

method does not make the method itself patentable, although the pattern should be patentable.

The lines upon the pattern are not shown to have been known and used before. The notches shown, although used for the same purpose, are not the same things. The lines are new things on the pattern for accomplishing the same purpose with the pattern, and the pattern, with lines upon it, was a new manufacture. To contrive them and place them there for the purpose would seem to involve constructive ingenuity, which amounted to an original conception of this device as an addition to the former pattern. No adequate reason is made to appear why the third claim is not valid for the pattern with these lines upon it. The use of such patterns by the defendant does not appear to be disputed. The notch for sleeve buttons on the patterns used is an addition not affecting the use of the lines. If it is an improvement, the patented invention has been taken to put the improvement upon, and the taking of it is none the less an infringement. So the plaintiff appears to be entitled to a decree upon this claim only.

This and two other cases between the same parties have been heard upon the same testimony, in one of which the plaintiff is to have a decree, and in the other the defendant. Obviously, the cost of the testimony is to be somehow apportioned. Perhaps the most equitable and practicable way would be to allow costs in each case to the recovering party for all but the evidence, and to disallow costs for that in all the cases. Decree for plaintiff as to third claim only.

TANNAGE PATENT CO. v. DONALLAN.

(Circuit Court, D. Massachusetts. April 7, 1899.)

No. 716.

1. PATENTS—INVENTION—PRESUMPTIONS.

The fact that a certain process of dyeing animal fibers, skins, etc., which is claimed to anticipate a patented process of chrome tanning, was publicly known for more than 30 years, during a time when inventors and scientists were vainly endeavoring to discover a successful method of chrome tanning, raises a strong presumption that such dyeing process did not fully disclose a practical tanning method.

2. SAME—ANALOGOUS USE—DYEING AND TANNING.

The two arts of dyeing and tanning are radically distinct, so that it would require invention of a high order to discover that an old dyeing process would produce merchantable chrome-tanned leather.

3. SAME—ANTICIPATION—ACCIDENTAL RESULTS.

An accidental result of a process, not contemplated and not recognized as important by the inventor, cannot anticipate a later patent.

4. SAME—CHROME—TANNING PROCESS.

The Schultz patents, Nos. 291,784 and 291,785, for a process of tanning by the green oxide of chromium, known as "chrome tanning," were not anticipated either by the Heinzerling patent of 1881, for a process of chrome tanning, which was never a commercial success, or by the Francillon French and English patents of 1853, for a process of dyeing animal fibers, skins, etc.

This was a suit in equity by the Tannage Patent Company against John E. Donallan for alleged infringement of certain patents for a process of chrome tanning. On final hearing.

Fish, Richardson & Storrow, for complainant.

George L. Roberts and W. Orison Underwood, for defendant.

COLT, Circuit Judge. This suit relates to two patents issued to Augustus Schultz, January 8, 1884, for "a process of tawing hides and skins." Patent No. 291,785 is for the general process. Patent No. 291,784 contains a more specific description of the solution which composes the second bath of the process. For present purposes they may be regarded as one patent.

The Schultz patent is for a process of mineral tanning, as distinguished from the old methods of bark tanning. Specifically, it is for a process of tanning by the green oxide of chromium, and is known as "chrome tanning." As a practical and commercial method for making morocco leather it has proved very successful, and may be said to have revolutionized this branch of the tanning art. It is estimated that 80 per cent. of the morocco leather at present produced in this country is made by this process. Not only does it largely reduce the time of tanning by the old methods, but the leather itself is of a superior quality. In the consideration of a patent of this character, and in harmony with what we believe to be the spirit and purpose of the patent laws of the United States, the court is naturally inclined to sustain it, unless it clearly appears to be invalid under the law. Nor does it detract from the merit of such an invention that prior inventors had nearly solved the problem, or had reached a successful experimental stage in its solution. When the prior art is brought to bear upon any important invention, this is often found to be the situation. The Schultz process for chrome tanning is to first subject the skin to a bath of bichromate of potash, and then to a second bath which consists of sulphite of soda dissolved in water, to which hydrochloric acid is added to set free the sulphurous acid, whereby the chromic acid throughout the skin is reduced to the green oxide of chromium; in other words, it is the reduction of chromic acid to chromic oxide through sulphurous acid. The prior tanning art does not disclose this process. For 30 or 40 years before the date of the Schultz patent, persons skilled in the art had striven to discover a practical method of chrome tanning, but, with one exception, these efforts were failures. This record presents an exhaustive review of these old methods. It is sufficient to refer to the most important. The earliest method is described in the Warrington British patent of 1846. Warrington uses for tanning "green vegetable matter," such as rhubarb, potatoes, or chemical deoxidizing agents, such as gum, starch, or certain compounds of sulphur mixed with tanning material, such as bark; and he uses either bichromate of potash or diluted sulphuric acid to prevent putrefaction. He employs one-eighth to one-half a pound of bichromate of potash in 100 gallons of water; and in the case of sulphuric acid a quarter of a pound to a pound of the acid to 10 gallons of water. Nobody contends that the Warrington process

was ever practically employed in tanning, and on its face it is very remote from the Schultz process.

We come next to the Swedish patent, to Cavalin (Cavallius), of May 1, 1850. He first describes a dyeing process which may be either a mineral one, as, "for instance, of one part of sulphate of protoxide of iron and six to twenty-four parts of water," or a vegetable one, with "leaves, sprigs, and the bark of a majority of the perennial plants." He then places the skins in a solution of chromate for tanning. In the second bath of Cavalin there is no suggestion of the sulphurous acid reducing bath of Schultz. Of this process, Heinzerling, in the *Elements of Leather Making* (1882), says, at page 144:

"We can regard Cavalin's process as a combination of iron, alumina and chrome tanning. The leather, however, showed an easily removable or deteriorating result in water, and was brittle, which made its practical application impossible."

Morfit on the *Art of Tanning* (1852) says (page 401) of Cavalin and other similar processes:

"It is doubtful whether leather made by any of the preceding processes will preserve its durability for any length of time, as from its very nature it would be reasonable to expect it to crack, unless it be kept constantly greased."

Davis on the *Manufacture of Leather* (1885) says, on page 629:

"Cavalin's method may be considered as a combination of tanning with ferric, aluminum, and chromic oxides. But a practical application of the process is not possible, since the leather loses its tannin easily when immersed in water, and its grain is brittle. * * * All the above-mentioned methods of tanning have been abandoned on account of the defective quality of the product prepared by them."

Professor H. R. Proctor says, in a lecture given October 9, 1893, when speaking of the Cavalin leather:

"The resulting leather was a combined iron and chrome tannage, which is not a practical success, though it is not impossible that some modification of it might be put to useful purpose."

The authorities on the subject of tanning, as well as an inspection of the Cavalin patent, demonstrate that it is not an anticipation of the Schultz process.

In 1858, Dr. Frederick Knapp published an article on the nature of leather. This article is translated in *Dingler's Polytechnical Journal*, vol. 149, p. 305, and in *Wagner's Jahresbericht* (1858) p. 521. Speaking generally, the Knapp method relates to tanning with salts of the oxide of iron or of the oxide of chrome. It is a "single-bath process." The Schultz process depends, primarily, "upon the reduction throughout the skin of a compound of chromic acid." No compound of chromic acid is employed by Knapp, and no reduction of chromic acid takes place when the skins are tanned. The Knapp method of treatment with iron and chromium salts has been unsuccessful. The literature of the art shows that the Knapp process never went into commercial use.

Heinzerling on the *Elements of Leather Making* (1882) p. 144, says:

"The application of iron and chrome alum in tanning has already been formally proposed, and also been practically carried out. The use of these substances was soon, however, given up again, since the leather so prepared

showed no advantage over the leather tanned with alum and other aluminum salts."

Davis on the Manufacture of Leather (1885) p. 629, says:

"The use of iron alum and chrome alum was at one time proposed and actually introduced in practice, but the use of these substances was soon abandoned, as the leather prepared in this manner had no advantage over that tanned with alum and alumina salts."

Wagner's Chemical Technology (1892) p. 889, says, under the heading "Knapp's Leather":

"The hides do not become really tanned by being immersed in solutions of such metallic salts as those of the ferrous and ferric oxides and zinc and chromium oxides. * * * Though a certain combination of the oxide and fibers takes place, no real leather is formed, because the substance when finished is not fitted for contact with water; for then the so-called 'tannin' is washed out. * * * Although the exterior color of good, sound leather may be imitated, the real qualities of leather are wanting. Knapp's process is not in use, or is so entirely modified by substituting alum for metallic oxides that the skins are tawed by a combination of the preceding tawing process and the oil tawing process now to be described."

Proctor, in his text-book on Tanning (1885) p. 219, says of leather made by the use of basic ferric salts:

"The leather, however, has by no means the same resistance to wet and decay as bark-tanned leather, and invariably has a tendency to crack when sharply bent. The process has been most carefully worked out by Professor Knapp, and was patented and worked commercially for a short time in Brunswick, but apparently without financial success."

It is manifest that Knapp does not describe the Schultz process.

We have next the Swan British patent of 1866. Swan states that his invention may be applied to tanning. His method is to immerse the skins in a solution containing 1 per cent. of chrome alum, or in a solution of chromate or bichromate of potash, and then to decompose the chromate or bichromate in the skin "by means of oxalic or other similar acid," so as to reduce the bichromate and produce "the required compound of chromic oxide." It is established by this record that oxalic acid reduces bichromate more slowly than sulphurous acid, and that it must be used with great care to prevent injurious action on the raw hide. The Swan process has not proved to be a practical method for tanning. It is not the Schultz process.

The Heinzerling English patent of 1880 and American patent of 1881 describe the only chrome-tanning process before Schultz which may be said to have gone into commercial use. Heinzerling first left the hides in the "chrome or aluminous solution" from one to twenty days. It is unnecessary to refer to the other operations of this complicated process, except to add that the hides were finally "exposed to the light for from twenty-five days to sixty." Heinzerling soaked his skins in a solution of chromic acid or of a chromate and bichromate, but he never reached the Schultz process of reduction through sulphurous acid. In chrome tanning there is no complete reduction until the hide turns green. In the Heinzerling process it seems that the gradual effect of exposure to the light had to be relied upon to reduce the chromate. Davis on the Manufacture of Leather (1885) p. 634, says:

"The cut surface of leather prepared according to the described [Heinzerling] process is at first yellow, but becomes gradually lighter, especially when exposed to the light, and turns finally to a nearly whitish green."

Concerning the Heinzerling process, Prof. Proctor, in his textbook on Tanning (1885) p. 221, says:

"A process which has been worked on a larger scale is that of Dr. Heinzerling, introduced about 1878, with the usual promise of 'complete revolution' in the leather trade, but which, in spite of the most determined and persevering efforts of the Eglinton Chemical Company, who own the English patent, has failed to take any very prominent position in commerce."

In a lecture delivered October 9, 1893, after speaking of the Cavalin process, Prof. Proctor said:

"Much later and much better known, if not more successful, was the Heinzerling process as carried out by the Eglinton Chemical Company and the Yorkshire Tanning Company. This could hardly be called a true chrome-tanning process, since alum and salt were the principal tanning agents, and the bichromate, which was used with them, was never systematically reduced to the green tanning form, though in course of time it gradually became partially changed at the expense of the skin."

Wagner's Chemical Technology (1892) p. 889, says: "Heinzerling's chrome tanning is, in the opinion of the author, perfectly worthless."

Upon examination of the present record, it appears—First, that, in the art of chrome tanning, no prior patent or publication describes the Schultz process; second, that no prior patent or publication disclosed a practical or commercial process for chrome tanning, with the single exception of Heinzerling, which was only successful to a limited degree, and which cannot be said to have solved the problem of practical chrome tanning worked out by Schultz; and, further, that the Heinzerling process is not an anticipation of Schultz because the two methods are distinctly different. Although chrome tanning may be effected experimentally by several of these old processes, as seems to appear from the evidence of the defendant's experts and the samples produced, we do not think this class of testimony detracts from the merit of the Schultz process, or from its position in the art. On the contrary, previous efforts and previous failures add to the importance of Schultz's discovery. A process carefully conducted by a skilled expert may be adequate to tan skins, and yet be commercially perfectly worthless. Such experimental success should have little or no weight in determining the question of the validity or scope of the Schultz patent. In the case of Patent Co. v. Zahn, 17 C. C. A. 552, 70 Fed. 1003, the circuit court of appeals for the Third circuit, on final hearing, sustained the validity of the Schultz patents. In five other suits brought by this complainant against various defendants preliminary injunctions have been granted, and in three of these cases the order was affirmed by the circuit court of appeals. Patent Co. v. Donallan, 75 Fed. 287; Same v. Adams, 77 Fed. 191; Adams v. Patent Co., 26 C. C. A. 326, 81 Fed. 178; Clerk v. Same, 28 C. C. A. 501, 84 Fed. 643; Ford Morocco Co. v. Tannage Patent Co., 28 C. C. A. 503, 84 Fed. 644. The substantial defense in the present case is anticipation of the Schultz process based upon the Francillon French and English patents of 1853. The Francillon patent was introduced in the prior injunction case against Adams, and carefully considered

by Judge Acheson in his opinion in the circuit court, and by Judge Dallas, speaking for the court, in the circuit court of appeals. It was also before this court on motion for a preliminary injunction. It is true, however, that the Francillon patent has not been heretofore considered by any court on final hearing, that this defense is now for the first time thoroughly and exhaustively presented, and that the defendant is entitled to have this question of anticipation investigated and passed upon in this case. It further appears that, in connection with the introduction of the Francillon patent, the whole prior art has been more fully presented in this case than in any prior litigation. After the most diligent search, however, in this and foreign countries, as we have seen, no process such as is described by Schultz has been found in the prior tanning art. We have only left then to determine the one important question whether in view of Francillon there was any patentable novelty in the Schultz method. Schultz describes a process of "tawing hides and skins" with minerals. Francillon's patent is for a process of "dyeing and printing silk, wool, and other animal fibers," including "skins." The Schultz patent is for a tanning process. The Francillon patent is for a dyeing process. This is the fundamental distinction between the two. The Francillon patent was taken out in 1853. It was commented on in trade publications, and was well known. It nowhere purports to disclose a tanning process. It was used for dyeing silks and wools. It does not appear that skins were ever dyed by this method. It was never used practically to tan a skin. It was not until after the discovery and great success of the Schultz process, and as a defense to the charge of infringement, that the expert witnesses for the defendant have found out by experiment that the Francillon dyeing process will in fact tan. And in this connection, and as going to show that the court should not be wholly guided by the experimental success of the most eminent experts, it may be observed that Prof. Carmichael also obtained good merchantable chrome-tanned skins from the Knapp, Cavalin, Swan, and Heinzerling processes, although, with the exception of Heinzerling, and then only to a limited extent, these old methods had proved practical failures.

With the history of the development of the chrome-tanning art before us, showing for many years repeated effort and repeated failure until the Schultz patents, and with these patents repeatedly sustained by the courts in other cases, the proof of an alleged anticipation in the form of a well-known foreign patent issued 30 years before, should be clear, convincing, and free from doubt. Before reaching the conclusion that the Francillon process is an anticipation of Schultz, we should be satisfied—first, that the art of tanning and the art of dyeing are so nearly analogous that there was no invention in the application of an old dyeing process to tanning; and, second, that the Francillon patent for dyeing sets out in full, clear, and exact terms the Schultz method of tanning, so that any one skilled in the art would be able to practice the Schultz process by following the directions of the Francillon specification. If either of these propositions is doubtful, the defendant's attack upon the Schultz patent must fail. As a matter of common knowledge, as well as scientific classification, tanning and

dyeing are distinct arts. The art of tanning is to change a raw skin into leather. The art of dyeing is to fix color. The Century Dictionary defines tanning as "the art or process of converting hides and skins into leather," and dyeing as "the operation or practice of fixing colors in solution in texible and other porous substances." The Encyclopædia Britannica (1894) defines leather as follows:

"Leather consists of the hides and skins of certain animals, prepared by chemical and mechanical means in such a manner as to resist influences to which in their natural condition they are subject, and also to give them certain entirely new properties and qualities. Skins in an unprepared, moist condition are readily disintegrated and destroyed by putrefaction, and if they are dried raw they become hard, horny, and intractable. The art of the leather manufacturer is principally directed to overcoming the tendency to putrefaction, to securing suppleness in the material, to rendering it impervious to and unalterable by water, and to increasing the strength of the skin, and its power to resist tear and wear."

It defines dyeing as follows:

"Dyeing is the art of coloring in a permanent manner porous or absorbent substances by impregnating them with coloring bodies. Most vegetable and animal bodies are porous or absorbent, and can be dyed; some minerals also, such as marble, can absorb liquid coloring matters; but the term 'dyeing' is usually confined to the coloring of textile fibrous materials by penetration. The superficial application of pigments to tissues by means of adhesive vehicles, such as oil or albumen, as in painting or in some kinds of calico printing, is not considered as a case of dyeing, because the coloring bodies so applied do not penetrate the fiber, and are not intimately incorporated with it. The mere saturation of textile fiber with a solution of some colored body and subsequent drying do not constitute a case of dyeing, unless the color becomes in so far permanently attached to the fiber that it cannot be washed out again by the solvent employed or by common water."

Dyeing, technically speaking, and as contrasted with painting, means a saturation or impregnation of the fiber in order to secure fixation of color. As applied to some animal fibers, such as silk or wool, it means a thorough saturation; as applied to skins, it may signify a thorough or a partial saturation; in other words, skins may be dyed on the surface, or a portion of the way through, or all the way through. The dyeing of skins is effected either by plunging or dipping in the dyeing solution, or by spreading the dyeing material on the surface by brushing over it. Francillon was a French dyer. His patent discloses a process for the fixation of a permanent green color on animal fibers. As practiced commercially, this method seems to have been limited to dyeing silk and woolen fabrics. Wagner's Jahresbericht (1858), in review of the Francillon process, says:

"Francillon described the following process for dyeing woolens and silk fabrics a permanent green by means of oxide of chromium."

He then sets out the steps of the process substantially as found in the Francillon patents. The Francillon French and English patents are substantially the same. With respect to these patents, Mr. Little, complainant's expert, says:

"The Francillon patents relate directly and solely to a process of dyeing. They are directed to dyers, and are to be read from the dyers' point of view. They are, moreover, primarily directed to the dyeing of silk and wool."

In the specification of his English patent, Francillon says:

"My invention of improvements in dyeing and printing silk, wool, and other animal fibers relates to a method of fixing upon silk, wool, and other animal fibers, such as hair, feathers, or skins, the green oxide of chrome, called by French chemists sesqui-oxide of chrome, or the chromic oxide of Berzelius. This oxide may either be applied and fixed alone, or in order to produce various shades and colors the oxide may also be employed in combination with various substances, such as certain acids or oxides, or with coloring or astringent matters. This object of the invention may be effected either by the oxidation of chromous oxide, which may be effected upon the substances either in the fibrous state or after having been manufactured into the fabrics to be dyed or printed, or the same effect may be produced by the reduction of chromic acid and its conversion into chromic oxide. The fixing operation is carried on in the following manner: A cold saturated solution of bichromate of potash is laid evenly either upon the whole fabric or upon any part which it is desired to have colored, dyed, or stained; and I would here observe that there are some kinds of fibers which are better impregnated with impure chromic acid, or even with bichromate of chloride (salt of peligot), than with a perfectly pure salt. This operation is performed at the ordinary temperature, or at a temperature of thirty degrees, forty degrees, or fifty degrees of the centigrade thermometer, or even a higher temperature may be employed, according to the nature of the fiber to be operated upon. The fiber thus impregnated with chromate or chromic acid is left in repose for some hours protected from the solar rays. The operation of reducing the chromic acid is then proceeded with, in order to deprive the acid of a moiety of its oxygen, and to convert it into chromic oxide. It is well known that many agents are capable of effecting the reduction of chromic acid either in a free state or in the form of chromate, and of converting it into green oxide. Amongst these may be particularly mentioned chloride of tin, the hydro acids, phosphorous acid, several oxy acids of sulphur, either free or in the form of a salt, but more especially sulphurous acid. This latter has been preferred, inasmuch as, besides presenting the advantage of economy, it possesses, furthermore that of only requiring for its action the apparatus and processes employed for bleaching woolen and silken fabrics by means of sulphur. When the fibers or fabrics to be dyed have been impregnated with chromic acid, they are to be exposed in a damp state to the action of sulphurous acid, either in gaseous form or in solution. The sulphurous acid instantly effects the reduction of the chromic acid, and the fibers pass from a brownish yellow color to either a grayish green or a decided green, according to whether the chromate has been employed alone or with the addition of arsenious or arsenic acid. The fabric or material now only requires to be washed, and the color is fixed. The tint obtained by means of the red chromate is upon wool a gray green, and a sea green upon silk, but much less intense. By adding to the chromate arsenical preparations, a great variety of shades of green may be produced. As the chromic acid acts as a mordant as energetically as alumina and oxide of iron, yarns or fabrics upon which the chromic acid has been previously fixed may be dyed in baths of madder, cochineal, and other matters, and by this means several fancy shades may be produced; but, in the same manner as when mordants of alumina and iron are employed together in order to produce complex shades, so the chromic oxide, mixed with the preceding mordants, serves to produce still more varying tints, which cannot easily be imitated by other processes. The coloring or astringent matter may, when they allow of it, be deposited and fixed at the same time as the chromate, and the sulphurous acid be allowed to act afterwards. In conclusion, I desire it to be understood that I claim the application to the dyeing and printing of fibers, yarns, threads, silken and woolen fabrics, and other animal fibers or tissues (such as hair, feathers, or skins) of the color produced by the fixing thereon of the green oxide of chrome (the sesqui-oxide of chrome of the French chemists and the chromic oxide of Berzelius). This oxide I either apply and fix alone, or in order to produce various tints I combine it (either at the time of applying it to the material or afterwards) either with certain acids, such as phosphoric, phosphorous, arsenic, or arsenious acid, or with certain oxides, such as those of iron, lead, copper, or other metal, or with coloring matters which require

the assistance of an oxide in order to combine with the fiber, and which find in the chromic oxide a mordant, and, lastly, with that no less numerous class of astringent matters by means of which so many fast colors are produced. I do not, therefore, intend to confine myself to the process above described; but what I consider to be new, and desire to claim as of my invention in the above-described process, is dyeing and printing animal fibers, such as wool, silk, hair, feathers, or skins, by means of chromic acid or its combinations, which may be reduced and converted into a chromic oxide, and fixed by any convenient chemical means, as above described."

Schultz, in his patent No. 291,785, says:

"Be it known that I, Augustus Schultz, a citizen of the United States, * * * have invented new and useful improvements in tawing hides and skins, of which the following is a specification: This invention relates to a new process for treating hides or skins, said process consisting in subjecting said hides or skins to the action of a bath prepared from a metallic salt, such as bichromate of potash, and of then treating the same with a bath containing sulphurous acid. In carrying out my process, I unhair the raw hides and prepare them in the same manner in which they are made ready for tanning. If the hides have not been pickled, I subject them to the action of a bath of bichromate of potash in an acid, such as hydrochloric acid, or, if the hides have been pickled, they may be treated in a solution of bichromate of potash in water without the addition of an acid. In this solution the hides are left for a longer or shorter time, according to their thickness and to the strength of the solution employed. A skiver or the face of a sheepskin can be done in a strong solution, as above described, in about fifteen minutes, while a full skin "roan," would require in the same solution about one hour. I call the solution weak if it contains five per cent. or less of the weight of the skins of bichromate of potash, and I call the solution strong if it contains more than five per cent. of bichromate of potash. The skins are done in small pieces cut from the thickest part thereof show that the solutions have entirely penetrated. The skins are then ready to be taken out of the solution, and, after the adhering liquor has run off, the skins are introduced into the second bath, which consists, by preference, of sulphite of soda dissolved in water, to which an acid—such as hydrochloric acid—should be added, in order to set free the sulphurous acid. The hydrochloric acid or its substitute may be added to the bath in a free state or through the medium of skins previously pickled, such skins being impregnated with the proper acid. The solution may be strong or weak of sulphite, and the quantity of acid used at first may be less than requisite to exhaust the bath of the sulphite, and more acid may be added if the skins show that more is required, which is indicated by the color of the skins. When the skins are done, they show a whitish, blueish, or greenish color, according to the time they are kept in the sulphite bath. A skiver which first has been exposed to the action of the bichromate bath for fifteen minutes will be ready by remaining in the sulphite bath about twenty minutes. For thicker skins a proportionately longer time is required. For some skins—such as calf or steers' skins—it is desirable that the same, after having been withdrawn from the second or sulphite bath, shall be returned to the bichromate bath, which imparts to them a brownish color, and leaves them in a favorable condition to be colored black. The leather coming from the sulphite bath is especially adapted for light and also for dark colors, and by proper dyeing methods better and brighter colors can be produced than on leather done by tannin. After the leather is done in the manner above described, it may be colored, soaped, and greased in the usual way. Leather can also be made by reversing the operation and first soaking the hides in a sulphite bath, and then exposing them to the action of the bichromate bath. By using the baths described at a heat of about 80° Fahrenheit, the process will be done in a shorter time than if the baths are used cold. Tawed leather made by my process is very strong, soft, and elastic, and my process is applicable to hides or skins of every description. Instead of using sulphite of soda, I can use other sulphites or bisulphites in presence of an acid or an aqueous solution of sulphurous acid. What I claim as new, and desire to secure by letters patent, is the within-described process for tawing hides and skins, said process consisting in subjecting the hides or skins to the action of a bath prepared from a metallic salt, such as bichromate

of potash, and then to the action of a bath capable of evolving sulphurous acid, such as a solution of sulphite of soda, in presence of another acid, such as hydrochloric acid, substantially as described."

We have italicized some parts of the above quotations from the patents in order to draw special attention to them.

The same chemicals are used in the Francillon dyeing process as in the Schultz tanning process, but the mode of treatment is not identical. The description in the Francillon patent is such as a dyer would find necessary to follow to successfully dye wool, silk, or the surface of a skin. The description in the Schultz patent is such as a tanner would find necessary to follow to successfully tan a skin. The literal following of the Francillon specification will not, in our opinion, tan a skin except by accident. It does not clearly or accurately describe or disclose a tanning process. The Francillon patent says nothing about two baths. As to the first operation it says: "A cold saturated solution of bichromate of potash is laid evenly upon the whole fabric or upon any part which it is desired to have colored, dyed, or stained;" or, in the language of the French patent, the bichromate is to be deposited "uniformly or locally on the textile fiber." To a skin dyer this would probably mean that the solution was to be applied to the surface with a brush, which was one customary mode in dyeing skins. By the Schultz process, the hides are first prepared for tanning, and then they are subjected to the action of a solution of bichromate of potash. In this solution the hides are left for a shorter or longer time, according to their thickness and to the strength of the solution employed. As to the second operation, Francillon says: "The sulphurous acid instantly effects the reduction of the chromic acid;" or, as the French patent says, "The latter reduces instantly the chromic acid." This exposure to the action of sulphurous acid and the instantaneous reduction of the chromic acid is a sufficient description to the skilled dyer to enable him to dye wool, silk, or the surface of a skin, because the reduction of the chromic acid and the change of color are instantaneous; but to effect the reduction throughout the skin, which is necessary in tanning, it is required to remain in the second bath from 20 minutes to several hours. Schultz says as to the second operation:

"A skiver which first has been exposed to the action of the bichromate bath for fifteen minutes will be ready by remaining in the sulphite bath about twenty minutes. For thicker skins a proportionately longer time is required."

A comparison of the Francillon and Schultz specifications demonstrates, we think, that the processes described are not identical, just as the results to be accomplished are different. To dye silk, wool, or the surface of a skin, it is only necessary to follow the instructions of Francillon, and to expose the material, after the first operation, for a few moments to the action of sulphurous acid to obtain what is sought,—green color; but this is not the tanning process described and carried out by Schultz, and which the defendant uses with an immaterial modification. With the Schultz process before him, it may be possible for a skilled expert to tan a skin by following what he believes to be a liberal construction of the Francillon specification. But that is not the question. Francillon is not to be interpreted

in the light of and with the knowledge of the Schultz process. The question is, assuming the Schultz process did not exist, does Francillon disclose a tanning process, and by following literally his instructions have you solved the problem of a practical and commercial method of chrome tanning? We think this question must be answered in the negative. The fact that the Francillon process was publicly known for more than 30 years before Schultz, and during a time when inventors and scientists were vainly endeavoring to discover a successful method of chrome tanning, raises a strong presumption on its face that Francillon did not fully disclose a practical tanning method. The discovery of a dyeing process for the production of color, by the fixation of chromic oxide upon wool, silk, skins, and other animal fibers, is quite a different thing from the discovery of a tanning process for the production of another substance called "leather." Indeed, if the Francillon patent for chrome dyeing disclosed a method by which chrome tanning might be effected, we think, in view of the history of the two arts contained in this record, and of the fact that they are radically distinct, it would have been invention of a high order to have discovered that an old dyeing process would produce merchantable chrome-tanned leather. And when we add to this what we have found to be the fact, that the Francillon patents do not contain a full, clear, and exact description of the Schultz process, the conclusion follows that the Schultz patents are not anticipated by Francillon.

The main arguments relied upon by the defendant seem to be: First. Francillon's patent was for a process for the fixation of chromic oxide upon animal fibers including, specifically, skins, and it therefore includes both chrome dyeing and chrome tanning. The answer to this is that repeatedly in both the French and English patents Francillon limits his invention, and only claims as new the dyeing, or the dyeing and printing, of animal fibers. Second. This is a case of double use, because Schultz simply applied the old and well-known Francillon dyeing process to tanning. The answer to this is that, in our opinion, this is not a case of double use, because the art of dyeing and the art of tanning are not analogous, since the results or products produced are different, and because the Francillon patent for dyeing animal fibers does not contain a full and clear description of the Schultz method for chrome tanning. It is true that the fixation of chromic oxide upon a skin will tan as well as dye. It is also true that a skin dyed by the Francillon process may be tanned on its surface, which does not make it leather, or accidentally tanned through and through, which would make it leather. But this result is not a sufficient reason for holding that Francillon anticipates Schultz. An accidental result not contemplated by a former inventor cannot anticipate a later patent.

In *Tilghman v. Proctor*, 102 U. S. 707, 711, 712, Mr. Justice Bradley, speaking for the court, said:

"We do not regard the accidental formation of fat acid in Perkins' steam cylinder * * * as of any consequence in this inquiry. What the process was by which it was generated or formed was never fully understood. Those engaged in the art of making candles, or in any other art in which fat acids are desirable, certainly never derived the least hint from this accidental phenomenon in regard to any practical process for manufacturing such acids. The accidental effects produced in Daniell's water barometer and in Wal-

ther's process for purifying fats and oils preparatory to soap making are of the same character. They revealed no process for the manufacture of fat acids. If the acids were accidentally and unwittingly produced, whilst the operators were in pursuit of other and different results, without exciting attention and without its even being known what was done or how it had been done, it would be absurd to say that this was an anticipation of Tilghman's discovery."

In *Clough v. Manufacturing Co.*, 106 U. S. 166, 175, 176, 1 Sup. Ct. 198, the Clough patent was held valid, notwithstanding the prior Barker burner. The court said:

"The testimony * * * amounts really to this only: that if that burner is used now in a way it which it was never designed to be used, and it is not shown to have ever been used before Clough's invention, it may be made to furnish a supplementary supply of gas. * * * Any further raising of the tube was accidental, and not a part of the law of the structure. * * * The structure was not designed for the same purpose as Clough's, no person looking at it or using it would understand that it was to be used in the way Clough's is used, and it is not shown to have been really used and operated in that way."

In *Pittsburgh Reduction Co. v. Cowles Electric Smelting Aluminum Co.*, 55 Fed. 301, 307, the court said:

"Suppose it to be a fact that in De Ville's process alumina was dissolved in the bath from the anode, and that thereupon it was electrolyzed as in the Hall process, it was a mere accident of which De Ville made no note, and which therefore, we may reasonably infer, he did not observe. Accidents of this character cannot be relied on as anticipations of a patented process, when the operator does not recognize the means by which the accidental result is accomplished, and does not thereafter consciously and purposely adopt such means as a process for reaching the result."

Upon careful consideration, we are of opinion that the Francillon patents do not anticipate the Schultz patents, and that the decision of the circuit court of appeals for the Third circuit in the Zahn Case was correct, and should be followed by this court. Decree for complainant.

UNITED STATES PLAYING-CARD CO. v. SPALDING et al.

(Circuit Court, S. D. New York. February 28, 1899.)

PATENTS—SUITS FOR INFRINGEMENT—VIOLATION OF INJUNCTION.

Where the question of the violation by a defendant of an injunction issued in a suit for infringement of a patent depends on whether or not a new article sold by defendant since the granting of the injunction is an infringement of complainant's patent, which is an intricate question, dependent on structure, and requiring a comparison of the article with others, and a consideration of other patents, the court will not undertake to determine it on a motion for an attachment, but, no intentional violation being claimed, will deny the motion, and leave the complainant to his remedy by a new bill.

In Equity. On motion for attachment for violation of injunction.

Arthur v. Briesen, for the motion.

Fred. L. Chappel, opposed.

WHEELER, District Judge. The statement in the opinion heretofore filed (92 Fed. 368) upon the motion for an attachment herein,