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SUPERINDUSTRIA Y COMERCIO
Radicacion : 00207000 00000003 Folios: 2
Fecha (AMD): 2002-02-05 15:54:42
Tramite : 003 PATENTES D 1 REGISTRO/ 538 PETICION
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

Bogotá, Febrero 4 de 2002

Señores

**DIVISION DE NUEVAS CREACIONES
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO**

E. S. D.

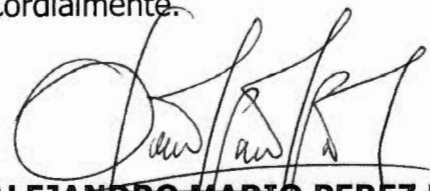
Ref.:	Número de Solicitud:	00 207.000
	Trámite:	PATENTE DE MODELO DE UTILIDAD
	Título:	TELEFONO MONEDERO CELULAR
	Int Cl.:	H04M 17/00
	Asunto:	Examen de Patentabilidad

ALEJANDRO MARIO PEREZ PATIÑO, mayor de edad, domiciliado en la ciudad de Barranquilla (Atlántico), identificado con la Cédula de Ciudadanía Número 72130797 de Barranquilla, en mi condición de titular e inventor del trámite de la referencia, me permito solicitar dentro del término concedido, y de acuerdo con la Decisión 486 de la Comisión de la Comunidad Andina y la Resolución 44691 del 31 de Diciembre del 2001, el examen de patentabilidad correspondiente. Para el efecto anexo recibo de pago por valor de \$212.000.00 por concepto de Examen de patentabilidad de modelo de utilidad.

Es importante establecer que la solicitud de Patente de Modelo de Utilidad fue publicada en la Gaceta de la Propiedad Industrial Número 510 de Noviembre 27 del 2001

Cualquier información adicional o notificación en relación con la presente comunicación, las recibiré en la Secretaría de su Despacho o en las oficinas ubicadas en la Calle 90 No 52c - 13. Edificio Hipocampus - Apto 102c de Barranquilla (Atlántico), Teléfonos (5)3575699 Fax (5)3685427

Cordialmente.


ALEJANDRO MARIO PEREZ PATIÑO

Cédula de Ciudadanía Número 72130797 de Barranquilla



Industria y Comercio

SUPERINTENDENCIA

NIT : 800176089-2

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RECIBO OFICIAL DE CAJA : 02 - 8,426
FECHA : FEBRERO 5 DE 2002

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
ALEJANDRO PEREZ PATINO	CONSIGNACION	BANCO POPULAR	050-00110-6	244937	05/02/2002	212,000.00

***** CONCEPTO *****

CANT. RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1 50005-01-01 SOLICITUDES	86 EXAMEN DE PATENTABILIDAD DE MODEL	212,000.00
	TOTAL :	\$ 212,000.00

MON: DOSCIENTOS DOCE MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No.

Carrera 13 No. 27-00 Pisos 5, 7 y 10
Conmutador 382 0840
Fax 350 5220
E-mail: info@sic.gov.co
www.sic.gov.co
Bogotá, D.C., Colombia

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES

2020
Bogotá D.C.

Señor:
Alejandro Pérez Patiño
Solicitante

REFERENCIA:

Radicación	00-207.000
Trámite	002
Evento	001
Actuación	430
Oficio No	00046
Folios	024

El artículo 85 de la Decisión 486 establece que, “son aplicables a las patentes de modelo de utilidad, las disposiciones sobre patentes de invención contenidas en la presente Decisión en lo que fuere pertinente... doce meses”, por lo tanto:

Como resultado del examen de patentabilidad de la solicitud de modelo de utilidad de la referencia, realizado según lo establece el artículo 45 de la decisión 486 de la comisión de la Comunidad Andina, se notifica el siguiente concepto técnico:

1. Documentos estudiados:

Para el presente estudio se tuvo en cuenta la descripción de los folios 18 a 20, los dibujos 1 a 3 de los folios 21 a 23, y las reivindicaciones 1 y 2 del folio 24, todos los documentos presentados como respuesta a las objeciones del primer examen, que se aceptaron.

El artículo 9 de la Decisión 486 de la Comisión del Acuerdo de Cartagena establece que, “La primera solicitud de patente de invención... conferirá al solicitante o su causahabiente el derecho de prioridad para solicitar... misma materia. El alcance y los efectos del derecho de prioridad serán los previstos por el Convenio de París... a) doce meses para las patentes de invención y modelos de utilidad...”.

La solicitud en estudio fue radicada el 25 de febrero de 2000, en ese momento ni posteriormente no se reclamó prioridad alguna, por lo tanto, acorde a lo dispuesto por los artículos 9 a 11 de la Decisión 486, no hay prioridad válida reivindicada.

2. Objeto de la invención

De acuerdo a lo que expone la descripción, el objetivo de la solicitud consiste en suministrar un teléfono monedero celular.

Por otro lado, el pliego reivindica un teléfono monedero celular, relacionado en las reivindicaciones 1 y 2.

Según la IPC la clasificación del objeto reclamado es H04M 17/00.

3. Claridad de la solicitud:

El artículo 28 de la Decisión 486 de la Comisión de la Comunidad Andina señala que: "la descripción deberá divulgar la invención de manera suficientemente clara y completa para su comprensión y para que una persona capacitada en la materia técnica correspondiente pueda ejecutarla".

La descripción aportada como respuesta a las observaciones del primer examen, intenta seguir el esquema recomendado; sin embargo, el aparte correspondiente a la "divulgación de la invención" quedó igual a la "mejor manera de llevar a cabo la invención", que es la descripción detallada, lo cual, es erróneo pues la "divulgación" debe ser un breve resumen.

La nominación de los cables de conexión 5, 6 entre los celulares 3, 4 y las tarjetas 7, 8 como "sistema de manos libres" NO corresponde a lo que, técnicamente, se conoce al respecto y se trata de una nominación arbitraria por parte del solicitante. En el arte, por "manos libres", se entiende un transceptor en forma de audífonos y micrófono, unidos por un cable que le permita a un usuario establecer una comunicación telefónica sin tener que levantar un auricular y sostenerlo con la mano.

No obstante lo anterior, no se pretende solicitar correcciones adicionales para ese aparte.

De otro lado, el artículo 30 de la citada Decisión indica que: "las reivindicaciones definirán la materia que se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción".

El nuevo pliego calificado continúa con defectos de claridad porque, el producto que se desea amparar, no se define por las características técnicas aportadas por el solicitante sino que se desvía a particularidades intrascendentes y a usos, que no permiten establecer si se alcanza o no el resultado declarado. Por ejemplo, "para efectuar llamadas a otros celulares... banda seleccionada", "... de tipo fijo afiliado a dos operadores diferentes...", "sistema de manos libres", "de tipo fijo para usarse en aquellas... celular".

La reivindicación independiente debe definir el producto que se desea amparar, de forma general, tal que contenga todas las características esenciales para alcanzar el resultado declarado y la(s) dependiente(s) es (son) para delimitar (aclarar) una característica contenida en la independiente.

Es de suma importancia que el interesado entienda que las reivindicaciones son lo que se califica y a lo que se concedería protección, por lo tanto, si esas reivindicaciones no son claras ni definen el objeto de forma completa, quién se podría ver afectado, eventualmente por ello, sería el mismo solicitante.

Una reivindicación independiente no debe limitarse solo a hacer una relación de elementos que conformen una disposición porque ello no permite establecer si se alcanza el resultado declarado o no y, por consiguiente, si el alcance de la protección se cumple o no.

Un ejemplo de redacción es el siguiente: "1. un sistema electro neumático de control para puertas de vehículos caracterizado porque comprende un sensor de movimiento (1) conectado a un microcontrolador (3), a su vez, conectado a los sensores de humo, temperatura, nivel y presión (7A), (7B), (7C), (7D) por medio de una interface (9) y que comanda las válvulas solenoides (5) y (12) de apertura y cierre de las puertas".

"2. el sistema de la reivindicación 1 caracterizado por que el sensor de movimiento (1) está

conectado a un circuito de emergencia (14)".

Es evidente, que los numerales deben corresponder a los elementos enseñados en los dibujos y descritos en la solicitud en estudio, los cuales, ayudan a interpretar una disposición que se pretenda proteger, y se deben incluir en paréntesis en las reivindicaciones.

Finalmente, como se informa en el folio 31 del expediente, no se presentaron oposiciones por parte de terceros.

4. Evaluación de la unidad de invención:

El artículo 25 de la Decisión 486 establece que, "La solicitud de patente sólo podrá comprender una invención o un grupo de invenciones relacionadas entre sí, de manera que conformen un único concepto inventivo".

El pliego reivindicatorio calificado se refiere a una única mejora, por lo tanto, cumple el requisito establecido.

5. Determinación del estado de la técnica:

La fecha para determinar el estado de la técnica es el 25 de febrero de 2000.

Consultadas las fuentes de información con que cuenta este despacho se encontraron los siguientes documentos anteriores a la fecha de radicación 25 02 2000, relacionados con la materia de la solicitud:

No	Documento	Título	Fecha de publicación
1	GB 2 144 305	Improved telephone	27 02 1985
2	US 5 046 085	Interfacing system for an international-type pay-telephone	03 09 1991
3	GB 2 251 155	Payphone with ring tone detection for deferring payment acceptance	26 06 1992
4	WO 94/00 947	Coin/card operated public telephone and its controlling method	06 01 1994

6. Evaluación de los requisitos de patentabilidad:

En cumplimiento del artículo 14 de la Decisión 486, el cual, dispone que: "Los países miembros otorgarán patentes para las invenciones, sean de producto o de procedimiento, en todos los campos de la tecnología, siempre que sean nuevas, tengan nivel inventivo y sean susceptibles de aplicación industrial"; se procedió a evaluar los requisitos de novedad y aplicación industrial, pertinentes para los modelos de utilidad, con el fin de establecer la patentabilidad de lo reivindicado en la presente solicitud.

Evaluación de la novedad

El artículo 16 de la Decisión 486 establece que, "Una invención se considerará nueva cuando no está comprendida en el estado de la técnica.

El estado de la técnica comprenderá todo lo que haya sido accesible al público por una descripción escrita u oral, utilización, comercialización, o cualquier otro medio antes de

la fecha de presentación de la solicitud de patente o, en su caso, de la prioridad reconocida.

Solo para el efecto de determinación de la novedad, también se considerará dentro del estado de la técnica, el contenido de una solicitud de patente en trámite ante la oficina nacional competente, cuya fecha de presentación o de prioridad fuese anterior a la fecha de presentación o de prioridad de la solicitud de patente que se estuviese examinando, siempre que dicho contenido esté incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40".

La publicación 1 (GB 2.144.305) divulga un teléfono conformado por una base, montada sobre rodachinas para su libre desplazamiento, que porta un teléfono conectado a la base por la antena. La base también incluye un mecanismo de recepción de monedas que habilita el uso del teléfono que puede formar parte de una red radio celular.

El segundo antecedente (US 5.046.085) revela un sistema de interconexión para acoplar un teléfono público tipo internacional a un sistema terrestre convencional o a un sistema celular. El teléfono que opera con monedas de pago se acopla a la red celular por el circuito de interconexión objeto de la publicación.

El antecedente 3 expone un aparato de control para un teléfono, en particular celular, cuyo uso se paga con monedas o tarjetas, que incluye medios de detección de tono, un suministro de alimentación, un mecanismo de control para las monedas (tarjetas), detectores de colgado o descolgado.

El último documento expone un teléfono público que funciona con monedas (tarjetas) que incluye una unidad de control para las monedas, un controlador, un teléfono, una pantalla LCD, un modem, una unidad de alimentación, etc.

En conclusión los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

No.	Documento	 Reivindicación(es) Afectada(s)	Requisito que afecta
1	GB 2 144 305; ver de línea 75 a línea 125 página 1; figuras 1, 2.	1 a 2	Estado del arte
2	US 5 046 085; ver de línea 61 col 1 a línea 12 col 3; líneas 52 a 68 col 3; figura 1.	1 a 2	Estado del arte
3	GB 2 251 155; ver páginas 1 a 8; figuras 1 y 3.	1 a 2	Estado del arte
4	WO 94/00 947; ver el extracto.	1 a 2	Estado del arte

En cumplimiento del artículo 45 de la decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de treinta días contados a partir de la fecha de notificación de la presente comunicación. En el caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsisten impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No 10 de 2001.


ALIX CÉSPEDÉS DE VERGEL
Jefe de la División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha

13/01/2004

Concepto Técnico	Examinador Técnico IE	Examinador jurídico
Número: 665	Código: 202004	Código:

39

(12) UK Patent Application (19) GB (11) 2 144 305 A

(43) Application published 27 Feb 1985

(21) Application No 8417490

(22) Date of filing 9 Jul 1984

(30) Priority data

(31) 8318468 (32) 7 Jul 1983 (33) GB

(51) INT CL³

H04Q 7/04 H04M 17/02

(52) Domestic classification

H4K QJ YR
H1Q JE

(56) Documents cited

EP A1 0048868
EP A1 0047524

(71) Applicant

Regional Telecom Limited (United Kingdom),
7 Bedford Street, Norwich, Norfolk

(72) Inventor

Damian O'Connor

(74) Agent and/or Address for Service

William Jones, Willow Lane House, Willow Lane,
Norwich NR2 1EU

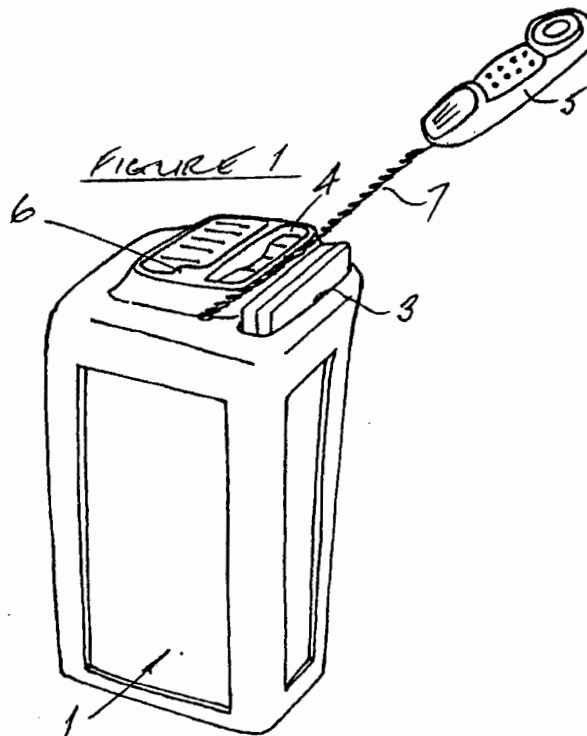
(58) Field of search

H4K
H1Q

(54) Improved telephone

(57) A moveable telephone comprises a base 1, mounted on casters 2 for free movement, carrying a hand set 5 linked to the base by an antenna 7. A coin freed mechanism 6 in the base enables the telephone to be used via a base telephone which may be some distance away and may be part of a cellular radio network.

The base 1 illustrated is freely moveable but not easily portable and includes a compartment 3 for accommodating telephone directory as well as having panels (not referenced) recessed into each of its four upstanding faces. The panels may carry advertising and may be illuminated from within the base.



GB 2 144 305 A

SPECIFICATION Improved telephone

The present invention relates to telephones, and more particularly to coin freed cordless telephones.

5 A telephone unit is hereinafter used to mean the combination of a handset containing a microphone and a speaker which may or may not be combined into a single hand-held unit, and a dialling means, which may be a rotating dial or a set of push
10 buttons, and this may either be combined with the handset into an integral unit or it may be spaced therefrom and connected thereto by an electrical connection.

A cordless telephone unit is hereinafter used to
15 define a telephone unit as defined above in combination with a transmitter/receiver device and an antenna. Signals to and from the cordless telephone unit are transmitted and received respectively by a second transmitter/receiver device
20 at a base station which may be several hundred meters from the cordless telephone unit. From the base station the telephone conversation is processed in the normal manner.

The above are well-known. Also well-known are
25 coin freed telephones, generally in public places, in which a standard telephone unit as defined above is mounted to a wall and may be used for a time dependent on the amount of money paid through the coin freed mechanism. It is also known to mount
30 such coin freed telephone units on trolleys, for example for use in hospitals. However, while this may be more convenient, it carries with it the disadvantage that cable must be provided to connect the trolley to a telephone socket. This
35 disadvantage can be partially overcome by providing a plurality of sockets, but this partial solution brings with it a second disadvantage of difficulty in locating the sockets.

It is an object of the invention to provide an
40 improved telephone unit of the cordless and coin freed type, whereby the above disadvantages are overcome.

According to the present invention there is provided a movable telephone comprising a
45 cordless telephone unit, as hereinbefore defined, a base which is freely movable but not easily portable, and a coin freed mechanism located in said base.

Preferably the handset is connected to the base by the antenna of the cordless telephone unit, such
50 that, in use, the antenna is extended, while the antenna retracts into the base when the handset is replaced on the base.

The antenna may be covered with metal tape wrapped spirally to deter separation of the handset
55 from the base.

The dialling means of the telephone unit may be located either on the handset or on the base.

A speech transponder may be provided for
60 instructing users of the telephone in the necessary procedures or for giving other information.

The base may comprise on at least one, but preferably all, of its side faces, panels for displaying information. They may be semi-translucent and illuminated from within the base.

65 The base is advantageously provided with castors for free movement.

An embodiment of the present invention will now be more particularly described by way of example and with reference to the accompanying drawings,
70 in which:

Figure 1 is a perspective view of a movable telephone unit embodying the invention; and
Figure 2 is a front view of a similar unit.

Referring now to the drawings, there is shown a
75 moveable telephone unit comprising a base 1 which is generally cuboidal with the four larger faces forming the sides of the base. It may be constructed of a framework of aluminium or other suitable metal, or rigid plastics material and each of the sides
80 may form a panel for displaying information. If so desired the panel can be sub-divided into two or more, as shown in Figure 2. The panels may be of semi-translucent plastics material printed with the information it is desired to display. They may then
85 be illuminated from within the base. For this purpose a rechargeable battery may be located within the base.

The exact dimensions of the base are not important provided that the base is large enough to
90 make the unit difficult to remove surreptitiously and to allow users to operate the telephone unit in a comfortable manner. The base is mounted on four 360° castors 2, one at each corner of the base. This enables the base to be moved freely about such
95 areas as hospitals, hotel lobbies or restaurants.

On the top of the base is a receptacle 3 for telephone directories or other publications, a cradle
4 for the handset 5 and coin slots 6. Inside the base, and not shown, are a coin freed mechanism
100 allowing operation of the telephone for a settable length of time per unit coin, a coinbox for safely receiving coins, and in certain embodiments lighting means and a rechargeable battery for operating them. At least one of the panels may be
105 hinged, preferably lockably, to allow access to the interior of the base.

The handset 5 comprises a microphone and speaker, arranged conventionally, with push
110 buttons for dialling arranged in the space between them. It would of course be possible to transfer the push buttons or whatever other dialling means are desired to the top of the base. A transmitter/receiver device is located within the handset 5, although again this could be arranged within the base. Where
115 the transmitter/receiver device is arranged in the handset, a re-chargeable 24 volt dc battery is provided and twin pins (not shown) are arranged in the cradle 4 for re-charging the battery when the handset is replaced. The pins are connected to a
120 nickel cadmium rechargeable battery in the base which is chargeable from the electric mains.

Since the unit is intended for use in public places, and since the handset is vulnerable to unauthorised removal, the handset 5 is connected to the base 1 by
125 a cable 7. This is connected to a reel-up device within the base so that when the handset is replaced, the cable 7 retracts into the base. In the preferred embodiment, this cable 7 comprises the antenna for the cordless telephone. Thus when the

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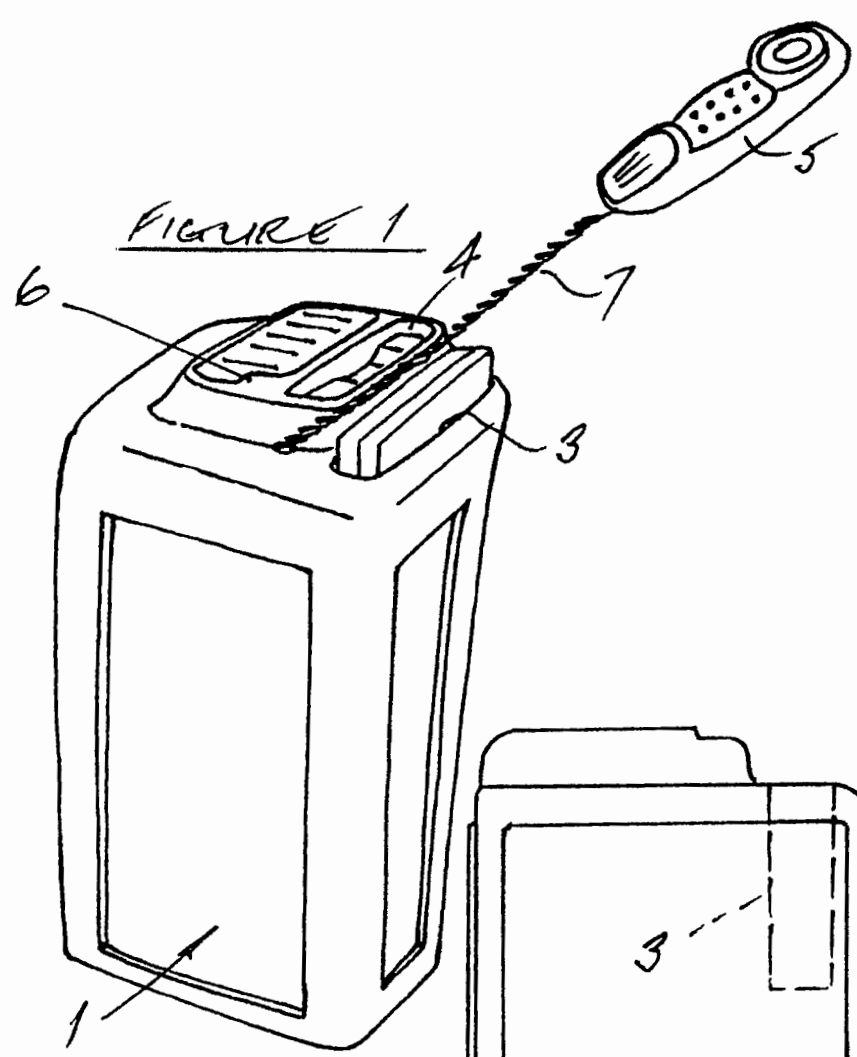
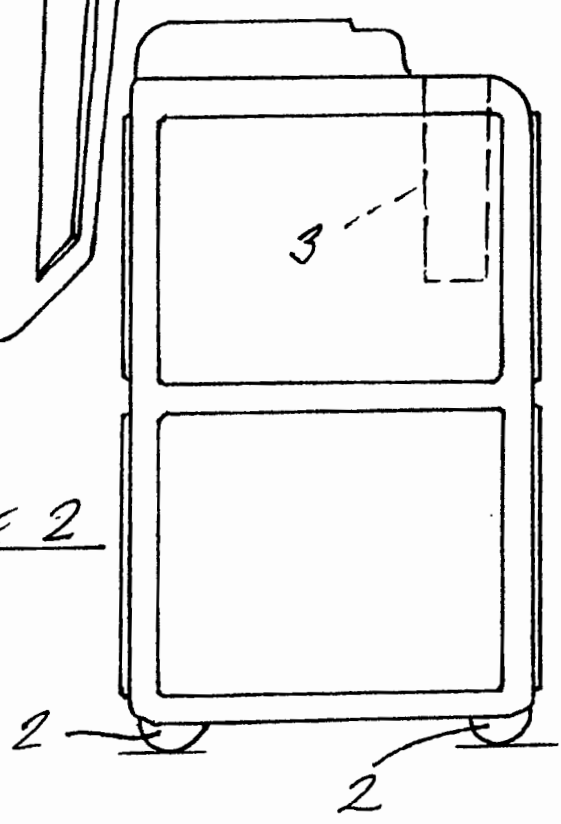


FIGURE 2



[54] INTERFACING SYSTEM FOR AN INTERNATIONAL-TYPE PAY-TELEPHONE

[76] Inventors: **Randall D. Godsey**, 170 Austin Ave., Carpentersville, Ill. 60110; **Charles T. Walneck**, 120 Lakeshore Dr., Cary, Ill. 60013; **James Santee**, 24675 N. Jensen Ave., Cary, Ill. 60013; **Ronald J. Gaulke**, 11706 Kenneth Ave., Huntley, Ill. 60142; **Luis R. Ortiz Perez**, 10-D-5 Chestnut Hill Ave., Cambridge Park, Rio Piedras, P.R. 00926; **Alexis T. Ramos**, Lomas de Carolina, Calle 7, Bloque L #3, Carolina, P.R. 00630

[21] Appl. No.: 524,192

[22] Filed: May 15, 1990

[51] Int. Cl.⁵ H04M 17/00; H04M 15/10; H04M 7/16

[52] U.S. Cl. 379/112; 379/63; 379/132; 379/155

[58] Field of Search 379/112, 59, 63, 115, 379/132, 146, 155

[56] References Cited

U.S. PATENT DOCUMENTS

4,924,497 5/1990 Smith et al. 379/132

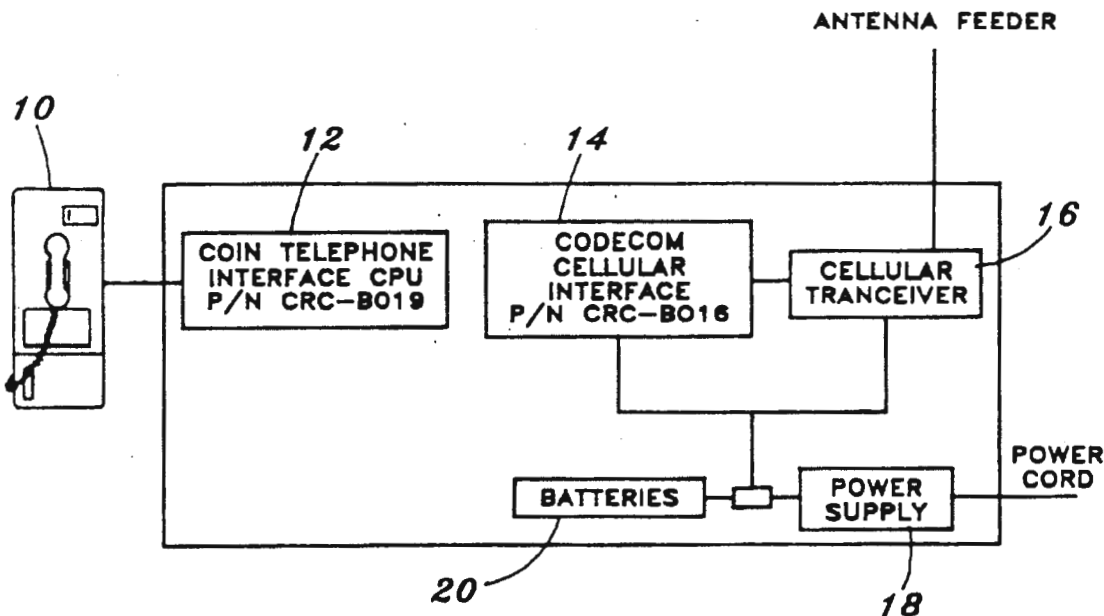
Primary Examiner—Stafford D. Schreyer

Attorney, Agent, or Firm—Milton S. Gerstein; Marvin N. Benn

[57] ABSTRACT

An interface unit for coupling an international-type pay-telephone to a land-based or cellular telephone system. The interfacing unit of the invention has a microcomputer, and an associated EPROM in which is stored the exchanges of the telephone numbers that are accessible by that local payphone-terminal, which EPROM also stores a table indicative of the tariffing rates associated with the respective exchanges called. The invention also includes the tone-detectors for detecting the dialed DTMF digits of the pay-telephone, for the conversion thereof for storage in the microcomputer for the determination of a valid telephone number dialed in order to determine the associated tariffing rates. The tone detectors also detect the tone-signals received from the telephone system. The invention also includes "isolating" switching circuitry for isolating the coin-operated pay terminal from its complement to the telephone system until the telephone call has been connected. After a call has been made according to the invention, the microcomputer, after having determined the tariffing schedule for that particular call made, will generate 12K to 16K tone-bursts to the international-type payphone terminal required for debiting the required amount from the coins or credit initially inserted into the payphone.

34 Claims, 9 Drawing Sheets



INTERFACING SYSTEM FOR AN INTERNATIONAL-TYPE PAY-TELEPHONE

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BACKGROUND OF THE INVENTION

The present invention is directed to an interfacing unit for an international-type coin-operated pay telephone, for example that manufactured by Sodeco, Ltd. of Switzerland, and commonly referred to as a Landis-Gyr international-type coin operated telephone. European, and other international, pay-telephone systems differ from their U.S. counterpart in that the telephone system's central office determines the consumption of the initial coins inserted into the coin-operated telephone via the generation of periodic tone-bursts, commonly within a 12K to 16k range. The frequency of the generation of these tone-bursts by the central office determines the frequency of the debiting at the payphone terminal of the coins inserted. Therefore, when making a long distance call that is more expensive than another long distance call, the central office will generate more frequent tone-bursts to the international-type coin-operated telephone, thereby debiting the terminal more frequently in the base coin-units of that particular country.

It is known to retrofit a conventional, U.S.-type, coin-operated telephone, such that the local payphone terminal is equipped with tariffing information, by which the payphone is monitored and charged via information stored at the local site. This is achieved by including at the local terminal site a listing of all of the exchanges to which one may make an outgoing call, and a listing of the associated tariff rates. There are retrofitting units that retrofit U.S. payphones such that tariffing is achieved at the local site. However, coin collection is still to be based upon the conventional, U.S. method of generation of reverse-polarity signals by a central office of the land-based, switched telephone-network. It is also known to couple such U.S. payphones to a cellular transceiver via a conventional cellular interface unit.

The present invention is directed to an interfacing unit that is coupled to an "International"-type payphone, such as the Landis-Gyr, coin-operated pay-telephone, which interfacing unit of the invention assumes all of the functions of the central office, so that private payphones may be readily and easily provided at any chosen site, whether such payphone be coupled directly to the land-based, switched telephone network, or be coupled to a cellular, or other radio, telephone system.

SUMMARY OF THE INVENTION

It is the primary objective of the present invention to convert a conventional, "International"-type, coin-operated pay-telephone, such that central office functions are generated locally at the payphone-terminal proper.

It is another objective of the present invention to, specifically, generate tone-bursts locally at the pay telephone site, by the generation of particular tone-fre-

quencies determinative of the cost of the call, what is generally termed "tariffing."

It is yet another objective of the present invention to allow for such central-office functioning at the local, pay telephone-terminal site, such that tariffing itself is done locally, with the determination of a valid telephone call as well as all tone-detections being done at the local payphone-terminal site.

It is an objective of the present invention also to provide for the disconnection of the pay telephone proper from the central office, or, alternatively, to its connection to a cellular interface unit, during the call-progress monitoring connection of the call to the called party, so as to isolate the pay-telephone terminal so as to prevent interference with the tones generated during the call-progressing.

Toward these and other ends, the interfacing unit of the present invention comprises a microcomputer, and an associated EPROM in which is stored the exchanges of the telephone numbers that are accessible by that local payphone-terminal, which EPROM also stores a table indicative of the tariffing rates associated with the respective exchanges called. The invention also includes the tone-detectors for detecting the dialed DTMF digits of the coin-operated pay-telephone, for the conversion thereof for storage in the microcomputer for the determination of a valid telephone number dialed in order to determine the associated tariffing rates. The tone detectors also include conventional tone-detectors for detecting the tones received from the central office, or, alternatively, tones received via the over-the-air radio transmission, such as the cellular network, via a conventional cellular interfacing unit, manufactured by Telular, Inc., which tone-detectors determine the various signals common to the generation and completion of a telephone call, such as tones representative of busy signals, as well as ringback signals. The invention also includes "isolating" switching circuitry for isolating the coin-operated pay terminal from its complement to the telephone system until the telephone call has been connected. This isolation, achieved through switching circuitry, is performed in order to prevent any noise or feedback from the pay telephone terminal that would in any way disrupt the call-progressing signals generated by the central office to the payphone-terminal. The switching circuitry, after having separated, or isolated, the payphone-terminal from its connection with the central office, will, however, switch over to a secondary unit that couples the payphone-terminal to the tone detectors in order that the person making the call may be able to hear the tones received from the central office, such as busy signals, audible ring signal, and the like, in order to simulate a conventional telephone.

The present invention may be used for land-line connection through a standard, land-telephone switching network, by which the pay-telephone is directly connected to the central office via land lines, or, may, alternatively, be used with a cellular network, by coupling the interface unit of the present invention to a conventional cellular interface unit that is coupled to a standard cellular transceiver, such cellular interface unit being conventional and manufactured by Telular, Inc., of Wilmette, Illinois, which cellular interface unit is disclosed in U.S. Pat. Nos. 4,658,096 and 4,737,975. There is, therefore, achieved at the local payphone terminal-site all of the functions hitherto generated by the central office. By localizing such central-office functions at the

local payphone-terminal site, private payphones may be easily and readily provided. After a call has been made according to the invention, the microcomputer, after having determined the tariffing schedule for that particular call made, will generate 12K to 16k or 50 hertz tone-bursts to the international-type payphone terminal required for debiting the required amount from the coins or credit initially inserted into the payphone, which debiting occurs by decrements in the base currency unit of the respective country. The more expensive the call being made, the more frequent the 12K to 16k or 50 hertz tone-bursts are generated.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more readily understood with reference to the accompanying drawings, wherein:

FIG. 1 is a block diagram of the overall system of the present invention coupled between a cellular transceiver via a conventional cellular interface unit and to a conventional international-type, coin-operated pay-telephone;

FIG. 2 is a flow diagram showing the sequence of events for completing a call over the system of the invention;

FIG. 3 is a schematic diagram of the microcomputer used in the present invention and its coupling to an oscillator-filter for generating the tone-bursts required for the tariffing of the call made;

FIG. 4 is a schematic diagram showing the switching circuitry for isolating the pay-telephone terminal from its coupling to the central office, or to the cellular transceiver, after a call has been determined as being valid and sent on for further, processing and completion;

FIG. 5 is a hardware diagram showing the coupling of the microcomputer of the invention, its inputs and outputs, and its connections to the tone-detectors;

FIG. 6 is a schematic diagram showing in greater detail the switching circuitry shown in FIG. 4;

FIG. 7 is a flow chart showing the operation of the system of the invention from initialization to the completion of a call;

FIG. 8 is a flow chart showing the flow of events during call-progressing and tone-detection of the invention; and

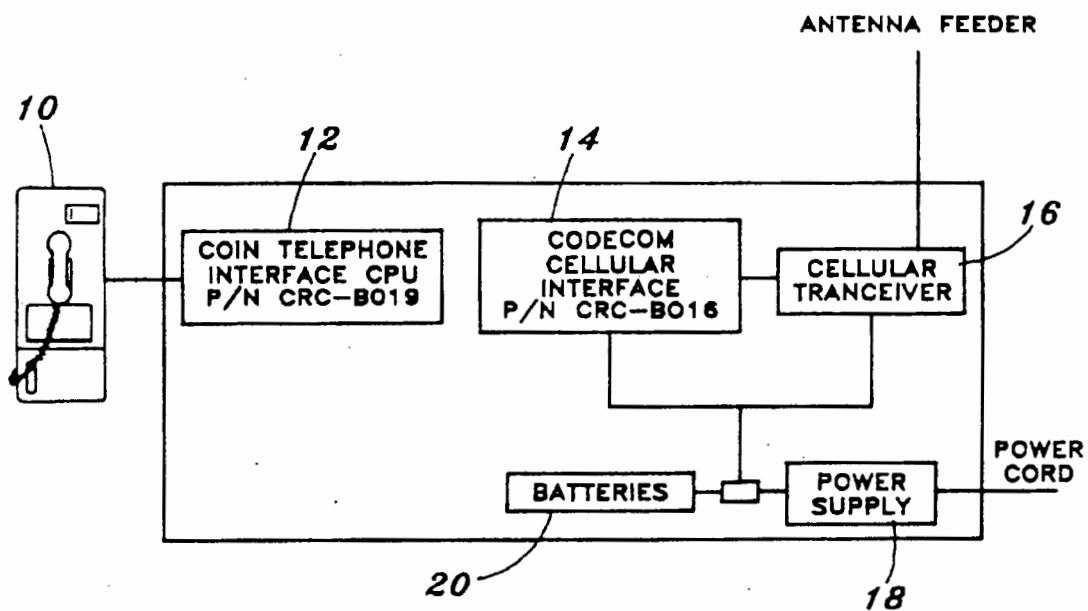
FIG. 9 is a flow chart showing the procedural steps for rate-determination at the outset upon having completed the dialing of a telephone number at the local pay telephone terminal site.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings in great detail, FIG. 1 shows the elements of the invention. A conventional international-type, coin-operated pay-telephone 10 is coupled to the cellular network, in this embodiment, via the interfacing system 12 of the present invention. The interfacing system of the invention, in turn, is coupled to a conventional cellular interface-unit 14, such as that manufactured by Telular, Inc. of Wilmette, Illinois, which, in turn, is coupled to a conventional, cellular transceiver 16 for over-the-air radio transmission to a base site, for subsequent connection to either a land-based switched telephone network, or to the cellular base station and another cellular phone. In the alternative embodiment, the interface unit 12 may be coupled directly via the land line to the conventional, land-based switched telephone network. Power is derived via conventional power supply 18 and batteries 20.

Referring to FIG. 2 for now, there is shown, in summary manner, the sequence of events by which a call may be made and completed via the present invention. After initial reset (block 22) and initialization of the system (block 24), the system of the invention awaits "off-hook" detection (block 26), which means that the phone has been taken off-hook, and loop-current flowing, by which a call is ready to be made. During the dialing of the digits of the telephone number on the payphone, the system of the invention reads such DTMF signals (block 28), converts them to binary code for storage in the microcomputer of the invention, and also determines the last digit of the telephone number dialed (block 30). This last-digit determination may be achieved via digit-determination, such as that set forth in U.S. Pat. No. 4,658,096, or may be accomplished by a simple time-out process, i.e., after a preset time has elapsed, it will be assumed that the last digit has been dialed. Typically, such a time period may be between 4 and 10 seconds. After determining the last digit of the dialed telephone number, the system of the invention will determine if the telephone number dialed is, in fact, a valid number, which is accomplished by "looking up" the first two or three digits of the dialed number, or what may be termed the "exchange" thereof, in its "look-up" table, which is stored in EPROM or nonvolatile RAM, and, if such exchange is valid, it is then checked for a respective tariffing rate associated with it. If such a rate is found (block 32), then the system of the invention will automatically calculate the rate of tone-pulse generation for tariffing purposes (block 34). The system will then send the dialed telephone number to the central office for the land-based, switched telephone network, or to the radio base station via over-the-air transmission in a cellular network. After such time, the system of the invention will perform answer-supervision (block 36), during which there will be determined whether the called party has picked up the phone at that end, or whether there is a slow busy signal generated, or the like. Assuming that the call has been answered, with the concomitant breaking of the ringback tone-signals, which indicates that the called phone has been answered, then the call is monitored and tariffing tone-pulses are generated at periodic intervals depending upon the cost of the call, all of which is initially determined during the validation process (block 38). The system will continually check to see if the phone has again been placed "on-hook" again (block 40), and, if it has, then the system returns to the "wait" state, disconnecting the call, with tariffing also being terminated.

Referring to FIG. 4, there is shown a schematic diagram for coupling the pay-telephone terminal to the switched telephone network, or to the cellular network, and for isolating it during the answer-supervision process. The conventional, international-type coin-operated pay-telephone 10 has associated with it a conventional "off-hook" current detector 24 for determining when the phone is taken off-hook. The pay-telephone 10 is coupled to the telephone network 26, which may be a land-line central office, or may be the cellular system, via first relay-switch K1, in a first state thereof. The switch K1, during the initial operation of the payphone, which is during the making of a telephone call, isolates the payphone from the telephone network 26. While the call is being dialed on the payphone 10, and the DTMF signals generated, the DTMF signals are sent to conventional tone-detectors, which form part of an overall series of conventional tone-detectors 30, for

FIG. 1

⁽¹²⁾ UK Patent Application ⁽¹⁹⁾ GB ⁽¹¹⁾ 2 251 155 ⁽¹³⁾ A

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(71) Applicant
Suche H.P. Ltd

(Incorporated in the United Kingdom)

**Unit 11, Meridian Centre, Kings Road, Oldham,
OL8 1EZ, United Kingdom**

(72) Inventor
Steven Merry

(74) Agent and/or Address for Service
Mewburn Ellis
2 Cursitor Street, London, EC4A 1BQ, United Kingdom

(51) INT CL⁵
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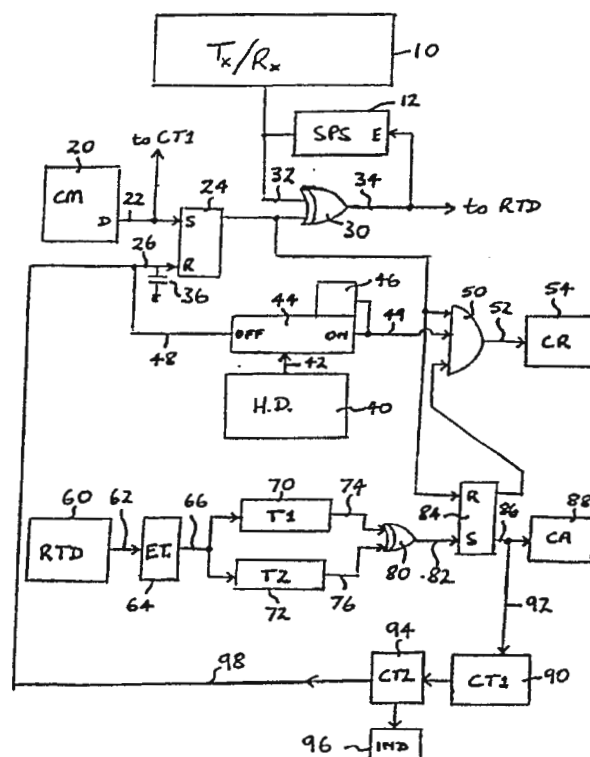
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H4K KEM KQJ

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EP 0134693 A2 US 4942604 A

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UK CL (Edition K) H4K KEM KQJ
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Online databases:WPI

(54) Payphone with ring tone detection for deferring payment acceptance

(57) Control apparatus for a payphone, especially a cellular telephone 10, includes ring tone detection means 60 for deferring acceptance of payment (eg coin or card) and commencement of call duration timing until ring tone ceases indicating successful connection of a call. The payphone has a power supply 12 connected to a coin controlled mechanism 20. A coin detect terminal D outputs a signal on coin detection through flip flop 24 to provide power from the supply 12 to the transceiver 10. A hook state detector 40 is energised by lifting the transceiver 10 and a coin is placed in a held condition whilst awaiting call connection. The ring tone bursts are detected by detector 60 which starts timers 70, 72 in response to the stop and start of each ring tone burst. When call connection has been made the output 86 energises coin accept means 88 and a call timer 90 associated with an indicator 96 related to elapsed time and coin accepted. When the call is terminated, or further coins are not supplied, the output 98 from the call timer 90 causes flip flop 24 to reset, actuate coin return means 54 and initiate power off procedure.



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

- 1 -

PAYPHONES

This invention relates to so-called payphones and has particular, but not exclusive, application to cellular telephones.

We are not aware of any cellular telephone units being available for operation on a pay-operated basis, and it is an object of this invention to provide an effective system capable of application to cellular telephones.

According to this invention, there is provided payphone control apparatus comprising payment detection means for successive payments, hook-state detection means for lifting of telephone handpiece, and timing means for limiting call duration according to payments made for and during the call, and ring tone detection means for deferring acceptance of payment and call duration timing until ring tone ceases indicating successful connection for the call and for terminating payphone operation after the handpiece goes on-hook.

The payment and hook-state detection means may be of any suitable nature and light emitting and detecting types will be described and shown.

Operational state of the payphone can conveniently be controlled by way of means performing an Exclusive-OR function relative to payment detection and power-on condition of the payphone, say controlling a switchable power supply for the telephone transceiver.

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JMe051090

- 2 -

Payment detection may involve setting the state of bistable means reset by signals from the hook-state detection means and/or call timing means.

Ring tone detection and related control preferably involves producing a control signal at a time beyond normal intervals between ring tone bursts. Such provision can advantageously involve means setting two different time periods both longer than intervals between detected ring tone bursts and providing a control signal only during the difference between said time periods after ring tone bursts cease to be detected. Two separate timers may be used, each started at the trailing end of each ring tone burst and reset at leading edge of next succeeding ring tone bursts. Means performing an Exclusive-OR function can be used for output states of the timers, and bistable means may further usefully effectively staticise the time difference control signal. When set, such bistable means can control both of starting the call timing means and operation of payment accept means. Resetting of such bistable means is preferably before next operation of payment detection means, typically going on-hook.

Provision for coin return can usefully utilise coincidence gate means response to on-hook state, preferably further with an eject provision, and conveniently further in response to payment detection and/or resetting of end-of-dial pulse detection means.

Specific implementation for this invention will now be described, by way of example, with reference to the accompanying drawings, in which:

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- 3 -

Figure 1 is a block circuit diagram;

Figure 2 is a flow diagram; and

Figure 3 is a detailed circuit diagram.

In the drawings, referring first to Figure 1, box 10 represents transceiver equipment of a cellular telephone subscriber's unit, and box 12 its power supply 12 required herein to be of a switched nature (represented by enable terminal E) for payphone operation indicated as controlled by coin mechanism 20.

The coin mechanism 20 has a coin detect output terminal D to line 22 connected to one input of a flip flop 24, which is of bistable type set by energising line 22 and reset by energising line 26 to its other input. Output 28 of the flip flop 24 goes to one input of a two-input Exclusive-OR gate 30 whose other input is connected over line 32 to output of the power supply 12. Output 34 of the Exclusive-OR gate 30 will have one state when both its inputs are high or low, and another state when those inputs are different, and is used to control the power supply 12 to be on when the Exclusive-OR inputs are different. The latter will occur when the power supply 12 is off and a coin-detect signal appears on line 22, also when the power supply 12 is on and there is no signal on line 22. That facilitates operation using a coin mechanism 20 of a type giving only a momentary coin detect output as a coin enters the mechanism on its way to a held position pending establishment of an intended call connection. A

capacitor 36 serves to ensure that response of the flip flop 20 to energisation of its reset line 26 is such that the switched power supply 12 will not shuttle between on and off states.

When the power supply 12 is switched on, the transceiver 10 will be operable. For the embodiment of payphone controller being described, however, operation is further made to be possible only if the telephone handpiece is lifted, i.e. off-hook in telephone parlance. That is achieved using an on-hook/off-hook detector 40 having an output 42 that is energised for off-hook conditions. Related circuitry 44 including a coin eject switch 46 is operative to control energisation of line 48 connected to reset line 26 for the flip flop 24 and line 49 connected to one input of AND gate 50. Resetting of the flip flop 24 is thus obtained when the telephone hand-piece is on-hook, also operation (via AND gate 50 and its output 52) of coin return means 54 of the coin mechanism 20.

Once coin entry has been detected with the handpiece off-hook, the power supply 12 will remain switched on while dialing takes place and ring tone bursts are detected by detector 60, indeed through a call connection. Output 62 from the ring-tone detector 60 is shown going to envelope and triggering circuitry 64 operative to produce timer start and reset signals on its output 66 at times corresponding to stop and start of each burst of ring tone, respectively. Two timers 70 and 72 are shown operated by trigger signals on line 66. Both of the timers 70 and 72 have time constants greater than intervals between ring tone bursts, but those time

constants are different so that, after a connection is completed and ring tone bursts cease, there is bound to be an interval corresponding to the difference in time constants of the timers 70 and 72 during which their outputs 74 and 76, respectively, are differently energised.

The timer outputs 74 and 76 comprise inputs of a second two-input Exclusive-OR gate 80 whose output 82 goes to one input of a second flip flop 84 of a bistable type thus set to energise its output 86 for operating coin accept means 88 of the coin mechanism and starting operation of a call timer 90 over branch 92. Because of the bistable nature of the flip flop 84, the coin accept means 88 will remain enabled to accept further coins for the duration of a telephone call.

The call timer 90 is shown cascaded with a second call timer 94, though the latter can conveniently be a last stage of a single timer if desired. An indicator 96, such as a light emitting diode, is associated with the second call timer 94 and serves to indicate that time paid for is running out and that further payment is required if the call is to continue. Otherwise, the call will be terminated automatically by way of output 96 of the second call timer 94 shown going to reset the first flip flop 24, thus producing similarity of inputs to the first Exclusive-OR gate 30 and causing power-down of the transceiver 10.

The coin accept means 88 can conveniently be of a type that goes automatically to a state in which coins are not accepted at power-down of the transceiver 10.

However, positive resetting of the second bistable 84 is preferred and advantageous, and is shown achieved over branch line 97 at next setting of the first flip flop 24 on detection of coin entry at next attempted use of the equipment, which is entirely safe as electronics responses will be much shorter than coin travel speed and distance involved in the coin mechanism.

The AND gate 50 for controlling coin return is shown with another input fed by branch 98 from the set output 28 of the first flip flop 24, and also by reset output from the second bistable 84. So, once a call has started no coins can be returned before the call is completed, in fact conveniently only when the telephone handpiece on-hook. Other arrangements can be provided and may be preferred. For example, with the handpiece off-hook but before ring tone is established, and/or employing a coin cumulation facility from which coins are taken by the coin accept means only successively but automatically at or just before timing-out by the call timer or stage 94 and then unused coins returned in the on-hook condition either automatically or on operation of the eject provision 46. Moreover, tokens could be used instead of coins, even progressively cancelled call credit cards by ready variation of known systems.

Figure 2 is a flow diagram representing operation of a system hereof illustrated in detail in Figure 3, and is believed to be self-explanatory.

Turning to Figure 3, boxes generally equivalent to those of Figure 1 are superimposed and similarly referenced. It will be noted that both of the coin

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detection means and the handpiece off-hook detection means at 20 and 40 are shown utilising light emitting diodes and phototransistors as convenient practical implementations. The flip flops 24 and 84 can conveniently be in a dual integrated circuit, as can a pair of 4-input NAND gates shown connected up for the three-input AND gate 10 of Figure 1. Indeed, so far as possible, it is generally advantageous these days to use semiconductor integrated circuits readily available with plural circuitry on each.

In Figure 3, various diodes and coupling, voltage dropping or load resistors are indicated outside boxes for which they serve, but that is not fully consistent, for example particularly for the ring tone detector 60 where various ancillary components are shown connected to an appropriate integrated circuit within the box 60, and for leading and trailing edge trigger circuitry 64, timers 70 and 72, call timer stages 90 and 94, output conditioning circuitry referenced 100 for output of the second Exclusive-OR gate 80, and referenced 102 for output from the handset on/off hook detector 40, also buffer circuitry 104 for output from the first Exclusive-OR gate 30. Relays are shown with associated circuitry for the coin return and accept means 54 and 84, and a power supply is indicated at 110.

It will be appreciated that payphone controllers hereof are not limited in application to telephones of cellular type.

Figure 3 shows a diode 99 in line 98 that shorts out the capacitor of timer 90 when a further coin is

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JMe051090

- 8 -

entered, so as to reset the timers 90 and 94. Resetting of the flip flop 84 similarly involves a diode in line 97 upon hand-set going on-hook and/or coin ejection.

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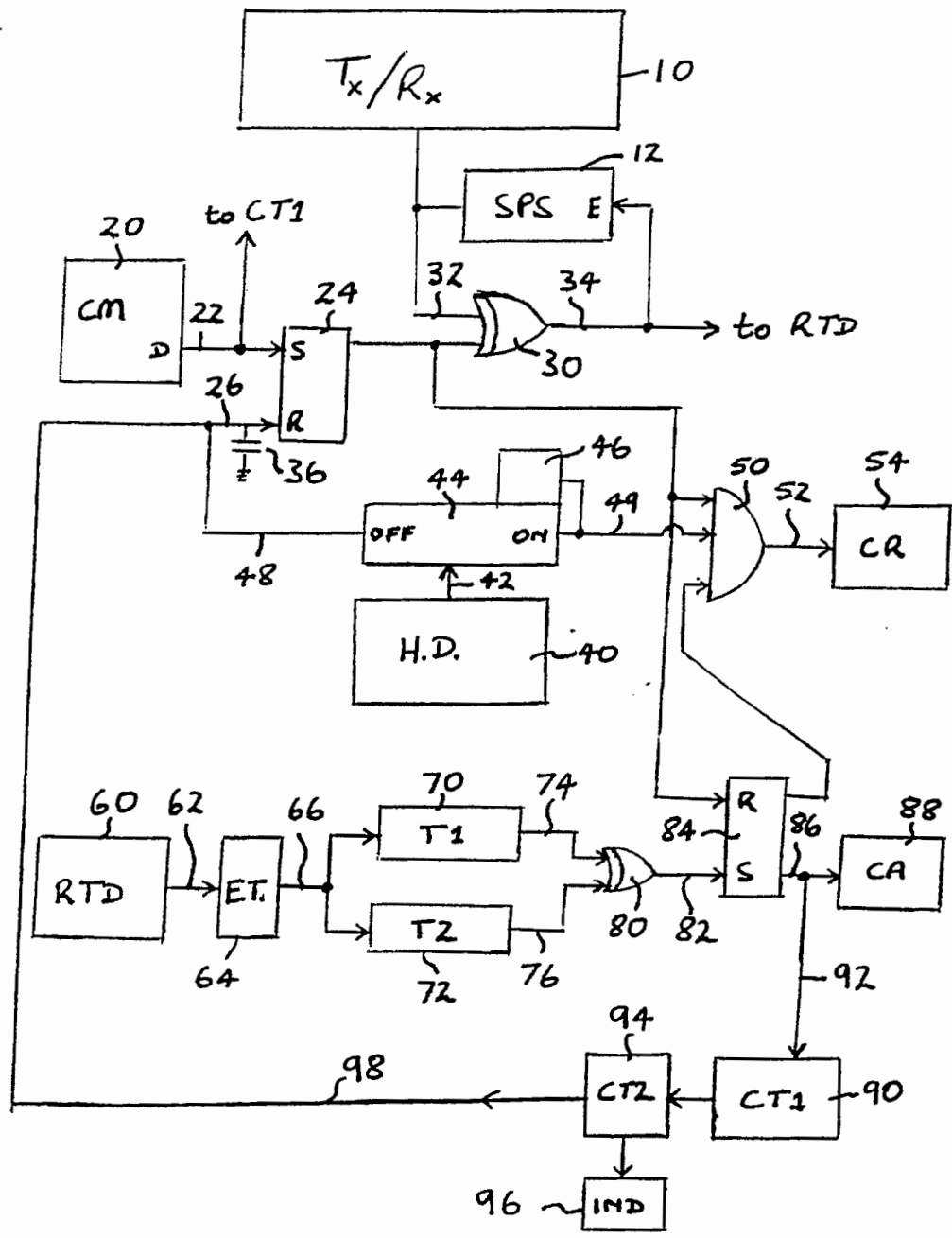
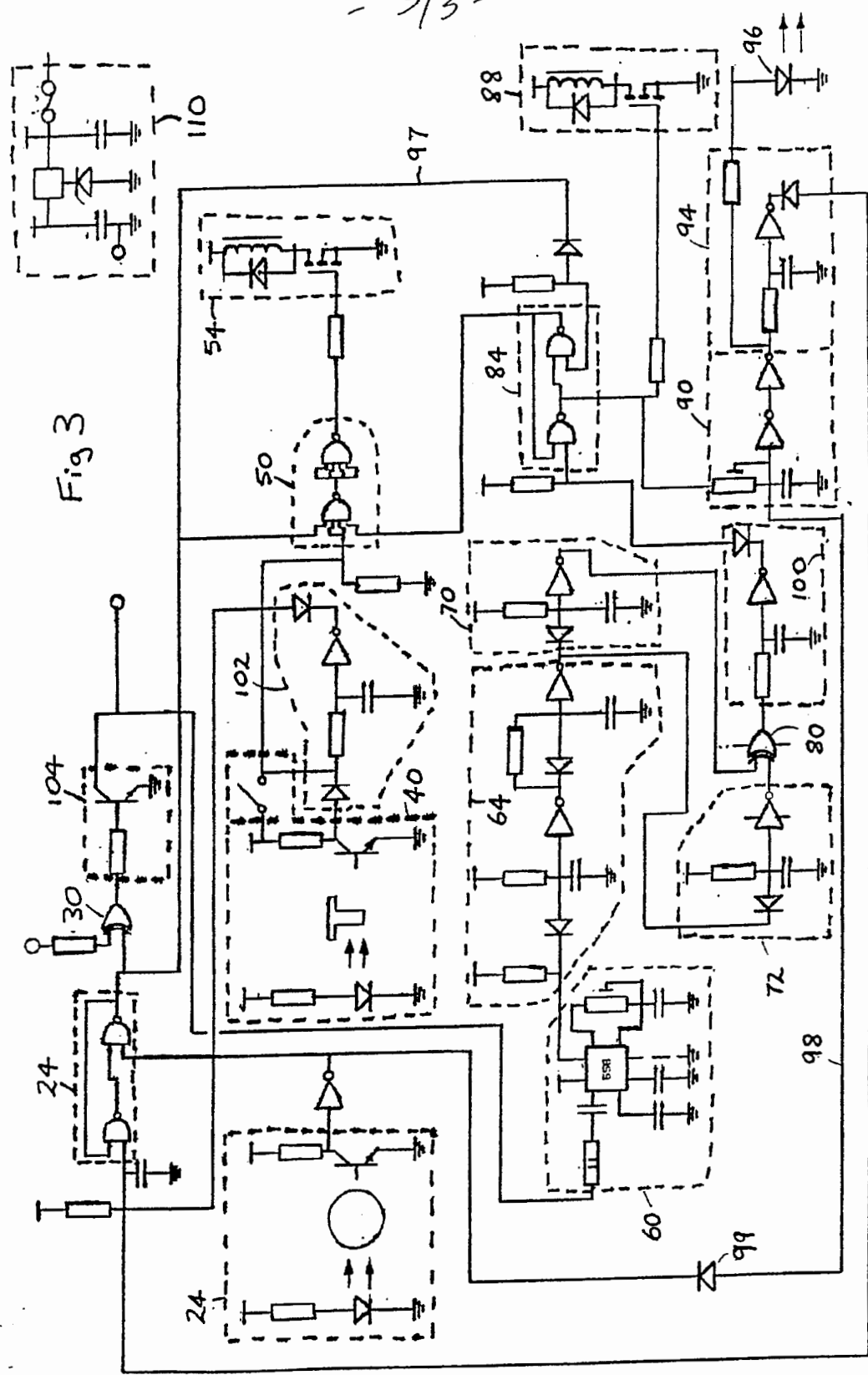


Fig. 1

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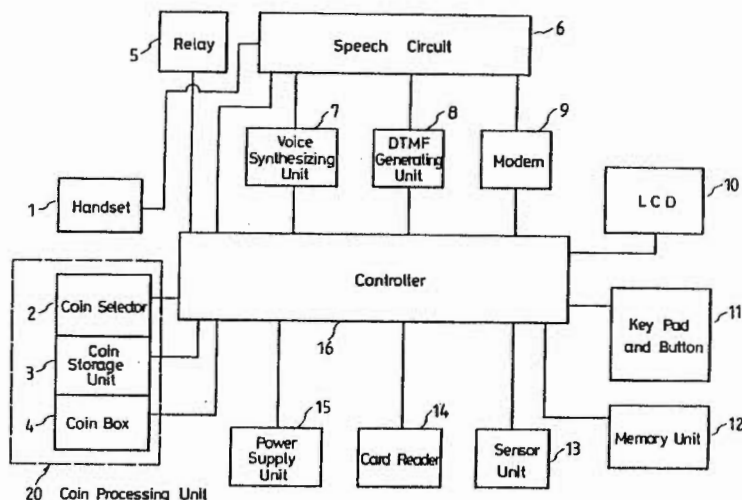




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(72) Inventors; and			
(75) Inventors/Applicants (for US only) : KIM, Eun, Ho [KR/KR]; 8-77, Boelkwang-dong, Eunpung-ku, Seoul 122-040 (KR). JIN, Byung, Wook [KR/KR]; Taeyang Apt. Ma-dong 208, Tabshibri-dong, Dongdaemon-ku, Seoul 130-030 (KR). JOO, Woon, Yong [KR/KR]; 89-1, Yang-jae-dong, Seocho-ku, Seoul 137-130 (KR). YOON, Jeong, Nam [KR/KR]; 1564-41, Shinrim 2-dong, Kwanak-ku, Seoul 151-010 (KR).			

(54) Title: COIN/CARD OPERATED PUBLIC TELEPHONE AND ITS CONTROLLING METHOD



(57) Abstract

A coin/credit operated public telephone is capable of making local, toll, and international calls using coins, credit card, or IC card and also of making a voice announcement regarding its operation method to the caller through a handset (1). Moreover, it provides graphic/character information through the LCD (10) and can transmit fault status that has been detected as a result of a highly reliable self-diagnosis carried out by receiving control signals from a remotely located central management system.