

1933
 Jan. 17.
 Apr. 3.

BETWEEN:

VICTOR MAUCK..... PLAINTIFF;

AND

DOMINION CHAIN COMPANY, LIM-
 ITED } DEFENDANT.

Patents—Infringement—Invention

The invention claimed is for a radiator for heating purposes. The Court found that, at best, if plaintiff had added to the prior art it was merely the product of that mechanical skill which normally results from habitual and intelligent practice, and was not invention.

Held, that it is not enough that a thing should be new in the sense that in the shape or form in which it is produced it shall not have been known before, and that it shall be useful, but it must, under the Patent Act, amount to an invention or discovery.

2. A change of form within the domain of mere construction is not invention.

(1) (1890) 63 L.T.R. 324.

(2) (1893) 63 L.T.R. 236.

(3) (1892) P., 363.

ACTION by the plaintiff claiming an injunction restraining defendant from making, using and vending apparatus made in infringement of plaintiff's patent, and for damages and costs.

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

A. J. Thompson, K.C., for plaintiff.

R. S. Smart, K.C., and *O. M. Biggar, K.C.*, for defendant.

The facts are stated in the reasons for judgment.

THE PRESIDENT, now (April 3, 1933), delivered the following judgment:

This is an action for infringement of patent No. 297,419 granted to the plaintiff, Victor Mauck, on February 11, 1930, upon an application filed on April 23, 1928. The title or name of the alleged invention is, in obedience to the requirements of the Patent Act, stated to be an "Apparatus for Exchange of Heat", which, I think, is accurately descriptive of the patented apparatus. In the description of the apparatus in the specification, the patentee refers to it as a "radiator", and probably that is the more popular though perhaps less exact designation of an apparatus or device of that kind.

The description of the invention in the specification, regardless of the numerals which have reference to the drawings, or the drawings themselves, will convey readily the essentials of the patented apparatus, and that is for material purposes as follows:—

My invention is adapted for inclusion in a house heating system wherein a gas consuming heater unit is connected by pipes with a distant radiating unit or units for heating respective rooms or any inclosure in which such a radiator may be located; both heating and radiating units being preferably of what is known as "honeycomb" or similar cellular construction, and said system including means for maintaining a forced circulation of both water within the heating system and the air heated by the radiator; such circulations being respectively effected by a pump and fans; both preferably operated by electric motors, with thermostatically operative controlling means.

* * * * *

In said figures; the radiator cellular structure 1 includes a congeries of primarily cylindrical flue tubes 2, preferably made of thin sheet copper, and having their opposite ends 3 expanded to hexagonal form so as to fit tightly together with their intermediate cylindrical portions in proper spaced relation to afford passageways 5 between them for hot water or steam. Said flue tubes 2 are assembled within the cylindrical circumfer-

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ential casing 6 conveniently with circular series of six filling pieces 8 at each of the axially opposite ends thereof. Said radiator structure is provided with opposite side conduits 9 and 10. Said conduits are respectively provided with couplings 11, adapted for attachable connection with the respective pipes 12 and 13 through which the heating fluid is circulated in the passageways 5, in connection with the heater of the system above contemplated.

Said radiator structure is provided with the fan 14 and the motor 15; the latter being preferably mounted within the circular inner casing 16 of the radiator structure in concentric relation with said casing 6, and within a soft rubber band 17 which minimizes the transmission of vibrations from the fan and the motor. Said casing 6 is, preferably detachably, rigidly connected with the face plate 18 which is, preferably detachably, rigidly connected with the outer casing 19 which is adapted to fit in a recess 20 of a ceiling 21, but may be set in any wall substantially flush therewith.

The zone 23 of said face plate 18 is perforated or otherwise made foraminous so as to admit air to the inner side of the radiator structure through the space between the latter and said outer casing 19; which air is driven outwardly by the rotation of said fan 14 through the tubes 2, wherein the air absorbs heat from the hot water or other heating fluid in the passageways 5.

The construction and arrangement of the radiator and its appurtenances above described are such that they may be readily installed; the pipes 12 and 13 being conveniently formed of soft copper tubing and the couplings 11 being conveniently of what is known as the "pinch" type; the joints between them and said pipes being sealed by soft metal bands encircling the pipes, which are pinched between axially opposite complementary conical seats respectively in said couplings and the conduits with which they are in screw threaded engagement.

Although I referred to the apparatus aforesaid as included in a water heating system; it is to be understood that the heated water may be discharged from the heater and presented at the radiators in the form of steam; with the advantage that a greater efficiency per unit of apparatus is thereby attained, as compared with apparatus in which the water is continually maintained below its boiling point.

The plaintiff alleges infringement of claim 2, which is as follows:

In a heating system, a radiator of cellular structure, formed of thin sheet metal walls, forming passageways for air, of a casing exterior to said radiator, in spaced relation therewith; and means arranged to effect the forced circulation of air between said casing and radiator in one direction, and through the radiator in the opposite direction.

Simply stated, the plaintiff's heat exchange apparatus or radiator, is composed of a plurality of small cylindrical tubes, preferably made of thin sheet metal, through which air is to circulate, and so constructed and spaced as to form independent conduits or passageways between the walls of the tubes for the circulation of a heating medium, hot water or steam as the case may be, which flows from a heating unit to the radiating unit, it being intended that

the heating medium shall heat the air to be circulated through the tubes. This type of radiator is known as of "cellular" or "honeycomb" construction, and to this I shall refer later. The hot water, the heating medium, enters the spaces between what the patentee calls the flue tubes in the radiator, through a pipe at one side of the radiator and flows out through another pipe on the opposite side; by means of a fan, the air is drawn into the back of the radiator between a casing exterior to the radiator and the radiator itself, and from the back of the radiator the air is blown or driven outwardly through the flue tubes into the space or inclosure to be heated; in other words, the air introduced between the radiator and the outer casing is forced to circulate through the tubes, and while this is taking place the heating medium gives up some of its heat to the air passing through the tubes of the radiator.

The plaintiff has made but four installations of his heat exchange apparatus in buildings, in the United States, and none elsewhere. These installations were, I think, largely experimental. He never manufactured or commenced to manufacture, any radiators for motor cars, either in Canada or the United States but he granted an exclusive licence to Tropic-Aire Inc., an American corporation, to manufacture his alleged invention in the United States, but to be confined to heaters for automotive vehicles of every description; however, no deduction is, I think, to be made from this fact either for or against the validity of the patent in suit.

The alleged infringing article is a radiator designed to heat the interior of an automobile. There was put in evidence two automobile radiators representative of those made and sold by the defendant; one of these radiators is known as a front seat heater, and is usually installed underneath the instrument board and against or close to the front body of the car, and is without any complete outer casing, but it is claimed by the plaintiff that the body of the car functions as an outer casing to the back of this radiator and ensures the circulation of air around and through the radiator; the other heater is known as a back seat heater, and is larger and comprises really two radiators connected together by a pipe, with a fan and motor between the two radiators; there is an outer casing surrounding the

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sides and back of this radiator, but the air does not enter the radiator through an opening between the casing and the radiator. I might here state that one of the earliest methods of heating an automobile was accomplished by utilizing the hot exhaust gas from the engine to heat air which was discharged through a register fitted in the floor or elsewhere, in the passenger carrying part of the car. But this form of heating a car has, it was said, disadvantages in construction and arrangement by reason of the fact that the products of combustion of the gas driven engine are corrosive, and the wall of the exhaust pipe or outlet must be correspondingly heavy and durable, and the capacity of that outlet must be adequate to permit the engine to function freely. In this method of heating the practice is, as I understand it, to take the air directly from the atmosphere underneath the hood of the automobile through a pipe surrounding the exhaust pipe, the former being larger in diameter than the exhaust pipe through which the heated products of combustion are conducted from the engine; the incoming air surrounding the exhaust pipe is thus heated and by appropriate means is then conducted through an opening in the outer pipe into the motor vehicle. This method of heating an automobile is still in use I understand, and was in use at the time of the plaintiff's alleged invention. The other method, and probably now the most approved method, of heating an automobile is to heat the air by utilizing the water which is heated by the engine, but which water was primarily intended to cool the engine; the hot water is led from the jacket of the engine through the several tubes of a radiator which is positioned in the automobile, and thence back to the jacket of the engine, and the air, which is introduced and forced to circulate by means of a motor driven fan around the tubes wherein the hot water circulates, becomes heated and is then blown into the automobile; that generally describes the manner in which the defendant's radiators function. In addition to the numerous thin flat tubes in the defendant's radiators wherein circulates the heating medium there is transversely placed a series of thin continuous pieces or strips of corrugated or irregular shaped metal, in contact with and surrounding the tubes, for the purpose of increasing the heating surfaces which heat the circulating air eventually to be

blown into the car; these strips of metal are not enclosed conduits or spaces such as the flue tubes in the patent in suit and through which air circulates, they are simply thin pieces of metal employed primarily for the purpose of increasing the heating surfaces which heat the circulating air; in one sense the strips form transverse channels for the air but, as I understand it, not quite in the sense in which the flue tubes in the patent in question function. In what has been called the back seat heater, I should perhaps say, the air is drawn by means of a fan from the front and forced through and around the heating surfaces; the air may be drawn into the car through the centre of the radiator where the fan is located and out through the radiating surfaces into the car, or this may be reversed, and the air may be taken through and around the radiating surfaces in the first instance and then blown out through the centre where the fan is positioned, all depending upon the manner in which the fan is revolved.

The case is in some respects a peculiar one. Mauck first applied for a patent in the United States and his specification described a complete house heating system, that is to say, it included what the patentee calls a gas consuming heater unit, preferably to be in the cellar of the house or other building, and a radiating unit, connected by pipes in the customary way with the heater unit. The United States Patent Office directed a division of the application, one of which was to relate to the radiating unit and corresponding precisely to the patent here in suit, and the other division was to relate to the heater unit. The latter division of the application states that the object and effect of the invention was to provide a house heating system including a gas consuming heater unit, connected by pipes with a distant radiating unit or units, for heating respective rooms or any inclosure in which such a radiator may be located. As already stated the radiator unit was subsequently patented in Canada, and that is the patent here in suit, but it appears that the heater unit was not patented here. I find it difficult to believe that the plaintiff ever had in mind at the date of his alleged invention the use of the hot water in the jacket of an automobile engine as a heating medium to circulate in a heat exchange apparatus for the purpose of heating an automobile, and never having

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thought of it, he did not describe a heating medium available from that source, or how that method or system of heating an automobile was to be operated. However, while the patent states that the radiator is adapted for inclusion in a house heating system and was to be mounted on a ceiling or wall, and no other use or mode of operation is suggested or described, it is now claimed, that it is adapted for use in an automobile, the heating medium being the water heated in the jacket of the engine. It is quite true that the claim relied upon does not limit the use of the radiator described to a house or building and it is stated broadly enough to include its adaptation for heating an automobile. In the state of facts which I have mentioned it does seem strange to say that the patentee has invented something new and useful for a certain purpose unmentioned in the specifications, while its utility and success for the purpose mentioned in the specification is apparently doubtful. However, I prefer to dispose of the case as if the specification sufficiently described a radiator that might be used for heating the passenger body of a motor car.

Assuming then that the patent is to be construed as describing a radiator adapted for inclusion in a motor vehicle, or any other suitable place, and that its mode of operation for such a purpose is sufficiently described as required by the statute. The real matter for consideration then is whether there is invention in the plaintiff's radiator. It is not a complete heating system we are to consider, it is simply a radiator unit, or a heat exchange apparatus, wherein or through which a heating medium, and air, are intended to circulate with the object of producing warm air for heating the interior of a motor vehicle. I have not been convinced that there is invention in the radiator described in the patent. The principle involved in heat exchange devices is admittedly old, the so-called cellular structure of the radiator is admitted not to be new, the principle of forcing the circulation of the air by means of a motor-driven fan is not new or so claimed to be. The use of a casing or housing around a radiator is not new, although I am not sure this is so clearly admitted, but I think it is. The necessity of an outer casing of some sort, where a forced circulation of air is employed by means of a motor-driven fan, would appear to me quite obvious, at least in most

cases. The claim to invention is in the particular construction and arrangement of parts as described in the patent.

Plaintiff's counsel urged at the trial that when the inventor suggested hot water as a heating medium in his alleged invention, it disclosed and made possible the use of, in an automobile, a compact and light radiator constructed of a nest of small thin tubes, and spaces or conduits, through which air and hot water respectively would circulate, the air thus heated by the hot water being used to heat the automobile; and it is claimed that the use of such a radiator would not have been possible with the use of exhaust gas as a heating medium instead of the hot water. There does not appear to me to be any substance whatever in this contention. The use of the hot water in the jacket of an automobile engine as a heating medium, in an automobile heating radiator, was suggested in the prior art, and once the idea was suggested, I have no doubt competent workmen could readily devise numerous ways of putting it into operation. Besides, the idea of using hot water as a heating medium in a heat exchange apparatus was of course quite old.

Much stress was laid by the plaintiff upon the so-called honeycomb or cellular construction of the radiator, which simply means a multiplicity of tubes or passageways for the circulation of a heating medium, and the air to be heated, respectively. This type of radiator is used chiefly in motor cars and for engine cooling. The *Journal of the Society of Automotive Engineers*, of March, 1926, gives a definition of an Air Tube Cellular Core as follows: "An assemblage of air tubes nested in such a way as to form fluid passages between the tubes, the passages being sealed at the ends of the tubes. In this type the fluid may flow transversely as well as vertically around the tubes". It appears this definition had been submitted by a Division of the Society in June, 1923, but was not finally adopted till January, 1926. Shurtleff (U.S. 1923) describes his radiator as of cellular, tubular, or honeycomb structure, and the construction preferred is either in the form of thin tubes or sheets so assembled or fabricated as to provide a multitude of transverse air ducts, surrounded by passages through which the steam or heating fluid is circulated. It matters not, I think, what name is applied to radiators of this

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general construction. The question of invention or infringement cannot well be determined on the trade nomenclature applied to any article. The name under discussion would seem generally to imply a heat exchange apparatus wherein a multiplicity of light thin heat radiating surfaces are arranged in juxtaposition to air channels of one kind or another, so as to effect an exchange of heat. If any distinction is to be made between the patented apparatus, and the infringing ones, it is to be determined on a construction of the patent, or on the particular construction of each, and not on the name which may be arbitrarily given to them.

Turning now to a brief consideration of the state of the prior art. One construction of a radiator suggested in the patent to Moreau, 1911, for effecting a change of heat, is of the honeycomb type such as found in the front of automobiles, and which we know is composed of numerous small conduits wherein water circulates for the cooling of the engine, and which radiator is constructed of thin light material. Moreau in this construction of a radiator provides for the exchange of heat "by the juxtaposition of vertical tubes or by the assembling of bent plates, leaving between them the circulating passages for the water and the vertical ascension conduits for the air". Other forms of construction and arrangement are suggested. The specification states that a fan may be used to secure a forced, or energetic artificial circulation, obliging the air to traverse the heat exchanging surfaces. The specification also states that the radiating surfaces may be sheltered in a casing, which is provided with openings, both above and below, allowing free circulation of the air to be heated. The patent to Shurtleff, applied for in the United States in 1923, describes a heat exchange apparatus which closely resembles Mauck's apparatus. The patent states:—

The novel features herein mentioned are principally the result of the utilization of a highly efficient type of heating element or radiator, heretofore limited in its use to the field of automobile cooling systems, but readily adaptable to heating purposes as an element of the type of heating apparatus herein disclosed. The type of radiator contemplated is of the so-called cellular, tubular, or honeycomb structure, as they are variously termed, depending on the structure. This type of radiator, regardless of its name, is characterized chiefly by its extreme lightness in weight in proportion to the radiator area, copper being the most satisfactory material used, either in the form of thin tubes or sheets, so assembled or fabricated as to provide a multitude of transverse air ducts, surrounded

by passages through which the steam or heating fluid is circulated. While the particular type of radiator is not essential, the so-called cellular or honeycomb type affords a desirable structure, due principally to the small resistance offered to the passage of air therethrough and the extensive radiator area available.

Elsewhere he states that "the radiator consists of a cellular body of copper sheeting so fabricated as to provide a multitude of small transverse passages or flues extending therethrough and separated by thin double wall partitions forming passages for the steam". In general the described radiator unit embodies a housing or cabinet preferably fabricated of sheet metal, adapted to be secured against the outside wall of a room, having an air or inlet passage near its bottom, a radiator of the so-called cellular type in the upper portion of the cabinet, and in the top wall of the cabinet a discharge opening; within the cabinet is a compartment in which is mounted a suction fan which draws a predetermined volume of air into the cabinet to circulate through the radiator. The heat exchange apparatus described by Shurtleff is in principle practically the same as Mauck; there are of course structural variations and differences in the arrangement of the parts, but such differences are of detail and not of principle. Modine, applied for in the United States in 1923, had for its object the production of a compact and light weight radiator, composed of any number of pipes or tubes through which the heating medium circulated, and radially extending from and secured to the pipes or tubes are what are called "fins" for radiating the heat from the pipes or tubes, but the adjacent fins are spaced apart so as to provide air spaces between which the air may circulate and become heated by the heating surfaces of the pipes or tubes and the fins. Essentially this radiator is one of the honeycomb type, of any size, constructed of light material, with any number of pipes or tubes for carrying the heating medium, with radiating fins radially extending from the pipes or tubes so spaced as to provide air spaces through which the air may pass and become heated; a casing or shell, the patent states, may be so arranged about and enclosing the discharge end of the heating unit that the air is drawn to and through the unit, heated, and discharged through the outlet end; and to increase the heating capacity of the unit the patentee suggests the use of a circulator, such as a motor driven fan.

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It is true that the construction of the casing is different from Mauck but its purpose obviously is to give direction to the air to be passed into and through the heating unit or radiator.

The prior art discloses completely the idea of a small, light and compact heat exchange apparatus of the honeycomb type, it also discloses the idea of forced and controlled circulation of air into and through such a heat exchange apparatus, by means of a motor driven fan and the use of a casing or cabinet surrounding the device; and several methods of applying the idea are disclosed. As I have already remarked, some form of casing would seem to me a most obvious and necessary thing to employ where there was a forced circulation of air through the heat exchange apparatus. There being no invention in the idea, can it be said that there is invention in Mauck's method of applying the idea? I think not. Any new arrangement of the elements of a heat exchange apparatus of this nature, or any change in the form of construction of such elements, would rarely afford subject matter for a patent if they substantially functioned in the manner and for the purpose already disclosed in the art, and I do not think there is subject matter in this case. It is not enough that a thing should be new in the sense that in the shape or form in which it is produced it shall not have been known before, and that it shall be useful, but it must, under the Patent Act, amount to an invention or discovery. If Mauck has added to the prior art it is merely the product of that mechanical skill which normally results from habitual and intelligent practice, and is not invention; at most Mauck suggests a change in form within the domain of mere construction which is not invention. Anything that Mauck suggests was not, I think, so far outside the track of what had been done before as to call for the exercise of the inventive faculty, or to fairly entitle him to a monopoly. Further, when a combination differs only from a previous combination in that there is substituted an equivalent part in the place of some part found in the prior combination, and the substituted part is obviously the equivalent of the old part though somewhat different, and there is not any essential change in its working, it is clear, I think, there can be no subject matter. Upon this principle, it appears to me, the field of

invention was closed to such an apparatus as Mauck describes; every element in Mauck is but the equivalent of elements found in prior combinations intended to effect the same result. This is not a case where it is pretended that the invention consists in the discovery of the method of the application of a new principle. The most that is contended for on behalf of the plaintiff is a particular construction and arrangement of old parts which required invention. I do not think that the construction and arrangement here required invention. There being then, in my opinion, no invention in Mauck it follows that the action for infringement fails. The defendant will have its costs of the action.

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Judgment Accordingly.