

[SS 1] ..fi epodoc

 Database: EPODOC

[EPODOC: SS 1] wireless and detonators

Results in EPODOC 68

[SS 2] ss1 and barehole

Results in EPODOC 0

[SS 3] ss1 and hole

Results in EPODOC 12

[SS 4] ..li



1/12 © EPODOC / EPO

PN - [JP2013108296](#) A 20130606

PR - JP20110254632 20111122

AP - JP20110254632 20111122

DT - I

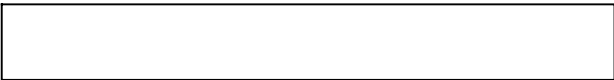
FI - E03C1/18; E03C1/20&A

FT - 2D061/BA06; 2D061/BB10;  
2D061/BC01; 2D061/CA10;  
2D061/CB10; 2D061/CC05

PA - MIZSEI MFG CO LTD

TI - FAUCET PAN

AB - PROBLEM TO BE SOLVED: To  
provide a faucet pan capable of  
attaining an original design  
shape by utilizing a conventional  
concrete molding technology,  
adding a structure having a  
recess for demonstrating a  
decorative function or the like,  
and smoothly discharging water  
from the recess.SOLUTION: On a  
partition wall 21 of a main  
space part 20, water conduction  
holes 22 and 25 for  
communicating a main space



and a sub space **SS1** are formed.  
 By configuring an upper surface of a bottom wall 30 by triangular inclined bottom surfaces 33 and 38 defined by straight lines connecting two adjacent vertexes of a regular octagon which is an outer shape of a sub space part 10 and a drain **hole**, the inclined bottom surfaces are inclined downwards from the sub space **SS1** to the main space and extended to the drain **hole**, and thus water in the sub space **SS1** is guided through the water conduction holes 22 and 25 to the main space and discharged to the drain **hole**.

**2/12** © EPODOC / EPO

- PN - [CN102015170](#) A 20110413
- PNFP - CN102015170B B 20130130
- PR - WO2008JP72628 20081212; JP20080115158 20080425
- AP - CN20088128804 20081212
- DT - I
- CCI - [B23B41/02](#) ; [B23B51/0493](#) ; [B23B27/145](#)
- CCA - [B23B2200/0423](#) ; [B23B2200/28](#) ; [B23B2251/46](#) ; [Y10T407/23](#) ; [Y10T408/892](#) ; [Y10T408/905](#) ; [Y10T408/909](#)
- PA - (A B)  
UNITAC INC
- TI - (A B)  
Deep-**hole** boring throwaway tip, and deep-**hole** boring drill head
- AB - (A)  
Provided is a deep-**hole** boring throwaway tip of three-time symmetry, which can be applied as a central blade for a drill head to both a whole cutting type and a non-cutting core folding-off type. The deep-**hole** boring throwaway tip is formed into a thick plate type having such a three-time symmetry that three sections (P1 - P3) divided at a center angle of 120 degrees are identically shaped. The blade edge (1) to confront in the boring direction when the tip is mounted in drill heads (D1 and D2) forms an angle shape corresponding to a first section (P1) with a shorter inner blade (11) and a longer outer blade (12), and the outer blade (12) is constituted of two continuous blade portions of a crest-side outer blade portion (12a) of a smaller outer blade angle (**ss1**) and a foot-side outer blade portion (12b) of a larger outer blade angle (**ss2**).

**3/12** © EPODOC / EPO

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|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PN  | - <a href="#">CA2718547</a> A1 20091029                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| PR  | - JP20080115158<br>20080425; WO2008JP72628<br>20081212                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| AP  | - CA20082718547 20081212                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| DT  | - I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CCI | - <a href="#">B23B41/02</a> ; <a href="#">B23B51/0493</a> ;<br><a href="#">B23B27/145</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CCA | - <a href="#">B23B2200/0423</a> ; <a href="#">B23B2200/28</a> ;<br><a href="#">B23B2251/46</a> ; <a href="#">Y10T407/23</a> ;<br><a href="#">Y10T408/892</a> ; <a href="#">Y10T408/905</a> ;<br><a href="#">Y10T408/909</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| PA  | - UNITAC INC [JP]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| TI  | - THROWAWAY TIP FOR DEEP- <b>HOLE</b><br>DRILLING AND DRILL HEAD FOR<br>DEEP- <b>HOLE</b> DRILLING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| AB  | - Provided is a deep- <b>hole</b> boring<br>throwaway tip of three-time<br>symmetry, which can be applied<br>as a central blade for a drill<br>head to both a whole cutting type<br>and a non-cutting core folding-<br>off type. The deep- <b>hole</b> boring<br>throwaway tip is formed into a<br>thick plate type having such a<br>three-time symmetry that three<br>sections (P1 - P3) divided at a<br>center angle of 120 degrees are<br>identically shaped. The blade<br>edge (1) to confront in the boring<br>direction when the tip is<br>mounted in drill heads (D1 and<br>D2) forms an angle shape<br>corresponding to a first section<br>(P1) with a shorter inner blade<br>(11) and a longer outer blade<br>(12), and the outer blade (12) is<br>constituted of two continuous<br>blade portions of a crest-side<br>outer blade portion (12a) of a<br>smaller outer blade angle ( <b>ss1</b> )<br>and a foot-side outer blade<br>portion (12b) of a larger outer<br>blade angle ( <b>ss2</b> ). |

PN - [US2010021250](#) A1 20100128

PNFP - US8202027 B2 20120619

PR - JP20080193214 20080728

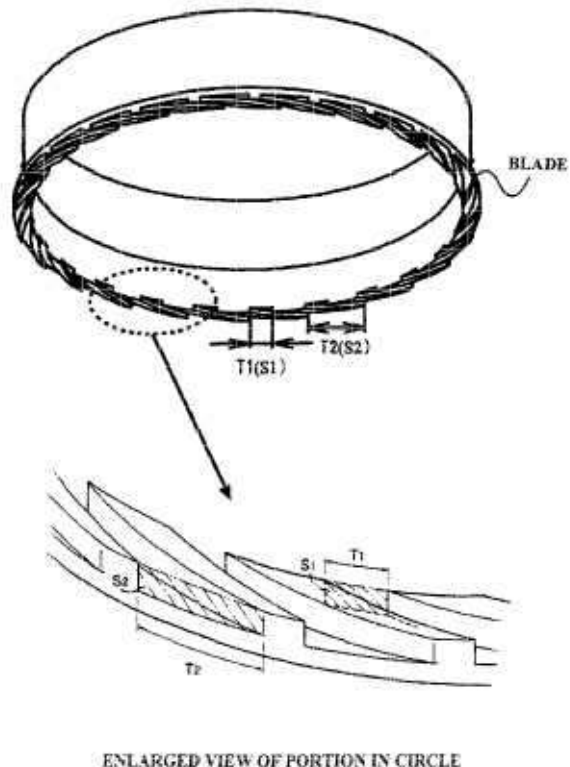
AP - US20080254991 20081021

DT - \*\*

CT - || R141 (A1)  
[US1857748](#) A 19320510 [ ] (EUGENE WALKER JOHN);  
[US1927865](#) A 19330926 [ ] (ALDEEN GEDOR W);  
[US2140901](#) A 19381220 [ ] (ETZENHOUSER MERRILL A, et al);  
[US3946818](#) A 19760330 [ ] (EK KLASGORANGUNNARSSON);  
[US7703552](#) B2 20100427 [ ] (KATAGIRI FUJIO [JP]);  
[US2008156538](#) A1 20080703 [ ] (KATAGIRI FUJIO [JP]);  
[US2151205](#) A 19390321 [ ] (HAWN RALPH A);  
[US2279186](#) A 19420407 [ ] (FRANKLIN TERRY WARREN, et al);  
[US3033298](#) A 19620508 [ ] (JOHNSON BERT E);  
[US3610349](#) A 19711005 [ ] (DEMPSEY EDWARD J);  
[US6145162](#) A 20001114 [ ] (DEUTSCHENBAUR PAUL [DE], et al);  
[EP0799674](#) A1 19971008 [ ] (NIKKEN CORP [JP]);  
[JPS59147617](#) A 19840824 [ ] (TASUKO JAPAN KK);  
[SU1565646](#) A1 19900523 [ ] (ZAKORKO SERGEJ N [SU])

- || STSE (B2)  
[US1857748](#) A 19320510 [ ] (EUGENE WALKER JOHN);  
[US1927865](#) A 19330926 [ ] (ALDEEN GEDOR W);  
[US2140901](#) A 19381220 [ ] (ETZENHOUSER MERRILL A, et al);  
[US2151205](#) A 19390321 [ ] (HAWN RALPH A);  
[US2279186](#) A 19420407 [ ] (FRANKLIN TERRY WARREN, et al);

Fig. 1



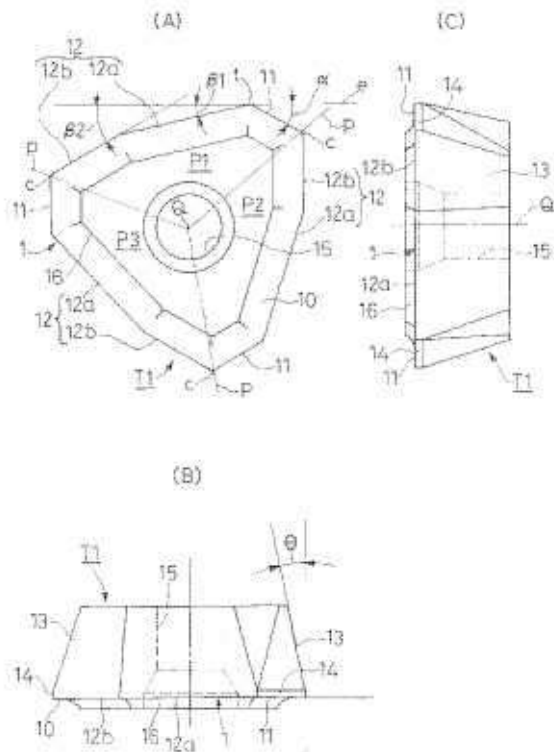
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | <p><a href="#">US3033298</a> A 19620508 [ ] (JOHNSON BERT E);</p> <p><a href="#">US3610349</a> A 19711005 [ ] (DEMPSEY EDWARD J);</p> <p><a href="#">US6145162</a> A 20001114 [ ] (DEUTSCHENBAUR PAUL [DE], et al);</p> <p><a href="#">EP0799674</a> A1 19971008 [ ] (NIKKEN CORP [JP]);</p> <p><a href="#">JPS59147617</a> A 19840824 [ ] (TASUKO JAPAN KK);</p> <p><a href="#">SU1565646</a> A1 19900523 [ ] (ZAKORKO SERGEJ N [SU])</p>                                                                                                                                                                                                                                    |
| CCI | - <a href="#">B28D7/02</a> ; <a href="#">B23Q11/005</a> ; <a href="#">B23Q11/10</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| CCA | - <a href="#">Y10T408/44</a> ; <a href="#">Y10T408/50</a> ; <a href="#">Y10T408/567</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| PA  | - (B2)<br>KATAGIRI FUJIO [JP]; TAKANO YOSHIYUKI [JP]; SHIBUYA COMPANY LTD [JP]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TI  | - (A1)<br>WATER TREATMENT PAD FOR DRILLING TOOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|     | - (B2)<br>Water treatment pad for drilling tool                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| AB  | - (A1 B2)<br>There is provided a water treatment pad for a drilling tool capable of being fixed quickly and firmly. The present invention provides a water treatment pad for a drilling tool, which is installed on a drilling surface of an object to be drilled when a <b>hole</b> is drilled in the object by using the rotating drill tool while machining water is supplied. The water treatment pad includes a substantially cylindrical pad body having a drain in the side surface thereof and mounted in a manner that surrounds the drilling tool, and a cylindrical diffuser ring detachably fixed in the pad body in a manner that surrounds the drilling tool to |

accelerate a fluid therein and release the fluid to the outside. On the end surface of the diffuser ring which comes into contact with the drilling surface, convex-shaped blades the transverse cross section of which has an airfoil profile tilting in the rotative direction of the drilling tool are arranged in an aligned manner. On a plane defined by the distance between the adjacent blades and the heights of blades, the relationship between the area ( $S_1$ ) on the inner surface side of diffuser ring and the area ( $S_2$ ) on the outer surface side of diffuser ring is  $S_1 < S_2$ .

5/12 © EPODOC / EPO

- PN - [WO2009130821](#) A1 20091029
- PR - JP20080115158 20080425
- AP - WO2008JP72628 20081212
- DT - \*\*
- CT - [JP] ISR (A1)  
[JP2006082180](#) A [X];  
[JP55834706](#) A [Y];  
[JP2003236713](#) A [Y];  
[JP2003236714](#) A [A];  
[JPH0768408](#) A [A]
- CCI - [B23B41/02](#) ; [B23B51/0493](#) ;  
[B23B27/145](#)
- CCA - [B23B2200/0423](#) ; [B23B2200/28](#) ;  
[B23B2251/46](#) ; [Y10T407/23](#) ;  
[Y10T408/892](#) ; [Y10T408/905](#) ;  
[Y10T408/909](#)
- PA - UNITAC INC [JP]; NOMURA TAKUJI [JP]
- TI - DEEP-HOLE BORING  
THROWAWAY TIP, AND DEEP-HOLE BORING DRILL HEAD
- AB - Provided is a deep-hole boring throwaway tip of three-time symmetry, which can be applied as a central blade for a drill head to both a whole cutting type

[041]



and a non-cutting core folding-off type. The deep-hole boring throwaway tip is formed into a thick plate type having such a three-time symmetry that three sections (P1 - P3) divided at a center angle of 120 degrees are identically shaped. The blade edge (1) to confront in the boring direction when the tip is mounted in drill heads (D1 and D2) forms an angle shape corresponding to a first section (P1) with a shorter inner blade (11) and a longer outer blade (12), and the outer blade (12) is constituted of two continuous blade portions of a crest-side outer blade portion (12a) of a smaller outer blade angle (ss1) and a foot-side outer blade portion (12b) of a larger outer blade angle (ss2).

**6/12** © EPODOC / EPO

PN - [JP2009097868](#) A 20090507

PNFP - JP5022170B B2 20120912

PR - JP20070266659 20071012

AP - JP20070266659 20071012

DT - I

CT - || STSE (A)  
[JP2003043002](#) A 20030213 [ ] (SAWADA TOSHIKI, et al)  
[JP2003107033](#) A 20030409 [ ] (NOBORIGUCHI KENGO, et al)  
[JP2003161717](#) A 20030606 [ ] (OKUMURA TATSUYA)  
[JP2001074686](#) A 20010323 [ ] (OKUMURA TATSUYA, et al)  
[JP2001099807](#) A 20010413 [ ] (MAKINO KEISUKE, et al)  
[JP2000171430](#) A 20000623 [ ] (MAKINO KEISUKE, et al)

FI - G01N27/409; G01N27/409&100; G01N27/58&B

FT - 2G004/BB04; 2G004/BD04; 2G004/BF15; 2G004/BF16; 2G004/BF18; 2G004/BF25; 2G004/BF27; 2G004/BG05; 2G004/BG15; 2G004/BJ02

PA - (A)  
 NGK SPARK PLUG CO

TI - (A)  
 GAS SENSOR

AB - (A)  
 PROBLEM TO BE SOLVED: To provide a gas sensor having a protector capable of securing

improved gas response properties and effectively preventing a detection element from becoming wet.

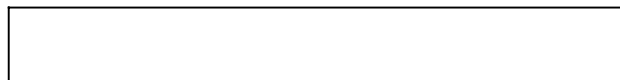
- SOLUTION: The gas sensor 100 has: the detection element 120; a main body metal fitting 110; an inner protector 161 having inner introduction holes 167, 169; and an outer protector 171 having an outer introduction **hole** 177. Then, the inner introduction holes 167, 169 have a first inner introduction **hole** 167 provided at the tip side of a gas introduction section 123; and a second inner introduction **hole** 169 provided at the base end side of the gas introduction section 123. A first total opening area **SS1** in the first inner introduction **hole** 167 is smaller than a second total opening area **SS2** in the second inner introduction **hole** 169.
- COPYRIGHT: (C)2009,JPO&INPIT

**7/12** © EPODOC / EPO

- PN - [JPH08336630](#) A 19961224
- PR - JP19950149245 19950615
- AP - JP19950149245 19950615
- DT - I
- FI - A63F7/02&304B; A63F7/02&321A; A63F7/02&337; A63F7/02&339
- FT - 2C088/AA68; 2C088/BA02; 2C088/BA23; 2C088/BA38; 2C088/BA53; 2C088/BA69; 2C088/BA72; 2C088/BA79; 2C088/BA84; 2C088/BA96; 2C088/BA99; 2C088/BB06; 2C088/BB07; 2C088/BB19; 2C088/BB29; 2C088/BC34; 2C088/BC63; 2C088/BC64; 2C088/CA02; 2C088/CA31; 2C088/CA35; 2C088/DA09; 2C088/EA26; 2C088/EA34; 2C088/EA45; 2C088/EB48
- PA - SOPHIA CO LTD
- TI - CARD TYPE PINBALL MACHINE
- AB - PURPOSE: To surely detect a safe ball of high flowing speed and hardly cause wrong operation affected by noise and static electricity by providing a ball separation means, which is provided in the flowing down path of a winning ball and separating the winning ball one by one so as to flow down, in a winning ball detector. CONSTITUTION: A safe ball detector 115 is provided with an introduction gutter (a ball separation means) 115a which introduces a safe ball SQ flowing down from a safe ball passing **hole** of a safe ball guide shelf into the detector 115, a feed gutter (a ball separation means) 115b which is connected to the safe ball gutter and feeds out the safe ball after the detection, and a rotary ball feeder (a ball separation means) 115c which feeds the safe ball SQ from the introduction gutter 115a side to the feed gutter 115b side one by one. It is also provided with the first safe ball detection sensor **SS1** provided in the end part of the ball feeder 115c side of the introduction gutter 115a and the second safe ball detection sensor **SS2** provided in the end part of the ball feeder 115c side of the feed gutter 115b.

**8/12** © EPODOC / EPO

- PN - [JPS5598317](#) A 19800726
- PNFP - JPS6243126B B2 19870911
- PR - JP19790006434 19790119
- AP - JP19790006434 19790119



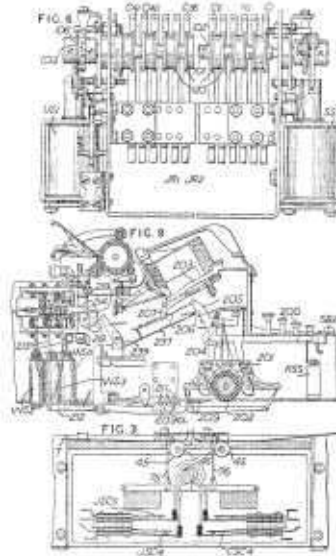
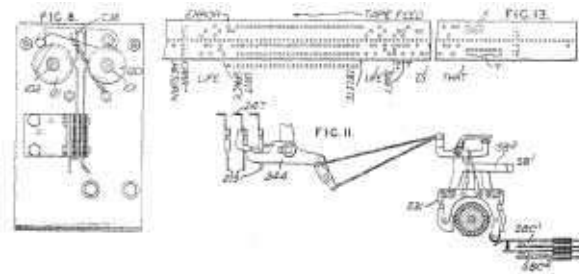


|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DT  | - I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| CCI | - <a href="#"><u>G01N21/274</u></a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| FI  | - G01J3/42&Z; G01N21/17;<br>G01N21/27&F; G01N21/35&B;<br>G01N21/3559                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| FT  | - 2G020/AA03; 2G020/BA02;<br>2G020/BA14; 2G020/CA02;<br>2G020/CC26; 2G020/CC27;<br>2G020/CC31; 2G020/CD05;<br>2G020/CD13; 2G020/CD58;<br>2G020/CD59; 2G059/AA01;<br>2G059/BB10; 2G059/CC09;<br>2G059/DD20; 2G059/EE01;<br>2G059/EE02; 2G059/EE11;<br>2G059/EE12; 2G059/FF08;<br>2G059/FF09; 2G059/HH01;<br>2G059/HH06; 2G059/JJ03;<br>2G059/KK01; 2G059/MM01;<br>2G059/MM11; 2G059/MM14;<br>2G059/MM15; 2G059/MM16                                                                                                                                                                                                                                                                                                                                            |
| PA  | - (A)<br>YOKOGAWA ELECTRIC WORKS LTD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| TI  | - (A)<br>CORRECTING METHOD FOR LIGHT<br>ABSORBING TYPE ANALYSIS DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| AB  | - (A)<br>PURPOSE:To enable the high<br>precision correction by the use<br>of an easily available element by<br>carrying out the correction<br>based on the signal in<br>connection with a reference light<br>and a measuring light obtained<br>by actually measuring two<br>standard samples.<br>CONSTITUTION:Two standard<br>samples <b>SS1</b> , SS2 having a flat<br>spectroscopic transmission are<br>prepared. Through the first<br>standard sample <b>SS1</b> , a signal<br>eR1 relating to the reference light<br>R is added to a sample <b>hole</b><br>circuit SHR. Then, through the<br>second standard sample SS2, a<br>signal eM2 relating to the<br>measuring light is added to a<br>sample hold circuit SHM. From<br>these, eM2/eR1 is obtained, |

whereby the change in sensitivity with respect to a predetermined span can be corrected. The correction in the case of a measuring material being zero is to be carried out by obtaining the ratio of the signal  $eM1$  relating to the measuring light  $M$  and the signal  $eR1$ ,  $eM1/eR1$ . Thus, the high precision correction can be done.

9/12 © EPODOC / EPO

- PN - [GB644577](#) A 19501011
- PR - US19450636525 19451221
- AP - GB19460035999 19461205
- DT - \*\*
- CCI - [B41J5/38](#) ; [B41B7/04](#) ;  
[B41B25/00](#) ; [B41J19/64](#)
- PA - IBM
- TI - Improvements in or relating to automatic justifying typographical machines
- AB - 644,577. Justifying mechanism for typewriters &c. INTERNATIONAL BUSINESS MACHINE CORPORATION. Dec. 5, 1946, No. 35999. Convention date, Dec. 21, 1945. [Classes 100 (iii) and 100 (iv)] A justifying typewriter or other typographical machine with variable spacing mechanism is controlled by a perforated tape having character designations sensed by one device and justification designations sensed by another device, the machine including a justifying computing mechanism set by the justification sensing device so as to effect the necessary line justification. The justification is effected by the automatic addition of one or more units of space to the word spaces starting from the first word



space on the left and working along the line until the units of space are used up and the required justification is complete. For example, if there are 7 word spaces in a line and 17 units of space are to be added to justify the line, then three units is added to the first three word spaces and two units each to the remaining four word spaces. The machine includes a mechanism which responds to a code in the tape indicating that an error was made in the punching of the tape and arranges for that line section to pass through the typewriter without effecting any printing. The perforated tape, Fig. 13, which may be produced by the machine described in Specification 644,576, has a central row of holes for engagement with feeding sprockets 45, Fig. 3, coding holes which may appear in any of six transverse positions as shown to represent characters, case shift, word spaces, carriage return, &c., and justification coding comprising (1) a row of holes X in the tape line " 2 " corresponding to the number of spacing units by which the line of type would encroach into a justifying zone at the end of each line of coding holes and consisting of 21 units of space, the difference between 21 and the number of holes encroaching into the zone being the number of units to be spread among the word spaces, and (2) a line of holes Y in line " 5 " below those in line " 2 " representing the difference between the actual number of word spaces in the line and fifteen; fifteen words

being the normal maximum of words to a line. The printing mechanism shown in Fig. 9, and which is similar to that described in Specification 504,774, has type keys 200 controlling the coupling to a power roller 202 of cam units 201 which through links 204-7 actuate type bars 203. Spacing between letters is controlled by a mechanism comprising three escapement wheels operated singly or in combination according to which character is to be typed. The operation of a character key 200 by a solenoid KSS brings an associated cam into contact with the roller 202 and thereby operates a lever 209 carrying one or more lugs 209a in various combinations which engage universal bails 211 to operate, via lever 212, the corresponding connecting bars 213 which operate appropriate escapement wheels in the mechanism C so as to give a carriage advance of two to nine units of spacing. Simultaneously with the operation of the key 200 a further cam is operated and, via linkage 204, 237, 239, 218 and 219, operates a slide 214 which releases one or more of the escapement wheels which cause the carriage to advance. Two space bars SB1, SB2, are provided. Bar SB1 is operated by a solenoid WSS2 (not shown) from a two-unit space code in the line " 6 " of the tape. If no justification has been set up, a 2 units space code will effect two units of space in the typing, but during automatic justifying space-bar SB1 operates the escapement rods 213 actuated by solenoids WS2, WS3 and WS4

to produce 2, 3 or 4 units of space respectively either singly or in combination in accordance with the circuits set up by justifying computing mechanism JR1, JR2. Space-bar SB2 is not linked up with the justifying mechanism and is operated by a solenoid WSS3 (not shown) which responds to a type code comprising a **hole** in line " 1 " and line " 2 " to effect 3 units of space, e.g. at the beginning of a line, by means of a separate slide 244, Fig. 11, actuating the three-unit escapement 247, the slide being moved by a linkage from a power-operated cam 231 associated with SB2. The tape T is fed from a coil through the two sensing mechanisms by toothed sprockets 45, Fig. 3, on shafts 46 each actuated by a pawl- and- ratchet mechanism. It passes through guides to the first sensing device where the sensing pins 75 and associated contacts JSC1-6 (JSC 1, 2, 3, 6 not shown on Fig. 3) firstly read the character codes and then the justification codes. The sensing of the character codes by this device has no effect but the reading of the justification code X, Y sets up the justification mechanism. The tape is looped between the two units so that the justification mechanism is completely set up before the second sensing device comprising sensing pins 76 and contacts CSC1-6 (CSC 1, 2, 3, 6 not shown in Fig. 3) commence to read the character designations which start the typing operations. For each **hole** in line X of the tape, an impulse is sent through contact JSC2 to a solenoid US1 causing a ratchet

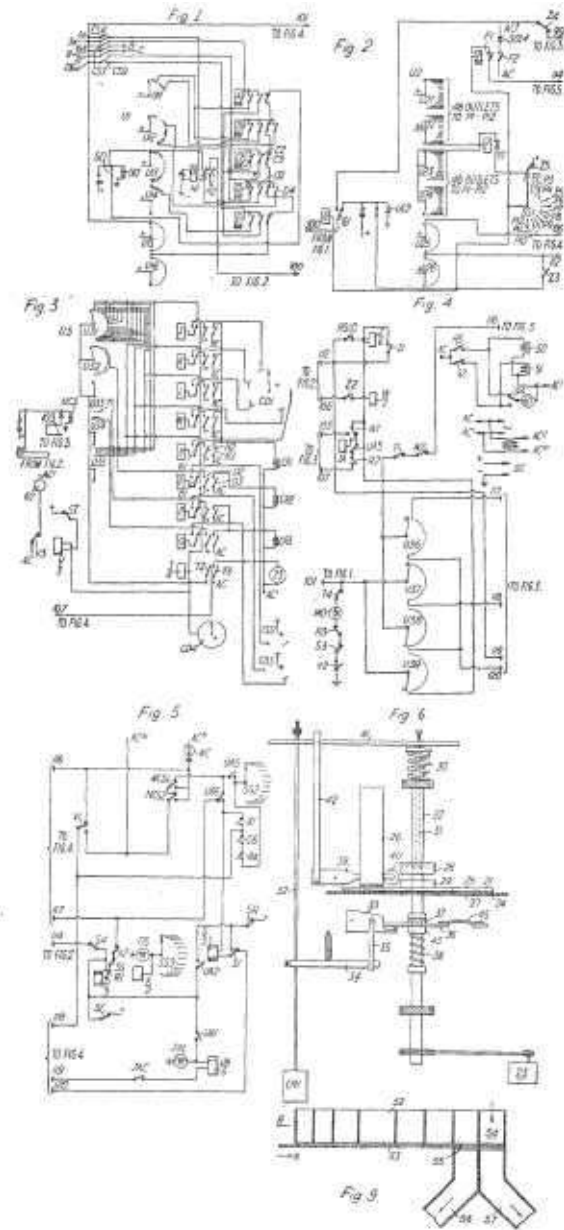
mechanism 106, 103, Fig. 6, of a shaft 102 to be rotated a number of steps corresponding to the number of holes. Similarly an adjacent shaft 101 is rotated by the operation of a solenoid **SS1**, a number of steps corresponding to the number of holes in the line Y. A series of 41 cams 121, Fig. 8, on the shaft 102 move the left-hand arms of one or more of 41 pairs of contacts C1-C41 of the justification computing relay JR1 and another series of cams 120 on a shaft 101 move one or more of the righthand arms of the contacts. The arrangement is such that both movements are necessary to close the contacts, the exceptions being contacts C1, C41 which are operated only by cam 121, and contacts C40 are operated by cam 120 only. In operation three main switches are closed by hand-energizing a typewriter motor, energizing a driving motor for the sensing units and supplying rectifiers. The first **hole** in the tape, a " carriage return " **hole** in line 4, reaches pairs 75 of the first sensing unit and is followed by spacing and character codes but no action results. The justification holes in the tapes are now sensed by the pins 75, closing contacts JSC 2 and 5 having contacts (JCSC, not shown) actuating the solenoids US1, **SS1**, and thereby closing the appropriate contacts C1-C41 of the justification mechanism. After the justification holes have passed the sensing pins 75 the first carriage return **hole** " 4 " has reached the second sensing device to complete the circuit of a carriage return solenoid. Another relay operates to change

over circuit connections so that the succeeding line of holes sets up a second justification relay provided for alternate lines. Following the return of the carriage the characters, spaces, &c. are sensed by pins 76 to effect typing. When a character code is sensed, the pins 76 operate, in various combinations, a series of relays to operate appropriate solenoids KSS which operate the key levers so that the cam units engage the power roller 202 and thus effect typing. The space occupied by the letters is controlled by the lugs 209a as described above. When a word space is sensed its solenoid operates space bar 1 closing contacts SBC1, 2. Contacts SBC1 cause the operation of appropriate solenoids WS2 ... 4 to effect two to nine units of space in accordance with the contact arrangement set up on the justifying relays JR1 or 2. Contacts SBC2 step the units solenoid US forwardly one step at each word space until the cam 121 reaches homo or " 0 " position indicating that full justification has been made. At each stop the justification relay closes contacts C1-C41 in prearranged manner so that circuits are made at each word space to operate the appropriate escapement solenoids WS2 ... 4. In the example given above WS2 and 3 are operated for the first three spaces and WS4 for the remaining four. Thus 3 units and 2 units are added as required. At the home position the contacts C41 open to prevent further rotation of the cam and contacts C1 close, which 'causes only the

normal 2-unit spacing solenoid WS2 to operate. After the reading of the character and spacing codes, justification holes are sensed by pins 76 to return cam 120 to the home position and similarly the unit cam 121 if it has not already done so. Should a line produced on the tape contain an error code the line in the tape is completed with a series of " X's " and finishes with a delete code **hole** in line " 1 " which when sensed by the typewriter allows the entire line section of the tape to pass the sensing mechanism without printing. This is effected by disconnecting a common return wire in the printing and spacing solenoids and suppressing further printing until the delete or **hole** " 1 " is registered by CSC1 contact which operates a further relay which restores the common return. The machine may also be operated as a simple typewriter by opening a switch which controls the driving motor DM for the tape sensing mechanism. In this case the two unit space-bar SB1 is operated manually and solenoid WS2 is selected in the same manner as when the solenoid WSS2 is energized. The circuits may control typographical machines such as line-casting and type-setting machines, by the operation of the various solenoids automatically selected as above, which control devices that select type and spacing slugs.



PN - [GB925985](#) A 19630515  
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 CCI - [G07F5/24](#)  
 PA - JOHN HENRY RUSSELL  
 TI - Improvements in or relating to automatic vending machines  
 AB - 925,985. Coin-freed vending apparatus. J. H. RUSSELL. Sept. 18, 1959 [Sept. 25, 1958], No. 30689/58. Class 27. [Also in Group XIX] A coin-freed vending machine has pulsegenerating means providing a number of pulses according to the value of a coin or coins inserted to set forward stepping switch means, a selector switch set according to the article to be purchased, article-delivery means arranged to release an article when the stepping switch means reaches the position set on the selector switch and change-control means whereby the pulses received after the set position is reached regulates the amount of change given. Coin-operated switches CS4-CS9, Fig. 1, are, with the exception of the penny switch CS4, connected to relays A-E which complete circuits for a stepping relay H so that pulses according to the coin value operate the coil UC1 of a first uniselector switch U1. For a shilling, the wiper of bank U12 is stepped round to its thirteenth contact when the relay C is de-energized and the closing of contact C3 completes a circuit between the fifth bank U16 and the self-interrupting contacts SC1 of the coil UC1 so that the uniselector switch is homed to zero position. For a two-shilling



piece, the bank U12 is first pulsed to its thirteenth contact through contacts D1, D2 of relay D and then through contacts D4, D2 until it reaches the twenty-fourth contact. Bank U11 serves for both the penny and sixpence relays and banks U13 and U14 co-operate together with relay E for half-crowns. Contacts H2 of relay H are connected through line 100 and relay contacts G1, Fig. 2, to the coil UC2 of a second uniselector U2 which therefore receives the same setting pulses as uniselector U1 but will total the value of coins inserted one after the other as it does not receive the homing pulses. Uniselector U2 has four banks totalling 96 contacts, or a price of eight shillings, the first two banks U21 and U22 counting up to 48 pennies during a first revolution and then energizing a relay Y so that the banks U23 and U24 count the next 48. Before inserting money, the customer sets a selector switch having three banks SS1, SS2, SS3, Figs. 2 and 5, each with contacts corresponding to the number of articles for sale and connected to an outlet on the uniselector U2 ending one penny short of the price of an article. When the wiper on switch U2 reaches the outlet corresponding to the selected article, relay G is energized and further pulses from stepping relay H are transferred from coil UC2 to coil UC3 of a third uniselector U3, Fig. 3, so that this uniselector is moved a number of times equal to one more than the excess value in pennies of the coins inserted, the first movement bringing the uniselector into

operation for counting the change required. A relay F closes the coin slots, locks the selector switch and connects a holding circuit through a switch SC, Fig. 5, which is opened once in each cycle by a cam. Uniselector U3 continues stepping until the first uniselector U1 stops and homes to zero, when the banks U37, U39, Fig. 4, are brought into circuit and a coin acceptance relay R, Fig. 5, is energized, through contact V1 of a normally-closed relay V, no-change switches NCS1, NCS2, contact UA6 of a normally-open jackpot relay UA, contact X2 of the normally-open out-of-stock relay X and the contact S5 of the normally-open coin reject relay S. Contact R2 is closed to supply current to banks U31-U35 and through the outlets on which the wipers rest (corresponding to the amount of change required) to change-making relays J-Q, Fig. 3, which give change in the minimum number of coin combinations, excluding threepenny and two-shilling pieces. For example, if elevenpence is required in change, relay N (five pennies) and relay O (one sixpence) are energized by the wipers of banks U31 and U32 and their contacts 1-3 energize a locking circuit, coin-release solenoids CR1, CR2 and a motor relay T which energizes a change-giving motor 23 and de-energizes the banks U31- U35. The motor 23 drives a disc 21, Fig. 6, for each kind of change coin through a clutch 28, 29 which is engaged when the appropriate solenoid such as CR1 is energized. The disc has a number of holes 25 which bring

coins from a supply tube 26 to a discharge **hole** 27 and the number discharged depends on the arc through which the disc is rotated. A switch disc 36 is driven by a slipping clutch 37, 43 when a lock 33 is released by the solenoid linkage and when the disc reaches the fifth of a series of contact arms 45 the solenoid is de-energized and the clutch 28, 29 disengaged but the motor 23 continues to turn until the lock 33 engages a radial slot in the disc and the motor relay T is de-energized. A roller 40 linked to the solenoid rides on the disc 21 and ensures the clutch 28, 29 can only disengage when the disc has rotated through an exact multiple of the angle between adjacent holes, the roller then dropping into one of the holes. The accept relay R is energized when the first unselector U1 homes following the attainment of the price of the selected article; the contact R3, Fig. 4, then opens and extinguishes the machine-operating lamp MO, which is also extinguished while unselector U1 is operating and while relay T is energized to drive the change-giving disc. The stepping of the wiper of bank U37 on to its main arc energizes relay Z and closing of contact Z3 supplies current to the self-interrupting contacts of the coil UC2 so that the second unselector is homed. Contacts Z4 and Z5 de-energize the stepping relay H and relay Y and contact 26 energizes through the article selector switch a solenoid which releases the article. Contact Z2 energizes relay W and the self-interrupting

contacts of the coil UC3 of the third uniselector are energized for homing of that uniselector. Relays Z, W and Y are then de-energized. Closing of contact R5, Fig. 4, energizes the accept solenoid 50 for the inserted coins and a motor 60 for delivering the released article. The whole cycle of events having been completed, the cam switch SC, which is operated by the delivery motor 60, releases the relays R and F and de-energizes and unlocks the main selector switch SS. Relay 6 releases and lamp MO is re-illuminated. If there are only a few coins left in the sixpence or shilling coin tubes, either the switch NCS1 or NCS2 changes over and a lamp NC is illuminated to indicate that the exact money must be inserted. When the exact money is inserted, the wiper of bank U36 moves one step from its zero contact and makes a circuit through a line 117 to the coin-acceptance relay R. If more than the correct money is inserted, the wipers of banks U36 and U38 move on to their main arcs so that the coin-reject relay S is energized through line 120 and all the money is returned. A contact S4 is used to break the locking circuits of relays F and R as the cam switch SC is not operated unless an article is delivered. The shilling switch NCS2 may be arranged to divert pulses requiring the giving of shillings in change to cause release of the equivalent value in shillings. Additional pennies for change are contained in four tubes in a turret rotatable through quarterrevolutions by a motor 62, Fig. 3. A

normally energized relay V is de-energized by a switch ST when only a few coins are left in a tube and its contact V3 energizes the motor 62. If an article column becomes empty, a switch applies current to the appropriate contact of the selector bank SS3 and when this column is selected by a customer, a relay X is energized to illuminate a lamp OS and, if money is inserted, to energize the reject relay S through contact X1. A contact X2 opens to de-energize relay R. To provide for free delivery of an article after a predetermined number of sales, a stepping relay JA, Fig. 4, imparts small movements to a cam which eventually opens a contact JAC and causes relay UA to be energized. Closing of contact UA6 re-routes the current which otherwise serves the relay R and directs it to the relay S to reject the money inserted, the delivery motor being energized through contacts S2 and UA4 and the article-release solenoid through contact UA5. If the customer desires return of his money before it totals the price of a selected article, he operates a switch RS10, Fig. 4, to energize relay Z and cause unselector U2 to home and reject the money by a mechanical action. According to whether the coin-reject relay S or the accept relay R is energized, a solenoid 50 or 51 is energized so that a coin reservoir 54, Fig. 9, for each denomination of coin is moved to the left and the coins fall through a **hole** 55 in a base 53 to a reject shoot 56 or the base is moved to the right and the coins fall to an acceptance shoot 57.

Instead of three uniselectors, two may be used if the second one is arranged to count forward beyond the preset article value as the coins are inserted and then count back again to the preset value and release corresponding change.

11/12 © EPODOC / EPO

PN - [GB1425125](#) A 19760218

PR - US19720243153 19720412

AP - GB19730017731 19730412

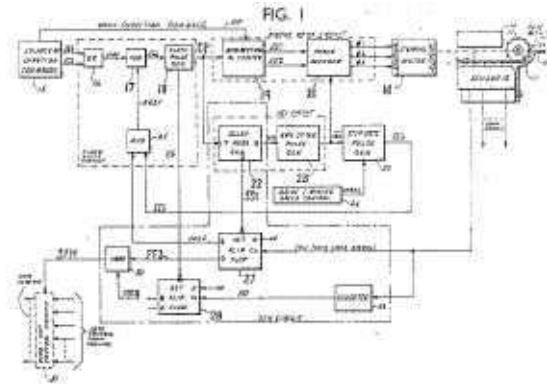
DT - \*\*

CCI - [G06K7/016](#) ; [G06K13/18](#)

PA - EX CELL O CORP

TI - APPARATUS FOR READING A RECORD MEMBER

AB - 1425125 Tape reader EX-CELL-O CORP 12 April 1973 [12 April 1972] 17731/73 Heading G4M A punched tape reader is arranged to block faulty signals created by incorrect positioning as the tape is incremented step by step. Directional commands for the reader stepping motor 10 pass AND gate 17, clock pulse generator 18, bidirectional counter 19 and a phase decoder 21. Clock pulse signals are also fed to a delay pulse generator 22, an anti-jitter pulse generator 23 which feeds the phase decoder and a step rate pulse generator. A signal pulse responding to the sprocket **hole** is fed to flip-flop 28 so that the leading edge operates flip-flop 27 and the trailing edge operates flip-flop 28. As the sprocket **hole** passes through the sensor a pulse is produced and when it passes out of the region of the sensor the pulse is terminated. If registration is correct any variation in sprocket **hole**



position, i.e. due to bounce or jitter or oscillations occurs inside the sensing region. If registration is incorrect the sprocket **hole** may move outside the sensing region and back again one or more times before achieving a rest position. These oscillations may produce faulty signals causing duplicated read-out of the corresponding row of data. A clock pulse advancing the motor will, via delay pulse generator 22, produce signal **SS1** setting flip-flop 27 so that the Q output FF3 is at a high level and holds the flip-flop set for a period such that jitter oscillations cannot be falsely detected. Flip-flop 27 is reset by the feed **hole** signal when the delay pulse generator is reset and further feed **hole** signals are not effective to set the flip-flop. Flip-flop 28 is set by CP and reset on detection of the trailing edge of the feed **hole**. When FF4 is high and FF3 is characters or holes. After delay pulse generator 22 resets flip-flop 27 is reset as the leading edge of the next sprocket **hole** is sensed. SFH behigh SFH is low to signal the reader is between comes high to indicate sensing of the next character and is not affected by feed **hole** signals until a further reader advance pulse restarts the sequence.





registered in the multiplicand register into a product register, which means are rendered effective, whenever the amount registered in the multiplier register is odd, under the control of the valves of the lowest multiplier sub-denomination, which is of binary form. General. The multipliers and multiplicands are entered into their respective registers from punched record-cards and each product, which is formed by successively halving the multiplier and doubling the multiplicand and summing the multiplicands corresponding to fractions of the multiplier that are odd, is punched automatically into the corresponding card. The machine is adapted for the British monetary system. Specification 653,313, [Group XL (b)], is referred to. Card feed. Each card is ejected in turn from a magazine 20, Fig. 7, by a picker 21 and is passed, a long edge leading, between rollers 36, where it is sensed, and rollers 38 to a magazine 49. Stops 37 and 39 hold the card stationary during multiplication and punching respectively and are operated, as is the picker 21, by cams on a shaft 30 rotated by a motor-driven mainshaft. According to the Provisional Specification, the card may be moved under control of pickers and stops, first with a long edge leading, then in a perpendicular direction through the sensing mechanism and finally in an opposite direction to the first through the punching mechanism. Sensing - mechanism. Each card passes

beneath a plate 57, Fig. 7, which has two groups of eighteen apertures for the multiplier and multiplicand fields of the cards respectively. Any number of these apertures may be shielded to limit the fields. The apertures in each group are staggered and the distance between the extreme holes in each group in the direction of card travel corresponds to the distance between adjacent rows of holes in the punched card. The groups of apertures are respectively scanned by beams of light formed by lenses mounted circumferentially on rotating discs 58, 59, Figs. 2 and 7, and originating from adjustably-mounted lamps 50, 51. The discs 58, 59 are driven, through gearing from the main-shaft at such a speed that as the beam from one lens completes its scanning of one row of a card, so the beam from the next lens begins to scan the next row. Light passing through an aperture in the plate 57 and a **hole** in a card is reflected to one of a pair of photo-electric cells (not shown) to produce a pulse at a time corresponding to the digit of the multiplier or multiplicand represented by the **hole** in the card. According to the Provisional Specification, the card columns may be scanned by light reflected from rotating mirrors, any light passing through a **hole** in a card being focussed by a lens-system on to a single photo-electric cell. Multiplier and multiplicand registers. Factorentering apparatus. The decimal denominations of the multiplier and the units-of-shillings and

pounds denominations of the multiplicand are each divided into a lower binary subdenomination and an upper quinary subdenomination. The pence denomination of the multiplicand is divided into quaternary and quinary subdenominations while the quaternary farthings and binary tens-of-shillings denominations are not sub-divided. Each of the multiplier and multiplicand registers comprises a ring of triode valves for each subdenomination, e.g. the multiplier units binary and quinary rings UB0-UB1 and UQ0-UQ4, Fig. 11E. The grid of each valve is connected through resistances 121 to the anodes of the other valves in the same ring so that, when any valve is in the registering (non-conducting) state, the other valves will be conducting. When a negative pulse is applied to the grid of a conducting valve, the valve is biased beyond cut-off to assume the registering state and the consequent rise in its anode potential raises the grid potential of the previously registering valve causing it to conduct. These registering negative pulses are derived from the photo-electric cells 71, Fig. 11A (one only is shown), are amplified, and each is applied to the appropriate registering valve or valves by a pair of distributors 80, 80a and a similar pair (not shown), the brushes of which are rotated by the main shaft. The distributors 80, 80a together distribute the pulses to the binary subdenominations of the multiplier and multiplicand registers and

to the pence-quaternary sub-denomination of the multiplicand register, and are respectively rendered active during the sensing of the upper and lower halves of a card by contacts 90, 90a on a drum 91 on the shaft 30, which contacts engage brushes connecting the distributor brushes 82, 82a with the output lead 88 of the photo-electric-cell amplifier. The other two distributors are similarly rendered effective during the sensing of the upper and lower halves of a card respectively and together distribute the pulses to the quinary sub-denominations of the multiplier and multiplicand registers and to the pence ternary sub-denomination and farthings denomination of the multiplicand register. The distributor contacts are appropriately connected in groups to leads, such as 100u and 113b, which are connected to the grids of the associated registering valves through a removable and adjustable distribution panel 303, Fig. 2. According to the Provisional Specification, two distributors only are used, each being connected to the amplifier output lead 88 during the sensing of the whole of each card. Multiplication. The halving of the multiplier is performed by means of "attendant" valves, one or two such valves being associated with each registering valve. The grids of the attendant valves, e.g. UB1A1 and UB1A2 for the binary registering valve UB1 and UQ3A for the quinary registering valve UQ3, are connected through resistances 131 to the anodes of controlling

valves in the two next higher subdenominations in the case of the binary attendant valves and in the same and next higher subdenominations in the case of the quinary attendant valves. The controlling valves are so chosen that when a number is registered, the high anode potentials of the registering valves raise the grid-potentials of one attendant valve for each of the registering valves representing half that number to a point just below cut-off. A positive pulse applied from a lead 136 through condensers 134 to the grids of the attendant valves will then cause those just below cut-off to conduct, the ensuing decrease in their anode potentials acting through resistances 126 to lower the grid potentials of those registering valves representing half the multiplier so that they assume the registering state. Doubling of the multiplicand is performed in an analogous manner by means of attendant valves, e.g. DT2A1 and DT2A2, Fig. 111, for the valve DT2 of the pence ternary ring, the grids of which are connected to controlling valves in the same and/or lower subdenominations. However, for speed of operation, the doubling pulses are applied first through the lead 213a to the pence and farthings denominations, then through a lead 222b to the units-of-shillings denomination, then to the tens-of-shillings and units-of-pounds denominations and so on. Therefore, as octupling may be taking place in the lowest group while quadrupling and doubling are occurring in higher groups, any transfer from one

group to another must be registered until the higher group has been doubled as many times as the lower had been at the time of the transferregistration. Thus in each group, valves, e.g. **SS1**, **SS2**, of an Eccles-Jordan trigger circuit, have their grids connected respectively through resistances 180, 185 to the anodes of those registering valves of the lower sub-denominations representing numbers which when doubled would or would not give rise to a transfer. The anodes of the valves **SS1**, **SS2** are respectively connected through resistances 188 to the grids of the binary attendant valves **SBOA**, **SB1A** of the next higher sub-denomination. The transfer-registering pairs are re-set prior to each fresh doubling operation in the group to which they apply by the doubling pulse for the next lower group or, in the case of the lowest group, by the halving pulse. The halving and doubling pulses are applied respectively to the leads 136, Fig. 11C, and to the leads 213a, 213b ... , which are connected to the leads such as 222b ... of the multiplicand groups, by brushes 138, on the main shaft 31 which intermittently connect the leads 136 and 213a, 213b ... to leads 139 connected to a positive line PL, during that part of a machine operation allotted to the multiplication, by a contact drum 141a on the shaft 30. When a multiplier, or one of the values obtained by successively halving a multiplier, is odd, the amount registered in the multiplicand register is entered into a product register

comprising a

[SS 4]