Now, considering this feature of the case upon the evidence, outside of the description of discoveries and of the necessary qualities in matter contained in his specification, Russell says repeatedly that his experiments demonstrated that mixtures of cement, generally speaking, did stand the test; and it may be observed that the expert evidence in the case abundantly shows that there exists in cementitious mixtures generally, when formed of acid-resisting materials, a common hot bisulphite resistant quality. It is not necessary to comment at length upon the testimony of the chemists and technologists, and it seems quite sufficient to refer to the statement of Dr. Carmichael as to the chemical action in the sulphite process. He says:

"The remarkable fact appears that, while bisulphite liquors attack hydraulic cement quite freely at ordinary temperatures, they have no action whatever at the high temperature at which the sulphite process is conducted." Again: "It is a curious fact, which the employment of the Russell lining has brought out, that, even if original defects exist in the Russell lining, they become filled in use." Again: "All cement linings are more or less porous when first applied, but in use soon fill up with sulphate and sulphite of lime. They then become practically impervious to liquor, and afford complete protection to the shell beneath. Such liquor as may work through a crack is quickly rendered harmless through reaction with the lime salts composing the cement."

As said by Mr. Justice Strong in Smith v. Vulcanite Co., 93 U. S. 486, 495, "to find a material, with a mode of using it, * * * had been an object long and earnestly sought." Russell discovered that cement materials generally, which possess the quality of being made plastic, when applied in that condition, as a thick, one-piece lining to an iron shell to be used in the process of disintegrating wood substances, generally speaking, had the quality of adhering to the shell, of resisting the hot acid, and of performing the function of protecting the iron from the highly-heated conditions to which it would otherwise be subjected, and that the expansive and resilient qualities of such materials were equal to the expansion and contraction of the shell with the temperature of the iron so reduced. The evidence demonstrates—and quite likely Russell understood—that some cement mixtures, commercially speaking, were more desirable than others; and the word "cement," used in the claims, must be understood, when considered in connection with the statutory description, as referring generally to cementitious mixtures having the qualities which he described. As to those which he expressly named, like commercial cement, preferably Portland, made plastic with water, and as to the ordinary cement mixtures,—sand and Portland cement, and sand and tar,—there can, of course, be no doubt in the mind of any person possessing ordinary skill in the art as to what he intended; and as to his general expression, "any material or mixture of materials which is acid-resisting, and capable of being made plastic and adhesive to the shell of the digester, and so compact as to prevent the acid solution from reaching the iron," he described the conditions which, in the hands of persons skilled in the art, would develop, whether in a given mixture the required property and qualities do or do not exist. He discovered that in such cementitious materials as could be made plastic, and were adhesive, cohesive, and self-hardening, the required properties, in a degree, existed as a quality common to them all. This

we think brings his invention and description within the reasoning of the supreme court in Incandescent Lamp Patent, 159 U. S. 465, 16 Sup. Ct. 75. There Sawyer and Mann supposed they had discovered in carbonized paper the best material for an incandescent conductor, but instead of confining themselves to carbonized paper, as the court say they might properly have done, they make a broad claim for every fibrous or textile material; while Russell, as it may be said, to contra-distinguish his claim from that of Sawyer and Mann, limited his claims and specification to material in the cementitious class which possessed the required qualities. In other words, Sawyer and Mann, having discovered the required quality in carbonized paper, claimed all carbonized, fibrous, and textile material, whereas Russell, having discovered that his required quality was common to cement material generally, still, in the general description employed in his specification, limited his claims to such cement materials as were acid-resisting. He not only limited himself to a class of matter which, generally speaking, possessed the necessary qualities, but expressly described the tests and conditions to which the required materials must respond. In other words, Sawyer and Mann claimed broadly in the fibrous and textile kingdoms, without limiting themselves to a particular material, or even to a class, while Russell not only does not claim so broadly, but, on the contrary, expressly limits himself to a class of material, and still further, though not claiming all material within that class, again expressly limits himself to a material possessing the required acid-resisting qualities. The reasoning of Mr. Justice Brown, used for the purpose of showing that Sawyer and Mann had discovered no general quality in fibrous and textile materials common to their purpose, and that their claims were therefore invalid, as claiming the art too broadly, includes propositions which are clearly applicable to the case under consideration, and sufficiently broad and comprehensive to sustain the patent in this suit. He says:

"If the patentees had discovered in fibrous and textile substances a quality common to them all, or to them generally, as distinguishing them from other materials, such as minerals, etc., and such quality or characteristic adapted them peculiarly to incandescent conductors,, such claim might not be too broad. * * * If, as before observed, there were some general quality running through the whole fibrous and textile kingdom, which distinguished it from every other, and gave it a peculiar fitness for the particular purpose, the man who discovered such quality might justly be entitled to a patent. * * * If Sawyer and Mann had discovered that a certain carbonized paper would answer the purpose, their claim to all carbonized paper would perhaps not be extravagant."

The Incandescent Lamp Case, just referred to, was recently under consideration by Judge Townsend in Read Holliday & Sons v. Shulze-Berge, 78 Fed. 493, as to its bearing upon the somewhat analogous question of equivalents, where it was cited, together with the opinion of the circuit court in this case (70 Fed. 988), to the point:

"That a patentee must clearly conceive and accurately state his invention or discovery, and that he cannot claim a monopoly of the whole art, nor by speculation include unknown elements within the limitations of his claim."

Judge Townsend then proceeds to explain what he understands to be the limitation upon this rule, as follows:

"I think the law must be that where the new ingredient is such as would have been known to or employed by the ordinary skilled, practical chemist, or is such as would naturally have been developed in the growth of the art, and the substitution thereof involves no alteration or new operation or result, it is covered by the patent, provided the specifications and claims are sufficiently broad to include it." Rob. Pat. § 257; Walk. Pat. § 354.

In conclusion, the specification in the case at bar was so referred to in the claims that either may aid in the interpretation of the other. Pearl v. Ocean Mills, 2 Ban. & A. 469, Fed. Cas. No. 10,876; Rob. Pat. § 517. And we think, upon principle and authority, that Russell, having discovered that cement material generally possesses the qualities required for his conception of a homogeneous digester lining, should not be limited to such materials in the class of cementitious mixtures as he had chemically and commercially isolated as individuals, but that his claims and description should be construed as including all cementitious mixtures which ordinary skilled practical chemists might be expected to find as answering the requirements of the described conditions, or such as would naturally develop in the growth of the art without invention.

In our opinion, the patent is valid, and protection should be commensurate with the invention stated in the claims and the discovery and process described in the specification; and in our view the patent covers homogeneous structural linings composed of adhesive, acid-resisting materials in the nature of cement, which possess the required qualities described in the specification. The circuit court has found that:

"If the patentee, Russell, was entitled to his patent at all, the defendant's method of obtaining a continuous lining of cement is plainly within its scope; and it differs so unsubstantially from the method described in the patent that it has the appearance of a mere evasion, easily devised when sought for, and plainly within the rules touching equivalents."

In this we fully agree. and, as the result of our conclusions sustains the patent, it follows that the decree of the circuit court must be reversed. The decree of the circuit court is reversed, and the cause is remanded to that court, with instructions to enter a decree in favor of the complainant for a perpetual injunction and an accounting as prayed for, and for further proceedings in accordance with law; the complainant to have its costs in this court and in the court below.

W. T. C. MACALLEN CO. v. JOHNS-PRATT CO.

(Circuit Court, D. Connecticut. April 10, 1897.)

PATENTS—CONSTRUCTION OF LICENSE.

A license under a patent for an "insulator" recited that the licensee desired a license "covering the use of said invention in connection with trolley wires or guard wires for electric railways." The grant was of an exclusive right to make and sell insulators "for electric railways, embodying the invention, or any material or substantial part thereof, set forth in said letters patent." A condition was added, giving the licensor a right to make improvements embodying the invention without liability to the licensees, the contract then continuing: "In other words, this license is intended to be limited to the form of said insulators shown in said patent, so far as it re-

lates to trolley or guard wires for electric railways, and is not to include improvements therein" made by the patentee. *Held*, that "form," as used in the last sentence, did not mean "shape," but "kind," and the license embraced all insulators embodying the invention that were used to prevent the current from escaping from trolley and guard wires.

This was a suit in equity by the W. T. C. Macallen Company against the Johns-Pratt Company for alleged infringement of certain patents relating to electric insulators.

Macleod, Calver & Randall, for claimant.

Edmund Wetmore and H. R. Williams, for defendant.

TOWNSEND, District Judge. To the bill herein for infringement of certain patents, defendant has interposed a plea of license to its assignor, as to patent No. 449,943. Said license is as follows:

"License and Agreement.

"Whereas, Louis McCarthy, of Boston, county of Suffolk, state of Massachusetts, is the owner of letters patent of the United States, No. 449,943, dated April 7th, 1891, granted to him for insulator; and whereas, the Gould & Watson Company, a corporation duly organized under the laws of Maine, and having a place of business at said Boston, is desirous of acquiring an exclusive license under said letters patent covering the use of the said invention in connection with trolley wires or guard wires for electric railways: Now, therefore, be it known that I, Louis McCarthy, of Boston, Massachusetts, for and in consideration of the sum of three hundred dollars to me in hand paid, the receipt whereof I do hereby acknowledge, paid by the said the Gould & Watson Company, do hereby give and grant unto the said the Gould & Watson Company the exclusive right and license to manufacture and sell insulators for trolley wires or guard wires for electric railways embodying the invention, or any substantial or material part thereof, set forth in said letters patent No. 449,943, dated April 7th, 1891; said license to continue in force to the full end of the term for which said letters patent are granted. It is understood and agreed that this license is accepted by the said the Gould & Watson Company, subject to the condition that the said Louis McCarthy shall have the right personally to invent or make insulators which are an improvement on the one shown in said letters patent, even if said improvement infringes thereon, without in any way being liable to the said the Gould & Watson Company hereunder. In other words, this license is intended to be limited to the form of said insulators shown in said patent so far as it relates to trolley or guard wires for electric railways, and is not to include improvements thereon when said improvements are embodied in insulators which are made by the said Louis McCarthy personally, or the firm or corporation by which he is employed, or of which he is a member; but in case the said Louis McCarthy leaves said employ, or ceases to be such member, then said firm or corporation shall cease to be protected by this provision of this license.

"In witness whereof, I have hereunto set my hand and seal, this twenty-first day of September, A. D. 1891. Louis McCarthy. [Seal.]

"In presence of Wm. A. Macleod."

The complainant assented to the transfer to defendant of said license, and of all of said assignor's rights thereunder. The insulators manufactured by defendant embody the construction covered by said patent, and certain elements (notably a covering of insulating material) embraced in the other patents in suit. The question of infringement of said other patents is not involved herein. Said insulators are technically known as strain insulators, being so constructed that they both resist heavy strains, and intercept the current from the trolley wire, and prevent its escape to the

ground. They are capable of use, and have been used, to a limited extent, for purposes other than those connected with trolley wires; but defendant has never made, sold, or used them for any purpose other than for use with trolley or guard wires of electric railways.

The sole contention between the parties is whether, under the grant of "the exclusive right and license to manufacture and sell insulators for trolley or guard wires for electric railways, embodying the invention or any substantial or material part thereof," the defendant has the right to make said insulators. It appears from the model in evidence (a section of the Hartford street-railway system) that defendant, as part of its equipment, uses these insulators in a variety of positions between the trolley and guard wires and their supports. The defendant contends that the insulators are covered by said license, because they are embraced within its terms, according to the plain, natural, and obvious meaning of its language, because their primary function is to intercept the current, and prevent its escape by insulation, and because the term "insulators for trolley wires or guard wires" is a generic term, including various classes of insulators used for such purposes. It appears that, prior to the date of said license, the licensor was in the employ of the original licensee; that immediately thereafter he left it, to engage with the complainant company in the manufacture of insulators for electroliers and gaseliers; and that for more than three years thereafter said licensee and this defendant, its assignee, advertised, manufactured, and sold these insulators, with the knowledge of complainant, and without remonstrance on its part. The defendant contends that these facts show an intentional division of the business; that the limitation contended for by complainant would defeat the purposes of the grant; that no concern would buy from defendant one special kind of insulators for trolley wires if it could not also buy from it the other kinds of insulators required for said wires; that the license is to be construed more strongly against the licensor; and that its acquiescence shows its interpretation of said grant in accordance with defendant's claim. Counsel for complainant contends that the words "insulators for trolley wires or guard wires" are limited to insulators serving to insulate the trolley wire from a span or cross wire or a bracket, and that such insulators were illustrated in certain forms shown in sheet 1 of the patent drawings, and that they were the only insulators known at the date of the said license, to those skilled in the art, as insulators for trolley wires or guard wires. In support of this contention, he cites the following language of said license agreement: "This license is intended to be limited to the form of said insulators shown in said patent so far as it relates to trolley or guard wires for electric railways."

I have been unable to adopt complainant's view, for the following reasons: The license states that the licensee "is desirous of acquiring * * * an exclusive license * * * covering the use of the said invention in connection with trolley wires or guard wires." Defendant's assignor was licensed to manufacture and sell such insulators "for electric railways, embodying the invention or