

COMMISSIONER'S DECISION

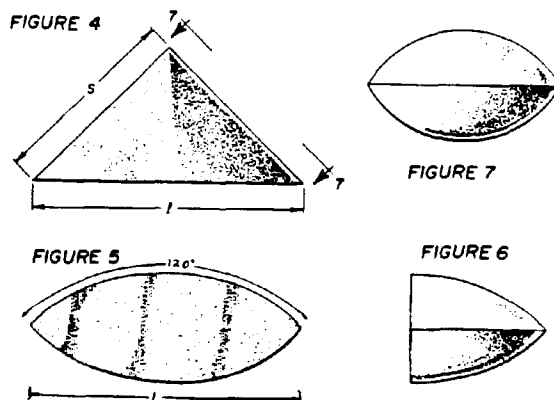
Sections 2, 27(3), Cited art:

Formulae developed by the inventor were found acceptable as a way of describing the dimensions of the briquet she devised. The claims did not define the features obtained by using the formulae in a manner to overcome the cited art. Rejection of the application withdrawn, and of the claims maintained.

This decision deals with Applicant's request for review by the Commissioner of Patents of the Final Action on application 440,304 (Class 44-38). The application was filed November 2, 1983, by the Clorox Company, and is entitled CONFIGURED FUEL BRIQUET AND METHOD. The inventor is Susan M. Peters. The Examiner in charge issued a Final Action on August 20, 1986, refusing to allow the claims and the application.

A Hearing was held on April 12, 1989 at which the Patent agent, Ms. L.S. Cassan, represented the Applicant.

The invention relates to the form of a charcoal briquet and a method of forming it in a particular configuration to obtain a burn phase after an ignition phase has provided visual ash over a predetermined percentage of the area of a briquet. Figures 4 to 7 reproduced below illustrate the configuration of a half pillow briquet.



For the half pillow briquet to obtain an ignition phase having 70% or more visual ash in 20 minutes, and a burn phase having a half life of 60 to 100 minutes, the briquet is formed taking the volume, density and area into account so that the burn phase consumes half the weight from initial ignition.

In the Final Action the Examiner rejected claims 1 to 13 and the application for lack of invention in view of the following patents:

United States

1,258,849 March 12, 1918 Zwoyer

United Kingdom

392,015 May 11, 1933

The Zwoyer patent relates to briquets made of compressed pulverulent material and formed to provide strength to prevent breakage in transport and provide maximum combustion effect, as shown in figures 3 to 5 reproduced below:

Fig. 3

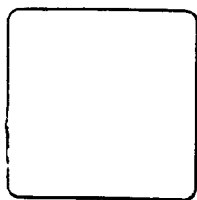


Fig. 4

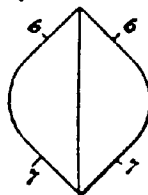
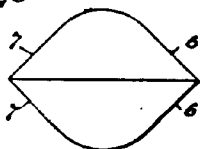


Fig. 5



The form is that of a frustum of two pyramids having their rectangular bases united, the frustum ends being rounded. The sides 6 and 7 are angled at  $90^\circ$  to one another to obtain the greatest strength, a lesser angle providing a fragile briquet, a greater angle leading to splitting of the briquet on leaving the mould.

The briquet of the British patent has two central curved side surfaces, designed to resist breakage, for example each less than one half of a cylinder as shown in figures I to IV shown below:

FIG I

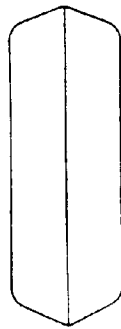


FIG II

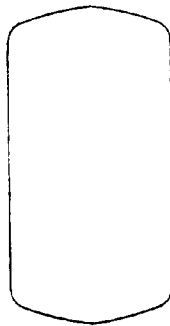


FIG III

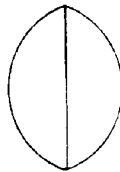
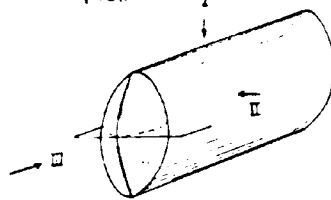


FIG IV



Each end is formed of two surfaces, the line of intersection of which extends transversely across the end of the briquet.

In her Final Action the Examiner rejected claims 1 to 13 and the application for lack of patentable subject-matter in view of Sections 2 and 28(3) of the Patent Act. In her view, the shape of the Applicant's briquet is not new and the method of constructing it is obtained by the process of calculation. She believes that a person skilled in the art could choose the material and dimensions, and by solving empirically derived formulae could produce the Applicant's "...briquet characteristics such as surface area, volume and density in relation to ignition time and half life". She said in part, in her Final Action, as follows:

The only novelty allegeable in the claims is based in a mental process by which criteria and dimensions of the briquets are determined. In a similar case, Lips' application 1959 R.P.C. pages 36 and 37, the judge said:

"It is not of course a circumstance fatal to the grant of a patent that a manufactured article cannot be physically distinguished from previously made similar articles. Indeed it may well be that an article made by say a less costly process of manufacture may be so devised as to simulate as closely as possible a known similar article made by a more costly process. It is common for a specification to include such a claim as "A...made by the process according to claims...". But in such a case the process must, to be allowable, particularise "physical" steps which constitute a manner of manufacture, and there is thus a test for determining whether or not the "article" claim is infringed. That test is-was an allegedly infringing article (physically indistinguishable) made by the process of manufacture referred to in the hypothetical prior claim? No such test is applicable in the present case. Once it is decided that the propeller forming the subject of the Applicant's claim 1 is not distinguished (only dimensional distinctions are here involved) from other propellers, it seems that the only novelty allegeable in the claim is the mental process by which the propeller blade thicknesses at different radial positions are determined. This clearly cannot be said to be manufacture within the meaning of the Act. In my opinion, having regard to my finding that the propeller claimed in claim 1 is distinguished only by the process of calculation by which its profile is determined, the claim cannot be regarded as for an invention within the meaning of the Act".

Moreover, applicant's attention is drawn to a more recent Commissioner's decision published in C.P.O.R. October 5, 1976 where the Commissioner stated that:

"The production of equations is a well known scientific step. ...It is well known to determine parameters of any device by experimentation with models by measuring the variables in question, and then ascertaining the desired physical relationship from such data. ...The method of determining parameters for a spray nozzle is simply the well known scientific method comprising experimentation with actual or model units, measurements of interesting variables, and finally determination of sought-after relationships from resulting data. ...While a new article may in the proper circumstances be defined by the process of making it, that process must particularize novel physical steps rather than "mental steps".

In Schlumberger Canada Ltd. v. Commissioner of Patents 56 C.P.R. (2d) 204, the applicant applied for a patent for a process wherein measurements obtained in a borehole of an oil-drilling operation were computed according to a specific mathematical formula. The formula provided charts, graphs and figures of improved quality to assist in locating hydrocarbon deposits. The court said:

"In order to determine whether the application discloses a patentable invention, it is first necessary to determine what, according to the application, has been discovered. What is new here is the discovery of the various calculations to be made and of the mathematical formulae to be used in making those calculations. If those calculations were not to be effected by computers but by men, the subject-matter of the application would clearly be mathematical formulae and a series of purely mental operations; as such, in my view, it would not be patentable. A mathematical formula must be assimilated to... a "mere scientific principle or abstract theorem" for which s-s.28(3) of the Act prescribes that "no patent shall issue".

Applicant argued on page 4 of his letter dated July 11, 1985 (in part):

Under Canadian law, mental steps or processes are only objectionable if the mental steps themselves are claimed. However, if mental steps are followed to arrive at a particularly defined composition or other article of manufacture, there is no objection to be made: the mental steps are not then claimed but only the particular commercial embodiment resulting from them.

The examiner disagrees with this view of the Patent Law. Mental steps must not just be followed by an article of manufacture but rather must be integrated into an industrial application to be patentable subject-matter.

Thus in the Schlumberger case the discovery of hydrocarbon deposits as a result of the new formulae and calculations did not make it a patentable invention. Similarly in Lips' application the calculations of the ship's screw propeller followed by a propeller of new dimensions is not an invention within the meaning of the Act.

In the spray nozzle there was a lack of the use of means to produce a result or no novel physical steps to integrate the process with the nozzle.

The Applicant did not agree with the Examiner and responded in part, as follows:

BRIQUET CLAIMS (Claims 1 to 5, 10 to 13):

(1) Non-Statutory Subject Matter (Sections 2, 28(3))

...The discovery of the applicant is not a formula by which the geometry of a briquet may be determined as alleged by the Examiner; rather, it (through the inventor -- its former employee) has developed, through experimentation, a new particularly defined charcoal briquet providing advantages over the prior art. That is, the "what" in this case which has been discovered by the inventor is the structurally (i.e., physically) defined briquet claimed by the applicant -- not a mathematical relationship between the various parameters of the briquet. As such, the claims are not for a mere scientific principle or abstract theorem falling under Section 28(3) of the Patent Act and clearly fall within the scope of Section 2 of the Act which includes items of manufacture.

The Examiner has referred... to the English decision of Lips' Application (1959) R.P.C. 35 and the Commissioner's Decision reported at C.P.O.R. 5 October, 1976... both... pertain to the issue of novelty and provide no holdings in respect of the issue of statutory subject matter....

Likewise, the Commissioner's Decision reported at C.P.O.R. 5 October, 1976 upheld an Examiner's refusal of a claim for a spray nozzle produced according to a specific set of equations not because it was found to lack proper subject matter but because it was not novel over the prior art....

A case... similar to that under consideration here is the Commissioner's Decision reported at C.P.O.R. 13 June, 1978. The claim in that case was for a nozzle device structurally defined in terms of two equations. The Commissioner held that the claim pertained to proper subject matter falling within the scope of Section 2 of the Patent Act stating the following at page xxii of the report:

"What we are really concerned with is whether or not the novelty lies solely in the performance of certain judgmental steps.... In this instance, the simplest way to describe the contours is by formulae, and we can see no valid reason to object.... the formula is but another way of describing the dimensions of a structure, and its physical form. New machines and apparatuses have always been patentable if they involve inventive ingenuity, are useful and are clearly defined in the claim."

Referring to claim 2 of this application, it is for a charcoal briquet having certain physical parameters as defined in the claim. Like the nozzle device... at C.P.O.R. 13 June, 1978, the briquet claimed is structurally defined, in part, by an equation.... this equation is simply a useful means of describing the structure of the briquet -- just as the equations considered

in the said Commissioner's Decision were used to describe the structure of the nozzle device. The same is true of claims 3-5 and 11-12 each of which are defined in terms of an equation relating to physical parameters or, more narrowly, specific dimensions and shape of the briquet.... the Commissioner should reverse the Examiner's objection to these claims on the ground of non-statutory subject matter. (The Commissioner may prefer that these claims be amended so as to define the various symbols recited in the claims (e.g., "v", "d" and "A" appearing in claim 1). The applicant is agreeable to submitting such amendments if the Commissioner wishes....

... claims 1 and 13 of this application... are directed to statutory subject matter notwithstanding that they are broader in scope than the remaining product claims. Neither of these claims pertains solely to a judgmental step.... the briquet designed by these claims must provide an ignition phase "defined as a selected percent ash on the outer surface of the briquet formed in a preselected time". This is a physical characteristic and such brings the claim into a statutory subject matter class, viz., items of manufacture.

## (2) Novelty

...the applicant has indeed provided a new briquet selected from the myriad of possible configurations.... The selected (claimed) briquets provide superior burning characteristics over those already known classes of briquets and, therefore, are novel over the prior art.... From the (Susan M. Peters) affidavit, it will be seen that the inventor, a person who is well skilled in the relevant art, is not herself aware of any known briquets which meet the criteria of the briquets claimed in this application.... In the absence of evidence to the contrary, it should be concluded that the subject matter which the applicant claims is novel....

...although U.K. Patent No. 392,015 shows a roughly pillow-shaped briquet, the briquets disclosed in that patent neither meet the criteria nor possess the qualities required by the present invention. For example, the volume-to-surface area ratio of 0.473 centimeters which is preferred in the present application is not met by the briquets shown in the British patent. The objectives of each of the cited patents are very different from those of the subject invention and the qualities associated with the results obtained by the briquets of the cited patents are unlike those of the subject invention. The geometric relationships of the briquets disclosed in the cited U.S. patent are not at all comparable to the briquets of the subject application. Nor are those disclosed in the cited U.K. patent. The U.S. patent does not refer to any limiting dimensions except that it is contended in the patent that the angle between side 6-6 and side 7-7 as shown in Figure 4 must be 90°. Likewise, the briquets shown in the cited British patent are long ellipsoidal-type heavy briquets weighing from about 250 to 1,500 grams. The briquets of neither the cited U.S. patent nor British patent can hope to meet the ignition and burn time requirements satisfied by the briquets claimed in this application. Grossly similar briquet shapes will not provide the performance benefits by the claimed briquets.

### (3) Unobviousness

...the applicant traverses the Examiner's statements. With respect to the first, it is accurate only to the extent that the properties and characteristics of the object so changed are not altered in an unobvious manner as a result of changing the size or proportion of the object... of the myriad of possible configurations, the applicant has selected a defined configuration which possesses qualities peculiar to the defined group which were not present in prior briquets. Charcoal briquets which do not meet the specific limitations of the claims of this application provide poorer burning characteristics.

With reference to the second ...it would not be expected of one ordinarily skilled in the art to arrive at the result which has been concluded by the inventor.... it is not obvious to one skilled in the art that ignition time and half-life time depend, not only on the density of the material used, but also on the surface area and volume of the briquet and the specifics of such dependence are even less obvious... the work done by the inventor required a degree of ingenuity which cannot be expected to be found in the ordinary work of the ordinary skilled technician.

...

The test which must be decided when addressing the issue of unobviousness is the well known "Cripps test"... widely approved by the Canadian courts. (For example, this test was recently approved by the Federal Court of Appeal in the case Windsurfing International Inc. v. Bic Sports Inc. (1986) 8 C.P.R. (3d) 241.) That is: Would an unimaginative skilled technician at the date of the invention in light of his general knowledge and the literature and information on the subject available to him on that date have been lead directly and without difficulty to the subject matter claimed.... As a result of two recent Federal Court of Appeal decisions (namely, Windsurfing International Inc. v. Bic Sports Inc. supra. and Beloit v. Valmet (1986) 8 C.P.R. (3d) 289), it is clear that the present law in Canada does not require any more than a scintilla of inventiveness... in the case of Beloit v. Valmet, the Federal Court of Appeal held that the trial judge applied too high a test on the issue of unobviousness and emphasized that the "unimaginative skilled technician" to be considered is not an inventor but rather "a technician skilled in the art but having no scintilla of inventiveness or imagination".... It is improper to say that a result will naturally follow from many experiments when the planning and carrying through of those experiments would not themselves be ordinarily conducted by the notionally unimaginative skilled technician....

...it cannot properly be concluded that the subject matter claimed by the applicant is "very plain" from the cited art. (See, for example, the recent Federal Court decision in Sandvik AB v. Windsor Machine Co. Ltd. et al. (1986) 8 C.P.R. (3d) 433 in which it was held that something which is obvious is "very plain").

### METHOD CLAIMS (Claims 6 to 9):

#### (1) Non-Statutory Subject Matter (Sections 2, 28(3))

...it is agreed that mental steps per se cannot be claimed, as was attempted in the Schlumberger case referred to by the Examiner, but instead must be directed to some physical result.... the steps of the process claimed in this application do result in a physical end-product (viz., a charcoal briquet).



...while the steps of this method involve the making of some derivations... these steps preface the physical step of producing a briquet having the selected briquet shape and dimensions such that, as a whole, the method claimed is a physical process. It is conceded by the applicant that claim 6 does not, as it is now written, explicitly include a production step but the applicant is agreeable to entering the same if the Commissioner so requires....

...

...In Shell Oil Co. v. Commissioner of Patents 67 C.P.R. (2d) 1, the term "art" was stated by the Supreme Court to mean learning or knowledge as used in the expression "state" of the art" that is, something which adds to the cumulative wisdom in a field whereby a desired result is effected having commercial value. In the case of the subject application, the precisely defined method of producing an efficient and novel briquet is of great commercial value and certainly adds to the cumulative wisdom on the subject.

### (2) Novelty

...the applicant has... provided a new method of manufacture in that the method claimed produces a new article of manufacture, viz. a new briquet. Neither of the two references... discloses a method of constructing a fuel briquet according to the method claimed in this application. Nor do (they) disclose a briquet which would be the result of the method claimed in this application....

### (3) Unobviousness

...neither... patent cited... teaches or even suggests the method claimed in this application for constructing a fuel briquet.... the above comments made on the issue of unobviousness with respect to the briquet claims are equally applicable here.

The issue before the Board is whether or not the application and claims are patentable under Sections 2 and 27(3) of the Patent Act, and whether or not the application and claims 1 to 13 lack inventiveness in view of the cited art. Claim 1 reads:

A charcoal briquet having a geometry configured to produce a selected burn performance including a first ignition phase and a second, burn phase, said briquet being configured to provide an ignition phase defined as a selected percent of visual ash on the outer surface of the briquet formed in a preselected time.

The Board uses the section numbering of the Patent Act in force on December 12, 1988, whereas the Final Action and the Applicant's response use that in effect before that date.

At the Hearing, Ms. Cassan stressed the invention lies in the recognition that the ignition and burn phases of a briquet can be controlled by predetermined geometrical parameters that provide a percentage of visual ash. She added that the above parameters produce the percentage visual ash regardless of the type of material used in the briquet, and pointed out these parameters produce unexpected results.

Referring to the cited art, Ms. Cassan noted that neither of the patents deal with burn characteristics. She highlighted the United States patent as it relates to strength and durability of the molded shape and to the contour of the shape for providing easier removal from a mold. She understood the invention of the briquet of the United Kingdom patent is in providing it with strength for transportation. In view of the cited references, she argued there was no basis why the article and method were not new.

Ms. Cassan noted that the inventor, Susan M. Peters, states in her affidavit she was not aware of any configuration in the marketplace conforming to the geometric design criteria that provides the preselected percent of visual ash as does her briquet. The inventor points to the parameters of surface area, volume and density, she believes achieve the ignition phase of the invention. The inventor says it is not obvious to use geometric relationships to obtain the briquets of this invention. Further, the inventor points out the formulae are not known or used by persons skilled in the art. Additionally, the inventor says that the two equations, she developed, namely,

$$\% \text{ Visual ash (20 min.)} = -207 (V/A \times d) + 163$$

and

$$T_5(\text{min.}) = 3.3 (V/d) - 9.8$$

represent respectively, the desired visual ash within 20 minutes formula, and the half-life formula, and that together they provide the advantageous ignition and burn characteristics. The inventor says these characteristics

will be attained regardless of the kind of fuel material used to form the briquet. She emphasizes in her example using a flat sheet of paper, then crumpling it or rolling it, that the relationship of density, volume and surface area must be considered together, as she notes that varying the thickness does not by itself provide a desired ignition phase.

Ms. Cassan discussed the relevance of the Commissioner's Decisions published in the Patent Office Record, in re Polnauer on October 5, 1976, and in re Glenn on June 13, 1978. In re Polnauer, she believes the Decision to refuse was taken on the basis there was no new structure obtained by using the disclosed formulae, and that there was no alteration of the nozzle under review. In re Glenn, she argues the Decision to allow the application was due to the nozzle being a different item of manufacture from what previously existed. She compares her client's invention to that in re Glenn, namely the inventor's briquet structure is different from what was previously made, in that no prior briquet has been made that provides the selected percent of visual ash and the selected burn performance that the Applicant's briquet does.

While it may be that a person skilled in the art could derive formulae and choose the dimensions to produce the particular briquet characteristics that the inventor discloses, the Board cannot overlook the inventor's affidavit explaining her work in developing formulae that were not previously known, for the particular purpose of obtaining a form of briquet with special ignition and burn phases that were not previously considered. Further, the inventor explains that the features she includes in her briquets are not present in the cited art briquets. In determining whether the inventor's subject matter is acceptable under Section 2 of the Patent Act, the following passage from the Commissioner's Decision in re Glenn provides guidance:

What we are really concerned with is whether or not the novelty lies solely in the performance of certain judgmental steps. The ambit of the nozzle are defined by formulae which in fact describe the structure of the nozzles. All nozzles coming within the limits of the formulae perform in the manner desired. Anyone wishing to practice this invention need not exercise a judgmental step to determine what type of nozzle to construct. He merely makes a nozzle coming within the metes of the claim. Whether the shape of the nozzle is described by a formula or in words is immaterial. In both cases what is claimed is a specific structure. In this instance the simplest way to describe the contours is by formulae and we can see no valid reason to object. We are satisfied on the facts before us that there is no judgmental step involved in exercising the invention of claim 1. In the present case the formula is but another way of describing the dimensions of a structure, and its physical form. New machines and apparatuses have always been patentable if they involve inventive ingenuity, are useful, and are clearly defined in the claim.

The Board considers the application is directed to a useful field of endeavor, namely the method of forming a briquet, and to a useful article by presenting formulae which in the present case is another way of presenting subject matter acceptable under Section 2 of the Patent Act. Having so determined, the refusal under Section 27(3) of the Patent Act is without force, and the Board considers this refusal should be withdrawn.

Discussion of the sufficiency of the claims ensued at the Hearing. The examining staff viewed claim 1 for example to be deficient for failing to present any clear definition over the pillow shape briquets in the cited art. It was felt claim 1 did not define the invention distinctly but only in terms of the desired results. In her view, Ms. Cassan felt there were no judgmental steps claimed per se, and that the steps recited produce a specific briquet.

In reviewing the allowability of the claims in light of the cited art, it is useful to consider the substance of the claims. In assessing claim 1 certain comments from in re Glenn and from Ms. Peters' affidavit bear scrutiny. In re Glenn it is said that a formula is but another way of stating structural dimensions, and that machines and apparatuses demonstrating inventive ingenuity and usefulness may be patentable if clearly defined. Ms. Peters says she developed the two equations to

obtain a briquet having predetermined geometric relationships that enable an ignition phase having a selected percent of visual ash within a selected time followed by a burn phase with a selected half life. Although claim 1 calls for a briquet having a geometry to produce ignition and burn phases due to the briquet's configuration, there is no definition of any means that provide the geometric relationships.

Claim 2 depends on claim 1 and only one formula is defined, and as noted at the Hearing the expression,  $(V.d/A + 163)$  is incorrect. Claim 3 is dependent on claim 2 and although setting out a formula pertaining to the half-life, it is not clear how it relates to any of the terms in claims 1 and 2. It is noted the terms in the formulae in claims 2 and 3 have not been identified. Claim 4 depends on claim 2 and presents a specific ratio but does not define the units. Claim 5 depends on claim 4, and although the information in claim 5 is clear, clarification of claim 4 is needed before claim 5 can be properly assessed. No clear definition of the invention disclosed is found by the Board in any of claims 1 to 5.

At the Hearing Ms. Cassan presented a proposal for wording of claim 6, noting it was for discussion purposes only and not to be viewed as an amendment. The Board considers no clearly acceptable passages were identified during the discussion, and that no further comments are in order until such time as that claim may become part of the prosecution.

In claim 6 on record, the steps of deriving an equation and choosing briquet dimensions do not clearly define the conditions set out by the formulae included in the disclosure and discussed at the Hearing. The method of claim 7 is similarly deficient with respect to the formulae.

In method claim 8 there is a definition of part of the formula expressed in claim 2. More than this part is needed however to complete the definition of the briquet, and claim 8 is deficient. Claim 9 depends on claim 8 and expresses a different result for the product of volume and

density from that given in claim 5. However, this product of volume and density does not advance the definition of the invention in that it represents only a part of the equation relating to visual ash and does not complete the formulae disclosed. Claims 10, 11 and 12 relate to height and side dimensions, and fail to set out all the features of the invention. Claim 13 depends on claim 1, and in setting out only a certain percentage of visual ash, it fails to define clearly all the features. Claims 6 to 13 of record, in the Board's opinion are deficient with respect to a clear definition of the formulae.

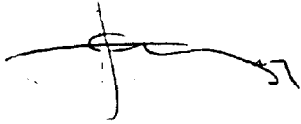
The briquets shown by the cited art all obtain an ignition phase and a burn phase as a result of their geometric configuration. The briquets obtained by the Applicant's claims define no characteristics that are discernible over the cited references. It may be the cited art briquets do not have the same characteristics that are disclosed by the Applicant, nonetheless they provide ignition and burn phases according to their geometry. The particular features of volume, area, and density described by the Applicant are not reflected in the claims. Accordingly, the Board finds claims 1 to 13 do not define clearly over the cited art.

The Board recommends withdrawal of the refusal of the application for failing to set forth patentable subject matter under Section 2 and Section 27(3) of the Patent Act. The Board recommends however that the refusal of the claims be affirmed for failing to define any inventive features in view of the cited art.



M.G. Brown  
Acting Chairman  
Patent Appeal Board

I have reviewed the prosecution of this application. I concur with the findings and the recommendations of the Patent Appeal Board. Accordingly, I withdraw the refusal of the application, and I refuse to grant a patent containing claims 1 to 13. The Applicant has six months within which to appeal my decision to the Federal Court of Canada, under Section 42 of the Patent Act.



J.H.A. Gariépy  
Commissioner of Patents

dated at Hull, Quebec  
this 17 day of May 1989.

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