blodgett, in Racine, during the summer of 1851, a device containing magnetic coils, through which spoken words could be and were transmitted at short distances. That the transmission was faint, and the words difficult to hear, and the attempt to talk through them was often a total failure; and occasionally, when all conditions were favorable, at most only a partial or meager success was obtained. That these boxes were open for experiment between White's shop and Wright's carpenter's shop, by the curious, and any one was at liberty to use them, but were so imperfect and unsatisfactory in their operation as to attract no special attention, and suggested to no one who used or heard of them their value for any practical use or purpose. That in 1854 or 1855 Josiah Cushman and Joseph B. Cushman made attempts to improve these boxes by changing the shape and material of the vibrators, and that these boxes with the improved or new vibrators were put into the wire-rope

factories, but no substantial improvement was made in them; and that the boxes sent to New Lisbon in 1857 worked no better than those constructed

with the aid of W. P. Cushman and Blodgett in the summer of 1851. These two boxes sent to New Lisbon Dr. Cushman had repaired in 1867, and exhibited them at New Lisbon, at Malvern, and at Leetonia; the exhibition at Leetonia being made for the substantial purpose of attracting the attention of intelligent men like Chamberlain, Chase, and the other persons who had met there to witness this exhibition, with the purpose that, if there was any promise of utility in the device, it should be patented, and made available with the other patents of Dr. Cushman, in which these persons were, or expected to become, interested; and yet the performance was not such as to suggest to any of these persons who witnessed the experiment with the device, either at Leetonia or at other places where Dr. Cushman exhibited it, as to attract attention, or suggest to any one its practical utility. It must be remembered that this exhibition at Leetonia, and the others testified to, in Ohio, were made after the close of the late civil war, when money was plenty, and speculation rife, and it can hardly be deemed probable that, if the performances of this device had been such as are described to have been realized by Dr. Cushman on the six-mile line in 1853 and 1854, that some one would not have seen its value, or its possibilities for improvement, and have been willing to take sufficient interest in it, and and Dr. Cushman in securing a patent upon it and developing it for use. All persons who are old enough to remember the condition of the art of telegraphy in 1851 will bear in mind that at that time messages were sent by means of the dots and dashes of the Morse alphabet impressed upon a strip of soft paper as it unwound from a reel; for at the alleged date of this invention operators who were guided solely by the sounds of the click of the telegraphic instruments were at least rare, if not unknown; and in this condition of the art of telegraphy it seems to me that the discovery of a device by which spoken words could be transmitted through the and of the electric current must have attracted general attention, if the performance had been such as to even promise success. That the Cushman boxes of 1851, 1853, 1854, 1855, and 1867, even if they operated upon the principle now embodied in the Bell telephone, as covered by these patents, were rude and imperfect structures, containing, at most, only the prophecy of possible future usefulness, is abundantly shown by the proof from the experiments made with the reproduced boxes here in proof, although I cannot divest myself of the conviction that these reproduced boxes are much more perfect in their organization than any of the original boxes made and experimented with there and elsewhere, as these reproduced boxes were made by men who have for years past been engaged in the manufacture of perfect telephones according to the present highest state of the art, and such manufacturer could hardly make as rude instruments as must have been made by Dr. Cushman, W. P. Cushman, and Blodgett, in 1851 and the succeeding years. Dr. Cushman was a telegraph operator and electrician, and a somewhat multifarious inventor and patentee in the field of electrical art, and must

have had some of that sanguine temperament and imaginative mind which characterizes the inventor, and his career, as disclosed by the proof, shows him to have been

a sagacious and in many respects capable business man, and I can hardly conceive it possible that, if he had succeeded in sending articulate speech for a distance of six miles by his device, so as to utilize it for errands and social purposes, he would not have realized that it was even then, in its then state of development, of sufficient value to be covered by a patent, as he was then doing with his other inventions.

I do not intend to be understood as intimating that Dr. Cushman, and Joseph Cushman, and Josiah B. Cushman, who are the principal witnesses for the purpose of supporting the defense in this case, have deliberately and willfully committed perjury in their testimony. The impression made upon my mind is that Dr. Cushman was very hear, in 1851, to the discovery and invention which Bell made in 1876, or perhaps a few months earlier; and when he, in 1877 and later, became familiar with the construction of the Bell telephone, and saw by how little he had missed the same great result in 1851, his imagination, made perhaps morbidly active by seeing how much of fame and profit he had missed, has clothed what he did in those past years with a light reflected from the success of others, and his statements of what he did then have unconsciously colored the testimony of many of those he has called to support him. Nor do I care to comment upon the many inconsistencies, as shown by the proof, in the statements and conduct of Dr. Cushman since he began to put forward his claims to this invention, nor to the contradictions of his testimony in some material particulars, which are found in the record. At the time of the exhibition of his talking boxes in Racine, from 1851 to 1855 or 1856, Racine was a city, as shown by the public archives, of from five to eight thousand inhabitants, presumably with the usual proportion of intelligent, capable, and far-seeing men which characterized the then growing towns and cities of the north-west, and it seems to me incomprehensibly strange that these boxes could have been on public exhibition for a year or more at one of the book-stores of the city, where all were at liberty to use and experiment with them, and have attracted so little attention as they seem to have done, if they could and did transmit articulate speech. The city had at that time, as the proof shows, one, and presumably more than one, newspaper, and yet no paragraph alluding or calling attention to this marvel of modern science has been found in the files of such paper or papers, and yet we have the significant fact that several, if not all, of Dr. Cushman's other inventions were the subject of paragraphs in one of the current newspapers of the city. I have no doubt from the proof that the machines made by Dr. Cushman, W. P. Cushman, and B. T. Blodgett, in 1851, were, in all practical respects, as good as any that were made afterwards by Dr. Cushman, or those who assisted him. Oren White tried to improve them, and afterwards Josiah B. Cushman made an effort in the same direction, but they were so imperfect in their operation as to offer no promise to any one of their future possibilities.

These considerations compel me to the conclusion that air the testimony, when taken together, falls far short of establishing beyond reasonable doubt the fact that Dr. Cushman in 1851 invented the telephone;

that what was done by him must and should be treated as, at best, only an abandoned experiment. I do not think the testimony, when fairly considered, shows that Dr. Cushman produced at Racine or elsewhere, prior to the invention of Bell, a practical operative telephone of any kind. He gave the world nothing. What he did, if he did anything but make an acoustic telephone, was suffered to die in the embryo or germ before any valuable or useful fruition. I do not, from the proof, believe that the machines made by him during these experimental years were so far perfected as to be of any practical value, or to even suggest that they might be so improved as to become valuable and useful. If a word could be occasionally transmitted through them, the result seems only to have excited curious wonder among the youth, and did not challenge the attention of practical men, as did the first exhibitions of the Bell device. When the Bell telephone was brought to the attention of the public, its value and possible utilities were grasped at once. It was accepted as a great invention, by the general public, as soon as its operation was seen; and I can see no reason why the public would not as readily have comprehended its advantages and value in 1851, as in 1876, had the machine been so far developed as to give substantial promise of what Bell accomplished. It may also, I think, be pertinently asked why some of these witnesses, besides Dr. Cushman, who have testified to the performance of these talking boxes, did not at once, on the publication of Bell's invention, come forward and deny his claim as the original inventor of the telephone, and call public attention to the fact that Dr. Cushman had made the invention more than a quarter of a century earlier; but none of these witnesses seem to have recalled the wonders they had seen and heard in 1851 until their memories had been refreshed and prompted by Dr. Cushman. A decree may therefore be prepared for an injunction and accounting, according to the prayer of the bill.

[1] Dolbear v. Telephone Co., 8 Sup. Ct. Rep. 778.