

COMMISSIONER'S DECISION

Sec. 2, 28(3): DETERMINATION OF GROSS THRUST

Measuring engine pressures in a static sea level facility and then calculating a correction factor for use under old operating conditions is statutory. It is an improved version over the applicants Canadian Patent which was copending at the time of filing.

Final Action - Reversed

Patent application 150,685 (Cl. 354-24), was filed on August 31, 1972 for

an invention entitled Determination of Gross Thrust-Related Parameters.

The inventors are George B. McDonald et al. The Examiner in charge of

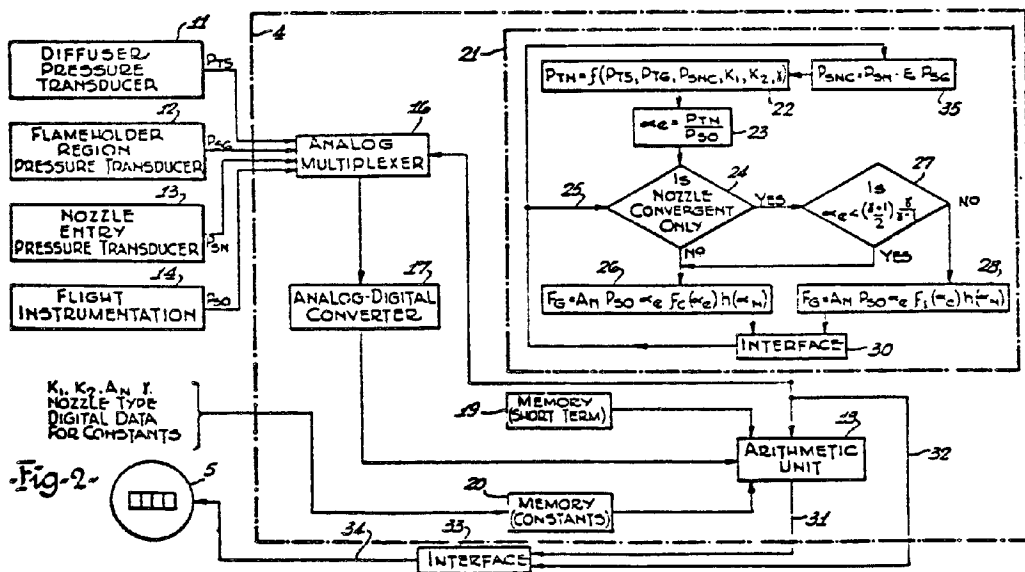
the application took a Final Action on April 17, 1978 refusing to allow

it to proceed to patent. In reviewing the rejection, the Patent Appeal

Board held a Hearing, at which the Applicant was represented by Mr. A.

Davidson. Also in attendance was one of the inventors, Mr. G.B. Mackintosh.

The application is directed to a thrustmeter for a jet engine aircraft which provides an output indicating engine performance at various throttle settings. The idea is to measure engine pressures in a static sea level facility, and then derive a correction factor for use under all operating conditions. Figure 2, below, is representative of that arrangement:



In the Final Action the Examiner refused the claims for failure to define patentable matter under Section 2 and 28(3) of the Patent Act.

At the Hearing Mr. Davidson stated that the applicant was no longer interested in pursuing claims 1 to 13 on file and wished to replace them with a single claim which he presented for consideration. It reads as follows:

Apparatus for determining a correction factor for use in testing a jet engine of known configuration comprising:

a test stand,

means for measuring gross thrust exerted by the engine on the stand,

first pressure transducer means positioned to measure nozzle entry static pressure, the reading being subject to error due to distortions in gas flow,

second pressure transducer means positioned to measure flame holder static pressure,

third pressure transducer means positioned to measure diffuser static pressure,

fourth pressure transducer means positioned to measure ambient static pressure,

means responsive to the gross thrust measurement and said second, third and fourth transducer means for determining a corrected value of said nozzle entry static pressure,

means comparing said corrected value and the measured value at said first pressure transducer to obtain said correction factor.

The question before the Board is whether or not the proposed claim is directed to subject matter which complies with the requirements of Section 2 and Section 28(3) of the Patent Act.

The disclosure outlines the disadvantages of the prior art systems, describes the applicant's arrangement and promises improved results. We note that the disclosure refers to the applicant's copending application 126,454 entitled "Method and Apparatus for Determining the Thrust of A Jet Engine" now issued to C.P. 998,770.

Page 10 of the disclosure states that the thrustmeter does not require the use of an immersed total probe in the nozzle region, thereby making it similar in that respect to the arrangement found in C.P. 998770. It adds "However, in the prior art, including the aforementioned application Serial No. 126,454, it was necessary to provide a gross thrust coefficient C_{fg} to account for some of the difference resulting from the actual gas flow being different from a one-dimensional model. The calculation of C_{fg} is elaborate and requires an altitude test cell to produce the desired nozzle pressure ratios."

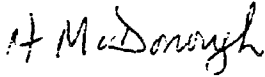
At the bottom of page 11 it states:

Accordingly the present invention is based on a discovery that certain internal engine pressures can be used to provide a corrected nozzle inlet static pressure which when introduced into the appropriate gross thrust equation will provide an extremely accurate indication of gross thrust for all throttle settings regardless of flight mach number and altitude."

As we understand the disclosure this application describes a thrustmeter which is an improved version of the one described in the above mentioned application, now CP 998770. We find that the presented claim defines an apparatus comprising a number of component elements for determining a correction factor for use in testing a jet engine of known configuration. We have no objection to this claim with respect to Section 2 and Section 28(3) of the Patent Act.

We informed the agent by telephone that the proposed claim was clear of the objections raised in the Final Action. On June 17, 1983 Mr. Davidson submitted an amendment in which permission was requested to cancel pages containing claims 1 to 13 and substitute a new page containing the proposed claim. We recommend entry of that amendment.

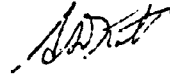
The Examiner has not had an opportunity to consider this claim during normal prosecution. We recommend therefore that the application be returned to him to assess its allowability with the above claim.



A. McDonough
Chairman
Patent Appeal Board



M.G. Brown
Assistant Chairman



S.D. Kot
Member

I have considered the recommendations made by the Patent Appeal Board.
Permission is granted to enter the amendment and the application is returned to the Examiner for further consideration.



J.H.A. Gariépy
Commissioner of Patents

Dated at Hull, Quebec
this 5th. day of August, 1983

Agent for Applicant

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