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THE BELL TELEPHONE PATENT PROBABLY BROKEN.

The claims of the Bell patent as at present construed by the courts cover the art of transmitting speech electrically. In the face of the famous Morse decision, a construction of claim fully as broad as that refused to Morse has been contended for and obtained by the Bell advocates. It is construed to cover the transmission of speech by the "undulatory current." By this current the diaphragm of a receiving instrument is assumed to be kept under permanent control of the diaphragm of a transmitter. It is all theory, but as accepted by the courts as a standard for judging of mechanical constructions, has a most important bearing on the extent of protection afforded by the Bell patents. It makes this protection absolute for all and every imaginable electric teleph me.

The scope conceded to this claim is quite incompatible with the state of the art as illustrated by the Reis device alone. If any one had affirmed a few years ago that from the records of the American Patent Office a complete anticipation of this broadly interpreted patent of Bell would be exhumed, none would have credited the assertion. Yet this has now been done. A telephone far superior to Bell's crude and inoperative device of 1876, or the somewhat better one of 1877, is illustrated in our columns elsewhere. It is an exact reproduction of a device patented by the early telegraphic inventor, Royal E. House, in 1868. His name is one of the best known in connection with the early history of the art. He was the first inventor of a printing telegraph. He stands side by side with Prof. Morse and Prof. Bain in the history of electric progress. To-day, nearly eighty years old, he still lives, connecting the past with the present.

Royal House, in 1865, patented what he termed an Improvement in Electro-phonetic Telegraphs. No relay was used in this system; by increasing its sensibility, he hoped to avoid the necessity for one. In this way Morse's claims would not be infringed. Not satisfied with his progress, a second improvement under the same title was patented three years later, and the new device was a telephone.

This 1868 patent describes a perfect telephone, designed to work as a telegraph receiver. The loud and very disagreeable clicking that a telephone under certain circumstances produces is familiar to all. It works as a sort of magnifier of sound. To make the sound produced by the make and break of a weak current acting on an armature more audible, Royal House availed himself of this telephonic principle. He invented a sounder that could work with very weak currents, because it was a telephone. It possessed a diaphragm and tube adapted for listener or speaker, just as the Bell telephones in his patents of both 1876 and 1877 did. The instrument may be adjusted so that changes in current will produce blows upon the diaphragm, or by adjusting screws the production of blows may be prevented and changed into that of impulses only. When this change is made, the apparatus for production and use of the "undulatory current" appears. According to the description of the House patent, a minute change in the adjusting screws will effect this. He contemplates a motion of the armature of only one hundredth of an inch. An adjustment to this extent by screws shown in the patent drawings is therefore enough to prevent the hammering.

That this species of adjustment came within the literal scope of the patent is not only evident from the presence of the adjusting screws, but is proved by the following very remarkable clause in the specification: "I have found, by experiments, that when the force of an armature of a receiving magnet is expended on limiters, F', F'', by limiting the motion of the armature a distinct, audible sound is produced, even when the electrical power is only sufficient to produce motion."

The inventor, in other words, had tried the effects of reducing the play of the armature, and there is no doubt that eight years before the invention of Bell, Royal E. House had heard the impulses of a telegraphic current audibly reproduced telephonically by the "undulatory current." The inventor, it is true, did not realize the full powers of his invention. Two of these instruments actuated by a battery or by their residual magnetism will operate as well, or better, than a pair of the modern Bell telephones. Prof. House did not specially claim or describe them as speaking instruments in his patent. Neither did Bell do so in his 1876 patent with reference to his instruments. But a device is protected by letters patent for all possible uses, and some very curious results may yet follow if suits are brought against the Bell Company under this patent.

An interesting confirmation of our views so frequently expressed as to the Bell claim is afforded by this patent. It overshadows, in importance, the Reis inventions, as it is so much their superior in efficiency. Neither is it a crude and impracticable telephone, like the earlier Bell devices. On the contrary, by legitimate inventive work, Royal E. House, the contemporary of Morse, constructed a telephone as good as the instrument in use at the present day.

One fortunate circumstance in connection with this instrument, as concerns its use in litigation, is that all the facts can be so concisely proved. The patent, in a

clear drawing and description, shows what the instrument is. A simple inspection shows that it is a telephone. By connecting two of them in a circuit they will talk, thus practically showing that they are telephones. The date of the invention is far enough back to remove all danger of claims of priority of invention on Bell's part. The bearing of this invention on the extravagant claims of the telephone monopoly would seem very evident. If it can ever be brought before the courts, it will be an entirely new matter and will justify a new decision by a circuit judge. At present these judges are governed by decisions already rendered. But this new matter in the shape of a prior patent, the most convincing of all proof, must certainly force a new decision that will limit the Bell claims. An attempt is now to be made to bring it before the circuit court on a final hearing.

Interesting in the abstract as this case may be as a feature in the history of the invention of the telephone, it assumes great importance in view of the aspect that the Bell controversy has recently acquired. Charges affecting the integrity of the methods of the Patent Office have been recently made an issue in government proceedings against the Bell patents. It is alleged that the Bell patents were fraudulently granted, that Bell was given access to Gray's caveat, and that corruption marked the whole of the proceedings in the matter of his 1876 patent. So serious were these allegations that the government suit mentioned above was instituted solely on their account, and is now in progress to determine their truth or falsity. The confirmation afforded them by this discovery falls little short of absolute proof. The examiner must have known of the House patents. Their inventor's name was famous. The subjects of the Bell and House patents were similar or almost identical. The drawings resemble each other closely. Interpreted by the specification, Bell's device is anticipated by a vastly superior apparatus. It is unfortunately a matter hardly susceptible of doubt that the contents of the House patent were known to the authorities when the Bell patent was granted. For the general public this patent will seal the condemnation of the Patent Office proceedings. The matter should have a great effect on the government suit.

Meanwhile, some of the old cases are beginning to appear in the Supreme Court of the United States. On the first of the present month motion was made in that court to advance and hear together, immediately after the February recess, all the telephone suits on the docket. Twenty-five thousand printed octavo pages are in the records of these suits. The argument on the united cases is expected to occupy a week. They include the Dolbear, the Molecular, the Clay Commercial, the People's (or Drawbaugh), and the Overland suits.

Progress in these suits will be watched by all with much interest. Unfortunately, none of the cases represents the full proofs, as they are all burdened with concessions, or characterized by omissions of some parts of the facts in the case. More results may reasonably be looked for from the House telephone than from the Supreme Court.

THE RECENT BOILER EXPLOSION AT CHARLOTTE, N. C.

In our issue for October 30, we gave an account of the explosion of a boiler at the Cotton Compress Works, Charlotte, N. C., in which our correspondent stated that it was an Abendroth & Root boiler that gave way. The boilers of this firm are well known throughout the world as safety boilers, the water being contained in small, strong tubes, which alone are exposed to the fire, and are capable of enormous resistance. The principle of construction is such that only by gross mismanagement could the boiler proper be made to explode. We are therefore not surprised, on receiving additional particulars, to learn that it was not the boiler proper that caused the mischief; but it was an old, worn out steam drum that exploded, and which the cotton press people had caused to be constructed and attached to the boiler, wholly without the advice or knowledge of the boiler makers. We have seen a letter from Mr. H. W. Edwards, superintendent of the Charlotte Cotton Compress Company, who positively certifies to the above effect, and it settles the question.

We deem it only just to Abendroth & Root Mfg. Co., and to their many customers in all parts of the country who have their boilers in use, to make the above facts known.

A REMARKABLE RAILWAY ACCIDENT.

A recent accident at Perkasio, Pa., tunnel shows the importance of their ventilation. The above tunnel is about half a mile long. Repairs are being made therein. On the 3d inst. some fifty men were at work near the center of the tunnel, when a freight engine, unable to draw its train through the tunnel, became "stalled" near the place where the men were at work. Fresh coal was put in the locomotive furnace, and the fan blast set in motion. Soon the train started, when it acted as a piston in a cylinder, driving the gases from the furnace before it; and when the gases struck the men who were working in the tunnel, they nearly all