COMMISSIONER'S DECISION

Section 36(2); Obviousness

Control System for an Air Conditioner

An air conditioner utilizes a compressor-expander in a closed loop, with a primary heat exchanger in an ambient atmosphere, and a secondary heat exchanger in an enclosed space. A source of auxiliary air is injected into the loop to provide varying pressures. The Final Action was withdrawn because the claims avoid the cited art and properly define the scope of monopoly of the invention described in the disclosure.

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On December 23, 1977, The Rovac Corporation filed an application for patent No. 293,849, class 62-127. The inventors are Thomas C. Edwards et al. The title given to the application is "Control System for Air Conditioner". The Examiner in charge of the application rejected the claims under Section 36(2) of the Patent Act and on obviousness. The applicant then requested that the rejection be reviewed, and that there be a Hearing to consider his arguments. In reviewing the rejection, the Patent Appeal Board held a Hearing on December 10, 1980, at which the Applicant was represented by W. Parks.

The invention is directed to an air conditioning system for use in automobiles. Figures 1 and 2 below illustrate the system.

Fig. 1.

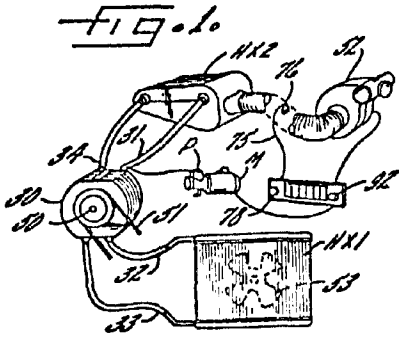
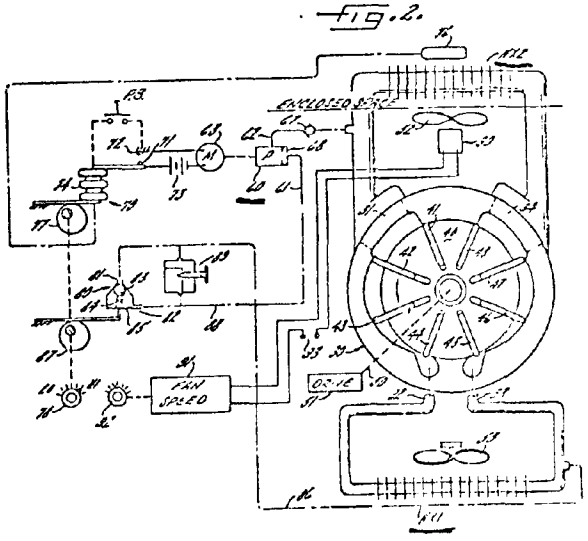


Fig. 2.



Air conditioning system 30 utilizes a compressor-expander in a closed loop with primary heat exchanger HX1 in an ambient atmosphere and secondary heat exchanger HX2 in an enclosed space. A source of auxiliary air is injected into the loop by means of pump 60 to provide varying pressures under thermostatic control 70 providing variation in the heat rate of the system to maintain a set temperature in the enclosed space.

In the Final Action the Examiner refused the claims for failing to define patentable subject matter beyond what is shown in the following United States Patents:

2,715,317	August 16, 1955	Cl 62-3	Rhodes
3,904,327	September 9, 1975	Cl 418-8	Edwards et al

In his rejection the Examiner argued that claim 1 would be allowable if the following features are defined:

1) the auxiliary pump

2) the secondary heat exchanger normally operating at atmospheric pressure

3) the secondary heat exchanger pressure being variable from a pumped down condition effectively zero to a pressure two to three times atmospheric to thereby greatly increase the heat rate of the basic system.

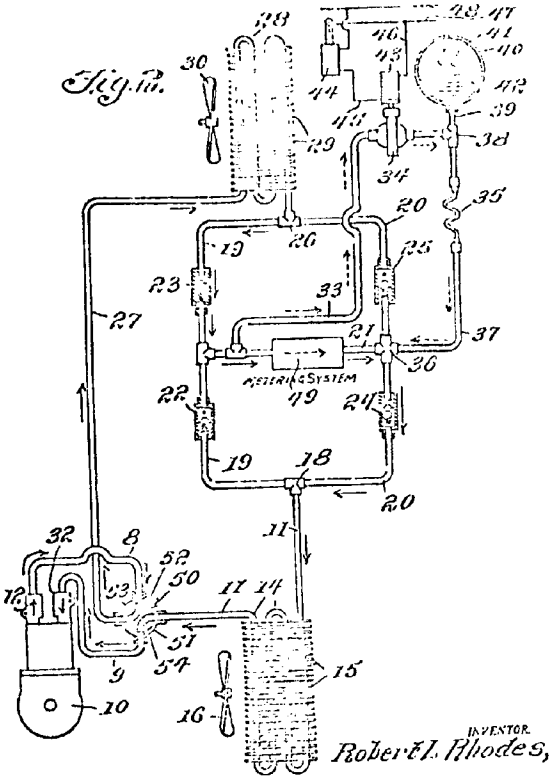
In response to the Final Action the Applicant objected to the stand taken by the Examiner. He referred to the following paragraph at page 3 of the disclosure, which reads:

> In accordance with the present invention the source of auxiliary air is provided with injecting means preferably in the form of a pump for controllable injection of air from the source into the closed loop, enabling the secondary heat exchanger to operate at a pressure substantially greater than atmospheric thereby to increase the heat rate of the system.
>
> It is believed that applicant is entitled to use the words "injection means" in the claim. The term is quite apt in view of the fact that the means is defined as means "for injecting air". Applicant is not aware of any reason based upon prior art why applicant should not be entitled to use the term "injection means" simply because applicant believes it might be preferable to use a conventional pump as an injector, does not mean that applicant should be limited to the use of a conventional pump. Any injecting means, capable of injecting air under pressure, may be used to practice the invention.

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

The patent to Edwards et al teaches a rotary compressor-expander which is similar to the one used in the present application.

Rhodes teaches a control system for a reversible heat pump or air conditioner. The system operates with freon in the reversed Rankin cycle. Figure 2 below illustrates the cooling cycle of that arrangement:



Refrigeration compressor 10 is connected to heat exchangers 28, 29 and 14, 15. Four check valves insure unidirectional flow through metering device 49 so that the capillary restriction of the metering device divides the system into high and low pressure sides. Restrictor 35 permits refrigerant to slowly return to the low pressure side of the system and to increase the charge until control switch 44 opens again.

Claim 1 of the application reads as follows:

1. In an air conditioning system for an enclosed space, the combination comprising a compressor having an inlet port and an outlet port, an expander having an inlet port and an outlet port, the compressor and expander having rotor means including vanes for positive compression and expansion as the rotor means is driven, a primary heat exchanger connected between the compressor outlet port and the expander inlet port, a secondary heat exchanger connected between the expander outlet port and the compressor inlet port complete a closed loop having a charge of air, one of the heat exchangers being thermally coupled to the enclosed space, a source of auxiliary air, injector means for injecting air from the source into the closed loop to increase the pressure in the secondary heat exchanger to substantially above atmospheric level to increase the heat rate of the system, and control means for controlling the injector means thereby to control the pressure existing in the loop.

At the Hearing Mr. Parks argued that Rhodes' refrigeration system differs in a number of ways from applicant's system. Rhodes does not have a closed loop with a "charge of air", as defined in claim 1. That system operates with freon in the reversed Rankin cycle, whereas Applicant's system operates with air in the reversed Brayton cycle. Rhodes has freon seeping passively into the lower pressure side, whereas claim 1 defines an injector means for pumping the system above atmosphere - exactly opposite to Rhodes' restrictor 35. Consequently, the system is safer to use, responds to a wider variety of conditions and has a quicker response time.

We note that the expression "injector means" in claim 1 defines the way in which the result of an element of the combination is accomplished. The means for performing the act of injecting is recited in a proper combination and covers the auxiliary pump which is described in the application as performing the action. No particular injecting element is essential to the combination and we therefore conclude that the statement of means is proper.

The Applicant argued, in reply to requirements 2 and 3 of the Examiner's action, that in the prosecution of an application he is entitled to indicate operating characteristics and advantages of the system without having to put them into the claim. He stated that operating features and characteristics which are inherently present in the system defined do not need to be included in the claim, as they provide unnecessary limitations to the scope of monopoly. Claim 1 defines an "injecting means for injecting air from the source into the closed loop to increase the pressure in the secondary heat exchanger to substantially above atmospheric level...." The system, as shown in Figure 2 of the drawings, operates in this manner. We agree with the Applicant that the expression "the

secondary heat exchanger normally operating at atmospheric pressure" is not required in the claim. In our view the third requirement is also unnecessary. In any case zero pressure cannot be obtained in the system when the pressure can only be increased above atmospheric level. As the compressor-expander of Edwards et al cannot be substituted for the compressor of Rhodes' refrigeration system the attack on obviousness must also fail.

The matter of narrow and broad claims was considered in Burton Parsons v Hewlett-Packard S.C.C. 17 C.P.R. (2d) 97 (1975), p. 106 where it was stated (in part):

> It is stressed in many cases that an inventor is free to make his claims as narrow as he sees fit in order to protect himself from the invalidity which will ensue if he makes them too broad. From a practical point of view, this freedom is really quite limited because if, in order to guard against possible invalidity, some area is left open between what is the invention as disclosed and what is covered by the claims, the patent may be just as worthless as if it was invalid. Everybody will be free to use the invention in the unfenced area. It does not seem to one that inventors are to be looked upon as Shylock claiming his pound of flesh.

We think that the present case is one where that principle would apply. Consequently we recommend that the rejection be withdrawn, and that the application be remanded to the Examiner for further prosecution.

L.P. Hughes
Assistant Chairman
Patent Appeal Board, Canada.

Having reviewed the prosecution of this applicaton, I concur with the recommendations of the Patent Appeal Board. The application is to be returned to Examiner.

J.H.A. Gariépy
Commissioner of Patents

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Dated at Hull, Quebec
this 20th. day of March, 1981