

[SS 1] ..fiepodoc

 Database: EPODOC

[EPODOC: SS 1] culture and alarm

Results in EPODOC 219

[SS 2] ss1 and system

Results in EPODOC 466

[SS 3] ss1 and LED

Results in EPODOC 11

[SS 4] ..li



1/11 © EPODOC / EPO

PN - [JP2013113858](#) A 20130610

PNFP - JP5871587B B2 20160301

PR - JP20110256826 20111124

AP - JP20110256826 20111124

DT - I

FI - G03B15/02&F; G03B15/02&G; G03B15/02&P; G03B15/02&S; G03B15/03&K;
G03B15/05; H04N5/225; H04N5/225&C; H04N5/225&D; H04N5/238; H04N5/238&Z

FT - 2H053/CA04; 2H053/CA06; 2H053/CA08; 2H053/CA12; 2H053/CA15; 2H053/CA45;
2H053/DA04; 5C122/DA12; 5C122/EA12; 5C122/EA52; 5C122/EA56; 5C122/FB03;
5C122/GG09; 5C122/GG11; 5C122/GG17; 5C122/GG19

PA - (A)
KEYENCE CO LTD

TI - (A)
IMAGINGAPPARATUS

AB - (A)
PROBLEM TO BE SOLVED: To provide an imaging apparatus which allows the whole area of an imaging visual field to be uniformly illuminated with a relatively small number of light sources.SOLUTION: An illumination unit 8 includes a lens body 22, a reflector body 24, and a substrate 10c mounted with a plurality of LEDs 26. The lens body 22 has a first surface 22a on the side of the substrate 10c, on which a toroidal lens 28 is arranged corresponding to each of the LEDs 26. The LED 26 has an optical axis LA which is offset outward in the radial direction relative to the center of the toroidal lens 28. The illumination light emitted from the toroidal lens 28 is formed in a rectangular illumination range La defined by a proximal imaging visual field region Ss1 and a distal imaging visual field region Ss2 with an effective working distance WD. The light emitted from each of the illumination unit 8 has a rectangular illumination range La defined by a side which is one of the proximal imaging visual field region Ss1 distal from the LED 26 and a side which is one of the

distal imaging visual field region Ss2 proximal to the **LED** 26.

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PN - [CN201899842U](#) U 20110720
PR - CN20102562812U 20101015
AP - CN20102562812U 20101015
DT - I
PA - YANDONG LIU
TI - Electronic sensitive teaching basketball hoop
AB - The utility model relates to the technical field of a basketball hoop, in particular to an electronic sensitive teaching basketball hoop. The electronic sensitive teaching basketball hoop provided by the utility model can accurately judge whether a goal is scored by photoelectricity induction technology and can visually display a judgment result in an acousto-optic combination mode so as to improve the accuracy of judgment and watching interest. The electronic sensitive teaching basketball hoop mainly consists of two groups of photoelectric proximity switches (**SS1** and **SS2**), an integrated control chip (IC1) and a plurality of peripheral electronic components. When the goal is scored, the goal is detected by the proximity switches, the proximity switches operates, the working condition of the integrated control chip is met, a buzzer emits sound, and simultaneously a light emitting matrix (**LED** <light-emitting diode> 2) is lighted so as to show that the goal is scored; otherwise, if no sound or light is displayed, the goal is not scored.

3/11 © EPODOC / EPO

PN - [KR20090006667](#) A 20090115
PNFP - KR100920594B B1 20091008
PR - KR20070070246 20070712
AP - KR20070070246 20070712
DT - I
CNOI - (A)
[F21K9/00](#) ; [F21V23/003](#) ; [F21V23/02](#) ; [H05B33/0815](#) ; [H05B37/02](#)
CNOA - (A)
[F21Y2115/10](#)
PA - (A)
SAMSUNG ELECTRO MECH [KR]
TI - (A B1)
APPARATUS FOR DRIVING INTERLEAVED FLY-BACK TYPE OF **LED**
AB - (A)
An interleaved flyback **LED** drive unit is provided to reduce ripple change of output current by reducing ripple generated in current drive through the current drive of anti-phase with an interleaved fly-back method. A rectifier(20) rectifies AC power source to a first DC power source. The first DC power source comprises primary current. A PWM controller(100) supplies a first switching signal(**SS1**) and a second switching signal(**SS2**) having opposite phases according to the load of an **LED** array (**LED-AY**). A first transformer converts the primary current(I1a) from rectifier into the secondary current(I2a). The transformed secondary current is supplied to the **LED** array. The second trans converts the primary current(I1b) into the secondary current (I2b) from the rectifier. The transformed secondary current is supplied to the **LED** array. A first power switch performs off switching action according to the first

switching signal. The primary current flowing into primary winding of the first transformer is turned on/off by on/off switching operation of the first power switch. A second power switch performs off switching action according to a second switching signal. The primary current flowing into the primary winding of the second transformer is turned on/off by on/off switching operation of the second power switch.

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- PN - [KR20070113121](#) A 20071128
- PR - KR20070048694 20070518
- AP - KR20070048694 20070518
- DT - I
- CNOI - [G09F13/20](#) ; [G08B21/00](#) ; [G08B21/02](#) ; [H02H3/04](#)
- PA - JU EUN KYUNG [KR]
- TI - INDICATING DEVICE FOR WARNING AT THE ELECTRIC SHOCK HAZARD OVER SAFETY STANDARD VOLTAGES
- AB - An electric shock warning device is provided to raise a safety level for a user by detecting a charging voltage at a non-charging metal portion, even when a voltage of 14V is applied to the metal portion. An electric shock warning device includes a non-charging metal portion and a 3-way switch(SS1). The non-charging metal portion is coupled with one terminal of the 3-way switch through an input line. A light emitting lamp is fixed and variable resistors are series-coupled between a common terminal of the 3-way switch and a ground terminal(ES). Input terminals of a bridge diode are connected to the common terminal of the 3-way switch and the fixed resistor. A Zener diode(ZD) is connected between output terminals of the bridge diodes. An LED(Light Emitting Diode) protective resistor(R4) and an automatic LED(L.L) are connected to both ends of the Zener diode.

5/11 © EPODOC / EPO

- PN - [JPS6186365](#) A 19860501
- PR - JP19840206196 19841003
- AP - JP19840206196 19841003
- DT - I
- CCI - [B65H39/11](#)
- FI - B65H39/11&Q; G03G15/00&430; G03G15/00&530
- FT - 2H072/FC04; 2H072/FC12; 3F050/AA02; 3F050/AA04; 3F050/AA06; 3F050/BC04; 3F050/BE06; 3F050/CA01; 3F050/CA02; 3F050/CA05; 3F050/CA06; 3F050/CB05; 3F050/CB07; 3F050/CD08; 3F050/CD09; 3F050/CE05; 3F050/CE06; 3F050/CE07; 3F050/CF01; 3F050/CF02
- PA - RICOH KK
- TI - SORTER
- AB - PURPOSE:To comprehend paper discharge containing condition for every bin reliably thus to realize flexible sorting work in sorter for copy machine by providing means for storing the amount of paper contained in respective bin. CONSTITUTION:Sorter control section or CPU 70 has an inner RAM to input the output signals SS1, SS2 from each sensor for receiving, intermediate, bin and door of two sorters coupled in series through a port 71 thus to control the operation of respective sorter. Solenoid 85 for operating a deflection click and bin assigning LED 36 are driven by drive data from shift registers 74, 75. Said shift registers are selected by select signals S2, S3 to

store deflection click drive signal S1 synchronously with clock pulse CP. Since the number of sheets discharged to respective bin is stored in such a manner, paper discharge/containing condition of respective bin can be comprehended reliably resulting in flexible sorting work.

6/11 © EPODOC / EPO

- PN - [JPS5769416](#) A 19820428
- PR - JP19800142962 19801015
- AP - JP19800142962 19801015
- DT - I
- CCI - [G05B23/0272](#)
- FI - G05B1/01&A; G05B23/02&302P
- FT - 3C223/BA03; 3C223/CC02; 3C223/DD03; 3C223/EA03; 3C223/FF34; 3C223/GG01; 3C223/HH24; 5H004/BA03; 5H004/BA05; 5H004/BC07; 5H004/BD08; 5H004/BD11; 5H004/GA24; 5H004/GA28; 5H004/JA21; 5H004/JA29; 5H004/JA30; 5H004/MA02; 5H004/MA33; 5H004/MA47; 5H004/MA49; 5H004/XP00; 5H004/XX01; 5H223/BB05; 5H223/CC08; 5H223/DD03; 5H223/DD09; 5H223/EE01; 5H223/EE03; 5H223/EE04; 5H223/EE22; 5H223/EE23; 5H223/EE29; 5H223/EE30; 5H223/FF08
- PA - TOKYO SHIBAURA ELECTRIC CO
- TI - SETVALUECONTROLLER
- AB - PURPOSE:To let an operator immediately know the abnormality of a set value controller through display, by indicating whether the abnormality originates from the error of set data or the fault of a control circuit, etc., during the modification of setting. CONSTITUTION:A position selection switch **SS1** is connected to a selected position address conversion part 8 in a controller 4 and an address bus AD1 transferring its output is connected to each controller 7. A data bus D1 from a digital switch DS is **led** to the outlet of a master switch MS and to an AND gate 14, and also connected as a set data bus D2 to the controller 7 for each controlled system. A bus D3 connected to a digital display device **LED** is connected to an answer check part 9 through the controller 4. The answer check part 9 is connected to a no-answer display device NOANS, a wait display device WAIT, and an error display device ERR.

7/11 © EPODOC / EPO

- PN - [JPS5558634](#) A 19800501
- PR - JP19780130557 19781025
- AP - JP19780130557 19781025
- DT - I
- CT - || STSE (A)
[JPS4999466](#) A 19740919 [];
[JPS52132759](#) A 19771107 [] (TOYO ELECTRIC MFG CO LTD)
- CCI - [H03L7/10](#)
- FI - G11B20/14&351A; H03L7/089; H03L7/10; H03L7/10&Z
- FT - 5D044/BB01; 5D044/GH16; 5D044/GH17; 5D044/GJ08; 5J060/AA04; 5J060/CC01; 5J060/CC21; 5J060/CC38; 5J060/CC41; 5J060/CC52; 5J060/CC57; 5J060/DD09; 5J060/DD46; 5J060/DD48; 5J060/FF06; 5J060/FF08; 5J060/KK08; 5J106/AA04; 5J106/CC01; 5J106/CC21; 5J106/CC38; 5J106/CC41; 5J106/CC52; 5J106/CC57; 5J106/DD09; 5J106/DD46; 5J106/DD48; 5J106/FF06; 5J106/FF08; 5J106/KK08
- PA - HITACHI LTD

TI - VFO CIRCUIT

AB - PURPOSE:To extend a range where input signals can be **led** in, by switching the maximum detection error quantity of a saw tooth wave phase comparator to the double of a normal leading-in state at an input signal leading-in time.
 CONSTITUTION:Input signal pulses (period T_0) are inputted to one shoot circuits **SS1** and **SS2** having set pulse width $T_0/4$ and $T_0/2$ respectively. Only at an input signal leading-in time, switching circuit 3 transfers the output of **SS2** to edge detection circuit 4 by leading-in signals, and signals (period T_0) obtained by dividing output signals (period $T_0/2$) of VCO9 into two by frequency divider circuit 6 are inputted to edge detector 6 by switching circuit 5, and outputs of edge detectors 7 and 4 are inputted to flip flop 8 and pass through inverter circuits 10 and 11 and NOR circuits 12 and 13, thereby outputting phase advance error and phase delay error.This output is converted to a voltage or a current by phase converter 14 and passes through low-pass filter 15 and VCO9,thereby feeding back the voltage or the current above to the input.

8/11 © EPODOC / EPO

PN - [JPS63274235](#) A 19881111

PR - JP19870107851 19870430

AP - JP19870107851 19870430

DT - I

FI - G01S5/14; H04B1/7075; H04J13/00&A; H04J13/00&411

FT - 5J062/AA02; 5J062/AA08; 5J062/BB01; 5J062/DD14; 5J062/GG01; 5J062/GG02; 5K022/EE02; 5K022/EE22; 5K022/EE32; 5K022/EE36

PA - SONY CORP

TI - RADIO COMMUNICATION EQUIPMENT

AB - PURPOSE:To simplify the constitution of a slave station by transmitting a spread spectrum signal while controlling its phase so that the phase of the received spread spectrum signal is coincident with that of a pseudo noise code signal of the slave station. CONSTITUTION:The same pseudo noise code is assigned respectively to a handset 1 and a telephone set main body 2 and the frequency of a carrier used for the PSK modulation is selected to be the same frequency as that of the carrier used for the PSK demodulation of the handset 1. Thus, the phase of a delay pseudo noise code signal SPN2 outputted to a multiplier circuit 23 of the telephone set main body 2 is controlled to be the **led** phase with respect to the pseudo noise code signal SPN1 of the handset side 1 so as to make the phase of the spread spectrum signal **SS1** received by the handset 1 side coincident with that of the pseudo noise code signal SPN1 by means of a PN lock loop controlling the phase of the spread spectrum signal **SS1** sent from the telephone set main body 2. Since the phase of the spread spectrum signal **SS1** and that of the pseudo noise code signal SPN1 are made coincident at the handset side 1, the constitution of the handset 1 is simplified by the phase coincidence.

9/11 © EPODOC / EPO

PN - [JPS54143000](#) A 19791107

PR - JP19780049879 19780428

AP - JP19780049879 19780428

DT - I

FI - G05B23/02&301Y; G08B25/00&C; G08B25/00&510F; G08B5/00&A

- FT - 3C223/AA02; 3C223/AA24; 3C223/BA01; 3C223/CC01; 3C223/DD01; 3C223/GG01; 3C223/HH16; 3C223/HH24; 5C083/AA02; 5C083/CC01; 5C083/CC24; 5C083/DD04; 5C083/DD16; 5C083/EE03; 5C083/EE05; 5C083/GG18; 5C083/GG20; 5C083/HH34; 5C083/HH38; 5C083/JJ25; 5C087/AA03; 5C087/AA11; 5C087/AA23; 5C087/AA60; 5C087/BB04; 5C087/BB35; 5C087/BB74; 5C087/DD08; 5C087/EE05; 5C087/FF01; 5C087/FF03; 5C087/GG01; 5C087/GG09; 5C087/GG18; 5C087/GG41; 5H223/AA02; 5H223/AA20; 5H223/DD07; 5H223/EE15; 5H223/EE30
- PA - TOKYO SHIBAURA ELECTRIC CO
- TI - FAULT DISPLAY UNIT
- AB - PURPOSE: To simplify the judgement of fault details by converting respective output signals from several remote fault input groups into different voltages and then supplying them to a central control room, and by selecting memory circuits and display elements, which correspond to fault detection points, using those voltages. CONSTITUTION: Fault detection input device Z which makes respective fault detection inputs in the group into one group output signal after conversion is fitted to the locale board and contacts X1 to Xn of the field apparatus led out from the board are connected to DC power supply P. In the central control room, display unit Y which displays by receiving the output of apparatus Z what spot in the group gets out of order and ordinal fault display unit ANN are both installed. In the above constitution, apparatus Z is provided with monostable multivibrators SS1 to SSn which generate outputs with contacts X made, signal converter circuits C1 to Cn different in set voltage, and OR circuit OR. Further, unit Y is provided with over input-level detection circuits LH1 to LHn, AND circuits A1 to An, memory circuits M1 to Mn, light-emission diodes L1 to Ln, thereby making a decision on each fault.

PN - [GB581603](#) A 19461018

PR - GB19420018288 19421223

AP - GB19420018288 19421223

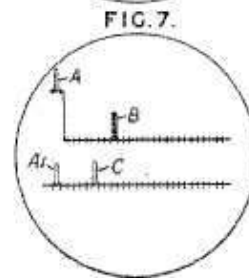
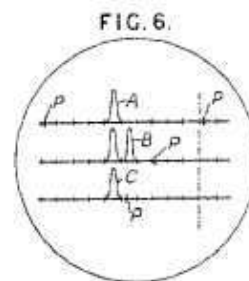
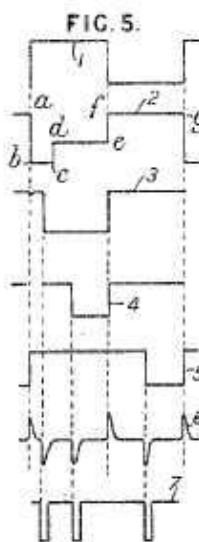
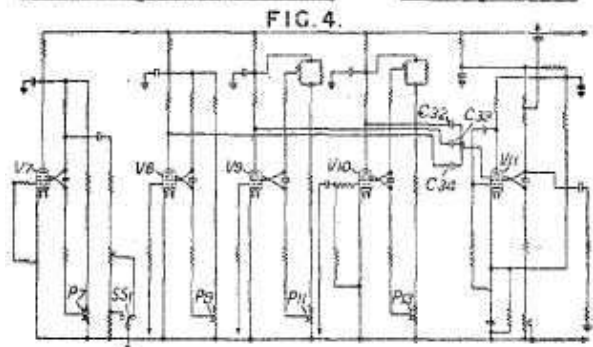
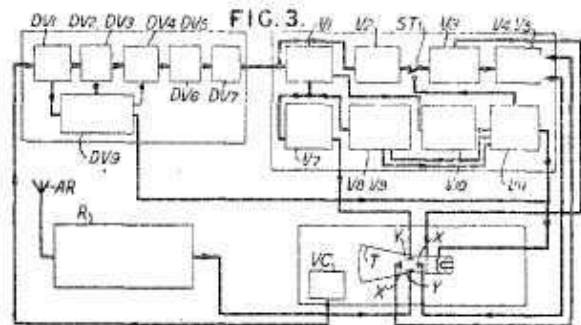
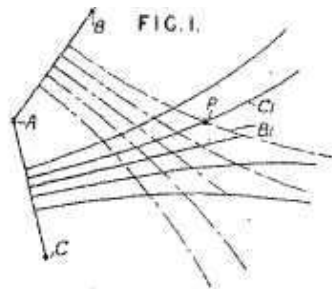
DT - *

CCI - [G01S1/24](#) ; [G01S1/02](#) ;
[G01S1/20](#)

PA - ROBERT JAMES DIPPY

TI - Improvements in or relating
to wireless systems for
navigation

AB - 581,603. Radio navigation ;
valve circuits. DIPPY, R. J. Dec.
23, 1942, No. 18288. [Class
40 (v)] [Also in Group XXXVI]
Wireless navigation
apparatus to enable an
aircraft &c. to determine its
position, or steer a desired
course, with reference to two
or more separate
transmitters, comprises
means for indicating or
measuring the time interval
between the reception of
pulse signals, radiated from
said transmitters and having
a predetermined time
relationship. The invention
may be used with the main
and satellite synchronized
pulse transmitters described
in Specification 581,602. Fig.
1 shows three transmitters A,
B, C and two series of curves
representing paths along
which there will be a certain
constant time interval
between the reception of
counter. part pulses from
stations A and B or A and C. A
pilot at position P on curves
B1, C1 can thus determine his
position with reference to the
three transmitters.
Alternatively, he can " home "
on to a given destination by
steering consistently along
one or other of the curves
which pass through that
point. Fig. 3 shows the
receiving apparatus on the
aircraft. Signals from the



aerial AR and superhet receiver R pass to one of the vertical deflecting plates Y of the cathode-ray tube T, shift or vertical spacing voltages being fed to the other vertical plate at appropriate times from valve circuit V7 in order to produce three parallel time bases in which pulses from the three transmitters A, B and C appear individually as shown in Fig. 6 or Fig. 7. Locally generated pulses and deflecting wave-forms are applied to the C.R. tube to provide "strobe" markers and time bases to facilitate accurate observation of the three signal traces. The timing of the circuits is controlled by a crystal oscillator VC stabilized at 150 kc/s. from which are derived by frequency-dividers DV2 ... DV7 voltages of frequency 500 (the pulse repetition frequency of station A) which are passed by a diode V2 to control a saw-tooth oscillator V3, the output of which passes through paraphase amplifiers V4, V5 to the horizontal deflecting electrodes X, X to provide the main time base. A further frequency divider V1 supplies voltages of frequency 250 to valve circuit V7 (which supplies the shift voltages previously referred to) and to three relaxation oscillators V8, V9, V10 which generate square-topped "strobing" or timing impulses which can be adjusted to "straddle" the A, B and C pulses as they appear on their respective traces. The strobing pulses are applied through a mixing valve V11 to the cathode of the tube T and appear as bright patches on each of the main traces. By

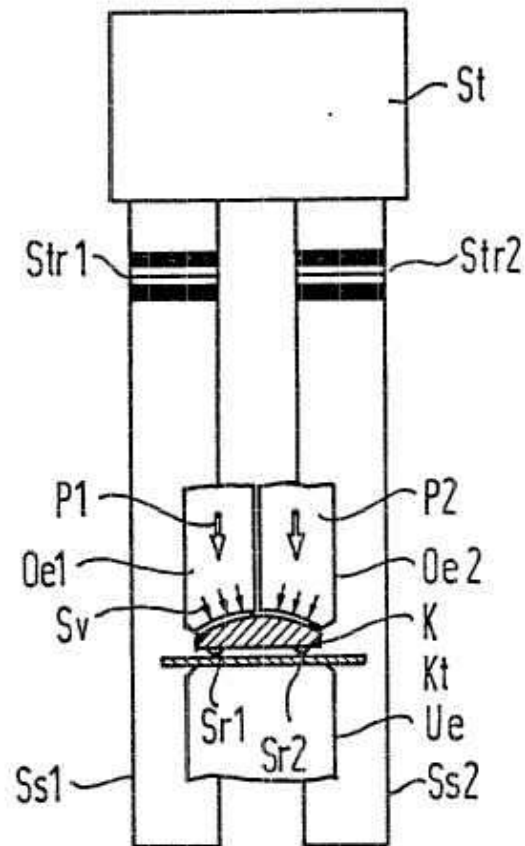
moving switch ST1 into its lower position, the strobing pulses can be fed from mixer V11 to the saw-tooth generator V3 to produce highspeed traces on the tube T. The signal traces are thus enlarged (as shown in Fig. 6) to facilitate measurement of the significant time intervals. Calibration pulses at frequencies of 150, 15 and 1.5 kilocycles p.s. derived from the square pulse generator DV1 and the frequency dividers DV3, DV4, are led through valve circuit DV9 to the cathode of the C.R. tube and produce spaced marking indications P, Fig. 6, on the screen. Deriving stepped vertical shift voltage from pentode V7, Fig. 4. Square-wave pulses 1, Fig. 5, applied to the control grid of pentode V7 cause the potential of the screen grid to fall from point a in the curve 2, Fig. 5, to a fixed level b where it remains until, after a period determined by the tapping P7, the suppressor grid recovers its initial positive potential. Anode current then flows and the screen-grid potential rises sharply from the level be to a point d where it remains until the negative half-cycle of the applied impulse, whereupon the screen-grid potential rises from the level de to its initial level f, g and remains there until the next positive pulse initiates a new cycle. The stepped voltage shown in curve 2 is applied to one of the vertical deflecting plates as described above. Deriving pulsed wave-form 7, Fig. 5, from square wave-form 1 for production of strobing impulses. The square pulses 1

are applied to the control grids of three transitron - connected pentodes V8, V9, V10, Fig. 4, the anodes of which are connected through condensers C32, C33, C34 to the suppressor grid of a mixing valve V11, from the screen-grid of which the desired pulses are obtained. Wave-form 3, Fig. 5, is produced at the anode of V8, and waveform 4 from the anode of V9, the positions of the negative-going edges being determined by the potential dividers P9, P11. Wave-form 5 is produced at the anode of V10, being controlled by a pulse half a cycle out of phase with pulse 1, the position of the negative-going edge being controlled by the potential divider P13. The relative shape and spacing of the pulses applied to the suppressor grid, and taken from the screen grid, of valve V1 is shown at 6 and 7 in Fig. 5. Operation. The pulse frequency of transmitter A may be 500 p.s., and that of transmitters B and C may be 250, and to facilitate identification of the pulses, one of them, say that from B, may have a second "ghost" pulse associated with it as shown in Fig. 6. In operation, the maintrace, shown in Fig. 7, is first used and the received signals caused to drift along the traces by adjusting the oscillator VC until the A and B signals are on the top trace, with the A pulse located on the stepped portion. This automatically places the A1 and C signals on the lower trace. The oscillator is then adjusted to synchronism, so that the received signals remain

stationary. The three " strobe " markers are moved along the traces, by adjustment of the potentiometers P9, P11, P13 until they straddle the A, B, C signals respectively. Switches **SS1**, ST1 are then operated to replace the main time bases by the three high-speed time bases corresponding to the three selected " strobe " positions, as shown in Fig. 6. Accurate measurement is now possible with the aid of the 150 kc/s. time markers. The arrangements of Figs. 3 to 7 also form the subject-matter of Specification 581,638 which is divided from the present Specification and the claims of which relate to the cathoderay oscillograph features.

PN - [EP0371363](#) A1 19900606
 PNFP - EP0371363 B1 19920401
 PR - DE19883840537 19881201
 AP - EP19890121416 19891120
 DT - *; Rep
 CT - || STSE (A1)
 [US4461943](#) A 19840724
 [A] (BEAUVAIS RENE G [US]);
 [US4703158](#) A 19871027
 [A] (BURGHER PETER H [US], et al);
 [US2979599](#) A 19610411
 [A] (WIDTH ROBERT B);
 [US4465913](#) A 19840814
 [A] (STOKOE PHILIP T [US], et al)
 CCI - [B23K11/14](#) ; [H01H11/043](#)
 PA - (A1)
 SIEMENS AG [DE]
 TI - (A1)
 Method and device for mounting contact parts on contact supports.
 - (B1)
 METHOD AND DEVICE FOR MOUNTING CONTACT PARTS ON CONTACT SUPPORTS
 AB - (A1)
 Contact parts (K) provided on the welding side with two protuberances, such as welding beads (Sr1, Sr2), arranged at a distance from one another are introduced for the purpose of being welded onto associated contact supports (Kt) between a lower electrode (Ue) and two upper electrodes (Oe1, Oe2), led closely alongside one another, in such a way that the two protuberances (Sr1, Sr2) are pressed equally strongly, i.e. with equally large electrode forces (P1, P2) against the contact support (Kt). In addition, the welding current feeds (Ss1, Ss2) to the two upper electrodes (Oe1, Oe2) are separated from one another. Due to the two

FIG 3



measures, an inclined position of the contact part (K) is avoided in the case of resistance welding, and a constant contact resistance is achieved, resulting in a largely complete interfusion of the protuberances (Sr1, Sr2) with the material of the contact support (Kt). <IMAGE>

[SS 4] ss3

Results in EPODOC 437

[SS 5] culture and alarm

Results in EPODOC 219

[SS 6] ss5 and prevent

Results in EPODOC 15

[SS 7] ..li



1/15 © EPODOC / EPO

PN - [CA2959772](#) A1 20160317

PR - US201462049987P
20140912; WO2015US49746
20150911

AP - CA20152959772 20150911

DT - I

CCI - [C07K16/2839](#)

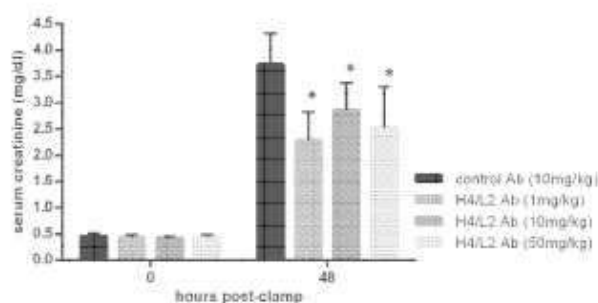
CCA - [C07K2317/24](#) ;
[C07K2317/41](#) ;
[C07K2317/55](#) ;
[C07K2317/56](#) ;
[C07K2317/565](#) ;
[C07K2317/567](#) ;
[C07K2317/76](#) ;
[C07K2317/92](#) ; [C07K2317/94](#)

PA - BIOGEN MA INC [US]

TI - HUMANIZED ANTI-ALPHA V
BETA 5 ANTIBODIES AND USES
THEREOF

AB - Humanized antibodies and
antibody fragments that bind
to $\alpha 5 \beta 1$ are disclosed. Also
disclosed are methods of
using the disclosed

FIGURE 5



antibodies and antibody
fragments to treat or **prevent**
a?B5-mediated diseases.

2/15 © EPODOC / EPO

PN - [CA2903546](#) A1 20140925
PR - US201361792681P 20130315; US201361898811P 20131101; WO2014US26234 20140313
AP - CA20142903546 20140313
DT - I
CCI - [A61K39/3955](#) ; [C07K16/2839](#)
CUI - [A61K45/06](#)
CUA - [A61K2039/505](#) ; [C07K2317/24](#)
PA - BIOGEN MA INC [US]
TI - TREATMENT AND PREVENTION OF ACUTE KIDNEY INJURY USING ANTI-ALPHA V BETA 5 ANTIBODIES
AB - Methods of using antibodies and antibody fragments that specifically bind avss5 or ss5 to treat or **prevent** acute kidney injury and/or its sequelae are disclosed.

3/15 © EPODOC / EPO

PN - [JP2009213263](#) A 20090917
PR - JP20080053854 20080304
AP - JP20080053854 20080304
DT - I
CCA - [Y02T10/7077](#) ; [Y02T10/6239](#) ; [Y02T10/76](#)
FI - B60K6/20&320; B60K6/20&350; B60K6/20&370; B60K6/445; B60K6/543; B60L11/14; B60L7/14; B60L7/14+ZHV; B60W10/00&900; B60W10/08&900; B60W10/10&900; B60W10/18&900; B60W20/10; F16H101/00; F16H59/70; F16H61/04; F16H61/66; F16H63/50
FT - 3D202/AA05; 3D202/BB14; 3D202/BB15; 3D202/CC06; 3D202/CC52; 3D202/CC66; 3D202/CC74; 3D202/DD01; 3D202/DD05; 3D202/DD06; 3D202/DD07; 3D202/DD24; 3D202/DD26; 3D202/DD27; 3D202/DD32; 3D202/FF05; 3J552/MA06; 3J552/MA13; 3J552/NB08; 3J552/PA02; 3J552/PA33; 3J552/RB18; 3J552/SA35; 3J552/SA45; 3J552/UA05; 3J552/UA07; 3J552/VA74W; 5H115/PA01; 5H115/PC06; 5H115/PG04; 5H115/PI16; 5H115/PI29; 5H115/PU08; 5H115/PU25; 5H115/QE17; 5H115/QI04; 5H115/QN02; 5H115/SE08; 5H125/AA01; 5H125/AC08; 5H125/AC12; 5H125/BE05; 5H125/CA01; 5H125/CB02; 5H125/EE51
PA - TOYOTA MOTOR CORP
TI - REGENERATIVE CONTROL DEVICE OF VEHICLE
AB - PROBLEM TO BE SOLVED: To **prevent** such a phenomenon that a deceleration rate of a vehicle increases to give a driver an odd feeling when an actual transmission gear ratio at a continuously variable transmission shifts to become larger than a target transmission gear ratio during coast traveling in which a braking torque is provided by a driving force source, etc.
- SOLUTION: In a case where a second regenerative rotating machine M2 is under regenerative control for providing a given braking torque during coast traveling, if an actual transmission gear ratio of a second transmission unit 20 becomes large quickly as a result of abrupt down shift operation to shift to become larger than a

target transmission gear ratio (preset value), step **SS5** is executed to reduce the regenerative torque of the second regenerative rotating machine M2, thereby: suppressing an increase in a braking torque regardless of a shift in a transmission gear ratio, i.e., an increase in a torque amplifying action; and reducing a change in a deceleration rate of a vehicle. When a braking torque is provided based on the rotation resistance of an engine 8, step **SS6** is executed to put the second regenerative rotating machine M2 under powering/traveling control to reduce the braking torque by the rotation resistance of the engine 8, thereby suppressing an increase in the braking torque.

- COPYRIGHT: (C)2009,JPO&INPIT

4/15 © EPODOC / EPO

- PN - [JP2009197951](#) A 20090903
- PR - JP20080042097 20080222
- AP - JP20080042097 20080222
- DT - I
- FI - F16H101/02; F16H101/04; F16H61/12; F16H61/66; F16H61/662; F16H61/664
- FT - 3J552/MA07; 3J552/MA09; 3J552/MA25; 3J552/NA01; 3J552/NB09; 3J552/PA02; 3J552/PB01; 3J552/SA02; 3J552/SA32; 3J552/SA34; 3J552/SA44; 3J552/SB10; 3J552/TB02; 3J552/TB06; 3J552/TB11; 3J552/VA74Z; 3J552/VB01Z
- PA - TOYOTA MOTOR CORP
- TI - SPEED-CHANGE CONTROLLER
- AB - PROBLEM TO BE SOLVED: To **prevent** a change of a gear ratio of a continuously variable transmission part due to fail, which causes change of driving torque including a braking torque, influences on behaviors of a vehicle, and a feeling of incongruity to a driver.
- SOLUTION: When an actual gear ratio $R_{\gamma<SB>CVT</SB>}$ of a second transmission part 20 is changed due to fail, if a fail handling control with a second rotary machine M2 is impossible, a limit of a gear ratio $S_{\gamma<SB>CVT</SB>}$ is loosened in a step **SS5**. Therefore, the actual gear ratio $R_{\gamma<SB>CVT</SB>}$ can be returned to a target gear ratio $\gamma<SB>CVT</SB>$ at a large transmission speed quickly, and a change of a driving torque such as a braking torque caused by a change (displacement) of the actual gear ratio $R_{\gamma<SB>CVT</SB>}$ can be restrained in a short time. Thereby, influences on behaviors of a vehicle are restrained, and a feeling of incongruity given to the driver is reduced.
- COPYRIGHT: (C)2009,JPO&INPIT

5/15 © EPODOC / EPO

- PN - [JP2008296907](#) A 20081211
- PNFP - JP4325732B B2 20090902
- PR - JP19990085300 19990329; JP20080175393 20080704
- AP - JP20080175393 20080704
- DT - I
- CCA - [Y02T10/7077](#) ; [Y02T10/6221](#) ; [Y02T10/6286](#)
- FI - B60K6/20&310; B60K6/20&320; B60K6/20&330; B60K6/20&400; B60K6/48; B60K6/543; B60K6/547; B60L11/14; B60L11/14+ZHV; B60W10/00&900; B60W10/06&900; B60W10/08&900; B60W10/26&900; B60W20/00&900; B60W20/13; B60W20/40; B60W20/50; F02D29/02&D; F02D29/02&321B
- FT - 3D202/AA04; 3D202/AA05; 3D202/BB05; 3D202/BB11; 3D202/BB37; 3D202/BB43;

3D202/BB64; 3D202/BB65; 3D202/CC01; 3D202/CC12; 3D202/CC24; 3D202/CC35;
 3D202/CC37; 3D202/CC42; 3D202/CC48; 3D202/CC51; 3D202/CC59; 3D202/DD07;
 3D202/DD10; 3D202/DD45; 3D202/FF05; 3D202/FF13; 3G093/AA06; 3G093/AA07;
 3G093/CA01; 3G093/CA12; 3G093/DA12; 3G093/DB11; 3G093/EC02; 5H115/PA01;
 5H115/PA12; 5H115/PC06; 5H115/PG04; 5H115/PI16; 5H115/PI29; 5H115/PO02;
 5H115/PO06; 5H115/PO17; 5H115/PU02; 5H115/PU08; 5H115/PU24; 5H115/PU28;
 5H115/PV09; 5H115/QE01; 5H115/QH01; 5H115/QI04; 5H115/QN03; 5H115/QN12;
 5H115/RE01; 5H115/SE04; 5H115/TB01; 5H115/TI02; 5H115/TO05; 5H115/TO22;
 5H115/TO24; 5H115/TO30; 5H115/UI13; 5H115/UI23; 5H125/AA01; 5H125/AC08;
 5H125/AC12; 5H125/BA00; 5H125/EE01; 5H125/EE27; 5H125/EE51

- PA - (A)
 TOYOTA MOTOR CORP
- TI - (A)
 DRIVE SYSTEM FOR HYBRID VEHICLE
- AB - (A)
 PROBLEM TO BE SOLVED: To **prevent** a hesitation due to a delayed engine start when switching a motor drive mode to an engine drive mode.
 - SOLUTION: When an engine 12 is started in Step SS4 for drive using the engine 12 as a driving force source, a delayed start of the engine 12 results in a NO decision in Step **SS5** to trigger Step SS7 and later on. In Step SS7, a motor generator 14 is operated for drive at large torque exceeding its rated output in, for example, an increased electrical energy supply from a battery 26 to compensate the insufficient driving force due to the delayed start of the engine 12, and when the battery 26 state of charge SOC falls to a lower limit value $SOC < SB > L2 < /SB >$, or when the duration TS of the MG special control reaches a predetermined time T1, the MG special control is aborted in Step SS11.
 - COPYRIGHT: (C)2009,JPO&INPIT

6/15 © EPODOC / EPO

- PN - [KR20030047268](#) A 20030618
- PNFP - KR100427693B B1 20040428
- PR - KR20010077716 20011210
- AP - KR20010077716 20011210
- DT - I
- PA - (A)
 HAN YONG SU [KR]
- TI - (A)
 METHOD FOR FIXING CORE OF PROXIMITY SWITCH
- AB - (A)
 PURPOSE: A method for fixing a core of a proximity switch is provided to **prevent** error of detection of proximity switch, while achieving improved workability by attaching the core surface of the printed circuit board through the use of epoxy resin. CONSTITUTION: A method comprises the first step(SS1) of positioning a magnet of a predetermined size onto a table; the second step(SS2) of mounting a case onto the magnet; the third step(SS3) of injecting an epoxy resin into the case in such a manner that the magnet and the case are integrated into a single body; the fourth step(SS4) of injecting a printed circuit board into the case; and the fifth step(**SS5**) of permitting the core of the printed circuit board to press-contact the sensing portion of the case, and fixing the cable and the cap.

7/15 © EPODOC / EPO

PN - [JPS628816](#) A 19870116
PR - JP19850147028 19850704
AP - JP19850147028 19850704
DT - I
CT - || STSE (A)
[JP55178416B](#) B 00000000 [];
[JPS57138414](#) A 19820826 [] (NIPPON DENSO CO, et al)
CCI - [B60S1/54](#)
FI - B60H1/00&103P; B60S1/54&Z
FT - 3D025/AA02; 3D025/AB01; 3D025/AC05; 3D025/AD02; 3D025/AD08; 3D025/AF21;
3D025/AF26; 3D025/AG66; 3L011/CP03; 3L011/CP04
PA - NISSAN SHATAI CO
TI - AUTOMATIC CONTROL AIR CONDITIONER
AB - PURPOSE:To **prevent** a front window from being clouded, by installing an on-off door in a demist-defrost supply opening, and constituting this door so as to be opened with output of a rainfall-snowfall detector. CONSTITUTION:A raindrop signal **SS5** out of a raindrop sensor 42 and a signal SS6 out of a windshield wiper switch 43 are all inputted in an operation control unit 40 via an analog-to-digital converter 38. This control unit 4 judges of whether there is rainfall or snowfall or not from these signals **SS5** and SS6. And, it outputs a signal CC, driving a demist-defrost door 18C via a blowoff mode selector actuator 24, and opens a demist-defrost supply opening C. With this constitution, a front window is preventable from being clouded.

8/15 © EPODOC / EPO

PN - [JPS60223249](#) A 19851107
PNFP - JPH045300B B2 19920131
PR - JP19840079014 19840419
AP - JP19840079014 19840419
DT - I
CCI - [H04L12/437](#)
FI - H04L11/00&321; H04L11/00&330; H04L11/00&331; H04L12/40&M; H04L12/42&A;
H04L12/42&M; H04L12/437&B; H04L12/437&R; H04Q9/00&311M; H04Q9/00&321F
FT - 5K031/AA07; 5K031/AA08; 5K031/BA03; 5K031/DA03; 5K031/DA06; 5K031/DB10;
5K031/EA01; 5K031/EA12; 5K031/EB02; 5K031/EB08; 5K031/EB15; 5K031/EC05;
5K032/AA01; 5K032/AA05; 5K032/AA06; 5K032/DA02; 5K032/DB19; 5K032/EA02;
5K032/EA04; 5K032/EB03; 5K032/EB06; 5K032/EC00; 5K048/AA06; 5K048/BA21;
5K048/DA03; 5K048/DA05; 5K048/DA06; 5K048/DA08; 5K048/DC04; 5K048/GB05;
5K048/GC02; 5K048/HA01; 5K048/HA02
PA - (A)
JAPAN NATIONAL RAILWAY; HITACHI LTD
TI - (A)
CONTROL SYSTEM OF SIGNAL TRANSMISSION LINE
AB - (A)
PURPOSE:To improve both the reliability and the working factor for transmission of signals and also to **prevent** misoperation, by controlling the transmission of signal with a signal transmission line based on a control table which is corrected in response to the change of the system connection state. CONSTITUTION:When a

circuit fault arises at a point P, posts SS4 and **SS5** set at both sides of the point P detect the generation of the circuit fault to switch themselves to the terminal modes and also to inform this switch to a post SS3. The SS3 is switched to an interruption mode from the terminal mode, and a slave station SS4 is included into transmission loop 1A. The contents of a control table provided to each post are changed according to the contents of changes of connections of said systems. Based on the contents of the changed control table, the signals are transferred between both posts SS2 and **SS5** through a route shown by a dotted line C2. In the same way, the information on the station SS4 is transmitted to a master station CC2 via a route shown by a dotted line B2.

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PN - [JPH05214978](#) A 19930824

PNFP - JP2894070B B2 19990524

PR - JP19920046113 19920131

AP - JP19920046113 19920131

DT - I

CT - || STSE (A)
[JPS62155141](#) A 19870710 [] (TOYOTA MOTOR CORP)
[JP3069536U](#) U 20000623 []

FI - B60K31/00&Z; B60K41/00&301A; B60K41/00&301D; B60K41/04; B60K41/06;
 B60W10/00&104; B60W10/00&106; B60W10/02; B60W10/06; B60W10/10;
 B60W10/10&210; B60W10/11; F02D29/00&H; F02D29/02&341; F02D41/14&320D

FT - 3D041/AA03; 3D041/AA31; 3D041/AA34; 3D041/AB01; 3D041/AC01; 3D041/AC08;
 3D041/AC15; 3D041/AC18; 3D041/AC20; 3D041/AD01; 3D041/AD02; 3D041/AD04;
 3D041/AD10; 3D041/AD13; 3D041/AD14; 3D041/AD23; 3D041/AD30; 3D041/AD31;
 3D041/AD34; 3D041/AD39; 3D041/AD41; 3D041/AD47; 3D041/AD50; 3D041/AD51;
 3D041/AE04; 3D041/AE05; 3D041/AE31; 3D041/AE32; 3D041/AE36; 3D041/AE40;
 3D041/AF01; 3D044/AA00; 3D044/AA01; 3D044/AA21; 3D044/AB01; 3D044/AC03;
 3D044/AC07; 3D044/AC08; 3D044/AC16; 3D044/AC24; 3D044/AC26; 3D044/AC57;
 3D044/AD02; 3D044/AD04; 3D044/AD21; 3D044/AE07; 3D044/AE19; 3D044/AE21;
 3D044/AE30; 3D241/AA03; 3D241/AA31; 3D241/AA34; 3D241/AB01; 3D241/AC01;
 3D241/AC08; 3D241/AC15; 3D241/AC18; 3D241/AC20; 3D241/AD01; 3D241/AD02;
 3D241/AD04; 3D241/AD10; 3D241/AD13; 3D241/AD14; 3D241/AD23; 3D241/AD30;
 3D241/AD31; 3D241/AD34; 3D241/AD39; 3D241/AD41; 3D241/AD47; 3D241/AD50;
 3D241/AD51; 3D241/AE04; 3D241/AE05; 3D241/AE31; 3D241/AE32; 3D241/AE36;
 3D241/AE40; 3D241/AF01; 3D244/AA00; 3D244/AA01; 3D244/AA21; 3D244/AB01;
 3D244/AC03; 3D244/AC07; 3D244/AC08; 3D244/AC16; 3D244/AC24; 3D244/AC26;
 3D244/AC57; 3D244/AD02; 3D244/AD04; 3D244/AD21; 3D244/AE07; 3D244/AE19;
 3D244/AE21; 3D244/AE30; 3G093/AA05; 3G093/AA06; 3G093/AA16; 3G093/BA04;
 3G093/CA04; 3G093/CA08; 3G093/CB00; 3G093/CB08; 3G093/DA01; 3G093/DA04;
 3G093/DA05; 3G093/DA06; 3G093/DA07; 3G093/DA09; 3G093/DA11; 3G093/DB00;
 3G093/DB01; 3G093/DB05; 3G093/DB11; 3G093/DB12; 3G093/DB15; 3G093/DB18;
 3G093/DB23; 3G093/DB26; 3G093/EA00; 3G093/EA03; 3G093/EA07; 3G093/EA09;
 3G093/EA15; 3G093/EB03; 3G093/EC01; 3G093/FA04; 3G093/FA10; 3G093/FA14;
 3G301/HA01; 3G301/HA19; 3G301/JA03; 3G301/KA16; 3G301/KB07; 3G301/LA03;
 3G301/LA04; 3G301/NC02; 3G301/NC04; 3G301/NC06; 3G301/ND02; 3G301/ND07;
 3G301/NE17; 3G301/PA03Z; 3G301/PA10Z; 3G301/PA11A; 3G301/PD02A;
 3G301/PE01Z; 3G301/PE08Z; 3G301/PF01A; 3G301/PF03Z; 3G301/PF05Z;
 3G301/PF08Z

PA - (A)

TOYOTA MOTOR CORP

- TI - (A)
ENGINE BRAKE FORCE CONTROL DEVICE
- AB - (A)
PURPOSE: To **prevent** the vehicle speed from being increased by the deficient engine brake force when a brake is released after the brake is depressed for deceleration in a device controlling the engine brake force to attain the vehicle speed when an accelerator is set to the off state. CONSTITUTION: The vehicle speed V when an accelerator is set to the off state from the on state (YES in SS5 and NO in SS8) is set to the target vehicle speed Vm (SS10), the throttle valve opening is controlled to travel at the target vehicle speed Vm. When the vehicle speed V becomes smaller than the target vehicle speed Vm by the preset value Vf or above by a brake action (NO in SS9), SS10 is executed again, and the vehicle speed V at that time is set to the target vehicle speed Vm.

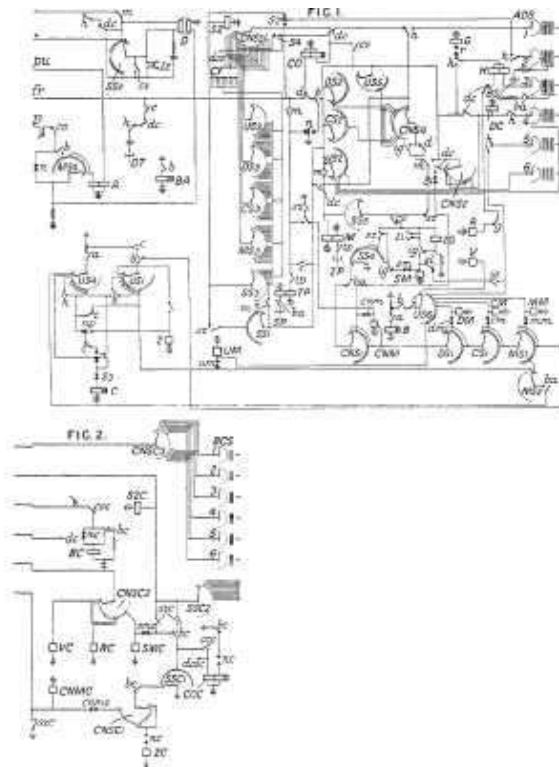
10/15 © EPODOC / EPO

- PN - [GB384001](#) A 00000000
- AP - GBD384001 00000000
- DT - *
- AB - 384,001. Totalizators; display arrangements. ERICSSON TELEPHONES, Ltd., 67, Kingsway, London, and LIMB, F., Holmwood, Fellows Road, Beeston, Nottingham. Sept. 10, 1931, No. 25356. [Class 106 (i).] To reduce the amount of display apparatus in a totalizator the number of characters displayed simultaneously is made substantially less than that required to give a complete indication of the actual or relative amounts invested on each of all the competitors in an event. For example, information regarding each of a plurality of competitors such as the totals or odds thereon may be displayed successively in the same display space, or information regarding win and place bets may be displayed successively in the same display space. Alternatively the competitor numbers or other characters indicative thereof may be displayed in order of betting popularity. Numerous modifications are described. The indicators are preferably of the monogrammic type but may be of any other suitable kind. In the embodiment according to Fig. 1, the totals on nine competitors, both win and place, are displayed in turn on an indicator CT by means of a sequence switch SS stepped under the control of contacts X, periodically operated in any convenient manner. Consecutive odd and even contacts of banks ss6 .. ss10 are connected respectively by way of relay contacts to the wipers of the various competitor win and place registering switches. Thus lines 11 from these banks lead by way of contacts sa, ob, oc, od, oe, to wipers a (units), b (tens), c (hundreds), .., e (tens of thousands) respectively, of the win registering switch of a competitor equipment EB; lines 12 lead to the corresponding wipers of the place registering switch of equipment EB. (Contacts sa, ob .. oe operate when their respective denominational registers first move off zero and serve to **prevent** the display of redundant zeros.) The banks a .. e are connected to the corresponding denominational elements u, t, h, th, tth of the indicator CT and are multiplied to the corresponding registering switch banks, both win and place, of all the other competitors. Associated with competitor equipments as EB or EA are plugs PB, PA the upper four contacts of which are connected to appropriate consecutive contacts in banks ss2, ss3, ss4 the lower three leading to registering controls RB, RA. These plugs may be inserted in any competitor jack J1, J3 .. J20, connected to ticket machines TMA, TMB, TMC and to the units, uc, and tens, tc, elements of the competitor number indicator CN. In operation, the plugs PA, PB, .. having been inserted in appropriate jacks J1 .. J20, a start key is thrown to operate a relay BS. At

bs1 a relay Q is energized and interacts with drive magnet ss to step sequence switch until wiper ss2 reaches a contact marked over bs2 the relay Q being thereby short-circuited. Assuming plug PA is inserted in jack J13, switch SS will be stopped in position 1 and at bs3 circuits will be made over wipers ss6 .. ss10 by way of the competitor register EA to the totals indicator CT, and over wipers ss3, ss4, terminals 3, 10, the elements uc and tc will be energized to display the competitor number 13. Over bs4 and col the indicator WP will energize to display W for win. At the next actuation of contacts X, the sequence switch advances one step whereupon the earth at contacts bs3 is connected over ss6 .. ss10 to the place register of competitor numbered 13, the total thereon being now displayed at CT. The same competitor number is displayed at CN but a relay CO energized over the even (place) contacts of wiper ss5 changes the WP display to place at contacts co1. In subsequent positions of SS the totals, win and place, on the other competitors are similarly displayed. Contacts np1, np2 are operated when place betting is not allowed. Some of the contacts of bank ss2, for example one to six, are multiplied to thirteen to eighteen. The three competitors who are likely to be favourites are plugged in to these positions, their totals being thereby displayed twice as often as those of the remaining competitors. Alternatively the figures pertaining to the favourites may be displayed for longer periods by manual or automatic control of contacts X. A pool total indicator AT is provided and may be adapted to display both win and place pools under the control of further contacts of relay CO. By providing two sequence switches and CT indicators, win and place bets could be shown concurrently. In the embodiment according to Fig. 2, there are individual competitor total indicators CT1, CT2, .. and corresponding competitor number indicators CN1, CN2, ... Each competitor denominational win register wa, units, wb, tens, .. we is paralleled with the place register pa, units, pb, tens, .. pe. Normally the win totals are displayed over contacts cox1 .. cox5, and contacts wsa, wob .. woe (correspondingly to sa, ob .. oe of Fig. 1), the place totals being displayed by periodically operating contacts X1 to operate the change over relay COB, contacts of which, as cob2, operate the COX relays of all the competitor registers. Contacts cob1 control the display of the W, win, P, place indication. In the embodiment according to Fig. 3, the competitor numbers are displayed in order of betting popularity on a vertical column of indicators CN1, CN2, CN3 .. CN24, CN25, the totals of only the first and last competitors being displayed. Associated with each indicator is a switch DS having two wipers ds1, ds2 which are manually set to indicate on tc1, (tens), and uc1, (units), the digits of the appropriate competitor number on closure of a key DK, the order of the numbers being changed as desired during betting. The first and last DS switches corresponding to indicators CN1 and CN25 have further banks ds3 .. ds7, to which are connected seriatim, the wires from competitor jacks J<1>1, J12, .., the first five wires leading to the DS switch of CN1 and the last five to the DS switch of CN25. A multipoint jack PA1, PB<1>, .., is associated with each registering switch, all of which have banks as aa1, ab1 .. ae1 multiplied to the corresponding denominational sections u1, t1, .. of indicator CTD1, and corresponding banks aa2, ab2, .. ae2, similarly multiplied to the sections u25, t25 .. of indicator CTD25 The jacks J<1>1, .. of the competitors who it is assumed will be first and last as regards betting popularity, are inserted in their respective jacks PA<1>, PB<1>, .. and the DS switches corresponding to indicators CN1 and CN25 are set to the appropriate positions and keys DK thrown, the indicators CTD1 and CTD25 then displaying the totals invested on these competitors respectively. If the number of competitors is less than the number of indicators CN1 .. CN25, the former may be given positions in the vertical column corresponding approximately with the relative totals thereon. In a modification one DS switch and indicator CN1 only may be provided, the competitor numbers being displayed successively in their order of betting popularity thereby.

11/15 © EPODOC / EPO

- PN - [GB446454](#) A 19360430
- PR - GB19350008423 19350318
- AP - GB19350008423 19350318
- DT - *
- CCI - [H04Q3/42](#)
- PA - SIEMENS BROTHERS & CO LTD;
WILLIAM GEORGE PATTERSON;
REGINALD GRIFFITH DIXON
- TI - Improvements relating to
automatic telephone systems
- AB - 446,454. Automatic exchange
systems. SIEMENS BROS. &
CO., Ltd., Caxton House,
Tothill Street, Westminster,
and PATTERSON, W. G., 59,
Grove Park Road,
Mottingham, and DIXON, R.
G., 234, Avery Hill Road,
Eltham, both in London.
March 18, 1935, No. 8423.
[Class 40 (iv)] In a code-
translating register-
controller, the registers for
the numerical portion of the
wanted designation, instead
of forming part of the register-
translator, are included in a
circuit over which translators
are taken into use, the
translator being released
immediately the routing digits
have been sent. As described,
the numerical registers are
included in the A-digit switch
together with sending and
control switches for the
transmission of the
numerical digits. The out-
pulsing loop, together with
the impulse springs and
associated control
arrangements normally used
in translators are also
included in the circuits of the
A-digit switch. The translator
also has sending and control
switches, and the sender is
stepped synchronously with
the numerical digit sender by



the impulse springs in the A-digit switch, the stepping of the last-mentioned sender being necessary since, although it does not determine the routing digits, one of its banks (SS2) controls the out-pulsing loop. The commencement and termination of a routing digit are signalled back from the translator over a wiper of the A-digit switch. The units register is used to distribute the digits to the A-digit switch, translator and the numerical registers and special arrangements are provided for controlling the steering relay. In the case of zero calls, a translator is not taken into use, the routing digits being determined by crossconnections between the numerical digit sender and earlier contacts of its control switch. In the case of special service calls, TOL, TRU, &c. requiring no numerical digits, the A-digit switch is also released immediately the routing digits have been sent. Operation of A-digit switch and registration of digits. On seizure of the A-digit switch, relay A (left-hand winding) is operated over wire p and the polarizing winding of D is energized, relays B and BA pulling up and A holding over the in-pulsing wire pu when this is connected up at the first code selector. Magnet MM of the thousands register takes a step over MS1, MS2, US4 whereupon magnet UM of the units register takes a step over MS2 and US4. The original circuit of A is now open, dialling relay C is operated over US4, dial tone is connected to wirefr, and the impulse repeating circuit

is connected over US6 to vertical magnet of the A-digit switch which steps in response to the first train, C being held over US1 during breaks. At the end of the train, C relapses since its original operating circuit over US4 is open at vertical off-normal contacts n so that UM steps US to contact 3. The rotary magnet operates over US2 and interacts with G, operated over wiper 3 by busy register-translators, until an idle one is found, whereupon H pulls up and locks over its low resistance winding and relay BC in the translator. Magnet UM operated over US4 steps switch US to contact 4 in which C pulls up and the impulse repeating circuit is connected over US6, ADS5 and CNCS2 to vertical magnet VC of the BC switch which takes the next train, the first impulse of which also operates UM to step US to contact 5 to provide a holding circuit for C during breaks. US6 in the impulse repeating circuit has a bridging wiper. The back stroke magnet CNMC of the translator control switch is operated over ADS6, US2, and the control switch takes a step when US steps to contact 6 on the relapse of C which thereupon re-operates. The next train is similarly repeated to the rotary magnet RC of the BC switch, US being stepped to contact 7 and subsequently when C relapses to 8. Magnet CNMC of the translator control switch also pulls up, but further operations of the translator will be described later. The thousands, hundreds and tens digits are repeated over US6 and pairs of contacts 8, 9

and so on to MM, CM and DM, the units digit being repeated to UM over the commoned contacts from 14 onwards in US6. There is no further pre-train operating circuit for C over US4.

Transmission of routing digits. CNMC in the translator relapses, stepping CNSC to contact 3 when US leaves contact 7, and IG, Fig. 1, is connected up over CNS4(1) and US2. When impulse springs 11 open, IG pulls up and the sender magnets SM, SMC at the A-digit switch and translator respectively are pulsed, the circuit for SMC being over ADS5 and CNSC2. When sender SS reaches contact 3, out-pulsing springs are connected up over SS2 and transmission proceeds until SZC, Fig. 2, pulls up over SSC2, marked contact of BCS1, CNSC3, ADS1, CNS4 and US2, a parallel circuit being also completed over ADS2 for stop relay SZ at the A-digit switch which shunts springs 12 and releases IG. Sender SS steps by self-interruption to contact 15, is pulsed by I1 to 19 and thence home by selfinterruption, while the translator sender SSC also goes home, both relays SZ and SZC being held over SS1 and SSC1 in parallel until both senders are home. The operation and release of relays SZ, SZC has stepped the control switches CNS and CNSC to contacts 2 and 4 respectively and the relapse of ZC restarts sending. Further routing digits determined by cross-connections between BCS2 ... 5 and SSC2 are transmitted until a wiper of BCS set to a contact connected to terminal dc is

reached, whereupon DC, Fig. 1, pulls up over ADS4 and the previously described marking circuit and locks up. If there are six routing digits, DC pulls up over CNS2 on contact 7, there being no connection from BCS6 to dc. Relay DC releases H to release the registertranslator at which BC falls back and switches SSC, CNSC and BCS go home in turn, the testing in wire of the translator being open until offnormal contacts nc of BCS are closed. To proceed with the transmission of the numerical digits, CNS is driven over CNS2 to contact 7 if it is not already there due to the transmission of six routing trains. If or when the hundreds digit has been received, IG is connected up over CNS4 and wiper CS2 of the hundreds digit to initiate the transmission of the thousands digit marked in SS3 over MS3 and CNS3. The digit is terminated by the operation of SZ. The circuit operations of Fig. 1 during the sending of numerical digits are similar to its operations during the sending of the routing trains, the banks CS3, DS3, US3 of the registers being connected up in turn by CNS. After the transmission of the units digit, CNS steps to contact 11 whereupon CO operates over CNS3, locks up, opens the circuit of IG and opens the p wire which results in release of the A-digit switch by the first code selector. Relays A, B, BA fall back, but CO holds over its left-hand winding and off-normal contacts n. When the sender SS reaches home after transmission of the units digit, ground over wiper SS4

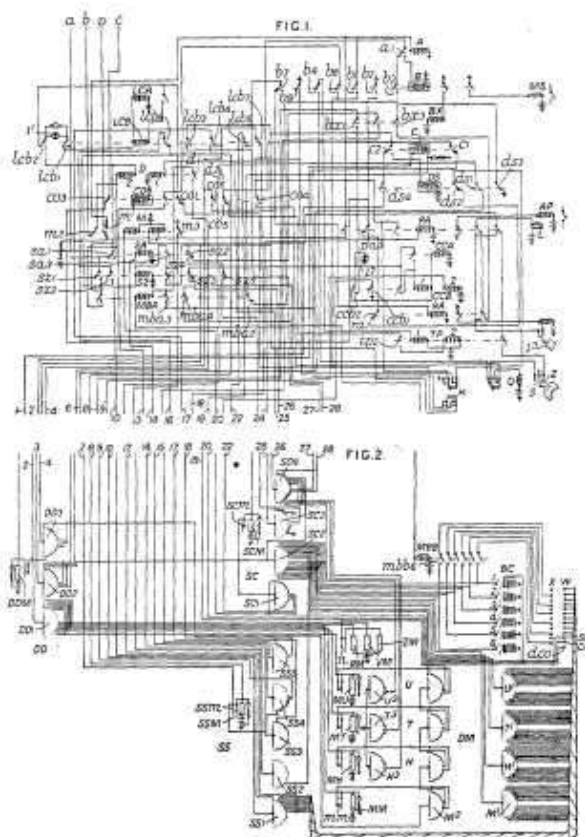
homes'CNS, DS, CS, MS, US in turn and the last-mentioned switch operates release magnet Z of ADS, CO thereupon falling back. All translators busy. Last contacts of the levels of ADS in banks 3 and 2 are connected to battery and busy signal respectively so that when the switch reaches these contacts and operates contacts s, H pulls up and the busy signal is sent back over fr to the first code selector which repeats it to the calling party. Contacts s3 **prevent** further operation of C so that any subsequent impulse trains are not repeated and the circuits remain in the present condition until the calling party releases. Zero calls. In response to the single digit O, the A-digit switch steps to the last contacts of the tenth level to which the busy signal is not connected. H pulls up and as US is on contact 4, DC operates over ADS4 and US2. Relay H thereupon relapses and sending starts as previously described, but the routing digits are now sent out as determined by cross-connections between the previously unused first five positions of CNS3 and frame CF to SS3, the self-stepping circuit of CNM being open at s1. The cut-off relay CO is operated over CNS3 in position 6 or over a previous position connected to dco according to the number of trains required. Other types of call. If the call is to a manual exchange, the routing digits are sent out as before, but when the junction to manual is taken into use, current reversal is sent back

to operate D and disable IG to **prevent** transmission of numerical digits until a coder is available. In the case of a special service call, e.g. TOL, not requiring numerical digits, it is necessary to release the A-digit switch immediately after the routing trains have been sent. For this purpose, the next wiper of the BC switch is standing on a contact connected to dcoc so that COC is operated and the translator released. H, Fig. 1, relapses and as US is on contact 8, CO pulls up and releases the A-digit switch as before. Irregular operation. If a spare code is dialled, the senders step, but as there is no marking over the BC switch, M, Fig. 1, pulls up over **SS5** and contact 14 and locks up, SZ being operated when SS3 reaches the directly grounded contact 22 so that the forced release wire fr is grounded to bring about the release of the first code selector. The digit 1 is not used for the A-digit and if it is dialled, post springs np are operated on the first level so that UM does not step on the relapse of C, but the release magnet Z is operated over US4. If no digits are dialled or an undue delay between digits occurs, TP will have been operated by a pulse on SP and locked up so that the next pulse over ZP operates M. If a digit has not been dialled, the forced release wire fr is grounded to release the first code selector. If dialling has occurred, H or DC will have been operated and M opens the loop to step the first code selector to the first level from which a tone signal is given. Relay IG operates

and ineffective sending starts.
The

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- PN - [GB270026](#) A 19270505
- PR - GB19260004416 19260216
- AP - GB19260004416 19260216
- DT - *
- CCI - [H04Q3/42](#)
- PA - SIEMENS BROTHERS & CO LTD;
WILLIAM HERBERT GRINSTED
- TI - Improvements relating to
telephone systems
- AB - 270,026. Siemens Bros. & Co.,
Ltd., and Grinsted, W. H. Feb.
16, 1926. Automatic exchange
systems.-In order to provide
the usual intertrain pause
when sending impulses from
a register controller set, the
counter switch comprises a
normal contact, digitworking
contacts, and further contacts
which provide the fixed
pause, a 25-point switch
being preferably used. The
switch hunts for the marked
contact, at the same time
sending cut impulses, is then
self-stepped over the
remaining marking contacts,
and is then stepped
alternately by self
interruption and an
interrupter. Where for
instance double selection
occurs, an abnormal pause
may be required, and this is
obtained by operating a
polarized relay, which acts to
open the switch circuit and to
keep the impulsing circuit
closed. Arrangements for
connecting to an operator by
dialling O or three code digits
are described, and also
means for giving a signal and
busying the register
controller if the interrupter
motor fails. Delay in dialling
or dialling a dead code



number are also dealt with.
Seizure of register-controller.
When a call is made, a first code selector at the exchange is seized, and in turn seizes a free 'A' digit selector. When the first digit is dialled, the 'A' digit selector seizes a free register-controller over a circuit from earth over wire c, contacts co3, pa3, ra1, ds2, busy key K, polarizing winding 1 of relay D to battery. The 'A' digit selector switches through, and relay A operates over the wire p from battery at the first code selector. Relay B energizes to earth at busy key K, connects earth to wire c at b2, and to relay D (1) at b9, and energizes relays BX, MS, the latter of which starts the interrupter motor. The continuously-rotating cam earths in turn contacts S, Z, the former of which now energizes relay TP (1) over contacts b4, and relay TP locks up over its winding 2, contacts tp2, w5, c1, key K, contact b1, key K to earth. When the interrupter contacts I<1> are closed, relay LCR energizes over contacts lcb1, lcb2, co1, b1 and when the interrupter contacts open, LCB energizes in series therewith, connecting the interrupter F<1> across the wires a, b, and short-circuiting it at sa1. When the contacts of interrupter I<2> next close, relay CCA operates in a circuit [earth over contact b1, strapped contacts of key K, contacts lcb3, wire 27, wiper SC4, wire 26, contacts sz3, I<2>, ccb2, CCA, battery]. When the interrupter opens, relay CCB (1) energizes in series with CCA, connecting the interrupter I<2> over

contacts ccb2, bx1, wire 8, magnet SSM to battery. Earth at contact ccb1 energizes magnet SCM to step the wipers of the out-controller SC to their second contacts, the circuit of relays CCA, CCB being broken. Registering digits. Relay A repeats the second train of code impulses to the vertical magnet VM of the switch BC in a circuit [earth, key K, a1, b3, mba2, relay C, wire 2, wiper DD1. VM, battery]. Relay TP is released at c1, and relay DS is energized over c2, opening at ds3 the circuit of the lamp L, which was closed previously at bx3. At the end of the train relay C releases and the in-controller DD is stepped, a circuit [earth, key K, b1, strapped contacts of key K, c2, ds4, line 1, DDM, battery], being opened when DS releases. The last train of code impulses is repeated over wiper DD1 to magnet RM of the switch BC, after which DD is stepped to its third contacts. The numerical trains of impulses now operate in turn the magnets MM, MH, MT, MU, of the marking switches DM over successive contacts of DD1, which remains on its seventh contacts. Impulsing. When the third code digit has been registered, relays CCA, CCB re-energize over wiper SC4, wiper DD2 to earth, and the counter-switch magnet SSM. is energized over wire 8, interrupter I<2>, sz3, wire 26, wipers SC4, DD2, to earth, and the switch is stepped by the interrupter. On its second contacts, relay SA is energized [wire 14, SS3, wire 17, lcb4, lcb3, key K, b1 to earth]. The counter-switch continues

stepping, impulses being now sent over the wires a, b by the interrupter I<1>, the short-circuit of which has been removed at sa1. When the contact marked in the bank of wiper SS1 by the terminal W connected to selected contact of wiper BC (1) is reached, relay SZ energizes [wire 10, wiper SS1, W, X, BC1, SC2, DD2, earth], shortcircuiting P at sz1 to stop impulsing, and closing a self-stepping circuit for the counting switch [SSM, ssm, wire 7, sz2, wire 16, **SS5**, wire 17, earth]. Relay SZ locks up over sa3, sz4, and release relays CCA, CCB. When the switch leaves the 13 contacts, relays SA, SZ de-energize, and break the self-stepping circuit, but the switch self-steps to the 15th contact over wiper SS4. The magnet SCM, energized over contacts sz5, ba2, is now de-energized and the switch SC steps to its third contacts. Relay CCB energizes [CCB(2), wire 9, SS4, wire 15 to earth] and locks up over its winding 1, SC4, DD2 to earth, and the interrupter I<2> steps the switch SS to its 16th contact, and the switch is then alternately self- and interrupter-stepped to normal. Five more translated digits are similarly sent, and the interrupter circuit for magnet SSM now passes over the 8th contact of wiper SC4 and the off-normal sector of wiper H3 of switch DM so that the thousands digit cannot be sent till the hundreds digit is registered; similarly the sectors for the wipers T3, U3 are connected to the 9th and the 10th - 12th contacts of wiper SC4. When all the digits have been sent, in accordance with the marked contacts of

wipers M1, H1, T1. V1, the out-controller SC is on its 12th contacts. Release of register controller. When the counter switch SS reaches its 19th contacts, relay CO energizes over wipers SS2, SC2, DD2, locks itself, de-energizes relays LCA, LCB, TP, releases the ' A ' digit selector at co3, operates the meter Q over key T, co4, and key K, and closes a selfstepping circuit for magnet DDM over relay RA. When the in-controller reaches its next normal position, it closes a circuit for the magnet MM [relay RA, co6, wire 4, DD3, M2, off-normal sector, mm, MM]. The switch M, and in turn the switches H, T, U, self-step to normal, when the release magnet ZM is energized over its off-normal contacts u, and the switch BC returns to normal. Relay RA operates an alarm to give warning of delayed release, and flashes the lamp L through the interrupter I3. Relay CCB deenergizes, the switch SS returns to normal [SSM, ssm, wire 7, lcb6, **SS5**, wire 18, lcb7, co6, RA] and the switch SC steps to its second normal position (SCM, scm, SC1, wire 22, lcb5, co6, RA). When the A ' digit selector was released, relays A, B, CO, BX, D (1) were released, but the self-stepping circuits of the switches were held from relay RA over contacts b7 instead of co6, relay RA releasing when all the switches are again normal. Delayed or dead code number dialling. All spare exchange-code contacts X are commoned to a contact sc and since the letters corresponding to the numeral 1 are, in the area under

consideration, not required, the contacts in the first level and the first contacts in remaining levels of the wiper BC (1) are commoned direct to contact sc and to wire 20, so that if a dead code number is dialled, relay M energizes over wipers BC (1), SC2 (contact 2), DD3 (contact 3) to earth. Contact m1 opens the input impulse wire p and connects relay A to battery over a resistance, and m2 opens wire b. The counter switch operates as usual, but when it reaches its 12th contact, relay SZ energizes [SZ, wire 10, SS1, wire 12, m3]. On reaching the 14th contacts, relay SA releases and switch SC steps to its 3rd contacts, so that relay M releases, de-energizing relays A, B, LCA, LCB. The homing circuits of the switches are closed as before, contacts b7 being closed. If dialling is delayed, relay TP remains energized when the contact Z is earthed by the rotating cam, and relay M (1) is then energized, initiating release as above. Operation on failure of interrupter motor. When the second code digit is recorded, relay PA operates [battery, PA, wire 24, first bank contact and SC3, wire 25, ds1, wire 6, DD2, wire 3, key K, contacts b1, key K to earth], and locks up to key K. An alarm relay AP is energized, and the lamp L and relay M (1) are intermittently operated. Wire p is opened and a distinctive tone sent to the caller from the first code selector. Relays A, B release in turn and the controller returns to normal. Relay PA remains locked until key K is pressed, so that contact pa3

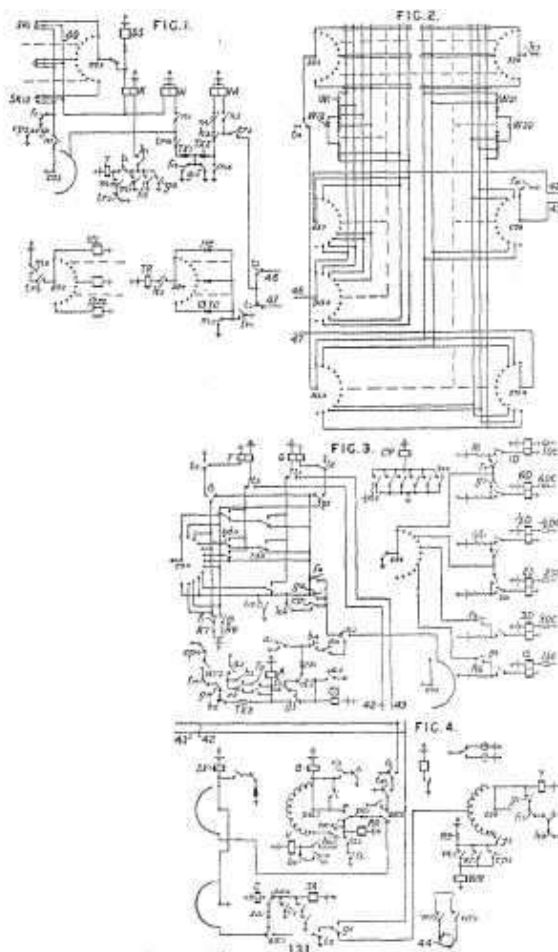
remains open to **prevent** seizure of the controller.

Connection to operator. (a) By dialling digit O. Wires outgoing from the 10th level of the 'A' digit selector have their a and b wires crossed, so that when relay LCB operates and energizes winding D (2) over the a and b wires, relay D operates. Relays A and B operate as before. Relays MBB. MBA energize over contact d<1> and wiper DD2, and lock up over contact mba3, winding D (2) is short-circuited, and the circuits of the recording switches are opened at mba2. The counter magnet energizes from wiper SCO over contacts mba4, lcb3 to earth instead of over wiper DD2. Relay MBB connects the wiper of switch BC to certain contacts X, and five trains of code impulses are sent out. The wiper mbb6 is cross-connected to contact co, so that when the out-controller is on its 7th contacts, relay CO energizes [CO, wire 13, wiper SS2 and its 19th contact, co, mbb6 SC2, wire 28 to earth to initiate release. For a lesser number of impulse trains, the corresponding wiper mbb would be similarly cross-connected. (b) By three code digits only. The corresponding contact X connected in the bank of wiper 6 is cross-connected to contact co and the impulsing circuits are normal.

Suppressing one or more translated digits. The necessary contacts X are cross-connected to the contact deo so that the switch SC is self-stepped on while the swit

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- PN - [GB767084](#) A 19570130
- PR - AUX767084 19500308
- AP - GB19540003647 19510301
- DT - *
- CCI - [G07F5/18](#) ; [G07F11/002](#)
- PA - PUNCH ENGINEERING PTY LTD
- TI - Checking means for coin-operated vending machines
- AB - 767,084. Digital electric calculating-apparatus. PUNCH ENGINEERING PTY., Ltd. March 1, 1951 [March 8, 1950], No. 3647/54. Divided out of 767,083. Class 106 (1). [Also in Group XVIII] A price frame for comparing the price of an article with the credit established by inserting coins in a coin freed machine gives the same indication whether the credit is greater than or equal to the price. The machine illustrated sums the values of inserted coins of several denominations and delivers articles selected by manually operated keys, provided the price is less than or equal to the credit. It then subtracts the price from the credit. It may employ the article delivery devices of Specification 767,083. Should selection be unduly delayed the driving motor for the article delivery devices is switched off. The machine may be modified to serve several customers simultaneously, one customer crediting while another is receiving articles. Totalling coin insertion.- Contacts operated respectively by the weights of halfpennies, pennies and threepenny, sixpenny, one shilling and two shilling pieces are designated in Fig. 3 as DC, 1DC, 3DC, 6DC, 1SC and 2SC.



Each controls a corresponding relay D ... 1S which, when operated, locks over its contact d1 ... 2s1 and a resistor R1 ... R6, closes a circuit for a pilot relay CP over its contact d2 ... 2s2, and at its contact d3 ... 2s3 prepares a circuit for adding the value of the coin inserted to any credit already registered. The latter circuit comprises normally operated relays SX (Fig. 4), B and C normally released relays A (Fig. 3), F and G, rotary stepping switches SA and PA, respectively registering the number of units of sixpence and one halfpenny in credit, and a rotary stepping switch CS which controls the switches SA and PA according to the indications of the contacts d3 ... 2s3. The operation of pilot relay CP completes a circuit for the magnet of switch CS from earth on the wiper and contacts of bank cs4, over unoperated contact D3 ... 2s3 contacts k4, cp1, n2, c4 and b4, interrupter springs cs1 and contacts n3, f3 and g3. The switch CS thus hunts until it finds the contact D3 ... 2s3 which has been operated, when either relay F, or relay G, is operated from the earth on the wiper of bank cs4 and locks over contacts f1 and f2, or g1 and g2, and a resistor R7 or R8. Earth from the wiper of bank cs5 is extended over contacts f7 ... f9 or g7 ... g9 to release the operated relay D ... 2S. The switch. CS then makes a number of steps determined by the value of the coin inserted in unison with either switch PA or SA. Thus if a threepenny piece has been inserted, so that switch CS

has hunted to its sixth contact and relay F has operated, contact f4 will short contact cp1, shortly to be released, and contact f3 will close a circuit for relay A which locks over contacts a2, b3 and f10 as well as over contacts a1 interrupter springs cs1 and contacts n3 and f3. Contacts a5 and f5 close a circuit for the magnet of switch PA the interrupter springs pa1 of which release relay B which in turn opens one locking circuit of relay A at contacts b3 so that when the magnet of switch CS is operated over contacts a3 its interrupter springs cs1 can release relay A. The circuits of the magnets of switches PA and CS are thus broken at contacts a5 and a3 so that the wipers of these switches step and the interrupter springs pa1 close the circuit of relay B over switch bank pa3 and interrupter springs cs1 and contacts b4 extend the earth from bank cs4 to re-operate relay A. The switches CS and PA make six steps (corresponding to six halfpenny units) in this way. When the wiper of bank cs4 reaches its twelfth contact it earths contact f1 so that F releases; the crediting action is now complete. A similar action takes place when other denominations are inserted, except that when a sixpenny, shilling, or two shilling piece is inserted switch CS steps once in unison with switch SA for each sixpenny unit inserted, relay C performing a function similar to that of relay B. Carry-over.-When the wipers of halfpenny recording switch PA reach their thirteenth contacts during

crediting, or during debiting
 (see below) relay V (Fig. 4)
 instead of relay B is operated
 from the earth placed on
 wiper pa3 when the
 interrupter springs pa1 close.
 Relay V locks over contact b5
 at v1, at v2 closes the circuit
 of the magnet of switch SA,
 and at v3 prepares a circuit
 for relay B over contact c1
 when relay C is released by
 the interrupter springs sa1.
 When relay B operates
 contact b6 extends the earth
 on the wiper and thirteenth
 contact of bank pa3 to
 operate magnet PA;
 interrupter springs pa1 then
 open and, when relay V,
 which is slow to release, is
 released by contact b5, the
 magnets PA and SA are
 released and the wipers of
 these two switches step
 together, the wipers of switch
 PA thus returning to their
 home contacts; During this
 action the open contact c4
 prevents operation of relay A
 so that continuation of the
 normal crediting action is
 deferred until the action is
 complete. Registering coins
 inserted.-The resistors R1 ...
 R6 in Fig. 3 may each be
 replaced by a message
 register such as the G.P.O.
 100-type meter. Selection
 from articles for sale at
 different prices.-Articles are
 selected by depressing
 pushbuttons SK1 ... SK13 (Fig.
 1) which control a rotary
 article selecting switch SS.
 Any button which is
 depressed disconnects a
 corresponding contact in a
 bank ss2 from a line 40 which
 it earths through contacts
 cp3, f11 and g11
 which **prevent** selection
 while crediting or debiting is

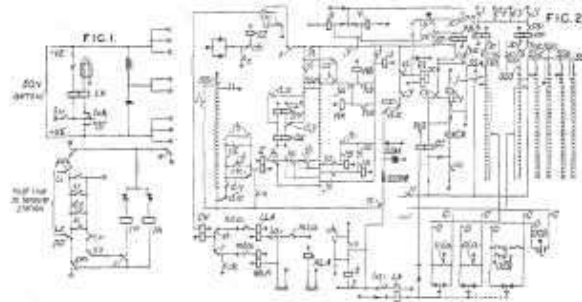
incomplete. The unoperated buttons extend the earth on line 40 to the corresponding contacts of bank ss2 to operate the magnet of switch SS so that this switch hunts for the contact corresponding to the depressed button. At the same time relay N operates and completes a circuit for the magnet of switch CS (Fig. 3) from the earth on wiper cs2 over contacts n2, c4, b4, interrupter springs cs1 and contact n3 so that switch CS, which is used subsequently in debiting the price of the article delivered, homes. Relay N locks over contact n1 and arc and wiper cs3, and contact n7 connects line 40 to the earth on the wiper and home contact of bank cs3 so that relay N remains operated, at least until the depressed button SK1 ... SK13 is released, to **prevent** delivery of more than one article. Article delivery circuits.-When the wipers of switch SS (Fig. 1) reach the contacts corresponding to the operated button SK1 ... SK13 relay K is operated from the earth on line 40 in series with magnet SS which does not operate under these conditions. Contact k3 completes a circuit over wiper and bank ss4, contact 1TC ... or 13TC opened by delivery of an article, and contact m3, for relay TR which locks over contact tr1 and at contact tr4 completes a further lock. for relay N. Contact k4 (Fig. 3) prevents further crediting. Contacts k5 (Fig. 2) and tr2 (Fig. 1) complete a circuit for comparing the price of the article selected with the

amount in credit; if the credit is not less than the price, relay M operates from the earth at contact k5 over the circuit provided by the price frame (see below), lead 46 or 47, contact t2 or t3, and contact tr2 and n5, and locks itself over contacts m1, k2 and n4, and relay K over contacts m7 and k1. Closure of contact m6 completes a circuit over contact tr5, and wiper and bank ss3 for the delivery clutch 1CL ... 13CL corresponding to the article selected in the delivery device described in Specification 767,083, and this circuit is broken when the corresponding contact 1TC ... 13TC is opened by the article as it is delivered to release the relay TR. Relay N, by ensuring that relay M remains locked over contact n4 until it is disconnected from the price frame at n5, prevents a repetition of the delivery action of relays M and TR, e.g. should relays F and G be operated by further coin insertions. Checking coin insertion against price. Price setting mechanism.-Separate connections are set up on the price frame shown in Fig. 2 for the number of halfpenny and sixpenny units in the price of each article, and rectifiers W1 to W12 and W21 to W32 provide a circuit where the credit marked on switches SA and PA exceeds the price of the article indicated by the switch SS. With the connections indicated the article corresponding to the seventh contacts of switch SS is priced at 7d. Circuits are thus provided from the seventh contact of bank ss6 through

the shilling lead directly to the contact of bank sa3 corresponding to a credit of sixpence and thence over contact t4, the seventh contact of bank ss5, and the one penny lead, both directly to the contact of bank pa4 corresponding to a credit of one penny, and through one or more rectifiers W1 ... W12 to the contacts of bank pa4 corresponding to credits of more than one penny. Further circuits are provided from the seventh contact of bank ss6 over the shilling lead directly to the contact of bank sa4 corresponding to a credit of one shilling and through one or more rectifiers W21 ... W32 to the contacts of bank sa4 corresponding to credits of more than one shilling. Thus if the credit marked on switches SA and PA exceeds the price of the article selected earth is extended from contact k5 to lead 46 or 47 to operate the relay M as described above. Subtracting price of article from credit.- The switch CS and the relays F and G used in adding the value of the coins inserted to the credit indicated on the switches SA and PA are also used to subtract the price of delivered articles from the credit. As described above the switch CS homes when an article is selected. Each contact of banks cs7 and cs8 (Fig. 2) respectively is connected to the price lead representing the complement in halfpennies on sixpence and in sixpences on six shillings respectively of the credit represented by the corresponding contacts of switches PA and SA. Thus w

14/15 © EPODOC / EPO

- PN - [GB556739](#) A 19431020
- PR - GB19420003258 19420312
- AP - GB19420003258 19420312
- DT - *
- CCI - [H02J13/00](#)
- PA - STANDARDTELEPHONES
CABLESLTD; EDWARDALBERT
HENRYBOWSHER; HAROLD
MOUNTJOY MUSCHAMP D ASS;
HUGHJENNINGS WARD
- TI - Improvements in or relating
to electrical remote
indicating and supervisory
systems
- AB - 556,739. Electric selective
signalling systems. STANDARD
TELEPHONES & CABLES, Ltd.,
BOWSHER, E. A. H., FONSECA,
H. M. M. D'ASSIS-, and WARD,
H. J. March 12, 1942, No.
3258. [Class 40 (i)] In an
electric signalling system for
power supply networks,
information concerning units
such as circuit breakers is
conveyed by a train of
impulses, the condition of
each circuit breaker being
indicated by the polarity of
an impulse and a change in
condition by a lengthened
impulse. When a circuit
breaker OCB changes over it
connects +<SP>ve</SP>
battery to lead O or C to
provide for the transmission
of a +<SP>ve</SP> or -
<SP>ve</SP> impulse, charges
up one of a pair of
condensers, -and leaves the
other charged and isolated to
provide the change
indication. A permanent
alarm condition on other
equipment operates a relay
such as ALA the change-over
contacts ala1 of which
operate in a similar manner
to those of the breaker. A
momentary alarm operates



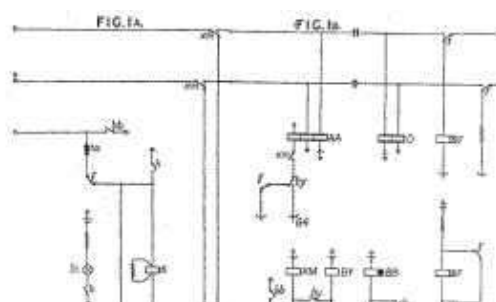
MLA which has similarly functioning change-over contacts and is locked up dependent on LLA. Control of the circuits and of the signals is effected by switch SS stepped under the control of a pendulum relay P1 and pairs of impulsing relays X, Y (for normal impulses) CX, CY (for lengthened impulses) and DX, DY (for extra long seizing &c. impulses). Banks SS1, SS2 are used for control of local circuits and the indications are given over pairs of banks SS 3, 4; SS 5, 6 ; SS 7, 8, connected up by switching relays HA, HB during successive complete revolutions. Sub-station makes a call.-When a change of condition or an alarm occurs, common relay LA is operated by the condenser charging operation described above, followed by S, which releases LA, and by ST slowly over wiper SS2 (normal). In the meantime, pendulum relay P1 has been operated and released and continues to swing at 20 c.p.s. Its impulsing contacts control X and Y in succession so that these relays operate at 10 c.p.s. and their operating periods extend over a full swing (to and fro) of the pendulum but are displaced by half the full swing period. Relay X controls, in a similar manner, dependent on the operation of CC, a further pair CX, CY operating at 5 c.p.s., and CX controls in positions 1 and 2 of the switch, a further pair DX, DT used for the production of a very long pulse. These relays are used to control the stepping circuit of the switch and also the holding circuits of PN, PP

which respectively transmit negative and positive impulses over the line circuit, Fig. 1. This line circuit has a normally flowing weak "proving" current which is removed when S pulls up, LV being a relay normally operated in this battery supply circuit. After P1 has made a number of swings to operate and release the various X, Y relays in the proper combination to make and break the circuit of switch magnet SSM, SS steps to position 2 in which PN is operated over SS4 and held by Y, CY and DY over overlapping periods and finally by Z to send an extra long negative impulse as a calling signal. The next time X, CX are operated when DX is back, Z pulls up and locks followed by ZZ and the release of S whereupon all the impulse controlling relays are open-circuited. ST falls back, SS goes home and Z releases to terminate the pulse. ZZ falls back very slowly to hold open the line proving circuit until the equipment at the tandem station has restored. The substation circuit now awaits initiation of another call or a request for a supervisory cycle from the control station. Supervisory cycles.-The request, in the form of a long - <SP>-ve</SP> pulse operates IN followed by CK which holds, brings up S and opens the circuits of Z, ZZ to **prevent** homing of SS after the partial revolution described on the preceding paragraph. When the pulse ceases, PI, ST operate as before but the extra long <SP>-ve</SP> pulse in position 2 is dependent on Y, DX, DY alone. When the

pulse terminates SS steps to 3
 and a normal <SP>-ve</SP>
 pulse is transmitted
 indicating the 1st revolution
 of the switch, which is now
 stepped by Y alone unless CC
 and CX are brought in due to
 occurrence of a change. In
 position 4, the substation
 battery voltage is signalled as
 standard by a lengthened
 negative or as low by a
 normal negative.. Relay LV,
 Fig. 1, is normally operated
 on standard voltage and
 brings in CC over SS3 to
 lengthen the <SP>-ve</SP>
 pulse produced by battery on
 SS4. Relay PP will not operate
 in series with CC. The
 remainder of the switch
 revolution deals with
 conditions of circuit
 breakers, alarms &c. The
 fixed springs of the change
 over contacts OCB, al a and
 so on are connected to
 contacts in banks SS1, 2 so
 that PN or PP is operated at
 each step to send a normal
 <SP>-ve</SP> or +<SP>ve</SP>
 impulse. If, however, a change
 has occurred, the charged
 and isolated condenser
 discharges over PN or PP
 (whichever is unoperated by
 the condition indication and
 which does not operate in
 this circuit), -<SP>ve</SP>, NG-
 , CC. Terminal NG- is
 connected to the
 corresponding terminal in
 Fig. 1 which provides a
 smoothed supply for the
 condenser circuits. Relay CC
 brings in the 5 c.p.s. pulsing
 pair CX, CY to lengthen the
 period during which SS
 remains stationary and so
 lengthening the pulse,
 +<SP>ve</SP> or -<SP>ve</SP>.
 When the switch reaches
 position 24, J operates over

SS2 and when the last indication has been sent (position 25), the switch steps to position 1 in which switching relay HA connects PP, PN to the wipers of the next pair of banks **SS5**, SS6. Similar operations ensue during the next revolution except that (1) a normal - <SP>ve</SP> is sent in position 1 to keep the distant received in step, (2) a normal +<SP>ve</SP> is sent in position 3 to indicate the 2nd revolution, (3) there is no provision for a battery voltage signal, (4) JA pulls up over SS2 in position 22 so that switching relay 4B connects up wipers of banks SS7, SS8 when the switch next reaches position 1. The 3rd revolution produces the same results except for a long - <SP>ve</SP> in position 3 to indicate this revolution. and that JB operates in position 20 so that when the switch reaches position 2 in the 4th revolution and the extra long <SP>-ve</SP> pulse is sent, Z pulls up followed by ZZ. Relays S,CK and ST fall back and switch SS homes. Faults. Continuous sending, due to failure of Z to operate, is prevented by an alternative circuit for Z closed by J, JA, JB during successive revolutions of the switch. Specifications 439,000, [Group XL], 514,991 and 556,745 are referred to.

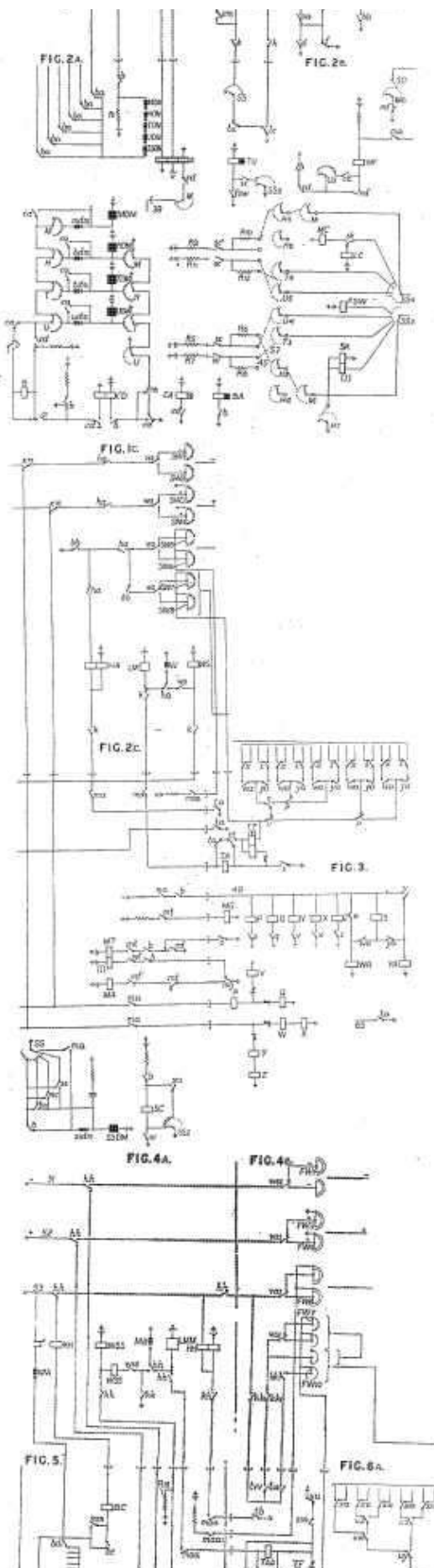
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- TI - Improvements relating to



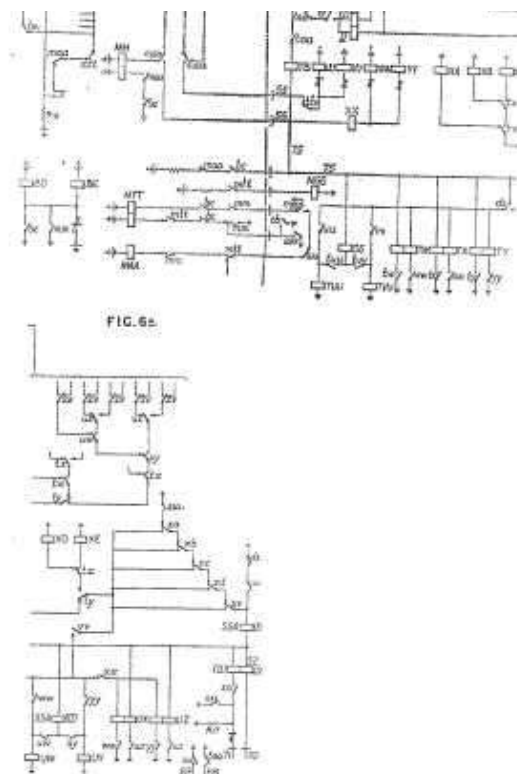
AB

automatic telephone exchange systems

- 952,832. Automatic exchange systems. ASSOCIATED ELECTRICAL INDUSTRIES Ltd. Jan. 10, 1961 [Jan. 18, 1960], No. 1772/60. Heading H4K. In an exchange system wherein a call is set up in a stage by stage manner involving the successive taking into use of a plurality of ranks of uniselectors, a first selector is coupled to a register common to a plurality of first selectors, wherein the dialled digits are stored, and a further or final selector is coupled to a control circuit common to a plurality of further or final selectors, the control circuit in turn being coupled to a marker common to a plurality of such control circuits, the marker being set from the register by signals transmitted over the preceding selectors so as to apply a marking to the relevant outlet or group of outlets of the further or final selector. As described, the first selector switches consist of uniselectors having banks SW1 to SW8 (Fig. 1C) containing first and last contacts and fifty intermediate outlet contacts in a row, there being two rows per switch bank, which rows are swept by electrically connected but staggered wipers to give in effect one hundred and four contacts per bank; the rows are symbolically represented by full and dotted lines and the wipers are shown as single double ended wipers. The final selector banks FW1 to FW6 (Fig. 4B) are similar in construction, banks FW7 to FW10 being of conventional single row type. A first



single row type. A first selector common control circuit shown in Figs. 2A-2C comprises motor-driven uniselectors M, H, T, U which act as the register and a further unselector SS which acts as a sequence switch for extending high or low resistance, plus or minus battery, over the register uniselectors to marking relays in a common marker circuit, Fig. 3. The latter relays effect marking, appropriate to the called number, in banks SW7 or SW8. A final selector common control circuit (Fig. 5) is taken into use with a final selector (Figs. 4A and 4B) and in turn seizes a marker (Figs. 6A, 6B) containing a number of marking relays operated in response to the aforementioned battery conditions extended over the sequence switch, so as to effect marking in banks FW7-FW10. Setting-up call; operation of first selector.- Upon the initiation of a call, a free first selector and its common control circuit are associated with the calling line and relay A, in the control circuit, pulls up to the calling loop. Release relay B and its slave BA follow thus busyng the first selector and the control circuit. BA also allows coupling relay K to come up in series with R1, thus operating BB and lighting a supervisory lamp SL. In response to B, relay SC pulls up over wiper SS2 of the sequence switch and relay CD followed by CA also operates. Dialling tone is reverted over wire 38 and the pulses of the first digit dialled are repeated by relay A to step the thousands unselector M,



relay B holding throughout impulsing. During the interdigital pause CD releases, but before CA can drop out, magnet HDM is energized over wiper M2 so that as CA falls, the hundreds unselector H is stepped on one step, thus allowing CD and CA to come up again. The hundreds, tens and units digits are then registered in the same way, CD finally releasing but before CA falls back, relay MF is energized over wiper U3 of the units unselector. A wiper switching relay WS will now operate if the thousands digit dialled, caused wiper M6 of unselector M to stop at a contact connected to wire 50. When the marker for this control circuit becomes free, relay MT is energized over its winding I and is followed by MG (in the marker) and MA (in the control circuit). MA completes the connection of the selector to the control circuit, completes at contact ma8 a test circuit for stopping the first selector on a last outlet in the event of an unsuccessful hunting operation, and causes, at contact ma4, unselector SS to step once. This step initiates the release of SC by short-circuit over wiper SS2 but before SC finally releases a battery condition is passed over wipers SS3, SS4 to the marker in order to cause the operation of the marker relays. The battery conditions used for this purpose are (a) low resistance positive battery, (b) high resistance positive battery, (c) low resistance negative battery, and (d) high resistance negative battery. Thus

condition (d) is shown, in Fig. 2B, in the connection of a contact of wiper bank H3 via wire 45 to resistor R6 and thence through resistor R5 to negative battery, while wire 57 connected to a single resistor R7 and positive battery indicates the use of condition (a) for marking a contact in wiper bank T3. One of these battery conditions is connected to each contact in the wiper banks H3, H4, T3, U4, which are associated with bank SS3 of the sequence switch, and one of these conditions is applied using R9-R12 to some of the contacts in the wiper banks H5, H6, T4, U5 associated with wiper SS4. In the marker (Fig. 3) either relay W or relay Y will always respond over SS3 when the sequence switch takes this first step and in the case of low resistance signalling, relay X or relay Z respectively will also come up. In response to W or Y, relays WA or YA will pull up to negative battery on a holding wire 49, and, when W or Y releases (to be explained) a start relay S operates in series with the operated one of relays WA and YA. Additionally relays V or Q may be energized over SS4 by high resistance negative or positive battery respectively and if low resistance signalling is used relay P also operates. The banks SW7 and SW8 of the first selector are thus marked. However, the release of SC de-energizes magnet SSDM and the sequence switch steps on once more, SC then pulling up again. The operation of start relay S in the marker when the operated relay W or Y

releases causes an operating earth to be extended to the stepping magnet LM of the first selector, causing this to hunt for the marked contact in bank SW7 or SW8. If the appropriate final selector (Figs. 4A, 4B) and its associated control circuit are free (contacts bdl, be1 closed), negative battery via resistor R18 and closed, off-normal contact NN1 is extended over the P-wire 53 to bank SW5 (or SW6 if WS has operated), thence to SW7 (or SW8) and via the marking relay contacts to high-speed test relay TT which operates to stop the hunting action by inserting relay TA in series with magnet LM. Operation of TA causes HA to come up, MF to release and earth to be connected to a meter in lead 65. The falling back of MF releases the marker from the control circuit and the operation of HA closes an energizing circuit for relay SK (Fig. 2B). If the hundreds digit is such as to cause the operation of relay WSS (Fig. 4A), then only the low resistance winding I of SK will be energized in a circuit extending from earth via bank H7, over wiper SS3 and the negative line wire 51 to negative battery connected to relay WSS in the final selector (Fig. 4A), KK having operated on seizure of the final selector (see below), WSS and SK then operating in series. If the earth on bank H7 is not present, SK pulls up to negative battery connected to resistor R16 (Fig. 5) and WSS does not operate. In operating SK causes MC to pull up in series with line relay MM (Fig. 5) over the positive line

wire thus readying the final selector. The aforementioned re-operation of SC allows a slow-releasing timing relay TU to operate (uniselector wiper **SS5** on third contact). In the final selector common control circuit operation of MM leads to the operation of MAA (in a way to be explained) with subsequent release of MC in the first selector common control circuit and thus the energizing circuit of SSDM is opened and uniselector SS takes another step. One of the four already mentioned battery conditions is thus applied from the tens register uniselector via wiper SS3 and the negative line wire to a wire 55 in the marker which by now has been associated with the final selector in question and marking relays therein are therefore operated. A similar condition may also be signalled to wire 56 in the final selector marker over wiper SS4 and the positive line wire 52. Meanwhile SC completes its release (initiated by the last mentioned step of SS) and causes uniselector SS to step on to the fifth contact. Thus SC re-energizes but TU begins to release and when it does so (contact tul falling back) SS is stepped on again, and SC now begins to release once more. With the wipers of uniselector SS now standing on their sixth contacts, one of the battery conditions is applied over the units register uniselector and wiper SS3 (and possibly SS4) to the marking relays in the final selector marker (marker relays UU, VV, WW, YY, Fig. 6A, having released while the

wipers of SS were on their fifth contacts) so as to complete the marking of the final selector switches. When SC finally releases SS is stepped on and relay FSW pulls up in series with the negative line and relay VV (Fig. 6A), the latter however remaining down. FSW re-energizes TU so as to **prevent** premature operation of relay XM (Fig. 1B). If the marked outlet in the final selector is tested free then contact t61 (Fig. 6A) opens and FSW is released followed by TU and subsequently XM operates. XM releases A and hence B and also releases the control circuit from the first selector and it brings up AA. Ringing.- Ringing current and ringing tone are supplied from the first selector and on the reply of the called party, ring-trip relay F operates to complete the connection, thus bringing up relay D which holds BB and hence F, HA and XM. Busy conditions.-If the first selector had found congestion when the wipers of sequence switch SS were standing on their third contacts or if the final selector found that the called line was busy (wipers of SS on seventh contact), a relay LC would pull up to an earth appearing on the last contact of positive wiper SW3 (or SW4) or F