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WORLD INTELLECTUAL PROPERTY ORGANIZATION
GENEVA

INTERNATIONAL PATENT COOPERATION UNION
(PCT UNION)

PCT COMMITTEE FOR TECHNICAL COOPERATION

Eighth Session
Geneva, September 16 to 20, 1985

POSSIBILITY TO CHANGE THE FORMAT OF PCT PAMPHLETS

Memorandum by the International Bureau

1. In a document addressed to the twelfth session of the Assembly of the International Patent Cooperation Union (PCT Union) (hereinafter referred to as "the Assembly"), which took place in Geneva from September 24 to 28, 1984, the International Bureau submitted for consideration, as a means to make savings in the operations under the Patent Cooperation Treaty (PCT), a possible change of the format of the PCT pamphlets (other than those which are used for each application's communication to the designated Offices under Article 20 of the PCT and which would continue to have the same format as they now have) (see document PCT/A/XII/1, paragraph 8).

2. Such change of format would consist of the following:

- suggestion A : the drawings would be printed recto-verso (instead of recto only);
- suggestion B : all pages of the pamphlet--other than the front page (which would continue to have the same format as it now has) and the pages containing drawings--would contain two pages of the international application, with a 50% reduction in size;
- suggestion C : each page would no longer be marked with the international publication number and would show the international application number as marked by the receiving Office (presently, the International Bureau prints on the top of each page the international publication number and the international application number after having deleted the international application number as marked by the receiving Office). The Annex to this document contains a sample of a PCT pamphlet in the changed format.

3. During its seventh session, held in Geneva from September 18 to 21, 1984, namely, the week before the twelfth session of the Assembly, the PCT Committee for Technical Cooperation (hereinafter referred to as "the Committee") put the matter on its agenda. "The Committee, in view of the serious technical implications of the above-mentioned change in the format of the PCT pamphlets, especially for the work of searchers, expressed the wish that the Assembly, unless it decides during its forthcoming session that the said change should not be made, refer the matter to the Committee for consideration and advice" (see document PCT/CTC/VII/2, paragraph 18).

4. In its twelfth session, the Assembly decided to refer the matter to the Committee for consideration and to take a final decision on the basis of the advice of the Committee; the report on the session of the Assembly states that "several delegations saw serious problems of a technical nature with such a change of format" (see document PCT/A/XII/4, paragraph 14).

5. In a letter dated January 21, 1985, the Patent Information and Documentation Committee of the Fédération internationale de documentation (FID) made comments on the above-mentioned suggestions. That letter contains in particular the following:

"...we as representatives of the users, especially of search offices who have to handle a large number of pamphlets every day, are strongly hesitating at accepting such amendments. The clear arrangements and ease with which search work could be done in a very great number of documents so far will be considerably impaired. And before bringing through the new measure we wish to advise repeated examination of the usefulness of any of the planned alternations. Hereby the requirements which users and examiners have to satisfy continuously should be taken into special consideration. We would appreciate it if the present form of application pamphlets can be maintained in the main since they can be handled more easily."

6. In the opinion of the International Bureau, suggestion A should not be considered independently from suggestion B. The adoption of suggestion A would not, from the viewpoint of the expected savings, be worthwhile without simultaneous adoption of suggestion B. On the other hand, suggestion B could be adopted without suggestion A. As to suggestion C, it is quite independent from the other two and could be adopted on its own. In the opinion of the International Bureau, suggestion C does not raise the kind of technical problems which may flow from suggestions A and B. Should the position of the Committee be against suggestions A and B, the International Bureau would appreciate it if suggestion C were considered on its own merits, particularly since its adoption would allow savings in the cost of the preparation of the PCT pamphlets for publication.

7. The Committee is invited to consider, and to give advice on, the suggestions A, B and C (see paragraph 2, above) concerning possible changes in the format of the PCT pamphlets.

[Annex follows]

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	KP	Democratic People's Republic of Korea
AU	Australia	LI	Liechtenstein
BE	Belgium	LK	Sri Lanka
BR	Brazil	LU	Luxembourg
CF	Central African Republic	MC	Monaco
CG	Congo	MG	Madagascar
CH	Switzerland	MW	Malawi
CM	Cameroon	NL	Netherlands
DE	Germany, Federal Republic of	NO	Norway
DK	Denmark	RO	Romania
FI	Finland	SE	Sweden
FR	France	SN	Senegal
GA	Gabon	SU	Soviet Union
GB	United Kingdom	TD	Chad
HU	Hungary	TG	Togo
JP	Japan	US	United States of America

CONNECTING UNIT FOR A RING BUS

TECHNICAL FIELD

The invention relates to a method and arrangement in a telecommunications system for obtaining, in transmitting information between terminals commonly connected by a ring bus, an adaption at the interface between the bus and respective terminal, where the terminals may assume different logical conditions.

BACKGROUND ART

In the known art, units with a simple repeater function are customarily used, i.e. the signals pass straight through the unit, only obtaining a correction of the signal shape in relation to the distortion in the line. As an example of such a connecting unit, reference is made to a circuit made by EXAR INTEGRATED SYSTEMS INC, type XR-C277. The circuit has a regenerating repeater function utilized in PCM systems.

DISCLOSURE OF INVENTION

A problem with arrangements in the known art is that a fault, e.g. in the shape of an interruption in any of the terminals connected to the ring bus, also causes a breakdown of the entire bus, and in the case of a series bus this stops all traffic on the bus. The inventive arrangement, characterized by the claims, solves this problem by each of the terminals being connected to the bus via a connecting unit. The terminals can assume different conditions in relation to the bus. With the power supply unavailable the terminal is not connected, and can neither receive nor monitor the data flow on the bus. With power being supplied, but in the OFF LOOP condition the terminal is not connected to the bus, but it can monitor the data flow. In the PASSIVE condition the terminal is connected to the bus for receiving the data flow, and the terminal can also interrupt the data flow if it is commanded to go active. In the ACTIVE condition the terminal has access to the bus and also the initiative in the traffic occurring.

The connecting unit functions as a switch between the ring bus and terminal such that when the terminal is not supplied with power, the data flow on the bus goes straight through the unit, the latter then functioning purely as a repeater, whereas when power is supplied to the terminal and it is in the ACTIVE condition, for example, switching takes place in the unit preventing the data flow on the bus from passing through the unit, the flow passing instead through the terminal through the output transformer of the unit and out on to the bus.

In the terminal there is transceive logic coacting with the connecting unit, for receiving information from the unit for analysis. The signal on the bus also continues straight through the unit, which has a repeater function. The terminal awaits connection to the bus until it has received a particular code combination in the incoming data flow. When this combination is received the terminal sends an inhibition signal to the connecting unit, thereby interrupting the data flow through it. In conformity with received information the terminal subsequently sends data out to the bus via the output transformer of the unit. Information on the bus now flows through the terminal and may be affected by the latter. The inhibition signal is also triggered by absence of power.

The aim of the arrangement in accordance with the invention is thus to obtain a security function against faults, this function maintaining the data flow through the ring bus, even if a break should occur in any of the terminals connected to the bus.

BRIEF DESCRIPTION OF DRAWINGS

The inventive arrangement will now be described in detail with the aid of an embodiment, while referring to the appended drawings, on which:

Figure 1 is a sketch of a system in which the arrangement is included,
 Figure 2 is a principle diagram of a connecting unit in accordance with the invention and indicates said transceive logic in the terminal for the sake of clarity.

MODE FOR CARRYING OUT THE INVENTION

As will be seen from Figure 1, a plurality of terminals T1-T6 are each connected to a common ring bus RB via a connecting unit CU. The bus is of the single direction series type, which means that data only flow through the connecting unit in one direction.

- 5 According to Figure 2, the information circulating on the bus is received by the unit on the input a/b of a transformer TR1. An output transformer TR2 sends information to the bus RB via an output c/d. Constant power supply to the unit is obtained conventionally with the aid of a zener diode Z, connected between the centre taps of the primary winding of the input transformer TR1 and the
10 secondary winding of output transformer TR2.

Circuit logic is connected between the transformers, and is utilized as repeater or switching logic according as requirements. It includes the following: A regenerative differential amplifier F1, e.g. made by EXAR INTEGRATED SYSTEMS INC, type XRC 277, containing a clock signal unit and a regenerative
15 repeater for regenerating incoming data, as well as for generating synchronizing signals to the terminal transceiver logic A; an amplifier F2 for distributing to the input of the terminal receiver data signals coming from the bus and regenerated in the amplifier F1; switching logic comprising two gate circuits G1, G2 for breaking the information path between the connecting unit input and output
20 transformers on receiving an inhibition signal from the terminal send logic; an output amplifier F3 connected to the output transformer.

Three optoswitches O1, O2, O3, e.g. made by HEWLETT PACKARD, type 6N 137, are coupled between the connecting unit and the terminal transceiver logic as galvanic insulation.

- 25 The terminal T contains an ADLC circuit of a conventional kind, e.g. MOTOROLA M6854, and loop logic which, controlled by a microprocessor CPU, e.g. MOTOROLA type M68000, (not shown on the drawing) comprise said transceiver logic A.

A switching sequence with the aid of the arrangement is implemented in the

following way.

Information from the ring bus RB is applied to the input a/b on the transformer TR1 in the connecting unit CU. When the terminal connected to the unit CU is not supplied with power, the information flow passes through the amplifier F1, in
5 which it is regenerated. The regenerated data flow passes through the output amplifier F3 and output transformer TR2 and once again out onto the bus RB. In this case the connecting unit has solely functioned as a repeater.

In the case where the terminal is supplied with power, but is still not connected to the bus, the connecting unit again acts as a repeater, but the information is
10 simultaneously received on the terminal reception input RxD via the amplifier F2 and the optoswitch O2. The terminal T then analyses the information while awaiting the appearance of a message in the form of a given code combination. Clock pulses to the input RxC of the terminal section T are sent simultaneously from the connecting unit clock CL via the optoswitch O1.

- 15 In the reception logic A of the terminal section T, a comparison is made between received code combinations and fixed combinations, and for conformity, i.e. when the terminal itself desires to transmit, an inhibition signal I is sent to one input on each of the gate circuits G1, G2, in the connecting unit. The inputs are inverting, and when activated, e.g. by logical 1's, communication between the
20 amplifier F1 and output amplifier F3 is broken. The terminal T1 now sends information via a gate G3 and an amplifier F4 to the transmitter output TxD via the connecting unit transformer TR2 out onto the ring bus RB. In this case the information is guided through the terminal, and the bridging function of the connecting unit is broken off. From what has been described, it will also be seen
25 that for a breakdown in the terminal, the inhibiting signal is not forthcoming, and the unit once again functions as a repeater, i.e. no breakdown in any terminal T1-T6 can give rise to a breakdown on the bus. The electronic switching described may naturally be implemented optically using optical fibre switches, the electronic switching logic then being replaced by optical switches, e.g. made
30 by NIPPON ELECTRIC, type OP-8751.

CLAIMS

1 Method in a telecommunications system, when transmitting information
between terminals commonly connected by a ring bus, of providing adaption at
the interface between bus and the respective terminal, where said terminals may
assume different logical conditions, characterized in that connecting units
5 between the respective terminal and the bus are caused, for a passive terminal
or one where power is lacking, to serve solely as a repeater with the signals on
the bus being caused to pass through the connecting unit, and for an active
terminal the signal path through the connecting unit is automatically broken,
whereon the signals on the bus are caused to pass through the terminal.

2 Arrangement for carrying out the method of claim 1, in a telecommunica-
tions systems, when transmitting information between terminals commonly
connected by a ring bus of providing adaption at the interface between bus and
the respective terminal, where the terminals may assume different logical
5 conditions, characterized in that said arrangement, for preventing a breakdown
on the ring bus (RB) for a breakdown in any of the terminals (T1-T6), contains at
every interface between terminal and bus a connecting unit (CU) comprising:

A repeater unit (F1) for regenerating signals passing between input and output
transformers (TR1, TR2) associated with the connecting unit, switching logic
10 (G1, G2) between the output of said repeater unit (F1) and the input of said
output transformer (TR2), which, for a passive terminal (T) or one without power
maintain the signal path through the connecting unit (CU) with the terminal (T)
bypassed, but for an active terminal breaks the signal path through the
connecting unit on reception of an inhibiting signal (I) from the terminal,
15 whereon the signal path is switched such that the signals flow through the ring
bus (RB) via the terminal (T); transceive logic (A) in the terminal, sending said
inhibiting signal (I) to the input on said switching logic (G1, G2) when the
terminal is active.

3 Arrangement as claimed in claim 2, characterized in that said switching
logic includes two gate circuits which receive said inhibiting signal on each of
their inverting inputs.

4 Arrangement as claimed in claim 2, characterized in that three optoiswitch-
es (O1-O3) are coupled between the connecting unit (CU) and the terminal (T) for
maintaining galvanic insulation.

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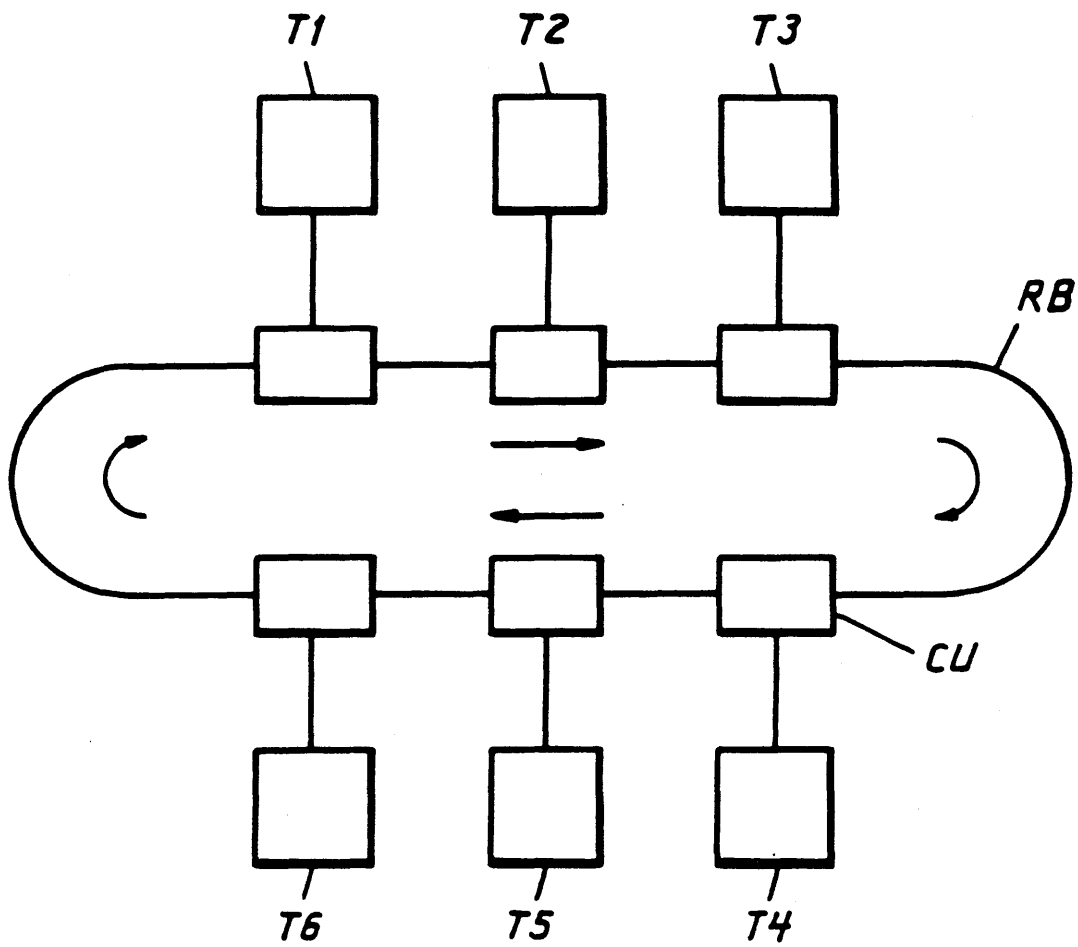


Fig. 1

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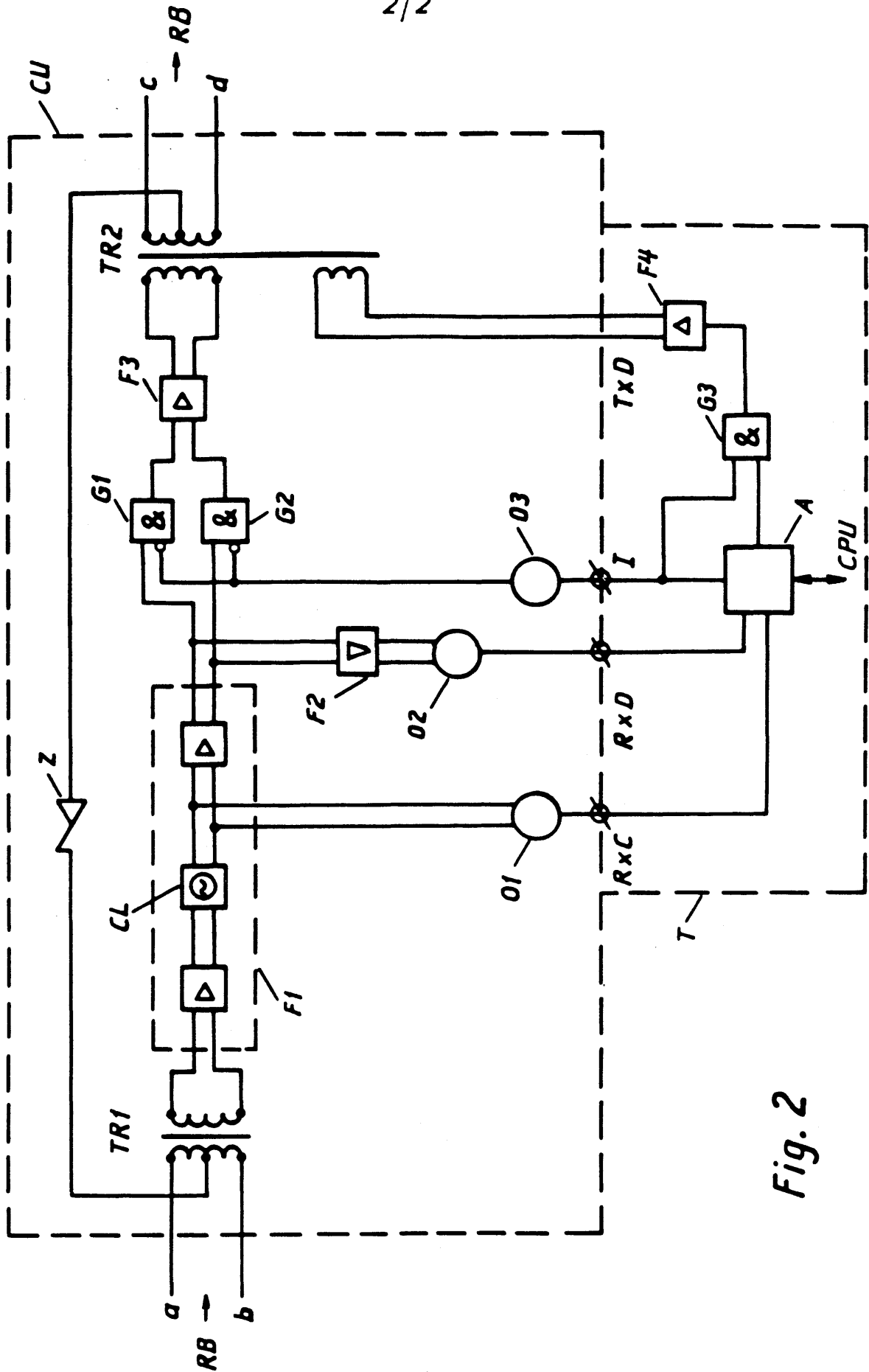


Fig. 2

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all)¹

According to International Patent Classification (IPC) or to both National Classification and IPC 3

G 06 F 3/04

II. FIELDS SEARCHEDMinimum Documentation Searched⁴

Classification System	Classification Symbols
IPC 3	G 06 F 3/04, 9/00, 15/00, 15/16, H 04 J 3/00, 3/14, 6/00, H 04 L 5/00, 5/22, 11/08, 11/16, H 04 M 9/00, 9/02, .../...
	H 04 Q 5/00-24

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched⁴

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT¹¹

Category ⁸	Citation of Document, ¹² with indication, where appropriate, of the relevant passages ¹³	Relevant to Claim No. ¹⁴
A	GB, A, 1 168 476 (BRITISH TELECOMMUNICATIONS RESEARCH LIMITED) 29 October 1969	
X	GB, A, 1 184 519 (STANDARD TELEPHONES AND CABLES LIMITED) 18 March 1970	
A	EP, A1, 0 006 325 (F M C CORPORATION) 9 January 1980	
A	US, A, 3 652 798 (JOSEPH HOOD McNEILLY, RYSZARD KITAJEWSKI) 28 March 1972	
A	US, A, 3 781 478 (DONALD EDGAR BLAHUT, FRITZ EDGAR FROEHLICH) 25 December 1973	
A	US, A, 3 790 717 (CARL N ABRAMSON, NICHOLAS A D'AGOSTO III) 5 February 1974	
X	US, A, 3 891 804 (VICTOR HACHENBURG) 24 June 1975	
	.../...	

⁸ Special categories of cited documents: ¹¹^A document defining the general state of the art which is not considered to be of particular relevance^E earlier document but published on or after the international filing date^L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)^O document referring to an oral disclosure, use, exhibition or other means^P document published prior to the international filing date but later than the priority date claimed^T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention^X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step^Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.^A document member of the same patent family**IV. CERTIFICATION**Date of the Actual Completion of the International Search¹⁵

1982-09-29

Date of Mailing of this International Search Report¹⁶

1982-10-05

International Searching Authority¹⁷

Swedish Patent Office

Signature of Authorized Officer¹⁸

Jan Silfvetting

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET**II Fields Searched (cont)**

US CI 178:2, 4.1; 179:15, 15AL, 18;
340:172.5; 235:151;
364:101, 102, 200, 900

National CI 21a¹:6/01-02;
21a²:36/20, 39/40;
21a³:46/10, 49/10, 51/10, 53/10;
42m:14

V. OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE¹⁹

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

 Claim numbers ... because they relate to subject matter¹⁹ not required to be searched by this Authority, namely: Claim numbers ... because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out¹⁹, specifically:**VI. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING²⁰**

This International Searching Authority found multiple inventions in this international application as follows:

 As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims: No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers: As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

 The additional search fees were accompanied by applicant's protest. No protest accompanied the payment of additional search fees.

H. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, ¹⁰ with indication, where appropriate, of the relevant passages ¹¹	Relevant to Claim No ¹²
X	US, A, 3 985 962 (IVOR JONES, HANS R MUELLER, DANIEL WILD, PITRO A ZAFIROPULO) 12 October 1976	
X	US, A, 4 071 706 (CHARLES STEWART WARREN) 31 January 1978	
X	IBM Technical Disclosure Bulletin, Vol 14, No 2, July 1971, p 488, E N BARNES, O E BECKLEY, E H STEWARD, A S WARNER: "Bypass Function For Stations On A Closed Communication Loop"	