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FORM 1

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- 7 MAR 1988

SPRUSON & FERGUSON  
Sydney

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

NEC Corporation, incorporated in Japan, of 33-1, Shiba 5-chome, Minato-ku, Tokyo, JAPAN, hereby apply for the grant of a standard patent for an invention entitled:

Branched Telephone System

which is described in the accompanying complete specification.

Details of basic application(s):-

Basic Applic. No: Country:

62-51282 JAPAN

Application Date:

5 March 1987

The address for service is:-

**Spruson & Ferguson**  
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DATED this SEVENTH day of MARCH 1988

NEC Corporation

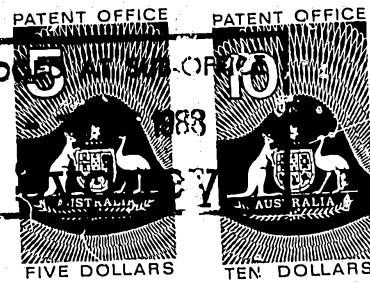
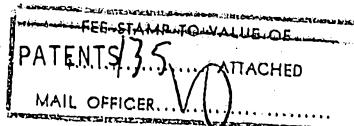
By:

*M.J. Anderson*

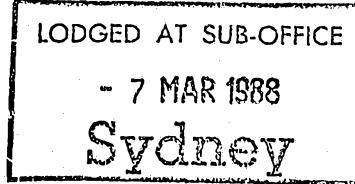
Registered Patent Attorney



TO: THE COMMISSIONER OF PATENTS  
OUR REF: 52426  
S&F CODE: 56179



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## COMMONWEALTH OF AUSTRALIA

THE PATENTS ACT 1952

DECLARATION IN SUPPORT OF A  
CONVENTION APPLICATION FOR A PATENTIn support of the Convention Application made for a  
patent for an invention entitled:AUSTRALIA  
CONVENTION  
STANDARD  
& PETTY PATENT  
DECLARATION  
SPPA

Title of Invention

"BRANCHED TELEPHONE SYSTEM"

I/We Susumu Uchihara

of c/o NEC Corporation of 33-1, Shiba 5-chome,  
Minato-ku, Tokyo, Japan

do solemnly and sincerely declare as follows:—

1. I am/We are the applicant(s) for the patent

(or, in the case of an application by a body corporate)

1. I am/We are authorised by NEC Corporation

the applicant(s) for the patent to make this declaration on  
its/their behalf.  
2. The basic application(s) as defined by Section 141 of the  
Act was/were made

Basic Country(ies)

in Japan

Priority Date(s)

on the 5th March, 1987

Basic Applicant(s)

by NEC Corporation

3. I am/We are the actual inventor(s) of the invention referred  
to in the basic application(s)

(or where a person other than the inventor is the applicant)

3. Hisashi Fujisaki and Keiko Shimada

both  
of c/o NEC Corporation of 33-1, Shiba 5-chome,  
Minato-ku, Tokyo, Japanis/are the actual inventor(s) of the invention and the facts upon  
which the applicant(s) is/are entitled to make the application are  
as follows:

The said applicant is the assignee of the actual inventors.

4. The basic application(s) referred to in paragraph 2 of this  
Declaration was/were the first application(s) made in a Convention  
country in respect of the invention(s) the subject of the application.

Declared at Tokyo, Japan this 9th day of February, 1988.

NEC Corporation

To: The Commissioner of Patents

Signature of Declarant(s)  
Susumu Uchihara  
General Manager, Patents Division

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**(12) PATENT ABRIDGMENT (11) Document No. AU-B-12742/88**  
**(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 622857**

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(54) Title  
**BRANCHED TELEPHONE SYSTEM**

International Patent Classification(s)  
**HO4M 001/70**

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(31) Number (32) Date (33) Country  
**62-51282** **05.03.87** **JP JAPAN**

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(71) Applicant(s)  
**NEC CORPORATION**

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**SPRUSON & FERGUSON, GPO Box 3898, SYDNEY NSW 2001**

(56) Prior Art Documents  
**AU 572959 38727/85 HO4M 1/68**  
**EP C009293**

(57) Claim

1. A branched telephone system having a plurality of telephones which are connected in parallel to a single subscriber line or to single radio equipment, comprising:

priority setting means for establishing a particular telephone available condition in which predetermined one of said telephones is still usable and the other telephone or telephones are disconnected from said subscriber line, said priority setting means comprising switching means for activating the function of said priority setting means and disconnecting the other telephones; and

priority cancelling means for cancelling said particular telephone available condition by detecting a change in a hook condition of the telephone to which priority is given, said priority cancelling means comprising means for detecting a hook, and switching means for selectively connecting or disconnecting the other telephones.

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FORM 10

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PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE:

Class Int Class

Complete Specification Lodged:

Accepted:

Published:

Priority:

Related Art:

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Name and Address  
of Applicant:

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Complete Specification for the invention entitled:

Branched Telephone System

The following statement is a full description of this invention, including the best method of performing it known to me/us

### ABSTRACT OF THE DISCLOSURE

A branched telephone system having a plurality of telephones which are connected <sup>in parallel</sup> to a single subscriber line or to single radio apparatus has a function of establishing a priority set condition 5 in which the communicating function of particular one of the telephones is validated to prevent the other telephones from being used, and a function of automatically cancelling such a ~~particular telephone available~~ ~~priority set~~ condition.



## BRANCHED TELEPHONE SYSTEM

### BACKGROUND OF THE INVENTION

The present invention relates to a branched telephone system in which a plurality of telephones are connected <sup>in parallel</sup> to a single subscriber line or to single radio equipment and, more particularly, to a branched telephone system capable of automatically cancelling a ~~priority set~~ <sup>Particular telephone available</sup> condition in which particular one of a plurality of telephones is usable.

In most of prior art branched telephone systems, two or more telephones are simply connected in parallel with no special control provided over them. In such a configuration, all the telephones share entirely the same functions and, therefore, it is impossible to give priority to desired one of the telephones over the others or to positively invalidate the latter. In a vehicle-mounted telephone system, two independent telephones may be connected to single radio equipment which is mounted on a vehicle and individually disposed in the vicinity of a front seat and a rear seat of the vehicle. It often occurs with such a vehicle-mounted telephone system that an occupant in the vehicle desires to invalidate one of the two telephones. For example, a person originated a call on the telephone near the rear sheet may



desire to keep the telephone number of the other party and the contents of communication from the driver.

SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a  
5 branched telephone system capable of establishing a particular telephone available condition in which the communication function of a particular one of a plurality of telephones is validated to prevent the other telephones from being used.

It is another object of the present invention to provide a branched  
10 telephone system capable of automatically cancelling a particular telephone available condition in which one of a plurality of telephones connected to a single line is validated with the others invalidated.

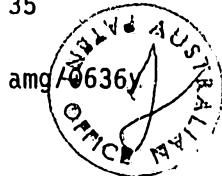
It is another object of the present invention to provide a  
generally improved branched telephone system.  
15 According to one aspect of the present invention there is disclosed a branched telephone system having a plurality of telephones which are connected in parallel to a single subscriber line or to single radio equipment, comprising:

priority setting means for establishing a particular telephone  
20 available condition in which predetermined one of said telephones is still usable and the other telephone or telephones are disconnected from said subscriber line, said priority setting means comprising switching means for activating the function of said priority setting means and disconnecting the other telephones; and

25 priority cancelling means for cancelling said particular telephone available condition by detecting a change in a hook condition of the telephone to which priority is given, said priority cancelling means comprising means for detecting a hook, and switching means for selectively connecting or disconnecting the other telephones.

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#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic block diagram showing a branched telephone system in accordance with the present invention;

Fig. 2 is a circuit diagram showing a specific construction of 5 a branching circuit and that of a switch unit as shown in Fig. 1; and

Figs. 3A and 3B are waveform diagrams representative of signals which appear in various portions of Fig. 2.

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#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Fig. 1 of the drawings, a branched telephone system embodying the present invention is shown and generally designated by the reference numeral 10. As shown, the system 10 is made up of radio equipment 12 having an antenna 14, a 15 branching circuit 16 provided with priority setting means, a master telephone 18, and a servant telephone 20. The telephones 18 and 20 are each connected to the radio equipment 12 via the branching circuit 16. A switch unit 22 located in the vicinity of the master telephone 18 is connected to the branching 20 circuit 16 and accessible for setting a priority set condition.

Fig. 2 shows a specific construction of the branching circuit 16 and that of the switch unit 22. A speech signal and control signal line 12b and a power supply line 12c of the radio equipment 12 are directly connected to, respectively, a speech 25 signal and control signal line 18b and a power supply line 18c of

the master telephone 18. A hook signal line 18a of the master telephone 18 is held in direct connection with a hook signal line 12a of the radio equipment 12. On the other hand, a hook signal line 20a, a speech signal and control signal line 20b and a power supply line 20c of the servant telephone 20 are connected to, respectively, the hook signal line 20a, a speech signal and control signal line 12b and power supply line 12c of the radio equipment 12 via a relay 24.

5 A flip-flop 26 is connected between the switch unit 22 and the relay 24 while a transistor 28 is connected between the relay 24 and the flip-flop 26. Usually, the output Q of the flip-flop 26 is maintained low level so that the transistor 28 remains non-conductive. In this condition, no current flows through the winding 24d of the relay 24 to hold contacts 24a, 24b and 24c 10 of the relay 24 closed, so that the servant telephone 20 is connected to the radio equipment 12 and usable in the same manner as the master telephone 18. When a contact 22a of the switch unit 22 is pressed, the output Q of the flip-flop 26 15 becomes high level, as shown in Fig. 3A. Then, the transistor 28 is turned on to cause a current to flow through the winding 24d of the relay 24, whereby the relay contacts 24a, 24b and 24c are opened. Consequently, the servant telephone 20 is 20 electrically isolated from the radio equipment 12 and, therefore, unusable while the master telephone 18 alone is usable. In such 25 <sup>particular telephone available</sup> ~~a-priority set~~ condition, when the contact 22a of the switch unit



22 is pressed again, the output Q of the flip-flop 26 is inverted to low level restoring the servant telephone 20 to the usable condition.

A light emitting diode 22b included in the switch unit 22 is 5 adapted to display the state of the flip-flop 26 so that a person may see if the servant telephone 20 is usable through the switch unit 22. A differentiator 30 is made up of a capacitor 30a, a resistor 30b and a diode 30c. When a change of the hook signal from low level to high level (see Fig. 3B) is detected by the 10 capacitor 30a and resistor 30b, a reset signal is fed from the differentiator 30 to the flip-flop 26 to thereby reset the output Q to low level. Now, assume that a person who is holding a communication on the master telephone 18 while giving priority to the telephone 18 through the switch unit 22 hangs up the 15 receiver of the telephone 18 to end the communication. Then, the differentiator 30 detects the resulting change of the hook signal from low level to high level, resetting the flip-flop 26. As a result, the output Q of the flip-flop 26 becomes low level to close the contacts 24a, 24b and 24c of the relay 24 again, 20 whereby the priority given to the main telephone 18 is cancelled.

In Fig. 2, the reference numerals 32, 34 and 36 designate inverters, the reference numerals 40, 42, 44 and 46 designate resistors, and the reference numeral 48 designates a capacitor.

In summary, it will be seen that the present invention 25 provides a branched telephone system with a capability of

Particular telephone available automatically cancelling a priority set condition. Specifically, the system of the invention automatically cancels a priority set condition by referencing the hook state of a telephone to which priority is given, preventing various undesirable occurrences ascribable to an inadvertent failure of cancellation.

Various changes and modifications will become possible for those skilled in the art after receiving the teachings of the present disclosure without departing from the scope thereof. For example, the present invention is applicable to telephone systems other than a vehicle-mounted telephone system shown and described, and telephone systems having more than two telephones. Further, the branching circuit and switch unit may be implemented with any known arrangement in place of the circuitry shown in Fig. 2.



The claims defining the invention are as follows:

1. A branched telephone system having a plurality of telephones which are connected in parallel to a single subscriber line or to single radio equipment, comprising:

5 priority setting means for establishing a particular telephone available condition in which predetermined one of said telephones is still usable and the other telephone or telephones are disconnected from said subscriber line, said priority setting means comprising switching means for activating the function of said priority setting means and  
10 disconnecting the other telephones; and

priority cancelling means for cancelling said particular telephone available condition by detecting a change in a hook condition of the telephone to which priority is given, said priority cancelling means comprising means for detecting a hook, and switching means for  
15 selectively connecting or disconnecting the other telephones.

2. A branched telephone system as claimed in claim 1, further comprising indicator means for displaying said priority set condition.

3. A branched telephone system as claimed in claim 2, wherein said system is mounted on a vehicle and wherein said particular one of  
20 said telephone is disposed in the vicinity of a rear seat and said other telephone is disposed in the vicinity of a front seat.

4. A branched telephone system being substantially as described with reference to the accompanying drawings.

25 DATED this FIFTH day of FEBRUARY 1992  
NEC Corporation

30 Patent Attorneys for the Applicant  
SPRUSON & FERGUSON

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FIG. 1

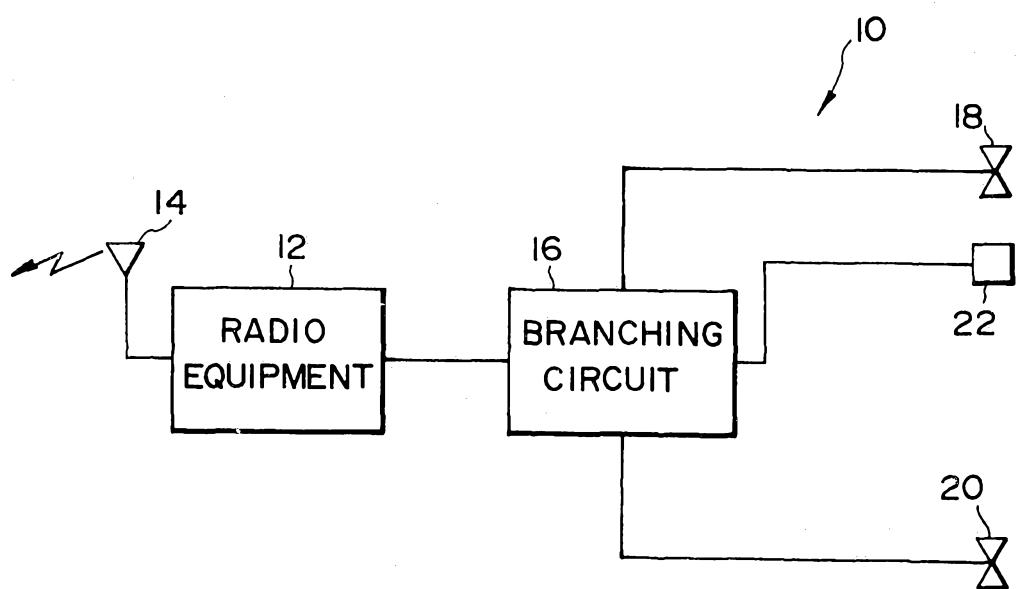
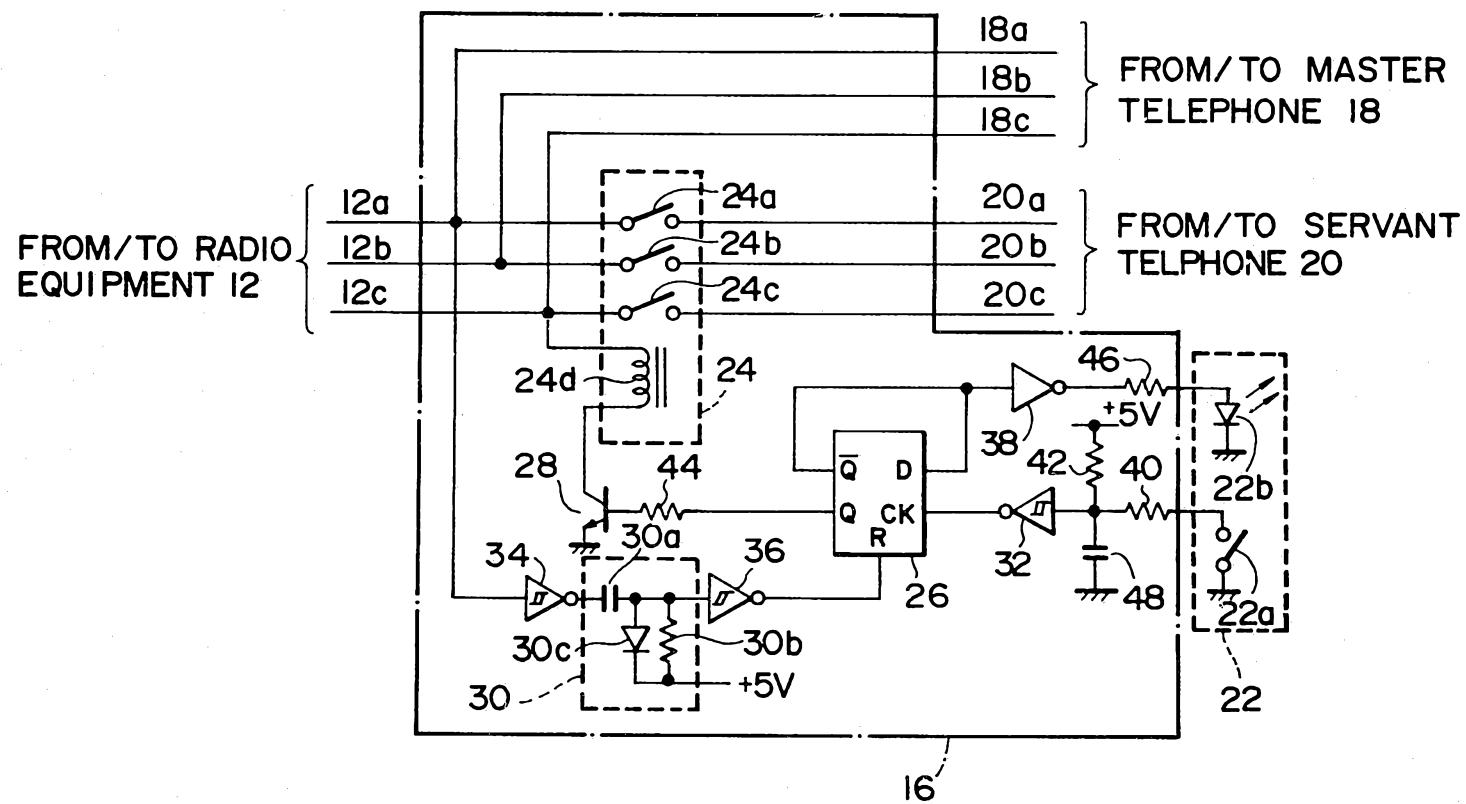


FIG. 2



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FIG. 3A

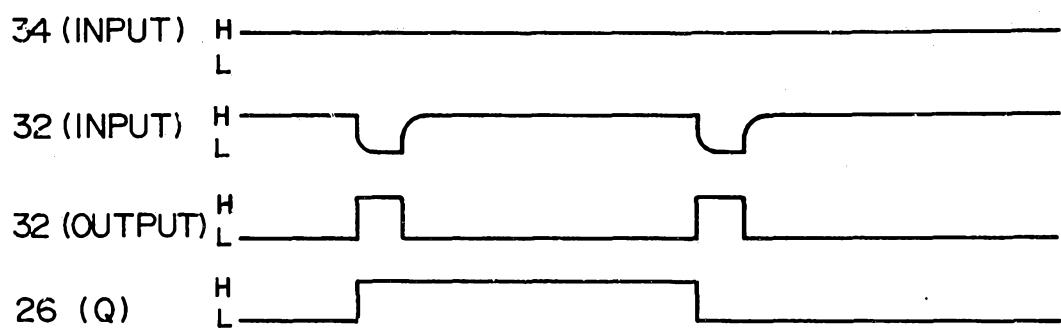


FIG. 3B

