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March 31
July 25.

BETWEEN:

CANADIAN GYPSUM COMPANY, LIMITED ..... } PLAINTIFF;

AND

GYPSUM, LIME & ALABASTINE, CANADA, LIMITED..... } DEFENDANT.

Patents—Subject matter—Ingenuity of invention—Novelty and usefulness.

Held that utility is not an infallible test of originality, and that to support a patent there must be something more than a new and useful manufacture, the invention must have required for its evolution some amount of ingenuity to constitute subject matter, or invention.

2. That the design of the patent law is to reward those who make some substantial discovery or invention adding to our knowledge and making a step in advance in the useful arts.

3. That the inventive ingenuity necessary to support a valid patent may be found in the underlying idea, or in the practical application of that idea or in both. The idea or conception may be meritorious, but once suggested its application is very simple, or the idea may be obvious but ingnuity is required to put it into practice, or the idea itself may have merit and the method of carrying it into practice also may require inventive ingenuity.

ACTION by the plaintiff herein to have it declared that the defendant is infringing their patent for invention relating to improvements in "Insulation" and insulating materials.

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

O. M. Biggar, K.C., for plaintiff.
W. D. Herridge, K.C., for defendant.

The points of law raised and the facts are stated in the Reasons for Judgment.

THE PRESIDENT, now (July 25, 1931) delivered the following judgment.

This in an action for infringement of a patent granted to the United States Gypsum Company, assignee of Bruno E. Bolduf, the alleged inventor of the patent, and was issued on the 9th day of July, 1929, the date of application being October 10, 1928. The patent was subsequently assigned to the plaintiff company, a subsidiary of the United States Gypsum Company. The invention is said to relate to improvements in "Insulation", and the insulating material said to be infringed is produced and sold by the plaintiff under the trade name of Thermofill.

The United States Gypsum Company, its subsidiaries in the United States and Canada, have long been engaged in the manufacture of gypsum products in various forms, chiefly for building requirements. About 1905 the United States Gypsum Company, and other similar concerns, began the manufacture of the well known gypsum board, or plaster board, as it is sometimes called. Gypsum board gradually came to be made by the trade in standard sizes, with covers of paper on its exterior surfaces, that is to say, the board consisted of a gypsum core about three-eighths of an inch thick, with paper varying in quality and thickness on each side, and in this form it was attached to walls. At an earlier stage layers of paper were also placed within the core of the gypsum board as well as on the outer surfaces of the board. Presently the plaintiff manufactures a gypsum board known as Rocklath to be used as a plaster base, and also another known as Sheetrock for the finished wall. The process of manufacture of gypsum board may be briefly stated. There is spread upon a plate a sheet of paper of predetermined size, and upon this there is poured calcined gypsum slurry, or plaster of paris, which is in a plastic state, and spread over the top of that by mechanical means is another sheet of paper.

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These two layers of paper, with the calcined gypsum slurry between, are then pressed between rolls which determines its thickness and edge characteristics. It is then carried on belts or conveyers such a distance as will give the gypsum core sufficient time to set; it is then dried in a kiln or other drying medium. This practically completes the process of manufacture. In the course of the fabrication of gypsum board, a certain proportion proves defective and therefore unsaleable. The plaintiff company alleges that in its experience, and that of its associated companies, eight to ten per cent of the total output of this board proved to be defective for one reason or other. It is claimed that efforts were made to utilize the waste board by using it over again in the manufacture of other board, or as an accellerator to hasten the set of the gypsum, but it is said without satisfactory results. Defective board was thrown away in piles which gradually grew to substantial sizes, and in one instance, a plant of the United States Gypsum Company was obliged to convey the contents of a dump pile out to sea some twelve miles, and there discharge the same.

In May, 1925, Bolduf, the alleged inventor, entered the employ of the United States Gypsum Company as a service engineer. At that time the United States Gypsum Company was manufacturing another insulating material called Pyrocell, which was made of finely ground calcined gypsum, with certain chemicals added thereto in order to make it expand so that its weight per cubic foot might be reduced below the weight of ordinary solid gypsum; the material was then mixed with water, and being then in a plastic state was poured into the wall spaces. It was claimed that there were some unsatisfactory features about Pyrocell, but I understand, it is still being manufactured and sold by the plaintiff company. While Bolduf was doing some experimental work with Pyrocell at one of his employer's plants in the state of Illinois, his eyes fell upon a pile of waste gypsum board, and he suggested to a coworker that this waste board might be used in ground form as an insulating material. That was, it is alleged the genesis of the insulating material now known as Thermofill. Bolduf thereupon ground some of this waste board in a small accelerator mill and he states that it came out in a fluffy condition, and that it would stand up like any

insulating material. Eventually, suitable machinery for grinding the waste gypsum board was found,—no invention is claimed for that—and in 1927 all the plants of the United States Gypsum Company in the United States were equipped for grinding this waste board into what is called a bulk fill insulator, the same being poured in a dry state into the walls and floor spaces of buildings. Thus, the plaintiff stressed in its evidence, was solved the problem of the dumps of waste gypsum board.

Turning now to the specification of the patent. The invention is said to relate to a new, fluffy, dry, powdered insulating agent having fire resistive, sound absorbing, and other novel features not found in ordinary powdered insulating agent. The stated objects of the invention are:—

to provide a new insulating material which is easily handled as a dry filling agent; to utilize materials formerly regarded as waste products in producing a new commercial article; to provide an insulating material which is variable in weight depending upon the ingredients used, which is fluffy and light in appearance, but which will not be packed down or compressed by the weight of a column of such material; to provide an elastic material of this kind which will not slump down or sift away, but remains piled vertically; to utilize such ingredients that the material although light and fluffy in appearance can be spread out in a thin layer and sprinkled lightly with water or other liquid, thereby forming a light crust on top of the material to prevent it from being blown about; to provide a light, fluffy, elastic insulating material of this kind which can be made, used and applied as hereinafter set forth; and in general to provide a new material of this kind as hereinafter set forth.

The specification then proceeds:—

Gypsum in its various forms, hydrous, partially hydrous, or anhydrite, has long been known and used as a fire resistive insulating agent, especially as contrasted with the low insulating properties of Portland cement, ordinary masonry, or similar fire resisting masonry materials. In ordinary materials the insulating properties and sound absorbing qualities cannot be built up to a high standard without materially sacrificing the fire resistive properties, but on account of the high fire resistance of gypsum, it is possible materially to build up its insulating properties by incorporating with it some fibrous material which will retain its fibrous structure through extremely fine grinding with gypsum. Thus by making a mixture of coarse gypsum and this fibrous agent, and comminuting the mixture to extreme fineness with suitable machinery, the resulting powder becomes fibrous and fluffy, taking on the joint characteristics of the union. Hydrous gypsum may be extended into organic fibrous material by such grinding, with the result that up to 20 or 25% of fibrous organic material can be incorporated with the gypsum during this fine comminution and the resultant powder still will not support combustion.

This new insulating agent is a mixture of calcium sulphate, which is more or less hydrated, ground paper pulp, paper stock, or other fibres that can be ground and intimately mixed with gypsum during grinding to develop light weights per cubic foot. If properly made, this powdered

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insulating agent is of fine fibrous material, very elastic in structure so that it is not easily compressed by weight. Thus it will remain lightly packed when placed between walls or other structures which it is desired to insulate and does not pack down or together with age, or settle, thereby lowering its insulation efficiency. In addition, this fibrous, fluffy powder does not run, fall, or break off easily from a mass of the material, but remains piled vertically with scarcely any slumping or sifting, all due to its elastic and fibrous nature.

The specification then states that the material when placed in layers between joists over the plaster on top of a plastered ceiling, for example, in a floorless attic, may be slightly sprinkled with water, when a thin crust will form on the surface of the material upon the water drying, which prevents the material being blown about if exposed to blasts of air.

Describing the method of manufacture the specification states:—

In one method of manufacture of this new insulating agent, calcined gypsum which has been rehydrated with water is used, in the form of gypsum block, tiles, gypsum boards, and the factory wastes resulting from these productions. If these products are not available, ground gypsum rock can be used with some addition of calcined gypsum, mixed together until hardened mass results. These products from whatever source prepared, are dried, then beaten up well in a hammer mill or a similar type of disintegrator. When this material is beaten up, the required amount of shredded paper stock may then be added so that the mixture can be further shredded, or the paper may be shredded separately and mixed in later. After the paper and gypsum have been shredded and mixed together this coarser granulated product is reground by special grinding mills like feed mills, which give it a fine cutting action as well as a fine powdering action during this final grinding operation. The resultant powder is quite homogeneous, very elastic, and a fine fibrous product in which the different constituents are perfectly blended. Because of this homogeneous structure and high content of gypsum, the product is very fire resistive and will not support combustion.

In a product intended as a very efficient insulator, weighing approximately twelve pounds per cubic foot when lightly packed in place, paper pulp or paper-like chip paper is employed as the fibrous agent in the ratio of one part of fibre to four parts of dried rehydrated calcined gypsum, and this gives a product composed of 80% gypsum and 20% fibrous material; for a product weighing twenty-four pounds per cubic foot when lightly packed in place, one part of fibrous material is used to seven parts of gypsum.

Plaster wallboard may be used alone or it may be combined with a small percentage of finely shredded paper. To increase the weight or content of gypsum, ground gypsum tile alone can be used. In this way any set mixture of fibrous agent and gypsum can be obtained, and are desirable because many types of insulation require different proportions of gypsum and fibres, but in the main it is desirable to limit the fibrous material to 25% or under because of the advantage of having high fire-resistance in the resulting product.

It will suffice here to refer to claims numbered 4, 5, 6, 8, and 9, and which are as follows:—

4. A composition of matter comprising comminuted wallboards having paper covers and hydrated gypsum cores, so that the composition is a light, fluffy mixture of partially hydrated gypsum and fibres.

5. The method of insulating a structure for thermal and sound protection which comprises comminuting dry, gypsum plaster boards to form a light, fluffy mixture of partially hydrated gypsum and paper fibres, pouring said mixture in a dry state into the structure, and applying water to the surface only of said mixture thus forming a crust on said surface by the rehydration of the gypsum so that said crust prevents the remaining dry mixture from being blown away.

6. The method of preparing a thermal insulating product which comprised comminuting a mixture of gypsum and paper, the proportion of ingredients being so proportioned that a light fluffy composition results in which the percentage of fibres from the paper is less than thirty per cent of the mass.

8. The method of recovering waste plaster board from the gypsum industry which comprises drying the waste boards and comminuting same to form a light, fluffy, insulating mixture having a gypsum to fibre content substantially equal to the gypsum to paper content in the original boards.

9. A dry, fluffy composition containing a mixture of powdered gypsum and not to exceed 25% per cent by weight of paper fibres, said composition being adapted to be poured in a dry state into structures to be insulated.

The specification, it seems to me, describes an insulating material composed preferably of calcined gypsum, and shredded paper stock or paper pulp, or any other fibrous organic material that can be ground; they are then mixed together in the proportions appropriate for the purpose for which the insulating material is required, and according to the weight required. These materials are then ground together until the different constituents are perfectly blended. Waste gypsum board may be used alone because ordinarily it is composed of calcined gypsum and paper. If the board happens to be deficient in either of these ingredients, for the purposes of an insulating material, the deficiency may be supplied during the process of mixing or grinding.

The insulating material made by the defendant, and known to the trade as Dry Insulex, is composed of ground calcined gypsum and ground wood fibre, but the defendant company has never used waste gypsum board, nor finding it profitable to do so, it is claimed. Thermofill and Dry Insulex are practically the same thing and are applied in buildings for insulating purposes, as a dry bulk fill.

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An insulator is any substance which delays the flow of heat. The defendant's witness, Thompson, stated that as a dam is required to prevent the flow of water from a high level to a low level, so insulation is a barrier to prevent the flow of heat from a high temperature to a low temperature. Essentially this is insulation. In fact, any material that prevents or impedes the flow of heat is acting as an insulator. The theory and principle of heat insulation has been long known and practised in some form or other. The value of porosity, cellular content, and lightness of weight, in insulating material, and the method of obtaining these characteristics has long been known. Materials such as shavings, cinders, sawdust, wood fibre, wood grain plaster, hollow blocks, mineral wool, infusorial earth, eel-grass, crushed cement, ground limestone, plaster, crushed or powdered gypsum, ashes, granulated cork, straw, asbestos fibre, rock wool, paper, diatomaceous earth, ground corn cobs and many other substances, usually waste products, have long been used as insulating materials. In the International Critical Tables will be found a long list, two score or more, of the thermal insulating materials with their several insulating values. Various materials have also been used in combination such as mineral wool and cork, asbestos and cement, shavings and lime, mud and shavings, straw and lime, and cork and paper. Then we have insulating material in the form of board, such as gypsum or plaster board, sold under various trade names. Gypsum board has always been advertised all over this continent, as possessing heat insulating properties; this board is also claimed to possess fire resisting and sound deadening properties. Another insulating material known as Insulex was introduced upon the Canadian market in 1925, by the Universal Gypsum Company, an American concern. This insulator was sold in bulk form, and was used between studding and over ceilings in buildings. Insulex is ground calcined gypsum to which is added chemicals to make it expand, to increase its cellular content and thus reduce its weight, just as in Pyrocell; in applying it water is added until it reaches a plastic state when it is poured into the wall spaces of a building. This product is generally called Wet Insulex, because it is in that state when applied. The Witness Gauvin, a building contractor in rather a large way, stated that he used Insulex in dry form, that is, he poured

it into the walls and over the ceilings in buildings, in dry form. The witness Govan stated that he used wet poured Insulex in 1923, 1924, and 1925, and that he frequently combined with it shredded paper or wood fibre.

The question for determination here is one of fact, and that is whether or not there is invention. It appears to me that the plaintiff's patent cannot be supported for want of subject matter. Thermofill has utility but, I think, only a comparative utility, a possible increase in utility over some other known insulating material. But utility is not an infallible test of originality. To support a valid patent there must be something more than a new and useful manufacture, it must have involved somehow the application of the inventive mind; the invention must have required for its evolution some amount of ingenuity to constitute subject matter, or in other words invention. Fortunately the law does not authorize the granting of a monopoly for everything that is new and useful. The design of the patent law is to reward those who make some substantial discovery or invention which adds to our knowledge and makes a step in advance in the useful arts. If there is no novelty there can of course be no inventive ingenuity, but if there is novelty in the sense required in the law of patents, it must be the product of original thought or inventive skill. As stated in the cases, the inventive ingenuity necessary to support a valid patent may be found in the underlying idea, or in the practical application of that idea, or in both. It may happen that the idea or conception is a meritorious one, but that once suggested, its application is very simple. Again, it may be that the idea is an obvious one, but that ingenuity is required to put it into practise. Or, again, the idea itself may have merit and the method of carrying it into practice also require inventive ingenuity. In all these respects, I think, the alleged invention in this case fails. I cannot see how there can be invention in the idea of combining ground calcined gypsum with shredded paper stock, and blending them together, and after all that is the essential feature of the alleged invention. The state of knowledge concerning the principle of heat, cold, or sound insulation, the wide range of known materials possessing heat insulating properties or fire resisting properties, their respective insulating values singly or in combination, and the many

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known methods of production and application of these insulating materials, was too extensive in my judgment to hold that what the plaintiff's patentee disclosed in his specification was invention. The insulating properties of the different elements entering into the Thermofill was known; it must have been known that the union of calcined gypsum with shredded paper stock or other fibrous material, however united or applied, would make an insulating material; the crushing, grinding and mixing did not involve a new method or means requiring the exercise of the inventive ingenuity. No serious difficulty was experienced by Bolduf in grinding gypsum board from the very start. Any skilled mechanic could have produced a machine that would grind the board whenever required to do so. The dry bulk fill insulation was known and practised. The introduction of shredded paper, or its equivalent, into ground calcined gypsum was known and had been practised, for instance, by Govan. It seems to me that all the patent discloses, lay in the track of old processes, methods, and means of insulation, and it is to be assumed that the patentee had access to everything that was commonly known. I do not think that the specification discloses sufficient invention to justify a monopoly.

The plaintiff therefore fails, and the costs will follow the event.

Judgment accordingly.