

Case No. 18,008. WOODWARD V. MORRISON ET AL.

{Holmes, 124; 5 Fish. Pat. Cas. 357; 2 O. G. 120; Merw. Pat Inv. 126.}¹

Circuit Court, D. Massachusetts.

March 22, 1872.

PATENTS FOR INVENTIONS—FLOUR PASTE—IN FRINGEMENT—SUBSTITUTION OF CHEMICAL EQUIVALENTS.

1. An invention of a flour-paste containing corrosive sublimate to prevent putrefaction, but in such small quantities in proportion to the flour that its poisonous and corrosive qualities are neutralized by the flour and the paste thus rendered innocuous, is not anticipated by a flour-paste in which a larger proportion of corrosive sublimate was used for the purpose of making the paste poisonous and corrosive.
2. A patent for a compound is infringed by the manufacture of a compound in which known chemical equivalents are substituted for one or more of the elements of the compound.

3. The use of chemical equivalents in place of one or more of the elements of a patented compound may infringe the patent for the compound, although in some respects the substituted equivalents are improvements.
4. A specification in a patent of the mechanical parts or chemical ingredients of the patented invention, includes known mechanical or chemical equivalents of the parts or ingredients named.
5. If there are equivalents existing, but previously unknown to ordinarily skilful mechanics or chemists, these are not included in the specification, unless expressly stated therein.
6. The complainant's patent was for a paste having as one of its ingredients chloride of sodium. The defendant, in the manufacture of paste, used chloride of zinc, a known chemical equivalent of chloride of sodium, for such purpose, the other ingredients being the same as complainant's. *Held*, that the defendant infringed; it appearing that in the process of manufacture, chloride of zinc produced practically the same result, in the same way, as chloride of sodium.

Bill in equity [by Joseph Woodward against L. P. Morrison and others] to restrain alleged infringement of letters-patent [No. 52,779] for a paste for bookbinders, granted the complainant Feb. 20, 1866.

James B. Robb, for complainant.

B. C. Moulton, for defendants.

SHEPLEY, Circuit Judge. This suit is founded on letters-patent of the United States granted to the complainant on the twentieth day of February, 1866, as the inventor of a new article of manufacture, "an improved prepared paste for bookbinders;" that is, paste deprived of its tendency to putrefaction and fermentation, and made a standard article of commerce.

To a proper understanding of the case it is necessary at the outset to give a construction to the claim in the complainant's patent. The claim is substantially for, "as a new article of manufacture," a new and improved prepared paste, consisting in the addition of ingredients to the common article of paste used by bookbinders and others, and usually formed of wheat-flour and water, which ingredients shall have a chemical action upon the flour or equivalent substance, so as to preserve it in condition for use for any desired length of time,—the preparation to consist of the following ingredients, in substantially the following proportions: flour, two pounds; chloride of sodium, one ounce; alum, one quarter ounce; bichloride of mercury, six grains; and so made and compounded as to obviate the objection which would naturally arise from the use of the rank poison, corrosive sublimate, in this composition, by the well-known fact in chemistry, that the gluten of the flour acts as an antidote to the poisonous qualities of the bichloride of mercury, thus rendering the compound innocuous and harmless. The paste in common use is usually formed of wheat-flour and water. The wheat-flour contains vegetable albumen, fibrine, gluten, and other albuminous or nitrogenous bodies; also, starch, sugar, gum, and other non-nitrogenous bodies. While the non-nitrogenous constituents have intrinsically no power or tendency to pass into decay or change in composition, the other albuminous or nitrogenous constituents, when exposed to moderately heated air in a moist condition, begin to putrefy

and decompose, and when in that state they are brought in contact with the starch, sugar, gum, and other non-nitrogenous constituents, they cause them also to change into other compounds, and it is this process that constitutes fermentation. The object of this invention Was to prevent this fermentation, by which the common flour-paste soon becomes unfit for use, and to produce that effect by means which should not impart to the paste corrosive or poisonous properties, and thus to prevent the great waste which necessarily resulted from the souring of the paste, and thus to make flour-paste a standard article of commerce.

We proceed now to consider the state of the art prior to the date of the complainant's invention. Flour-paste had been made with an admixture of alum and water, with an admixture of salt, and with the addition of corrosive sublimate, long before the date of complainant's patent. In fact, preserved paste had been made containing every ingredient that Woodward's patent contains, separately, and every ingredient in combination except salt; but from the evidence in the case it does not appear that any prepared paste had been previously made containing in combination every ingredient that Woodward's patent contains, in substantially the same proportions, for substantially the same purposes, or effecting substantially the same results.

Corrosive sublimate, or bichloride of mercury, had been used by Dr. Turner in the year 1847, and subsequently mixed with alum and water, in a paste by which he secured paper-labels to wooden boxes; but he used corrosive sublimate and other poisons in his paste, because the boxes contained pills manufactured to be sold in the Southern markets, and the paste was purposely made poisonous to prevent insects from destroying the labels, boxes, and content. When, therefore, he used corrosive sublimate, it was not in such small quantities, or in such proportions to the flour, that the poisonous or corroding qualities were neutralized by the chemical action of the albuminous bodies in the flour, but in such quantities and proportions as were intended to leave, and did leave, the prepared paste corroding, poisonous, and destructive to animal life. Noah, one of the respondents, who manufactured from scraps of leather inner-soles and layers of leather to be pasted together for heels and stiffenings, had also used corrosive sublimate in his paste to kill the rats that troubled

him by eating the paste between the layers of the leather. In "Cooley's Cyclopaedia of Practical Receipts," London, 1856, it was stated, on page 938, that the addition of a few drops of creosote, or oil of cloves, or a little powdered camphor, colocynth, or corrosive sublimate (especially the first two and the last), will prevent insects from attacking it (paste), and preserve it in covered vessels for years; and on page 216 of the same book, "the addition of a few grains of corrosive sublimate or a few drops of creosote will prevent it turning mouldy, and is said to preserve it for years." Salt, or chloride of sodium, had also been used in paste long before the complainant's invention.

What, then, remained to be discovered in the art of making a prepared paste as a standard article of commerce? It was known that corrosive sublimate and other poisonous substances might be used for the purpose of arresting or preventing spontaneous decomposition of the paste, and also for preventing the attacks of vermin or insects on the paste. It does not appear to have been known that paste could be preserved by means of these substances, without making a corrosive and poisonous composition, unsafe to handle, and to a certain extent unfit to use. The desired result which remained to be attained was to arrest the fermentation and prevent the spontaneous decomposition and consequent great waste of the paste without making a composition corrosive or poisonous. The complainant, who was a paper-hanger, and whose attention was therefore constantly directed to the necessity of attaining this new and improved result in the manufacture of paste, seems to have devoted much time and study to the investigation of the theory of fermentation, and to experimenting with various substances known to possess the property of arresting the different kinds of fermentation to which the different ingredients or constituents of flour were subject. He did not discover that the poisonous qualities of corrosive sublimate were neutralized by albumen, but he does appear first to have discovered that by the use of a quantity of corrosive sublimate, so small that its poisonous qualities were neutralized by the albuminous bodies in the flour, a comparatively large quantity of paste could be preserved from putrefactive decomposition. He also appears to have ascertained, and practically to have demonstrated by experiment, that in the manufacture of the article of common paste, as previously made with flour-water and alum, a practically useful and beneficial result and improvement in the manufactured product was attained, beyond the use of the few grains of corrosive sublimate with each pound of flour, by the addition of chloride of ammonium, or chloride of sodium, or some salt or substance (equivalent to these for the desired result) which was soluble in the aqueous solution of corrosive sublimate, or in the same solution in which that was soluble. Of these, for this purpose, equivalent salts, he selected for the formula in his patent the chloride of sodium, because it was attainable at a less price than the others. The experts examined by the respective parties differ widely in some respects as to the chemical or other actions of the chloride of sodium in the composition of the complainant's product. Professor Babcock,

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examined by the complainant, testifies that, first, "it tends partly to preserve the paste;" second, "it is useful also in raising the boiling-point of the water of which the paste is made, enabling the paste to receive a higher temperature without burning;" and, third, that "it is of advantage in increasing the solubility of the bichloride of mercury so as to carry it more thoroughly into the body of the paste." Dr. Adams, an expert examined by the defendants, says the "salt may increase the solubility of the corrosive sublimate, but it has little or no preservative action on the constituents of the flour." Mr. Merrick, also examined by the defendants, is "not aware that it has any effect, unless it may possibly tend to raise the boiling-point of the paste." Upon this evidence the court could not be expected to decide that in the process of manufacture as described in the complainant's patent, there was no practical advantage or utility in the admixture of the chloride of sodium with the other ingredients; and, for the purpose of determining the question of the novelty and utility of the invention, it is not necessary to decide between the conflicting theories of scientific experts as to the exact extent of its utility or the precise nature of its chemical or other action. We see no reason from the evidence in this case to doubt that the complainant was the original and first inventor of a new and useful prepared paste, as claimed in his patent, and that the letters-patent issued to him therefor are good and valid.

The question whether the defendants by the manufacture of the paste made by them, and which in their answer they admit to be made according to the specifications of the patent granted to George G. Noah, one of the defendants, more than four years after the grant of the letters-patent to complainant, infringe upon the rights of the complainant, is one a solution of which is much more difficult and intricate. The defendants make a paste possessing the same properties as complainant's paste in its freedom from tendency to putrefaction and fermentation, and from being corrosive and poisonous. The ingredients of the defendants' paste are the same as those of complainant, except the substitution of the chloride of zinc in the defendants' for the chloride of sodium in the complainant's, and the addition in the defendants' of two or three drops of the oil of

cloves. The ingredients and the proportions thereof in their respective formulas of manufacture, as stated in the respective patents, are as follows:

Complainant's.	Defendants'.
Flour, 2 pounds.	Flour, 100 pounds.
Common salt (chloride of sodium. Na. Cl.), 1 ounce.	Chloride of zinc, 5 pounds.
Alum, $\frac{1}{4}$ ounce.	Alum, 5 pounds.
Corrosive sublimate (bichloride of mercury, Hg. Cl.), 6 grains.	Bichloride of Mercury, 1 ounce.
	Oil of cloves, $\frac{1}{2}$ ounce.

Although the proportions of these ingredients differ, as stated in the formulas in the respective patents, yet taking into consideration these two facts,—first, that the defendants use the solution of chloride of zinc instead of the dry salt, five pounds of the former being equal to three pounds of the latter; and the other fact, that the corrosive sublimate is so acted upon by the oil of cloves that a portion of it is changed to Calomel, which is not proved to have any antiseptic or otherwise beneficial effect on the paste, and therefore may be rejected,—it will be found that, when the formulas in the respective patents are applied to the same aggregate quantities, the proportions of the essential ingredients will be substantially identical in both.

Regarding the invention or subject-matter of the complainant's patent as an entirely new manufacture, it might perhaps be sufficient in this case to find, what we think the evidence discloses, that the defendants make substantially the same thing, whether by the same or a different process. The defence is put substantially on the ground, that, in the manufacture of the defendants' paste, the substitution of one class of ingredients in the place of another described in the complainant's specification Tenders their process substantially different from the process of complainant. It is necessary, therefore, to determine whether in this composition of matter the defendants have or have not substituted in the place of one or more elements, known chemical equivalents; for by such substitution of chemical equivalents, patents may as well be infringed as by mechanical equivalents. When a new composition of matter or process of manufacture is invented and patented, it is easy for the chemist, with the aid of the specification in the inventor's patent, to suggest changes in the process by the substitution of chemical equivalents which may produce similar or better results. It does not necessarily follow that such a use of chemical equivalents would not infringe the patent, even if in some respects they were improvements on the original process patented.

Four classes of ingredients are common to the two patents. The first class of substances common to both is found in the material which gives the adhesiveness and forms the paste; viz., the flour. The second class is the bichloride of mercury, which arrests the putrefactive decomposition of the flour by its antiseptic action. The third class is a metallic

chloride, which increases the solubility and assists in the diffusion through the mass of the paste of the bichloride of mercury, and perhaps performs another function in preventing the fermentive action of the glucose on the starch. The fourth class is alum, a substance added to give greater body to the paste. The materials used in the first, second, and fourth classes are identical in the process of the complainant and the defendants. In the third class, the material in each is a metallic chloride,—in one the chloride of sodium, in the other the chloride of zinc. Is the metallic chloride which the defendant uses in his process a known chemical equivalent for the metallic chloride which the complainant uses,—not a chemical equivalent in every respect and for every purpose, but an equivalent in this particular process, contributing to produce the same composition of matter by substantially the same chemical action in combination with the other ingredients of the product? Such chemical equivalents are referred to in both patents, the complainant's patent claiming in terms the use of substantially the same or equivalent articles; if they accomplish the same purpose in substantially the same manner, and the respondents' specifying the other salts of zinc, such as the sulphate and acetate, and also the chloride and the sulphate of copper, as equivalents to be used in place of the chloride of zinc.

Now, it is obvious that, for all purposes and in combination with all other substances, the chloride of zinc is no more a "chemical equivalent for the chloride of sodium than, under all possible conditions, the sulphate of copper referred to in the specification of defendants' patent would be a chemical equivalent for the chloride of zinc; but it is equally obvious from the testimony in this case that, for the purposes of manufacturing the product of a preserved and innocuous paste, the chloride of sodium and the chloride of zinc are, when used as described in the respective patents, practically the equivalents of each other, because in the process of manufacture they practically produce the same results. Starting from the platform of the complainant's patent with the advantage of his discoveries, it is plain that the defendant could, by inquiring of any chemist, have learned that the one could be used in this process in place of the other, with like results. This information he appears to have obtained of Dr. Jackson. From him or some other chemist, he obtained the information that the other salts of zinc and the other salts of copper would for this purpose be the chemical equivalents of each other, and of the chloride of zinc. His knowledge in either case was not the result of discovery or experiment. He appears to have started with an appropriation of the complainant's invention, and to have proceeded

in precisely the same way as a person who, after having examined a patent for a machine containing several well-known mechanical contrivances in combination, should go to a mechanical expert to substitute some one or more mechanical equivalents for the contrivances in the patented machine, hoping thereby to take his machine out of the monopoly of the patent.

Every specification is to be read as if by persons acquainted with the general facts of the" mechanical or chemical science involved in such inventions. The specification of the parts in a mechanical or chemical process is a specification to ordinarily skilful mechanics or chemists of the well-known mechanical or chemical equivalents. If there are equivalents, mechanical or chemical, existing, but previously unknown to ordinarily skilful mechanics or chemists, these are not included in the specification, unless expressly stated therein. These are, in fact, new discoveries in themselves, independent of the specification, and may be used by all persons without infringing the patent.

It is further claimed that, by the action of the oil of cloves in the defendants' formula upon the corrosive sublimate, calomel is produced; and therefore the corrosive sublimate does not act upon the albumen in the flour, forming an albuminate of mercury, as in the complainant's process. But it is evident from the proofs in the case, that only a portion of the bichloride of mercury is thus acted upon by the oil of cloves, leaving sufficient for the action upon the albuminous portion of the flour, which the defendant describes in his specification, by stating, that "the objection to the use of corrosive sublimate in this composition is met by the fact that the gluten of the flour neutralizes the poisonous effect of the corrosive sublimate." The practical effect of the addition of the oil of cloves in the defendants' process, upon the bichloride of mercury, seems only to convert a portion of it into a substance of little or no use in the process, and to leave the chemical action of the residue upon the nitrogenous portions of the flour identical, substantially, with that in the complainant's patent, both as to the compound formed and the proportions of the elements effectually operative in forming it. If the preservative action in the defendants' paste results from the action of the chloride of zinc, and is not due to the action of the bichloride of mercury upon the albuminous portions of the flour, defendants can omit the use of the corrosive sublimate, or any well-known chemical equivalent of it, and make a paste which would not infringe upon the rights of the complainant. The essence of the complainant's discovery was, that the use of a very minute quantity of corrosive sublimate (in the proportion of about three grains to a pound of flour) would, in combination with another chloride or equivalent salt, arrest the tendency to fermentation in the paste, without imparting to it any poisonous properties.

The conclusion, therefore, to be deduced from the evidence in the case is, that, so far as the ingredients in the two pastes are different, they are substantially the equivalents of each other, and, if there be any slight difference in the specific action of any of the in-

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redients upon each other, yet that the general results produced by the action upon each other of the several ingredients are alike, and the two pastes are substantially the same.

Decree for complainant

¹ [Reported by Jabez S. Holmes, Esq., and here reprinted by permission. Merw. Pat. Inv. 126, contains only a partial report.]