DECISIONS RELATING TO PATENTS.

United States Circuit Court.—District of Indiana.

NATIONAL CAR BRAKE SHOE COMPANY *vs.* TERRE HAUTE CAR AND MANUFACTURING COMPANY *et al.*

Car Brake Shoe Patent of James Bing, granted Oct. 6, 1883.

Woods, J. (charging jury):

In an action at law for infringement of a patent all parties who participate in the infringement are liable, although some are simply acting as officers of a corporation. All parties who participate in a tort or trespass are liable, and a man cannot retreat behind a corporation and escape liability for infringements in which he actively participates.

It is for the court, as a matter of law, to construe a patent, and for the jury, as a question of fact, to determine whether it has been infringed, and the amount of damages that should be allowed.

In an infringement suit the burden is on the plaintiff to show the amount of damages he has suffered; and if he furnishes reasonably satisfactory evidence on that subject, he is entitled to substantial damages; otherwise to nominal damages.

On the question of damages, it is competent for the patentee to prove the prices at which licenses were granted under the patent while it was in force; but in order to be competent evidence of value, the prices agreed upon must have been prices fixed with regard to the future use, when, there being no liability between the parties, they are presumed on both sides to have acted voluntarily, and therefore to have made up their minds deliberately as to what was a fair price. Such arrangements, licenses thus granted, fees thus fixed, are competent evidence to consider in determining what the actual value of an invention is and what the recovery ought to be for its use.

It is not competent for a patentee to prove the prices paid for infringements already perpetrated. Such settlements are not at all admissible on the subject of value.

The value of an invention for which an infringer is liable is the value at the time of the infringement. A man who has got a patent owns it as property, and if anybody sees fit to infringe it he is bound to pay for its fair value; and the fact that there is something else as good or better does not entirely destroy its value, but may affect it.

The doctrine of a confusion of goods has no application to a suit for infringement of a patent, especially where there is only a confusion of bookkeeping, and not a confusion of the articles themselves, the articles being incapable of mixture.

If a party shows an unwillingness to let the truth out, and keeps back facts and the means of getting at facts in his power, then the jury is warranted in drawing the strongest possible inferences against him which may be drawn from the evidence actually given in favor of the other party; but if he comes forward with his books, furnishes all the evidence in his power, and is fairly candid in the matter, no inferences should be drawn against him, except such as are fairly drawn from the evidence adduced.

Every one is bound to take notice of the existence of a patent and of the rights of parties under it. Like the record of a deed to real estate, the record of a patent at Washington is notice thereof to all the world.

United States Circuit Court.—District of Massachusetts.

COLLINS COMPANY *vs.* COES *et al.*

Patent of Lucius Jordan and Leander E. Smith, Oct. 10, 1865, *for an Improvement in Wrenches.*

Before Gray and Nelson, Judges.

Gray, J.:

The application to a device of a feature which had already been in use for the same purpose in another form of tool lacks the invention requisite to support a patent within the decisions of the Supreme Court.

Abstract of Paper on Training for Mechanical Engineers.

BY GEO. I. ALDEN, WORCESTER, MASS.

Progress in education is secured by forces outside and above the schools. When a few have made discoveries in science, or advancement in art, or in engineering, they have set a standard which must thereafter be the aim of educators. Mechanical engineering as taught in the schools is subject to the general law of progress. It is taking a high rank as a liberal profession, and offers a broad field for the activity of the best powers of young men who enter it. The schools must look for progress in the education and training of engineers to two forces, viz., the *scientific attainments* and *practical achievements* of those foremost in engineering science and practice. A school for training engineers is properly a professional school, and should hold its standards of professional work sufficiently high to secure the success of its graduates, that it may be able to demand of candidates a liberal course of preparatory study for matriculation. It should aim to fit young men for immediate usefulness in the profession, and to lay the sure foundations for growth which shall enable them finally to take up the unfinished work of the engineers of this generation and carry it forward into the next century of progress.

To aim at practical achievements is not enough, for the man is more than his profession. Scientific attainments are not alone sufficient. The ability to apply knowledge to practical ends is valuable in the development of the individual as well as essential to professional success. The necessary scientific attainments are more than mere knowledge of facts and principles. The evidence of such attainments is the ability within a sufficiently wide range of inquiry to give accurate answers to definite questions. To secure this ability the studies in the curriculum of the schools should be taught by the most thorough and direct methods, with the aid of numerous well selected problems, and practice in laboratories. These problems should approach as nearly as possible the character of actual engineering problems, to the end that the student may acquire that complete assimilation and personal appropriation of the subjects taught throughout the course which is characteristic of the scientific attainments toward which the school should aim.

The practical achievements of the engineer are closely related not only to his scientific attainments, but also to the progress of machine shop methods and practice. All his designs must be sent to the shop in a form consistent with such practice. To secure a knowledge of machine shop methods, limitations, and possibilities, most scientific schools of to-day have a practical or shop department in their engineering course. It is important that the successful engineers of the country should say what the standards of such a department should be and what it should accomplish. The shop is made a department in the school, to add *methods* as well as *facilities* of instruction. It should not, therefore, be such an institution as would be developed out of or by the school, but should be superior in all its appointments, for practical work. It should have not only the tools, methods, and facilities, but also the business, of a leading productive machine shop, with unusual means for instruction and experience in the solution of practical engineering problems. Such a shop is able to adopt in its full measure the modern method of instruction aimed at in other departments, bringing the student as close as possible to the realities to which his studies are intended to direct his thought. The instruction will be in accordance with the economical principle of teaching analysis and synthesis in close relation. Work on real, practical, valuable products has important elements of training, which are in a great degree lacking in work on simple pieces. It cultivates practical judgment, and gives real experience and available skill. The high standards of practical achievement necessary to secure the best efficiency of the shop training are kept up by the demands of the open markets. The giving of instruction to the students will lower the *productive capacity* of the shop, but need not impair the *quality* of its products, and must not, if they are to be sold at the highest current prices. Such a business shop will stimulate to breadth and thoroughness of instruction in the theoretical studies of the school, and will itself ultimately reach a higher standard of practice, on account of its relation to the school.

It will give students who spend about ten hours per week for four years as much skill (and more general ability) in the shop as an ordinary three years' apprenticeship. This skill and ability open to every graduate a wide door to the profession, and secures to him independent self-support. The shop unites the study of theory and practice, and promotes economy of the school time by variety of occupation. From fifty to one hundred thousand dollars for shop and equipment would provide facilities for the instruction of one hundred students, and from three to ten thousand dollars per year would be required for current expenses. Experience shows that money expended in founding and fostering such a department yields large returns, both to the individual students and the engineering profession.

The Analysis of Ammoniacal Liquors.

A novel method for the quantitative determination of carbonic acid in the presence of alkaline sulphides, sulphites, and hyposulphites is described in a recent issue of the *Chemical News*, into which it is translated from the *Zeitschrift fur Analytische Chemie;* and as it appears to be peculiarly adapted for use in the analysis of ammoniacal liquors, we here reproduce it. The process is as follows: The substance to be analyzed is placed in a flask holding 300 c.c., and fitted with a caoutchouc stopper, having two perforations. Through the one passes a funnel tube, fitted with a cock, and reaching down nearly to the bottom of the flask. Through the other aperture it is connected air tight with the following pieces of apparatus: (1) A Liebig's bulb tube, containing a dilute solution of permanganate, slightly acidified. (2) A U-tube, filled with calcium chloride. (3) A Liebig's bulb tube filled with potash lye (sp. gr. 1·27), and weighed. (4) A U-tube, filled with calcium chloride. After the whole has been joined together, and the connections have been found air tight, a solution of permanganate containing 5 grammes per liter is allowed to flow down the funnel tube, shaking occasionally until the solution takes a permanent dark red color. The acid necessary for the decomposition of the carbonate (dilute sulphuric, nitric, or acetic, but never hydrochloric) is next introduced. The cock of the funnel tube is closed, and the decomposition of the carbonate and expulsion of the carbonic acid are effected by the application of heat, very gently at first, but afterward raised to a simmer. The heat is then withdrawn, the cock opened, and the funnel tube placed in connection with a washing bottle, filled with potash lye, when air is aspirated through the apparatus for 30 to 45 minutes. The increase of weight in the Liebig's bulb tube containing potassa gives directly the weight of the carbonic acid. The total sulphur present in the sulphur compounds can be determined in the same portion of the sample. After the determination of the carbonic acid, the contents of the decomposition flask and of the Liebig's bulb tube containing permanganate are rinsed into a beaker. The excess of permanganate is destroyed by the addition of hydrochloric acid and the application of heat, which at the same time redissolves any precipitate. The liquid is boiled to expel chlorine, and the sulphuric acid is determined in the ordinary manner. Of course, only nitric or acetic acid must have been used to decompose the carbonate.

What Constitutes One House.

A house, according to Mr. Justice Kaye, of England, is an edifice whose occupants may get in or out of without recourse to a door or staircase likewise used by occupants of neighboring apartments. It appears that the tenant of a piece of land held it under a covenant not to build on it a house worth less than £400. He began to build two houses, but the municipal authorities restrained him from carrying out his plans, on the ground that if completed as proposed there would not be enough air space behind them. He then lessened the height of the buildings, and to bring himself within the covenant, established communications between them on the ground floor, and called them one house. Each had a street door and a shop front, and together they cost more than £400. In Justice Kaye's opinion a common ashpit and closet, and a door between them, do not convert two houses into one. If they did, adds *Building*, there are places in this city where three or four tenement buildings would, in a legal sense, be but one house.

Lieut. Greely's Arctic Discoveries.

Although yet so feeble as to need to apologize to his hearers for his weakness, Lieut. Greely read a brief paper before the British Association, as follows:

"The geographical work of the Lady Franklin Bay expedition was nearly three degrees of latitude and over forty degrees of longitude. Starting from latitude 81·44 and longitude 84·45, Lieut. Lockwood reached, May 18, 1882, on the north coast of Greenland, latitude 83·24 and longitude 40·46. From the same starting point he reached to the southwest in May, 1883, Greely Fiord an inlet of the Western Polar Ocean, latitude 80·48 and longitude 78·26. This journey to the northward resulted in the addition to our charts of a new coast line of nearly one hundred miles beyond the furthest point seen by Lieut. Beaumont, R. N. It also carried Greenland over four hundred miles northward, giving that continent a much greater extension in that direction than it had generally been credited with. The vegetation resembled closely that of Grinnell Land. Among the specimens brought back, the Arctic poppy and several saxifrages were identified. About the eighty-third parallel, traces of the polar bear, lemming, and Arctic fox were seen, and a hare and ptarmigan were killed. Lieut. Lockwood and myself journeyed across Grinnell Land, and examined into its physical condition, discovering what may have been hitherto unsuspected, that between the heads of Archer and Greely fiords, a distance of some seventy miles, stretches the perpendicular front of an immense ice-cap, which follows closely from east to west the eighty-first parallel. The average height was not less than 150 feet. The undulations of the surface of the ice conformed closely to the configuration of the country, so that the variations in the thickness of the ice-cap were inconsiderable. In about sixty miles but two places were found where the slope and space were so modified as to render an ascent of the ice possible. This ice-cap, extending southward, covers Grinnell Land almost entirely from the eighty-first parallel to Hayes's Sound and from Kennedy Channel westward to Greely Fiord in the Polar Ocean. In connection with the line of perpetual snow, I may say that on Mount Arthur it was not far from 3,500 feet above the sea. From barometrical measurements it appeared that the crest of Grinnell Land was of about 2,500 feet elevation in front of the southern ice cap and 3,000 feet near Mount Arthur."

The paper was enthusiastically applauded. Mr. Henry Lefroy said, amid unbounded enthusiasm, that the British Association felt honored in being able to honor Lieut. Greely as the brave explorer who had surpassed the brilliant achievements of a glorious line of predecessors, and had been successful in the honorable desire to plant his national flag nearest to the North Pole, thus exceeding the noblest efforts ever made. Referring to the persistence of purpose shown by Lieut. Greely's party in bringing back the pendulum apparatus, he remarked that there was nothing nobler in the annals of scientific heroism than the determination of these hungry men to drag the cumbersome box along their weary way.

Interesting Experiment with Magnets.

A curious and instructive experiment has just been made by M. Duter, who took a number of very thin plates or disks of tempered steel, about a millimeter thick, and from five millimeters to forty centimeters wide, and built them into piles, the adjacent plates being sometimes in contact, and sometimes separated by a sheet of paper or cardboard. These piles were then inserted in a very powerful magnetic field, and withdrawn. It was then found that they had become powerful permanent magnets; but when the individual plates were separated they seemed to have lost their magnetism. On building up the pile again the original magnetism was restored to it. It appears then that the thin plates have not really lost their polarity on being withdrawn from the exciting field. Some of Professor D. E. Hughes' recent experiments have a great similarity to M. Duter's.