IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 496,903, having been rejected under Subsection 47(2) of the Patent Regulations, the Applicant asked that the Final Action of the Examiner be reviewed. The rejection has consequently been considered by the Patent Appeal Board and by the Commissioner of Patents. The findings of the Board and the ruling of the Commissioner are as follows:

Applicant

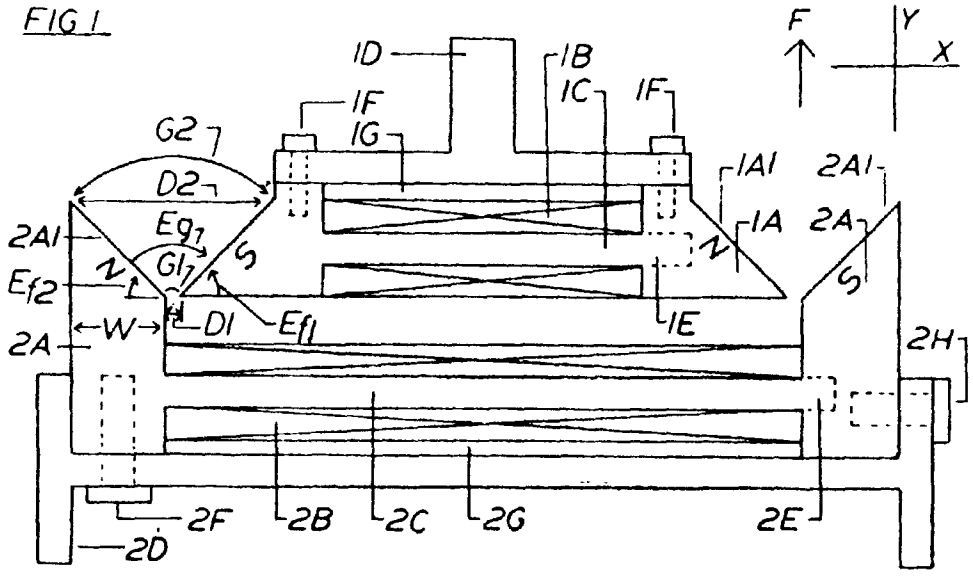
Mr. William R. Cruikshank
Halifax YMCA
1565 South Pk. St., #313
Halifax, Nova Scotia
B3J 3H1

This decision deals with the Applicant's request for a review by the Commissioner of Patents of the Examiner's Final Action on application number 496,903 (Class 310-63) filed on December 5, 1985 and entitled "Magnetic Force Device". The inventor, William R. Cruikshank, prepared, filed and prosecuted his own application without the assistance of a registered patent agent. In response to the Examiner's request for a working model of the invention Mr. Cruikshank filed a small paper model of one of the embodiments of his device.

The application relates to a device for lifting and propelling machines including aircraft, spacecraft, submarines, ships, land vehicles and rail guided machines. The device purports to use the magnetic attractive force between magnets of opposite polarity to generate thrust.

The application contains twelve drawings of which Figure 1 shows a cross section of an embodiment of the device which generates thrust in one direction. Figure 4 shows an embodiment of the device which generates thrust in two directions and Figure 6 shows an embodiment which allegedly generates thrust in four directions.

The alleged invention is best illustrated by Figure 1 wherein the poles of upper magnet 1 and the poles of lower magnet 2 are separated by wedge shaped gaps. The upper magnet is attached to a beam 1D and the lower magnet is attached to beam 2D with the lower magnet being an electromagnet. While not specifically shown in Figure 6 it is apparent that beams 1D and 2D are held in a fixed relationship to each other. Figure 1 is reproduced below:



The application contains twenty-two claims and independent claims 1 and 22 read as follows :

(1) A machine in which one or more magnetic force devices each comprising two or more magnets separated from each other by two or more wedge shaped gaps with adjacent poles of the two or more magnets alternating in polarity across the gaps, the magnets fastened to one or more supporting beams, with one or more of the magnets an electromagnet and with magnetic pole faces of the magnets oriented relative to the axis of the device to produce a force, when the one or more electromagnets is energized, in one or more directions along one or more of the principal axis of the machine.

(22) A machine in which a power and control system for propelling and controlling machines in translational and rotational motion along one or more axis comprising: steering and control in the horizontal plane; elevation, banking and level control; height and hover control; acceleration control; speed control; motor control for one or more direct current motor-generator sets; magnetic force devices arranged in the vehicle in one or more groups and sections to produce force along the principal axis in which the directional controls are inter-locked with the acceleration and speed controls in multiple directions using feedback and with feedback from the various controls to the motor-generator set controls and with operator and other extraneous inputs from associated equipment.

The Examiner issued a Final Action on March 10, 1992 refusing all of the claims in the application and the application itself. The grounds for refusal were threefold, firstly for lack of invention in view of cited references and in view of the common knowledge of magnetic forces as shown in several text book references, secondly for lack of utility and thirdly for being indefinite.

In the Final Action the following references were cited:

United States Patents

4,259,908	April 7, 1981	Feistkorn et al
3,842,748	October 22, 1974	Schwarzler et al

Text Books

Principles of Electricity,
Page and Adams
Van Nostrand, 1949, pages 116-117

Elements of Electrical Engineering
Cook and Carr
John Wiley, 1947, pages 28-29

Principles of Electrical Engineering
Timbie et al
John Wiley, 1951, pages 328-330

In rejecting the claims, as well as the application, the Examiner stated (in part) that:

Claims 1 to 22 as well as the remainder of the application are rejected for lack of invention in view of the patents to Feistkorn et al, Schwarzler et al and common knowledge of magnetic forces as shown in the three reference books.

In response to the last examiner's report the applicant states in his letter dated April 13, 1989 that his invention requires an exact geometric design for the magnets combined with an exact geometric arrangement of one magnet relative to another. The invention is in the geometry of the design and involves a new type of magnetic levitation system.

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The "geometric design" of the applicant is not an improvement over the prior art because this "geometric design" increases the air gap between the poles of facing magnets and therefore increases the magnetic flux leakage. In figure 1 of the drawings, the facing magnet poles N and S have non-parallel surfaces. As disclosed by Page and Adams, the magnetic force between two poles of a magnet is inversely proportional to the square of the distance between the two poles. Timbie et al disclose that in a magnetic circuit containing air gaps, the greater part of the magnetomotive force is consumed by the gap. Contrary to these well established principles in magnetic systems design and the well known law of physics stated above, the applicant's magnets configuration will create a large leakage flux because of the great distance D_2 (figure 1) between the upper portions of the magnet poles N and S. This is the reason why the air gap between the poles of facing magnets is usually kept as small as possible to obtain the maximum magnetic force between these two parts.

The disclosure is further rejected under Section 34(1) of the Patent Act for being indefinite. The application contains numerous ambiguous statements. For example on page 4 it is stated that the upper magnet is fastened to a beam 1D and that the lower magnet is fastened to a beam 2D and that there is no relative movement between beams 1D and 2D, whereas on page 1 it is stated that the magnetic force device is used for lifting and propelling machines including aircraft, spacecraft, land vehicles and on page 10 the device can hover at any altitude including above the atmosphere (deep space).

The applicant at pages 1 and 10 of the disclosure states that the invention could be used to hover at any altitude including above the atmosphere (deep space). This is contrary to basic principles of magnetic levitation, as shown above, where the gap between two facing poles is kept very small. The application is therefore rejected under Section 2 of the Patent Act as unworkable (lack of utility) because it will not produce the intended result (hover in deep space).

In reviewing the references that were cited during the prosecution of this application, the Board notes that the text books relate to elementary principles of electricity and magnetism. These texts appear to have been cited merely to provide background information and are not directly related to the Applicant's device. As such they were not analyzed in detail by the Board.

United States patents 4,259,908 and 3,842,748 are each directed to a magnetic suspension system for vehicles which comprises a U-shaped electromagnet attached to the vehicle, the poles of which extend towards another magnet which is attached to a support.

There is a narrow gap between the adjacent poles, with the faces of the adjacent poles being flat and parallel to each other. In one embodiment, shown in Figure 3 of patent 3,842,748, there is a wedge shaped gap between the poles of the adjacent magnets. The magnets move with respect to each other as the vehicle moves with respect to the support.

The Board is of the opinion that the cited references each show all of the individual elements claimed in claim 1 of the instant application. However, the applicant has emphasized one fundamental difference between his device and the prior art. In the references, the magnets move with respect to each other while in Applicant's device, the magnets remain stationary with respect to each other. Because the devices shown in the prior art are directed specifically to transportation systems where relative movement between the magnets is essential, indeed the entire reason for the devices, it is the Applicant's argument that it would not be obvious to modify the prior art devices in such a way as to prevent the magnets from moving relative to each other.

In considering the matter the Board accepts Applicant's argument that the two cited United States patents are directed to inventions different from the alleged invention disclosed by the Applicant. It is the Applicant's position that the two magnets (shown in Figure 1 for example) are an unitary device where the beams 1D and 2D are integral parts of the whole device. Therefore the Board concludes that Applicant's device differs from the prior art devices cited by the Examiner.

The Board will now deal with the Examiner's refusal of the application on the grounds of lack of utility. Section 2 of the Patent Act sets out the requirement that, in order to be patentable, an invention must exhibit utility. In the Exchequer Court decision in Mineral Separation v. Noranda Mines Ltd., (1947), Ex. C.R. 306, Thorson P. stated, at page 316, that:

> Two things must be described in the disclosures of a specification, one being the invention, and the other the operation or use of the invention as contemplated by the inventor, and with respect to each the description must be correct and full. The purpose underlying this requirement is that when the period of monopoly has expired the public will be able, having only the specifications, to make the same successful use of the invention as the inventor could at the time of his application. The description must be correct; this means that it must be both clear and accurate.

In its basic form (Figure 1), the device claimed in claim 1 consists of two magnets, each of which is bolted to a beam with other embodiments having additional magnet pairs. These pairs of

magnets are oriented at different angles to each other in order to generate forces which are alleged to act in a variety of different directions.

The Applicant has made it clear throughout the prosecution of the application that there is no relative movement between the beams so, as a consequence, there can be no relative movement between the magnets. The Applicant claims that the device can be used as a support device for lifting and propelling machines of all sorts. However, there is no explanation of how the lift device interacts with the machine which is to be lifted or propelled. Is the lift device part of the machine or is it a separate mechanism? The Applicant has devoted a considerable amount of the disclosure to equations which can be used to calculate many of the design parameters such as size of the magnets, the amount of power required etc. but has not given any indication of the practical application of the device. It would appear to the Board that the Applicant is confusing the concept of magnetic force with thrust, i.e. the attractive force between two magnets of differing polarity and the concept of a thrust which could propel a vehicle.

A worker in this field of technology should be able to make use of the invention by making use of the information given in the disclosure of the application. However, the information set forth in the disclosure of the application does not satisfy this requirement. Before attempting to put the alleged invention into operation, a worker skilled in the field of transportation would first have to discover how to construct an operable embodiment of the Applicant's device. This is not merely a question of some minor detail but lies at the very heart of what the Applicant feels he has invented.

It is the Board's opinion that the application does not set forth in clear and concise terms how an operable embodiment of the Applicant's device could be constructed and thus fails to meet the requirements of Section 34 of the Patent Act.

The Board feels that this lack of explanation of the practical mode of operation of the lift device may have contributed to the Examiner's difficulty in understanding what the Applicant feels he has invented and has resulted in the refusal of the application on the grounds of ambiguity. This is the case in claim 1. The Applicant has defined the elements of the device but is ambiguous as to how in the device the magnetic force produced along the principal axis of the machine translates into physical motion. A similar difficulty arises with claim 22.

Reference is made to systems for controlling the vehicle's movement utilizing the magnetic forces produced along the principal axis (for example). The claim is ambiguous and indefinite since there is no indication of how the magnetic force between two magnets fixed in positions relative to one another generates the thrust needed to propel a vehicle. It is for these reasons that the Board agrees with the Examiner's assessment that the application is indefinite.

In conclusion the Board recommends that the rejection of all of the claims for lack of novelty over the cited prior art not be supported but that the application be refused for failing to disclose an operable invention and for failing to meet the requirements of Section 34 of the Patent Act.

P. J. Davies
Chairman

M. Wilson
Member

I concur with the findings and the recommendation of the Patent Appeal Board. Accordingly, I refuse to grant a patent on the application. Under Section 41 of the Patent Act, the Applicant has six months within which to appeal my decision to the Federal Court of Canada.

M. Leesti
Commissioner of Patents

Dated at Hull, Quebec
this 30th day of November 1994

1995

IN THE FEDERAL COURT OF CANADA
TRIAL DIVISION

Between:

WILLIAM RALPH CRUIKSHANK,

Plaintiff.

and

HER MAJESTY THE QUEEN AND
THE COMMISSIONER OF PATENTS AND
THE PATENT APPEAL BOARD

Defendants.

NOTICE OF APPEAL

Filed on the 29th day of May , 1995.

Take notice that an Appeal is hereby filed in the Federal Court of Canada under Section 41 of the Patent Act appealing the Decision of November 30th, 1994 of the Commissioner of Patents and Patent Appeal Board rejecting Application No. 496,903.

The Appellant proposes that the Appeal be heard at Halifax or be disposed of by Notice of Motion in writing under Rules 324-325.

Dated at Halifax, in the County of Halifax, Province of Nova Scotia, the 29th day of May , 1995.

William R. Cruikshank
Appellant

Address: 1565 South Park St., Rm.313,
Halifax, Nova Scotia,
B3J 3H1.

1995

IN THE FEDERAL COURT OF CANADA
TRIAL DIVISION

Between:

William Ralph Cruikshank,

Plaintiff.

and

Her Majesty The Queen and
The Commissioner of Patents and
The Patent Appeal Board

Defendants.

INDORSEMENT

Notice to the Defendants.

You are required to take cognizance of the within Notice of Appeal and make opposition thereto in accordance with its terms and the appropriate provision of the Rules of this Court.

If you fail to do so, you will be subject to have such judgment given as the Court may think just on the Appellant's own showing.

Note:(1)Copies of the Rules of Court, information concerning the local offices of the Court, and other necessary information may be obtined on application to the Registry of this Court at Ottawa(telephone 613-992-4238)or at any local office thereof.
(2)This Notice of Appeal is filed by William R. Cruikshank of Halifax, Nova Scotia, Plaintiff.