1931
Sept. 18, 19.
1932
May 16.

BETWEEN:—

CHIPMAN CHEMICALS LIMITED.....PLAINTIFF;

AND

FAIRVIEW CHEMICAL COMPANY LIMITED ..... } DEFENDANT.

Patents—Infringement—Chemical patents—Equivalency—Discovery—Invention

The patents in suit relate to improvements in Weed Killers and Methods of Killing Weeds, which are fully described in the reasons for judgment. There was no suggestion that the defendant by experimental work had produced a new herbicidal preparation or that by the addition of a small amount of magnesium chloride it had produced a new result or compound or increased its utility or herbicidal effect. The Court held that the patents were valid and that the defendant's herbicidal mixture was substantially the same as the plaintiff's, and that by the mere addition of a small amount of magnesium chloride, which gave much the same results as calcium chloride, used by the plaintiff, the defendant could not escape infringement.

Held further, that though the action and properties of each constituent of a chemical composition or mixture was known, where a new formula has been made known and the constituents have been so combined as to overcome difficulties or disadvantages in known herbicides, such combination is patentable.

2. That a chemical compound intended for the accomplishment of a specific purpose, which has never before been known, used or published within the meaning of the Patent law, may be patented, provided one may assume some degree of skill and ingenuity, or the exercise of intelligent research and experiment successfully directed to a particular purpose or end.

3. That prior published documents cited as anticipating the patent in suit must be read without the knowledge of susequent researches, especially those of the patentee, and the prior patents relied upon to establish anticipation must disclose as much as the subsequent patent.

ACTION by the plaintiff for an injunction against the defendant to restrain it from infringing certain Letters Patent of the plaintiff, relating to improvements in Weed Killers and the Method of Killing Weeds.

The action was tried before the Honourable Mr. Justice Maclean, President of the Court, at Winnipeg.

Sir Charles Tupper, K.C., and *W. C. Hamilton, K.C.*, for plaintiff.

E. K. Williams, K.C., and *R. E. Curran* for defendant.

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The facts and sections of the various specifications in the patents material to the issue herein are given in the reasons for judgment.

THE PRESIDENT, now (May 16, 1932), delivered the following judgment:

This is an action for infringement of three patents of invention owned by the plaintiff, the assignee of Chipman Chemicals Engineering Co. Inc., a United States concern, and which I may have occasion to refer to as the "parent company"; in each case the patentee was Ralph Nelson Chipman. Patent no. 287,002, issued in February, 1929, on an application filed in May, 1926, and is said to relate to certain new and useful improvements in Weed Killers and Methods of Killing Weeds; patent no. 287,332 issued in the same month and year on an application filed in June, 1927, and is said to relate to new and improved Herbicide Forming Methods; and patent no. 287,333 also issued in the same month and year on an application filed in June, 1928, and is said to relate to a new and improved Method of Killing Weeds. The alleged inventions described in these three patents formed the subject matter of a single application for patent, made by Chipman in 1926, but upon the direction of the Commissioner of Patents the application was divided, and hence the three patents. No point was raised concerning the division of the original application and the issuance of three patents, and any discussion of the fact is therefore unnecessary. Even if it were arguable that one of the patents covered the same subject matter as one other, it would not, I think, affect the result or the matter of costs.

The defendant, having its principal place of business at Regina, Sask., pleads the defences usual in infringement cases. Broadly speaking, it will be seen that the alleged inventions here in suit relate to a weed herbicide and the method and art of forming and applying the same. Before referring to the several specifications, it might be desirable to refer briefly to some of the herbicides in general use prior to Chipman, together with their composition and characteristics, the steps leading up to the alleged inventions in

question as developed in evidence, and in a very general way what is alleged to be the essence of the invention here claimed.

One of the earlier herbicides used, especially prior to 1923, was an arsenical compound, but while effective as a weed-killer—probably it is still used—it admittedly proved unsatisfactory largely because it was poisonous to animals. The parent company sold the compound quite extensively in the United States at one time, but it was obliged to pay from $8,000 to $20,000 annually, in settlement of claims for the death of cattle grazing on treated areas, it having been required to insure its customers against loss of this nature; in other respects it was not entirely satisfactory. The use of this herbicide was largely limited to the treatment of the trackage of railways upon which treated areas animals would frequently stray. Later, the parent company, perhaps others, adopted the use of a herbicide preparation containing sodium chlorate as its essential constituent and which was the subject matter of a patent to one Teppet. The sodium chlorate was simply dissolved in water and thus applied to weeds. While this preparation proved effective as a weed killer it disclosed some undesirable qualities. It is claimed that it stimulated rather than destroyed the growth of weeds of marine origin; being an electrolytic salt it was extremely combustible when brought into contact with organic matter, and evidence was given to the effect that it was responsible for the destruction of property, by fire, reaching very substantial sums; and it was most effective in localities which were subject to heavy dews or light rainfalls, otherwise it dried quickly after application as a dry crystal and for lack of the presence of moisture, blew away before it could act destructively upon the weeds. The parent company ultimately discontinued its use, but it still continued to be used by others as a herbicide, particularly in certain areas.

The patentee then commenced experimental and research work with the object of overcoming the disadvantages of the sodium chlorate mixture, that is to say, the fire hazard and the tendency of the sodium chlorate preparation to dry out and blow away after being applied and before it had completed its destruction of the undesired plants or weeds. In this research work Chipman decided to experiment with

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calcium chloride as a hygroscopic agent in combination with sodium chlorate, which former agent or ingredient it was hoped would draw sufficient moisture from the air to retard evaporation of the mixture and thus prolong the period of the activity of the weed killer upon plants, and also eliminate the fire hazard. Field experiments, which would require a full season, followed laboratory experiments, and altogether, as I understand it, two years of experimental and research work was carried on. The earlier experiments were not successful in obtaining the proportioned quantities of the constituents which would eliminate the fire hazard. Chipman also discovered in his experimental work, that whenever excess quantities were dissolved in a gallon of water crystals of salt would come out, which was disturbing it was said, because this would stop up the spraying apparatus, which would in practise be quite serious. Later, experimental work disclosed the fact that when calcium chloride and sodium chlorate were brought together in solution, and when evaporation commenced, crystals of sodium chloride, common salt, were formed, and from this disclosure, Chipman states it became evident that calcium chlorate had been formed in the mixture, so that there must be found, he concluded, present in the solution, not only sodium chlorate and calcium chloride, but also sodium chloride and calcium chlorate. Chipman states that he then decided to make a mixture of sodium chlorate and calcium chloride in such proportions as would result in a complete change from sodium chlorate to sodium chloride and obtain a maximum amount of hygroscopic element. Ultimately he succeeded in ascertaining the proportions of the constituents of such a mixture that would practically eliminate the fire hazard because it possessed the hygroscopic element which would keep the mixture from drying out on plants, thus also prolonging its herbicidal effect, and also avoiding the formation of salt crystals which would prevent or make difficult the application of the solution by a spraying apparatus, but yet a preparation that would act as an effective weed killer, and that is the substance of his claim to invention. In the result, it is claimed that the bringing together in an aqueous solution of sodium chlorate and calcium chloride, in certain ascertained proportions, all of the sodium chlorate by chemical combination, in accord-

ance with the chemical equation mentioned in the patents, with all but the excess of calcium chloride, was converted into sodium chloride and simultaneously yielded a solution of calcium chlorate, or, as one of the specifications states it, by metathesis, the sodium chemically combines with the chlorine of the calcium chloride, which may or may not precipitate out as a salt (NaCl) according to the regulation of the water content. As I understand it, with chemically proportioned quantities calcium chlorate alone with sodium chloride may be obtained, but the patentee takes an excess of calcium chloride so as to have some of that ingredient in the herbicidal liquor. The resultant liquor is practically a calcium-chlorate calcium-chloride liquor, if an excess of the calcium chloride has been used, but in any case the liquor may be sufficiently freed of salt in varying degrees according to the water content, when desirable, as it is said sometimes to be, when being used to destroy certain types of weeds. While the presence of sodium chloride pointed at first, according to Chipman, to act as a stimulant to the growth of certain weeds of marine origin, and for a time the sodium chloride was extracted, yet, further investigation showed that the calcium chlorate present nullified this. It was also found by Chipman that in most circumstances, 3 pounds of calcium chlorate had the same effect as 5 pounds of sodium chlorate in killing weeds, which alone meant a saving, and he states that while he would prefer to use ordinary calcium chlorate it was not on the market or produced commercially at a cost permitting its use in herbicidal preparations; by Chipman's method of producing it the cost was in keeping with his requirements, and it was even more hygroscopic than calcium chloride and would even absorb sufficient moisture to go into solution. It was stated in evidence by Prof. Parker that calcium chlorate, though known to the laboratory, had never been produced in commercial quantities, and even if it were procurable in commercial quantities, the price would prohibit its use as a commercial weed killer. Thus it is claimed that Chipman, from two commercially available and comparatively cheap compounds produced a herbicidal liquor composed of calcium chlorate as an essential element associated with as little or as much of a highly liquescent agent as might be desired, and either with but little, or with considerable salt,

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at a reasonable cost, and which even if associated with impurities was still satisfactory as a weed killer. This, imperfectly I have no doubt, sets forth the steps leading to Chipman's herbicidal preparation, or preparations of sodium chlorate and calcium chloride, and which in his patents he designates as calcium chlorate, because it had all the effects and characteristics of calcium chlorate. I shall now refer to the specifications at some length, because they will more fully and clearly describe the alleged inventions, and with more accuracy than I could possibly hope to do, and if I have fallen into any errors, the recital of their substance will serve to correct me.

I shall first refer to the specification of patent no. 287,332 because it emphasizes the method or means of producing calcium chlorate, an essential element in Chipman. I cannot do better, I think, than recite the whole of this specification.

> This division of my parent application (No. 314,152 filed in the Dominion of Canada on May 21, 1926) deals with the method therein described of manufacturing the weed-killing agent to which said parent application has been devoted.
>
> Through the aforesaid application it has been revealed that the chlorate of an alkaline earth base, such as calcium, when dissolved in considerable water constitutes a solution of great utility as a plant destroyer when sprayed on the foliage thereof. It has also been explained in said application that the utility of that compound is materially augmented by associating the chlorate with a highly liquescent agent; calcium chloride being instanced as especially advantageous.
>
> Calcium chlorate, as such, at the date of this invention has not been available in commercial quantities for want of a satisfactory method, and as large amounts will be required for extensive herbicidal operations, some method of its production sufficiently simple for ordinary factory operations has been needed.
>
> In seeking to take advantage of the fact that the chlorate of an alkali base, such as sodium chlorate, can readily be obtained in commercial quantities, and hence would be an economically suitable raw material, I have experimented to that end and thereby have ascertained that in simple solution the chlorate of sodium will react completely with as much chloride of calcium as may be available for that purpose; yielding chlorate of calcium either associated with sodium chloride or substantially free from it, depending upon the extent to which the operation is conducted, under "salting out" conditions.
>
> I herein below set forth chemicals, and the approximate proportions thereof, which are severally and combinatively now preferred for forming an aqueous, herbicidal liquor representative of this invention; but it is to be understood that the proportions may be varied without departure from the invention and that I intend to cover all chemical equivalents.

Preferably, but not necessarily, for the best results as now known to me, I mix together about:

3 to 4½ pounds avoirdupois of sodium chlorate ($NaClO_3$)

2 to 5 pounds avoirdupois of calcium chloride ($CaCl_2$)

Adding water to make one gallon of solution.

If there be used sufficient water and no excess of either of the chemicals, (molecular proportions) then will the conversion and the resultant solution be in accordance with the following equation:

$$2\,NaClO_3 + CaCl_2 = Ca(ClO_3)_2 + 2\,NaCl.$$

In this case, all of the salt formed by the reaction would remain dissolved; yielding an herbicidal agent highly lethal to all such weeds as are not of marine ancestry. But, if it is desired to exterminate weeds largely or wholly of marine origin, it is preferable that no great proportion of salt shall be present.

By methathesis, in other words, the sodium chemically combines with the chlorine of the calcium chloride and may or may not, precipitate out as salt (Na Cl) according to the regulation of the water content, as may be preferred. The resultant liquor may be a calcium-chlorate calcium-chloride liquor, if an excess of the latter has been used, and in either case the liquor may be substantially freed of salt (Na Cl), as is sometimes desirable, because salt (Na Cl) is promotive of the growth of some weeds and plants of marine ancestry.

An excellent ratio, within the range of the permissible proportions, initially mentioned, is 3 pounds of sodium chlorate to 2·25 pounds of calcium chloride. This employs an original excess of calcium chloride and ensures the presence of the highly hygroscopic calcium chloride in the resultant liquor; rendering the non-poisonous agent distinctly liquescent under all natural weather conditions of temperature and humidity and consequently more active in its herbicidal effects and likewise altogether safe as to fire hazards.

By the above contrived method, it will be perceived that by a single, simple and easily performed operation, using two commercialy available and comparatively cheap compounds, it becomes possible forthwith to produce an herbicidal liquor composed of the chlorate of an alkaline earth base as an essential element associated with as little or as much of a highly liquescent agent as may be desired and either with but little or with considerable salt.

The next patent to which I shall refer is no. 287,002. The specification states:

This invention relates to a Weed Killer and Method of Killing Weeds. Its object is to produce a weed killer which, when in use on and within plants, has a much more intense, weed killing quality or property than has heretofore been known and which contains a hygroscopic ingredient that compatible with the herbicidal agent and which is co-active with constituents of the plants or vegetation to be killed, the hygroscopicity of the herbicide keeping it from drying out on and within plants and prolonging its herbicidal effect.

One substantial, material and crucial factor in my new conception of means to end is the incorporation in the weed killing liquor of an ingredient which constantly draws moisture from the air, during the period of the activity of the weed killer on and within plants, and of another ingredient which, at the same time effects a constant liberation of nascent oxygen.

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I hereinbelow set forth chemicals and the approximate proportions thereof which are severally and combinatively now preferred for forming an aqueous, herbicidal liquor containing this invention; but it is to be understood that the proportions may be varied without departure from the invention and that I intend to cover all chemical equivalents.

Preferably, but not necessarily, for the best results as now known to me for plants of marine origin, I mix together about

3 to 4½ lbs. avoirdupois of calcium chlorate $Ca(CLO_3)_2$

2 to 3 lbs. avoirdupois of calcium chloride ($CaCl_2$)

Adding water to make one gallon of solution.

The foregoing ingredients result in about one gallon of liquor of about 29 per cent calcium chlorate and of about 16 per cent calcium chloride, whereby my new weed killer solution has about 45 per cent of active weed killing content, and being free from sodium chloride, is especially useful for regions teeming with marine growths.

The patentee then refers to another mixture the formula for which is to be found in the specification of the patent to which I have already referred. The specification continues:

It is to be noted particularly that, in each of the foregoing liquors (the one containing no and the other containing some sodium chloride) the calcium chloride is an element constantly acting to draw moisture from the atmosphere and it may be considered as an evaporation retarder compatible with a chlorate of an alkaline earth base; and in its behaviour in conjunction with the chlorates, materially adds to the destruction of the equilibrium of the plant processes, as hereinafter described.

* * * *

The described herbicidal liquors (containing the chemically active, water-drawing element) are the best of various types of slow-drying, aqueous herbicides known to me. They are non-poisonous to animal life, their constantly effective water-drawing content keeps them constantly moist and reduces the hazard of combustion when in contact with organic matter.

The specification then discusses the plant structure and the functions and effects of a slow-drying weed killer thereon. The last paragraph of the specification is as follows:

The calcium chlorate, by its continued contact with the organic material, will ultimately be deprived of all of its oxygen and will finally exist as a residue of calcium chloride. In that phase it forms, in co-operation with such sodium chloride as may concurrently be present, an effective agency for retarding germination of the various plant types. For example, sodium chloride is detrimental to some growths while stimulative to others but the calcium chloride, being a distinct retardant to germination, will in turn negative the stimulative tendency of the sodium chloride towards plants of marine ancestry.

The remaining patent is no. 287,333. The patentee in his specification states:

By my parent application no. 314,152, filed on May 21, 1926, in the Dominion of Canada, there was set forth a novel method of killing weeds to which the present divisional application is now devoted.

To invent an ideal method of eradicating weeds has been a problem with which those skilled in the art have long been engaged. It must be simple and readily performed. It must be distinctly destructive to grown weeds and retardive to secondary germinations thereof. It must neither be detrimental to railroad equipment or property, nor poisonous to users or animals. It must retain its chemical efficiency when applied in arid regions, and it must not involve fire hazards.

This invention accordingly relates to a Method of Killing Weeds. Its object is to produce a method which, when resorted to on and within plants, has a much more intense weed killing quality or property than has heretofore been known and which functions through a hygroscopic and herbicidal agency and which is co-active with constituents of the plants or vegetation to be killed, the hygroscopicity of the herbicide keeping it from drying out on and within plants and prolonging its herbicidal effect.

One substantial, material and crucial factor in my new conception is the utilization by a leaf-spraying operation, of a weed killing liquor incorporating an ingredient which constantly draws moisture from the air, during the period of the activity of the herbicidal method on and within plants; the composition being such as to, at the same time effect a constant liberation of nascent oxygen.

The remainder of this specification repeats matter appearing in the other two specifications.

Turning now to the question of invention. The law concerning chemical inventions, and I am treating this case as such, is the same as in any other invention. A chemical compound which has never been known or used, or published, in the sense required by the law of patents, for the accomplishment of a specific purpose is, I think, patentable, providing one may assume some degree of skill and ingenuity, or, perhaps I should say in a case of this kind, the exercise of intelligent research and experiment directed to a particular purpose or end. When two or more compounds are mixed or chemically combined, the product or method of producing the product, may or may not be patentable, because much, as in all other cases, depends upon the result obtained, and the properties of the product. "There is no prevision in chemistry" is an observation attributed to Sir James Dewar. One cannot always predicate the results that may be obtained from chemical substances in combination, as in a combination of mechanical devices. The trained mechanical man can readily calculate the effect or result of the combination of certain mechanical devices, but that is not so in chemistry which is an experimental science, predictions are liable to failure without experiment, and results are obtained only by concentrated experiment and research. Where chemical action is in-

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volved analogy does not carry one far. The experimental chemist is perhaps therefore entitled to more favourable consideration than one working in the mechanical field, in the matter of invention. The discovery of a new principle, natural law, or a new chemical principle, cannot be patented unless it can be put to some new and useful use in the form of a described process, composition of matter, or apparatus. When that is done, there is then a patentable invention even though it embraces a discovery. The herbicidal preparation disclosed by Chipman, now known under the trade name of Altacide, is undoubtedly, I think, a new and useful herbicide compound. It is superior as a weed killer to arsenical compounds in the respect that it is non-poisonous to animals. It is superior to the sodium chlorate preparation because the fire hazard has been practically eliminated in Chipman. It is undoubtedly an effective weed killer. All these favourable features of Chipman were not, so far as I recall, seriously controverted. Chipman discloses a process or method of obtaining in commercial quantities, calcium chlorate, something previously known only to the laboratory. Then, Chipman has been well received by the interested public and has gone into very substantial use in Canada and the United States, production and sales expanding with the years. It meets other requirements, availability of raw materials, cheapness, capacity for concentration thus affecting favourably freight charges, all desirable in producing and marketing any herbicide. There can be no doubt, I think, but that Chipman accomplishes new and useful results, more than was inferable from the prior art. But more than novelty and bare utility is required to constitute invention. Some evidence of ingenuity and skill is required by the Courts in order to constitute invention. There is, I think, in Chipman sufficient evidence of skill, research and experiment to hold that there is subject matter for a patent or patents as claimed here. To say that sodium chlorate as a weed destroyer was known, and that calcium chloride was known as an absorbent of moisture or as a hygroscopic agent, and therefore there was no invention in combining them together to overcome a specific difficulty, to avoid disadvantages in sodium chlorate as a herbicide, is not of substance. That contention is not supported by authority and it has been held time and

again, that if a new combination of well known things bring about new and useful results, there is invention. The combination of substances disclosed by Chipman had not been done before for the purpose of a herbicide, and new results were produced by that combination. New properties and results may be produced by a change in the proportions of ingredients and that, I think, is true of this case. Chipman seems to have accomplished something more than might reasonably be expected of the hypothetical person skilled in the art, and all, I think, required of him is that he do more than is to be inferred from prior publications or known usages in that particular field, and this I think Chipman has done. Unless there has been anticipation, which I shall next deal with, I hold there is invention.

I do not think there has been anticipation of Chipman. A prior published document must be read as it would be read without the knowledge of subsequent researches, especially those of the patentee; the prior patents relied upon to establish anticipation must disclose as much as the subsequent patent. Three prior patents have been cited as an anticipation of Chipman, but I do not think that any person to whom they are addressed could without experiment and research, equivalent to invention, find therein Chipman's method or process for producing his herbicidal product. The patent to Teppet does not seem at all relevant. The herbicide there described is essentially sodium chlorate in solution in water, and while it has been shown to be effective as a weed killer, yet it disclosed serious disadvantages which I have already mentioned. It is altogether a different herbicidal preparation from Chipman. The French patent to Truffant is next to be considered. This patent may describe a useful herbicidal product but it does not seem to me to anticipate anything that Chipman describes or claims in any of his patents in question here. Then there is the patent to Pradourat, and applying the same test, one cannot, I think, read Chipman out of the very general specification of this patent. The invention claimed in this patent is for the use of all chemicals or products liberating under the action of moisture, a heavy chlorous gas, destructive of weeds. The patent does not point out how the ingredients named are to be compounded. Whatever the specification, if followed, might or might not

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bring about in the hands of a skilled chemist, it seems to me that any such person attempting to understand it, practise it, or produce a herbicide from its directions, would require to do so much research and experimental work that it would not be just or proper to hold that it is a published document in terms anticipating Chipman. Concerning all these prior patents, I think it cannot be said, that any of the patentees had in mind just what Chipman has done; Chipman had a very definite thing in mind, which by experiment he demonstrated to be practical, he plainly describes the various steps to be taken, the functioning relations of each ingredient in his herbicidal preparation, and no point is made against Chipman for insufficiency or inaccuracy of description. Whatever be the merit of the herbicides described in these patents, not one of them is Chipman, and the result, the product or products procurable by Chipman's process or method is not, in my opinion, described in or to be inferred from the cited prior patents. I therefore think there has been no anticipation by prior publication, and the defence of prior user has not been seriously advanced if at all.

The next point and frequently the most difficult one for decision in a patent case, is that of infringement. It is admitted that the defendant has manufactured and sold a weed killer consisting of a mixture of 250 pounds of sodium chlorate, 120 pounds of calcium chloride and 20 pounds of magnesium chloride, with 100 to 120 gallons of water, and it is claimed by the plaintiff that magnesium chloride is the equivalent of calcium chloride for the purpose of this mixture, that is to say, it is a hygroscopic agent, just as calcium chloride. The proportions are, it is admitted, sodium chlorate sixty-five per cent, and calcium chloride twenty-five per cent, and magnesium chloride ten per cent. The proportions of the chemical ingredients and water in the plaintiff's mixture are substantially the same as the defendant's, if magnesium chloride, is to be treated substantially as an equivalent of calcium chloride. Professor Parker testified that, assuming the substances to be pure, that 250 pounds of sodium chlorate would theoretically require 130 pounds of calcium chloride to complete the reaction, and he stated that the inclusion of magnesium chloride was but the substitution of the chemical equivalent

of calcium chloride; and that in effect the defendant's mixture would contain 140 pounds of calcium chloride, which would be an excess of the amount of calcium chloride required to make the conversion exact, but that slight excess would not prevent the complete conversion of all the sodium chlorate into calcium chlorate, and there would be an excess of calcium chloride or magnesium chlorate, and this statement I accept as being correct. Professor Parker also stated that calcium and magnesium chloride are closely related, chemically similar, similar in chemical behaviour, and in the classification of elements calcium and magnesium are in the same family and are often referred to as alkaline metals. They both absorb moisture but generally magnesium chloride not so readily as calcium chloride. If the presence of magnesium chloride is the equivalent of calcium chloride when used for the purpose in which we are here interested, and there being invention in Chipman, infringement would follow. Mr. Job, one of the defendant's expert witnesses stated that magnesium chloride was a hygroscopic agent. Again he said that it was well known that calcium chloride and magnesium chloride were used to remove moisture from the air. Professor Parker I understood to say, that you might replace calcium chloride by magnesium chloride provided the correct equivalent proportions were maintained, and get the same result, or without making any considerable alteration in the result. With the two leading expert witnesses of the parties so much in agreement upon the point that magnesium chloride is hygroscopic, and accepting as I do the statement of Professor Parker, that with the addition of a small amount of magnesium chloride the same result is obtained, I have no difficulty in reaching the conclusion that the defendant has infringed the plaintiff's patent and does not escape infringement by the addition of magnesium chloride in its herbicidal mixture. In the matter of equivalency in chemistry one must of course have in mind the problem involved, or the purpose to be attained, because obviously one chemical, or a combination of chemicals, might in certain circumstances produce one result, but under other conditions, or for other purposes, would fail to produce the desired result. There may be a difference of opinion among chemists as to the classification of calcium and magnesium, but I am not disposed

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to think that any such difference is of prime importance in the controversy here. I am satisfied that the defendant's herbicidal mixture is substantially the same as Chipman, and is practically a mixture of the same chemical constituents, intended to effect the same result in the same way. There is no suggestion on the part of the defendant that by any experimental work of its own or on its behalf, it has produced a new herbicidal preparation, or that by the addition of a small amount of magnesium chloride it has produced any new change or result, or brought to light any new property in the compound, or increased its utility or herbicidal effect.

If there is invention in Chipman, and I have already stated that in my opinion there is, then, I think this is a case where infringement has been established, and the plaintiff is entitled to the relief claimed, with the usual result as to costs.

Judgment accordingly.