COMMISSIONER'S DECISION

INSUFFICIENCY, OBVIOUSNESS: Information Display System for Aeroplanes

The concept of projecting instrument information onto the windscreen of an aircraft by selective illumination of optic fibres at a remote location is not found in the cited art. The disclosure is sufficient.

Rejection reversed.

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Patent application 257,194 (Cl. 375-49), was filed on July 16, 1976 for an invention entitled IMPROVEMENTS IN SYSTEMS FOR THE DISPLAY AND INDICATION OF INFORMATION. The inventor is Pierre Coulomb. The Examiner in charge of the application took a Final Action on October 3, 1979 refusing to allow it to proceed to patent. In reviewing the rejection, the Patent Appeal Board held a Hearing on November 26, 1980, at which the Applicant was represented by Mr. Mitchell.

The subject matter of this application relates to a system for displaying information on the windscreen of an aircraft particularily useful at the time of take-off or landing. This information is in the form of an optical image which appears at infinity so the pilot can see it without having to drop his eye to the instrument panel. Optic fibres are used to form the image adjacent the windscreen. Figures 1 and 6 are illustrative of the application.

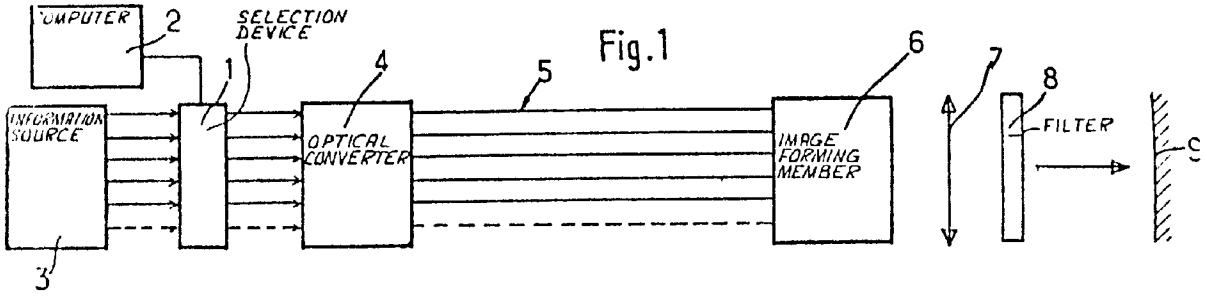

Fig.1

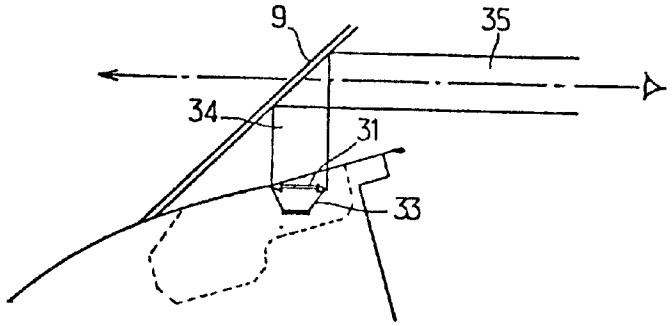

Fig.6

Image forming member 6 is encased in 33 located in the dash of the aircraft. Lens 31 projects the beam 34 onto windscreen 9 to form the image in line with the pilots field of view.

In the Final Action the Examiner rejected the application for insufficient disclosure and obvious in view of the following references:

Canadian Patents:

810,815	Apr. 15, 1969	Baker
816,322	June 24, 1969	Baker

British Patents:

1,066,282	Apr. 26, 1967	Barnes
1,077,003	July 26, 1967	Briggs

United States Patent:

3,663,112	May 16, 1972	Jones

Barnes and Briggs both show apparatus for projecting images on reflected screens in aircraft. Bakers' patents relate to light modulators and converters and Jones discloses apparatus for projecting images onto an aircraft windscreen.

In the Final Action the Examiner stated (inter alia):

> Insufficiency of the Disclosure
>
> The disclosure, however, fails to disclose adequate instructions on how to make, build or construct the apparatus necessary in order to realize these objects.
>
> The drawings are found to be merely an assembly of blocks containing a recapitulation of the goals of the invention while failing to give any structural details or circuit diagrams explicitly setting forth how the stated goals and criteria could be put into practice.
>
> In particular, the structure of the "converter" has not been disclosed.
>
> It is therefore held that while the disclosure contains many ideas it fails to reduce them to practice. The ideas in the disclosure are found to be of the form of invitations to make an invention (or inventions) which the Applicant himself has not yet quite made, or shown how to make, by his failure to disclosure structural details of his "converter", "coder" and "decoder".
>
> Applicant has argued that no inventive ingenuity will be required to design an apparatus capable of carrying out the stated goals, such as the "converter ..." etc. However, if no invention is involved in carrying out the goals of the invention then nothing patentable remains.
>
> The fact remains that the necessary design work has not yet been done and still remains to be done.
>
> The disclosure is therefore rejected as being inexplicit, contrary to Section 36(1).

Inexplicitness of Claims

Because of the failure of the disclosure to teach explicitly how to construct the claims

> "converter for receiving information and generating binary signals representative of an intelligible image related to said information" (claim 1 lines 2-4),
>
> "... signals provided by the converter (being) encoded and ... decoded" (claim 9 lines 2-4)

these claims items are held to be inexplicitly defined and not fully supported by the disclosure. Claims 1 and 9 and the dependent claims 2-8 and 10-12 are therefore furthermore rejected as being inexplicit, contrary to Section 36(2), and not fully supported by the disclosure.

In the response to the Final Action the Applicant amended the disclosure and the claims. He stated (in part):

> It is respectfully submitted that for an application to describe a patentable invention, two fundamental requirements must be met, both of which are directed to the same hypothetical skilled person in the art incapable of invention and which when taken together are completely logical. On the one hand, in the description, the applicant must reduce his description of the invention to a form such that this hypothetical skilled person in the art is capable of putting it into practice. That is what is required by Section 36. Thus, if the invention can be reduced to a series of block units, each of which when taken separately is such that it can be readily made by this hypothetical skilled person incapable of invention, the applicant has satisfied that part of the Section 36 requirement. In addition, it goes without saying that having reduced the invention to a series of such blocks, each of which when taken separately is capable of being made by this skilled person in the art, the invention must be such that that same skilled person would not have been able to combine the separate blocks described to produce the results claimed by the applicant. Thus, to reduce this idea to its simplest form, it could be said that if two units A and B were well known in the art to produce results a and b and someone found, unexpectedly, that if A and B were combined they produced a result c which was different from a + b, then all an applicant would have to do is disclose A and B and the fact that when combined they unexpectedly produced the result c. The applicant would not have to describe the internal workings of blocks A and B because they are assumed to be known to the skilled person in the art. This is an extreme hypothetical example to illustrate the point. Returning to the present application, the applicant is saying that the blocks 1 through 6 are such that each, when taken <u>separately</u>, they may readily be constructed by a skilled person in the art <u>without</u> the exercise of inventive ingenuity. The applicants have thus complied with Section 36 of the Act. However, the blocks are such that the skilled person in the art would <u>not</u> know to achieve the object of the present invention by making these blocks and combining them together in the manner defined in claim 1. It is for this reason that the invention, in the applicant's submission, is not obvious.

> In summary, the applicants therefore submit that, as far as sufficiency is concerned, there is only one question to ask. That is, has the applicant reduced each component block to a form such that the skilled person in the art could put it into practice without the exercise of inventive ingenuity. The applicants forcefully submit that the answer to this question is yes. It is quite easy for the skilled person in the art, on the basis of the applicant's instructions, to design a "converter" which illuminates light sources in accordance with information fed into it. For example, if the information is available in the form of a word of bits arriving in parallel, the converter would simply comprise an array of LEDs with suitable logic circuitry to activate different LEDs as different binary words arrived at the input of the converter.

The issue before the Board is whether or not the disclosure is sufficient and if the application is directed to a patentable advance in the art.

Amended claim 1 reads:

> A system for displaying information on a vehicle windshield, comprising: a converter including a plurality of discrete light sources disposed at a location remote from the vehicle windshield, said converter being adapted to receive the information and convert it into optical form by energizing selected ones of said discrete light sources; an assembly of optic fiber groups each group having one end associated with a respective one of said discrete light sources, and having their other ends juxtaposed at a location adjacent the vehicle windshield such that the optic fiber groups illuminated by said discrete light sources form an image representative of any given piece of information; and a lens for projecting said image formed by said other ends of the optic fibre groups to infinity on the windshield of the vehicle.

We note that both of the Baker patents show the use of optic fibres in combination with light modulators and converters of various sorts. Jones relates to a display system for an aircraft. An illuminated fibre optic bundle in a graticule box mounted below the windscreen of the aircraft combines with a spherical mirror mounted above the windscreen and a semi-reflecting mirror mounted in the pilots line of sight to enable him to see the display. There is no teaching of selectively illuminating the fibre ends or projecting this image by a fixed lens directly onto the windscreen of a vehicle in these references.

The disclosure was rejected for failing to give adequate instructions on how to make, build or construct the apparatus necessary in order to realize the objects of the alleged invention. In particular the rejection indicated that neither the structure of the "converter" nor the details of the "coder" and "decoder" were disclosed.

At the Hearing Mr. Mitchell argued that he has a novel concept. He maintains there are many advantages in projecting information onto the windscreen while at the same time eliminating the bulk of the optical projection equipment from this overcrowded location. This is achieved by "making use of optic fibers to form an image adjacent the windscreen and then projecting this image onto the windscreen with a lens. The optic fibre bundles are juxtaposed at the image-forming end and selectively and individually illuminated at the remote end so that a desired image can be formed simply by determining which fibre bundles are illuminated. The image can thus be changed without the need for any moving parts." He adds that in order to selectively illuminate the remote ends of the bundles of the optic fibres a device (optical converter) which accepts digital electronic information and converts it to optical information is used. According to Mr. Mitchell the "essence of the invention is that the optical image in effect is formed at a remote location by the optical converter simply by illuminating selected ones of the optic fibre bundle and transmitting the light to the location adjacent the windscreen through the optic fibres where the image is formed by the terminations of the optic fibre projected onto the windscreen."

It is a well-established principle of patent law that the patentable merit in an invention may reside in the idea behind the invention. Once having conceived that idea the way to implement it may be both simple and apparent, but that will not nullify the patentability of such an invention. The invention may be in recognizing the existence of a problem, or in clearly perceiving some particular useful end to be obtained.

A leading case dealing with "recognition of the idea or concept" is Hickton's Patent Syndicate v. Patents and Machine Improvements Company Ltd.(1909) 26 R.P.C. 339. At page 347, Fletcher Moulton L.J. set forth the applicable law as follows:

> The learned Judge says: 'An idea may be new and original and very meritorious, but unless there is some invention necessary for putting the idea into practice it is not patentable.' With the greatest respect for the learned Judge, that, in my opinion, is quite contrary to the principles of patent law, and would deprive of their reward a very large number of meritorious inventions that have been made. I may say that this dictum is to the best of my knowledge supported by no case, and no case has been quoted to us which would justify it.... To say that the conception may be meritorious and may involve invention and may be new and original, and simply because when you have once got the idea it is easy to carry it out, that that deprives it of the title of being a new invention according to our patent law, is, I think, an extremely dangerous principle and justified neither by reason, nor authority.
>
> ...
>
> In my opinion, invention may lie in the idea, and it may lie in the way in which it is carried out, and it may lie in the combination of the two.

This doctrine forms part of Canadian jurisprudence. Mr. Justice Rinfret put it this way in Electrolier Manufacturing Co. Ltd. v. Dominion Manufacturers Ltd. (1934) S.C.R. 436 at 442:

> The merit of Pahlow's patent is not so much in the means of carrying out the idea as in conceiving the idea itself (Fawcett v Homan), supra....

We agree that the concept of projecting information onto the windscreen by selective illumination of optic fibres at a remote location is not shown in the cited art. We are consequently satisfied that there is patentable subject matter present over the cited art.

On the question of construction detail for the converter and decoder we think it is comparable to the LED's and liquid crystal readout used for wristwatches on the market for a number of years now. Since they convert electrical into optical information we do not think there would be a problem for a person skilled in the art to construct a "converter" capable of operating in a manner envisaged by the Applicant. The disclosure therefore, in our view, is sufficient under the circumstances.

At the Hearing Canadian Patent 931,252 was presented by the Examiner as additional art to support the obviousness rejection. This patent relates to a computer output display with a plurality of light sources shining through optical fibers and selectively illuminating the fibres. The Applicant agreed to study this reference. On April 21, 1981 Mr. Mitchell submitted a letter commenting on this reference. In it he states that "while it appears optical fibre groups have been used to generate output displays for a computer printer, the idea of applying such a concept to an aircraft display system is novel and fundamentally not obvious."

In summary, while fibre optics are shown in the cited art the concept of selective illumination for optical display on an aircraft windscreen is not suggested. We therefore recommend that the decision in the Final Action to refuse the application be withdrawn and that, in our view, the amended claims are acceptable over the art of record.

J.F. Hughes
Assistant Chairman
Patent Appeal Board, Canada

S.D. Kot
Member

I have considered the prosecution of this application and the recommendation of the Patent Appeal Board. I concur with the reasoning and findings of the Board. Accordingly I direct that the prosecution should resume on the basis of the amended claims.

J.H.A. Gariepy
Commissioner of Patents

Agent for Applicant

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Dated at Hull, Quebec

this 20th. day of August, 1981