

Now, it is a matter of common knowledge that if a round wire is pointed, by being pressed or swaged or flattened upon two sides, the diameter of the point will be and must be greater than the diameter of the wire. The making of such broadened points upon nails and staples was a matter of common knowledge years before the date of Vinton's patent. The old cut nail was made in this form for the very purpose mentioned in the patent,—that the broad, flattened point might cut a slit in the wood through which the shank would enter, and thereby prevent splitting the wood. So it was with common nails and staples. With reference to the patentability of such an improvement the case of *Double-Pointed Tack Co. v. Two Rivers Manuf'g Co.*, 109 U. S. 117, 3 Sup. Ct. 105, is cited, and is pertinent.

The Prentice patent is for a button fastener differing from the Vinton and Ely fasteners only in trifling particulars. Prentice took almost the exact form of the Vinton staple with the beveled ends, and made a slightly different angle between the body of the legs, so as to make the crown portion with a double reverse curve instead of a single curve. Prentice provided his staple with a sort of supplementary crown, leaving shoulders against which the legs might be clinched. The old paper staple, in common use long before Prentice's patent, had a flat top against which the legs clinched, the top and the legs lying parallel after the clinching operation was finished. If such a staple was required to hold the eye of a button, or any similar object, a portion of the crown must be raised so as not to bind against the paper or cloth or leather; and, the necessity being apparent, mechanical ingenuity was all that was involved in the requisite change of form.

The complainant's patents are invalid upon their face for want of invention. The demurrer will be sustained, and the bill dismissed, at the complainant's costs.

MATHESON v. CAMPBELL.

(Circuit Court, S. D. New York. July 27, 1895.)

1. PATENTS—ASSIGNMENT IN FOREIGN COUNTRY—HOW PROVED.

An assignment made in a foreign country, and purporting to have been executed before the consul general of the United States, is sufficiently proved by his signature and the United States consulate general seal.

2. SAME—ANTICIPATION OF PRODUCT PATENT—CONCEALED CHEMICAL FORMULA.

The fact that an alleged anticipating chemical compound was commercially sold and used in this country prior to the date of the application does not invalidate the patent, when such compound was made in a foreign country by a secret process, not discoverable by inspection or analysis. *Boyd v. Cherry*, 50 Fed. 279, followed.

3. SAME—SUFFICIENCY OF SPECIFICATIONS.

A patent for producing a dye from coal-tar products should describe the process with such clearness and certainty that an ordinary manufacturer of aniline colors, having such ordinary knowledge as existed in this country at the date of the patent, would be enabled by its instructions to carry out the process successfully.

4. SAME—MISUSE OF CHEMICAL TERMS.

The use of "nitrate" of sodium for "nitrite" of sodium, in the specifications of a patent relating to the manufacture of a coloring compound from

coal-tar products, *held* not such a misuse of terms as would invalidate the patent; it appearing that no one skilled in the art would be misled thereby, and that the use of "nitrate" for "nitrite" was common in the earlier patents relating to the particular art.

5. SAME—VALIDITY OF PATENT—EFFECT OF LIMITATION.

The rule that a patent must be construed in conformity with the self-imposed limitations contained in its claims may be invoked in support of the validity of the patent as well as in denial of infringement.

6. SAME—INTERPRETATION OF PATENTS.

The fact that a patent is for a meritorious invention of a primary character is entitled to consideration, in determining whether mistakes in the specifications which would not in fact mislead persons skilled in the art should be permitted to invalidate the patent.

7. SAME—DEFINITIONS OF CHEMICAL TERMS.

The words "technically pure," as used in reference to substances employed in chemical processes, mean pure in the ordinary acceptance of the terms of the art. "Chemically pure" means absolutely pure.

8. SAME—DEFECTS AND OMISSIONS IN SPECIFICATIONS—PRODUCT PATENT.

The specifications of a patent for a color compound produced from coal-tar products contain the following: "We take one of the compounds corresponding to the general formula, $R(SO_3 H)_x-N-N-C_{10}H_8NH_2$ (a) obtained by the reaction of diazo-sulphonic acids alpha-naphthylamine, and converted into the diazo-azo compound with the necessary quantity of nitrous acid. This diazo-azo compound is then allowed to react upon naphthol or naphthol-sulphonic acids in an alkaline solution. As an example, we shall describe the process of carrying out the manufacture of the dark blue azo coloring matter, which we call 'naphthol black.' We dissolve thirty-five kilograms naphthylamine disulphonate of sodium in three hundred liters of water acidulated with thirty kilograms of muriatic acid, twenty-one degrees Baume, and diazotize by addition of seven kilograms of nitrate of sodium in aqueous solution at a low temperature. Thereupon eighteen kilograms of chlorhydrate of alpha-naphthylamine dissolved in five hundred liters of water are poured into the above mixture while constantly stirring. The diazo-azo compound thus formed is allowed to act upon a solution of thirty-six kilograms of beta-naphthol-alpha-disulphonate of sodium (salt R) kept alkaline by addition of twenty kilograms ammonia of twenty per cent. The immediately formed coloring matter separates completely by addition of common salt. It is then filtered, and is delivered to the trade as a black paste, or in solid form." This description, so far as it relates to the special process, omits to describe one necessary step, namely, a second diazotization, whereby the diazo-azo compound mentioned is produced. *Held*, that the omission was immaterial, because—First, the general formula set forth provides for the conversion of the amido-azo compound into the diazo-azo compound; second, because the reference in the latter part of the specification to a diazo-azo compound would be sufficient to inform any practical coal-tar color manufacturer that a second diazotization was necessary; and, third, because any one skilled in the art would understand at once that the second diazotization could be accomplished by merely repeating the first as previously directed and explained.

9. SAME.

The general formula set forth in the specifications covered about 100 different substances, only a few of which will produce the naphthol black when treated by the special process described; and complainants claimed that the patent covered all of these bodies which should be found, on experiment, to produce the desired coloring matter, as being equivalents of the naphthylamine disulphonate of sodium called for in the special process. *Held*, that this broad claim was inadmissible, for the inventors could not be allowed to thus appropriate all the available substances in advance of experiment; that the general formula and statement might, however, be fairly considered as a disclosure of the general character and scope of the discovery, inserted merely to assist to a better comprehension of the special process afterwards set forth; that the patent was limited

to the particular substance mentioned in the description of the special process; and that, as thus limited, it was valid, notwithstanding the unwarranted attempt to cover all the other available bodies by means of the general formula and statement.

10. SAME—PURITY OF CHEMICALS.

On a question as to the sufficiency of the description contained in the specifications of a patent for producing a dye from a coal-tar product, defendant's expert chemist testified that, in producing the naphthylamine-disulpho acid required by the patent, he procured the correct raw materials, and followed the directions of the specifications, but that after obtaining the acid he did not test it to ascertain its purity. He was unable, from the acid thus produced, to obtain the desired results. Three experts for complainant stated that they readily produced the desired dye by following the patent, but that they tested their acids, after producing them, to see that they were technically pure. The patent prescribed no such tests, but it appeared that a practical chemist or manufacturer of coal-tar dyes at the date of the patent would, as a matter of common practice, have tested the purity of the materials used. *Held*, that the failure of defendant's expert must be attributed to impurities in his acids, and that the tests used by complainant's experts were to be regarded, not as experiments outside the patent, which were necessary to render it operative, but rather as mere simple and ordinary tests, which any practical and conscientious chemist would make in the ordinary course of manufacture, and, hence, that the omission of the patent to prescribe them did not invalidate it.

11. SAME—ASSIGNMENT OF PATENT—PAST INFRINGEMENTS.

In a suit for infringement of a patent for a dyeing compound, the only evidence of infringement was the sale by defendant of a can of alleged infringing dye prior to the time when complainant procured his patent by assignment. The assignment did not purport to transfer any right of action for prior infringements. *Held*, that on this evidence the suit could not be maintained.

12. SAME—COLOR COMPOUNDS—COAL-TAR PRODUCTS.

The Hoffmann & Weinberg patent, No. 345,901, for a naphthol-black color compound produced from coal-tar products, construed, and *held* valid and infringed.

This was a suit in equity by William J. Matheson against John Campbell for infringement of a patent for a color compound produced from coal-tar products.

Henry P. Wells, for complainant.

Cowen, Dickerson & Brown, for defendant.

TOWNSEND, District Judge. Final hearing on bill for injunction and accounting. Complainant alleges infringement of patent No. 345,901, for naphthol-black color compound, granted July 20, 1886, to Meinhard Hoffmann and Arthur Weinberg, and assigned to complainant July 10, 1888.

A preliminary question suggested by defendant is whether an assignment which purports to have been executed before the consul general of the United States of Frankfort-on-the-Main, Germany, is sufficiently proved by the signature of said consul general and the United States consulate general seal. I think this proof is sufficient, under the statutes of the United States and of the state of New York. *Rev. St. U. S. § 1750; Pharmaceutical Ass'n v. Tilden, 14 Fed. 740; Houghton v. Jones, 1 Wall. 702.*

The record herein discloses a series of complicated questions of chemical compositions, processes, and analyses, involved in the application of the general law of patents to the claimed chemical product. The elaborate and exhaustive brief of counsel for defendant forcibly presents an array of defenses supported by the testimony of an able expert, and by the results of skillful cross-examination. The determination of the issues raised has been found the more difficult by reason of the mass of expert testimony concerning chemical characteristics and laboratory processes, which the court cannot verify by inspection or experiment, and by the uncertainty as to how far these matters would be understood by one skilled in the art. A brief preliminary statement of the character of the subject-matter of the controversy, apart from its most technical chemical features, will be helpful in studying the development of the case. It has further seemed more desirable, even at the expense of some repetition; to present and dispose of only a single question at a time.

The patent is for a new coal-tar coloring product, called "naphthol black." It is described as a black color, is called a black dye, and is used for dyeing dark shades, commonly called "black." As a matter of fact, there is no such thing as an absolute or actual black dye. The artificial coal-tar colors employed in dyeing black, either alone, or in admixture with other colors, generally dye dark blue shades, which have the appearance of black, and which, when sufficiently concentrated, are commercially known as "black colors." In view of these facts, the patentees claim: "As a new product, the herein-described dyestuff or coloring matter, of a black color and capable of dyeing shades of dark blue, as set forth." The word "black" will be used herein in its popular meaning, as applied generally to colors. In this sense, the patent in suit was the first printed publication which described a process by which a black dye could be obtained from coal tar, and claimed the resulting product. Prior to its discovery, logwood had been generally used, in admixture with yellow, to dye a black color. It has a great advantage over logwood, in that it produces a beautiful black on the fiber to be dyed, without the use of mordants. It has been extensively adopted in the industries in place of logwood, and its sales have continuously increased. Its utility is not disputed. The patent was the first disclosure of a new, important, and highly meritorious discovery.

Before proceeding to a consideration of the specification, the general character of the chemical processes involved will be briefly stated: Certain aniline colors derived from coal tar are known as "azo compounds"; the word "azo," derived from "azote," or "nitrogen," being used to show that these compounds contained nitrogen in the form of nitrous or nitric acid. Among the chemical processes used in the creation or development of coal-tar colors is that of azotization. To azotize such a color is to treat it with nitrogen. To diazotize is to unite two nitrogen atoms to a hydrocarbon radical, and to form a diazo compound. A repetition of the process, or rediazotization, forms a diazo compound. The general

formula, " $R(SO_3 H)_x-N-N-C_{10}H_8NH_2$ (a)," includes the sulpho-acids of any radical,—a group comprising a great number and variety of colors.

The foregoing general statement is not derived from the record or briefs, but is inserted merely as an aid in understanding the terms used and processes described.

The patent in suit contains several errors. The product claimed therein cannot be produced by following strictly the process as described. "Nitrate" is used in the place of "nitrite." The specific description of a second diazotization is omitted. One of the reducing tests is ambiguously stated. It is only by following a process in which the first two errors are corrected that a black dye can be produced. The specification of the patent in suit is as follows:

"We take one of the compounds corresponding to the general formula, $R(SO_3 H)_x-N-N-C_{10}H_8NH_2$ (a), obtained by the reaction of diazo-sulphonic acids upon alpha-naphthylamine, and convert it into the diazo-azo compound with the necessary quantity of nitrous acid. This diazo-azo compound is then allowed to react upon naphthol or naphthol sulphonic acids in an alkaline solution. As an example, we shall describe the process of carrying out the manufacture of the dark-blue azo coloring matter, which we call 'naphthol black.' We dissolve thirty-five kilograms naphthylamine disulphonate of sodium in three hundred liters of water acidulated with thirty kilograms of muriatic acid, twenty-one degrees Baume, and diazotize by addition of seven kilograms of nitrate of sodium in aqueous solution at a low temperature. Thereupon eighteen kilograms of chlorhydrate of alpha-naphthylamine dissolved in five hundred liters of water are poured into the above mixture while constantly stirring. The diazo-azo compound thus formed is allowed to act upon a solution of thirty-six kilograms of beta-naphthol-alpha-disulphonate of sodium (salt R) kept alkaline by addition of twenty kilograms ammonia of twenty per cent. The immediately formed coloring matter separates completely by addition of common salt. It is then filtered, and is delivered to the trade as a black paste, or in solid form. Naphthol black produces on the fiber in an acidulated bath dark-blue shades. It is very soluble in water, insoluble in spirit, and dissolves in strong sulphuric acid with green color. Reducing agents destroy the color-forming alpha-naphthylamine besides other products."

The specification first states the class of coloring matters to which the invention relates, discloses the general character of the discovery, and describes generally the nature of the chemical operations upon a class of products or colors included under a broad general formula. Then follows a specific description of the process employed in treating one of these products, naphthyl, in order to obtain the patented color. There is considerable controversy over these two descriptions, and it will be important to keep them distinct. They will therefore be hereafter referred to as the "general description" and "special process," respectively.

The patent relates to a method for manufacturing coloring matters belonging to the azo group. The formula of said general description covers from 100 to 500 products. Dr. Schweitzer, the chief expert for complainant, declares that the effect of the directions for treating any one of the compounds, corresponding to the general formula, $R(SO_3 H)_x-N-N-C_{10}H_8NH_2$ (a), was to say, if you treat any sulpho acid of any radical according to the directions in this specification, you will get a color producing black. He then adds:

"Of course, with the change of the radical there is a change of the chemical composition of the product; but in the arts the patent, in effect, declares that one is the equivalent of the other, and may be used as a substitute for the other, and that they are therefore technically the same."

While, technically, they would not have the same chemical composition, by reason of substitutions made in the general formula, causing differences in the position of the atoms in the different molecules, it was claimed that no chemical analysis would show any difference in the products obtained from following the process of the patent, and that all of them would have the same effect in the arts. Acting upon this theory, Dr. Leibmann, the expert for defendant, made a series of experiments with these coloring matters or bodies claimed as equivalents, following the description or general formula of the patent in suit. He testified that the colors so produced were not technical substitutes in the art, and that by following said description he could produce a variety of colors, but no color which, by itself, would dye black. He says that by following exactly the method of the special process he could obtain only orange, brown, and purple; by following the method of the general description, almost any conceivable color, except black, could be produced. Dr. Liebmann also testified to a series of experiments following the special process of the patent, with both the necessary corrections as insisted upon by complainant. In these experiments he made use of the G. acid, the R. acid, and the Ter Mer Dahl acid, either of which, acting upon soda, would produce the naphthylamine disulphonate of sodium called for in the special process of the patent. The results in each case were practically the same as those already stated. The patentees undertook, by their general formula, to cover every body or color in the azo group which, when treated by their process would give the product of the patent. In this attempt they used such broad terms as included a large number of bodies, of which very few, when treated according to the directions of the patent, would produce the patented color. Counsel for complainant claims that no one skilled in the art would have been misled into supposing that all of the hundreds of bodies included under the general formula would produce the patented product. He further says:

"The inventors were entitled to protect themselves against such as might try to steal their broad discovery by the general statement that many of the bodies included in the general formula might, when subjected to their process, produce naphthol black, and that the products so produced from those that did work were the equivalents of the product resulting from the specific materials set forth in the example. Without this, or something of the kind, the real invention could have been appropriated with impunity, and this pioneer patent for a most valuable discovery would have been almost valueless to the inventors."

I do not understand the law to be so that an inventor can thus speculate on the equivalents of his claimed invention, and thereby oblige the public to resort to experiments in order to determine the scope of the claims of his patent. It is admitted that the general formula covers over 100 different bodies. The patentees declare that they are equivalents. This, in regard to the operation of chemi-

als, means "equally good." *Tyler v. Boston*, 7 Wall. 327. The patentees say, according to complainant's expert, "If you take any sulpho acid of any radical, and treat as we direct you, you will get a color producing black." In fact, very many of these bodies are not equivalents, and will not produce a black color. Whether this statement is true or false, as applied to a particular color, can be ascertained only by experiment. Complainant's expert says, "As far as those bodies are concerned, a chemist would be obliged to experiment in order to find out the fact inquired about." If the experiment succeeds, the patentees claim the body as an equivalent. If it fails, they disclaim it. The law requires that the description in a patent for a chemical discovery should be especially clear and distinct. The rule and the reason are stated by Mr. Justice Grier in *Tyler v. Boston*, supra, as follows:

"A machine which consists of a combination of devices is the subject of invention, and its effects may be calculated a priori, while a discovery of a new substance by means of chemical combinations of known materials is empirical, and discovered by experiment."

Counsel for defendant has furnished the court with a copy of the opinion of the lord chancellor in *Simpson v. Holliday*, 13 Wkly. Rep. 577, in which a question similar to that presented herein was decided adversely to the complainant. There a patentee described two separate chemical processes for the production of a certain dye. One process was ineffective. It was claimed, however, that as this ineffective process was so described that a person of ordinary knowledge and observation would reject it, and adopt the other, no one would be misled. But the lord chancellor declared the patent void, and dismissed the bill, saying that while it is true that errors which could not possibly mislead, such as those appearing on the face of a specification, would not vitiate a patent—

"The proposition is not a correct statement of the law, if applied to errors which are discoverable only by experiment and further inquiry. Neither is the proposition true of an erroneous statement in a specification, amounting to a false suggestion, even though the error would be at once observed by a workman possessed of ordinary knowledge of the subject."

Judge Shepley, in *Jenkins v. Walker*, Holmes, 123, Fed. Cas. No. 7,275, says:

"When the specification of a new composition of matter gives only the names of the substances which are to be mixed together, without stating any relative proportion, undoubtedly it would be the duty of the court to declare the patent void, and the same rule would prevail when it was apparent that the proportions were stated ambiguously or vaguely; for in such cases it would be evident on the face of the specification that no one could use the invention without first ascertaining by experiment the exact proportion of the different ingredients required to produce the result intended to be obtained. The specification must be in such full, clear, and exact terms as to enable any one skilled in the art to which it appertains to compound and use the invention; that is to say, to compound and use it without any experiments of his own." *Moody v. Fiske*, 2 Mason, 119, Fed. Cas. No. 9,745.

It seems to me that this attempt of the patentees to cover this group of bodies, and thereby to appropriate products not embraced within their discovery, should not be countenanced. Discovery cannot be claimed in advance of experiment. There is no considera-