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54 Electronic apparatus for high-speed writing on electronic typewriters, printers, photocomposers, processors and the like.

57 The equipment comprises at least a keyboard for abbreviated, simultaneous keying of several letters or numbers by the operator.

The keyboard is divided into 8 operating sectors making possible simultaneous, abbreviated keying, according to a determined code, of words or parts of words, so that they can be written by a single stroke at high speed (about 1,200 characters per minute), i.e. greater than the speed possible on a traditional keyboard, with possible prior recording, automatically transcribed by a decoder, in an orthographically and linguistically correct and complete, i.e., unabbreviated form, on electronic typewriter, incorporated or external printers, photocomposers, processors and the like.

The keyboard comprises 8 operating sectors, 4 for the right hand (b_2, c_1, c_2, c_3) and 4 for the left hand (a_1, a_2, a_3, b_1) and further comprises a sector for special operating commands (c_4) and one (d) for commands to external equipment.

A microprocessor sequentially scans the keyboard and memorizes the pressed keys, then proceeds to decoding the combination and memorizing them.

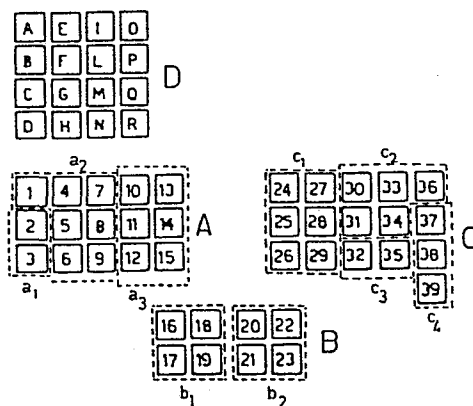


FIG1

Electronic apparatus for high-speed writing on electronic typewriters, printers, photocomposers, processors and the like.

This invention has as its object electronic equipment for high-speed writing on electronic typewriters, incorporated or external printers, photo-composers, processors and the like and as a means for rapid communication for those with
5 a verbal handicap. The characteristic of the invention is to permit writing of an alphabetic or alphanumerical text at a speed up to 1,200 characters per minute (therefore, more than double the typewriter input) in any current language: English, French, German, Spanish, Italian, etc.

10

It is known that now machine writing, whatever the purpose, (typing, processor input by recording, or input in a system for photocomposition) is done by striking of a letter at a time, according to the reading sequence, of the letters
15 that form the word.

For this reason, even the fastest operator can reach a maximum of 600/700 strokes per minute.

20 The equipment according to the invention makes it possible instead at each stroke, by use of several fingers simultaneously, to strike entire words or several letters, obtaining, by electronic processing, the corresponding complete text in connected equipment, with a reduction of work time
25 from 2 - 2.5 to 1, i.e., as indicated above, with a speed of more than 1,200 characters per minute.

The text can be written in any language.

30 Arrangements for using the keys are suited for each language on the basis of frequency either of individual letters or words, the characteristic endings and frequent words.

Illustrative codes for various languages will be given below.

Still according to the invention, in an effort to reach a higher input speed, use of an electronic storage is provided which makes it possible by a single stroke to obtain complexes of letters or words that would require several strokes, on the basis of their linguistic frequency, therefore obtaining a further increase in writing speed.

10

The equipment under discussion is characterized by the characterizing part of claim 1.

According to a preferred embodiment, the keyboard comprises 8 operating sectors, 4 for the right hand and 4 for the left hand and further comprises a sector for operating commands and a sector for controlling possible external equipment.

The accompanying drawings represent several preferred embodiments of the invention in a nonlimiting and nonbinding manner.

Fig. 1 represents the keyboard with the various sectors delimited.

25

Fig. 2 diagrammatically represents the connections of the keyboard with the microprocessor that sequentially reads the various groups and memorizes the corresponding sequences.

30 Fig. 3 represents the time scanning diagram of the keyboard.

Fig. 4 represents the diagrammatic detail of the key.

Fig. 5 represents a specific diagram of embodiment.

- 5 The machine consists of a keyboard, of electronic decoding, printing apparatus, connectors for the external printers, for the recorders, for connections with word processors or with an electronic typewriter.
- 10 The code formally differs, depending on the language chosen, because of frequency, grammatical and orthographic problems.

The code for English, German, French, Italian and Spanish will be illustrated below and more detailed explanations
15 will be given for English by way of illustration.

The keyboard is shown in Fig. 1 and comprises 8 sectors a_1 , a_2 , a_3 , b_1 , b_2 , c_1 , c_2 , c_3 which are represented in the following tables with the relative reference letters and
20 numbers, plus a " c_4 " sector for operating commands and a "d" sector for commands to external equipment.

ENGLISH LANGUAGE CODES

SECTOR "a₁"

Keys n°

2 = A
3 = S
2/3 = SH

SECTOR "a₂"

Keys n°

1 = Z
4 = G
5 = H
6 = C
7 = F
8 = T
9 = P
1/4 = PH
4/7 = W
5/8 = K
6/9 = B
4/5 = GH
5/6 = CH
7/8 = TH
8/9 = D
4/7/5/8 = X
5/8/6/9 = QU

SECTOR "a₃"

Keys n°

10 = .
11 = R
12 = M
13 = :
14 = L
15 = ?
10/13 = ,
11/14 = N
12/15 = !
10/11 = S
11/12 = (
13/14 = ;
14/15 =)
10/13/11/14 = . new paragraph
11/14/12/15 = /

SECTOR "b₁"

Keys n°

16 = A
17 = O
18 = I
19 = E
16/18 = AI
17/19 = U
16/17 = IOU
18/19 = J
16/17/18/19 = Y

SECTOR "b₂"

Keys n°

20 = I
21 = E
22 = A
23 = O
20/22 = AI
21/23 = U
20/21 = J
22/23 = OU
20/21/22/23 = Y

SECTOR "c₁"

Keys n°

24 = B
25 = L
26 = C
27 = P
28 = R
29 = T
24/27 = F
25/28 = N
26/29 = H
24/25 = M
25/26 = G
27/28 = S
28/29 = D
24/27/25/28 = W
25/28/26/29 = GH

SECTOR "c₂"

Keys n°

30 = F
31 = T
33 = G
34 = K
36 = Y
30/31 = TH
33/34 = N
30/33 = V
33/36 = PH
31/34 = M
30/33/31/34 = X
30/33/36 = Z
30/31/34 = L
30/34 = B
31/33 = D

SECTOR "c₃"

Keys n°

32 = E
35 = S
32/25 = ES.

SECTOR "c₄"
SPECIAL KEYS

Keys n°

37
38
39

GERMAN LANGUAGE CODES

SECTOR "a₁"

1 = PH
2 = S
3 = S
1/2 = AUS
2/3 = SCH

SECTOR "a₂"

4 = P
5 = W
6 = G
7 = F
8 = B
9 = M
4/5 = K
5/6 = D
7/8 = H
8/9 = Z
4/7 = QU
5/8 = V
6/9 = T
4/5/8 =
6/5/8 =
4/7/5/8 = C
5/8/6/9 = X
5/6/9 =

SECTOR "a₃"

10 = Z
11 = L
12 = M
13 = D
14 = R
15 = B
10/11 = S
11/12 = H
13/14 = T
14/15 = F
10/13 = W
11/14 = N
12/15 = P
10/13/11/14 = .new paragraph
11/14/12/15 = / etc.

SECTOR "b₁"

16 = O
17 = E
18 = A
19 = I
16/18 = J
17/19 = U
16/18/17/19 = Y

SECTOR "b₂"

20 = A
21 = I
22 = O
23 = E
20/22 = J
21/23 = U
20/22/21/23 = Y

SECTOR "c₁"

24 = D
25 = R
26 = .
27 = K
28 = L
29 = M
24/25 = T
25/26 = F
27/28 = S
28/29 = H
24/27 = G
25/28 = N
26/29 = P
24/25/27/28 = CH
27/28/26/29 = B

SECTOR "c₂"

30 = H
31 = L
32 = B
34 = T
35 = S
30/31 = K
31/32 = P
34/35 = R
31/34 = D
32/35 = N
30/31/34 = CH
31/32/35 = Z
32/31/34 = M
31/34/32/35 = W

SECTOR "c₃"

33 = ST
36 = EN
33/36 = E

SPECIAL KEY SECTOR
FOR OPERATING COMMANDS "c₄"

37 =
38 =
39 =

SPECIAL KEYS FOR CONTROLLING
EXTERNAL EQUIPMENT (SECTOR
"d")

A-B-C-D-E-F-G-H-I-L-M-N-
O-P-Q-R.

The function of these keys
are defined and correspond
to those required by the
external machine to be
controlled. (Video - Change
characters, recording, etc).

FRENCH LANGUAGE CODES

SECTOR "a₁"

1 = SH
1/2 =
2 =
2/3 =
3 =

SECTOR "a₂"

4 = V
5 = C
6 = P
4/5 = CH
5/6 = X
7 = F
8 = T
9 = B
7/8 = H
8/9 = D
4/7 = QU
5/8 = G
6/9 = PH
4/5/7/8 = Ç
5/8/6/9 = K
4/5/8 = W
6/5/8 =
5/6/9 =

SECTOR "a₃"

10 = .
11 = L
12 = a
13 = ;
14 = R
15 = EAU
10/11 = H
11/12 = M
13/14 = S
14/15 = Œ U
10/13 = :
11/14 = N
12/15 = Y
10/13/11/14 = -
11/14/12/15 = /
10/11/14 = y-a-t-il
11/12/15 = est-ce-que

SECTOR "b₁"

16 = O
17 = E
18 = A
19 = I
16/18/17/19 = Y
16/18 = J
17/19 = U

SECTOR "b₂"

20 = A
21 = I
22 = O
23 = E
20/22 = J
21/23 = U
20/22/21/23 = Y

SECTOR "c₁"

24 = T
25 = R
26 = M
24/25 = S
25/26 = N

SECTOR "c₂"

27 =
28 = G
29 = é
30 = V
31 = D
32 = B
27/28/31/30 = LL
27/28 = F
28/29 = è
30/31 = E
31/32 = C
27/30 = Z
28/31 = L
29/32 = P
28/29/32/31 = K
28/29/32 = ..

SECTOR "c₃"

33 = AUX
34 = T
35 = S
36 = ?
33/34 = X
34/35 = E
33/36 = !

SECTOR "c₄"
SPECIAL KEY SECTOR FOR
OPERATING COMMANDS

37 =
38 =
39 =

SPECIAL KEYS FOR CONTROLLING
EXTERNAL EQUIPMENT
(SECTOR "d")

A-B-C-D-E-F-G-H-I-L-M-
N-O-P-Q-R.

The functions of these
keys are defined and
correspond to those
required by the external
machine to be controlled.
(Video - Change characters,
recording, etc).

ITALIAN LANGUAGE CODES

SECTOR "a₁"

2 = S
3 = S

SECTOR "a₂"

1 = GLI
4 = P
5 = T
6 = V
7 = G
8 = C
9 = M
1/4 = Y
4/7 = B
5/8 = H
6/9 = QU
1/4/7 = caps.
4/5 = D
5/6 = F
7/8 = GH
8/9 = CH
4/7/5/8 = X
5/8/6/9 = W

4/5/7 =
5/6/8 =
4/5/8 =
5/6/9 =
4/7/8 =
5/8/9 =

1/7 =
4/5/9 =
5/6/7 =

5/7 =
6/8 =
4/8 = K
5/9 =

SECTOR "a₃"

10 = N
11 = R
12 = '
13 = 1
14 = 3
15 = 5

10/13 = N'
11/14 = L
12/15 = L'
10/11 = Z
11/12 = S
13/14 = 2
14/15 = 4
10/11/13/14 = +
11/12/14/15 = =

SECTOR "b₁"

16 = O
17 = I
18 = A
19 = E
16/17 =
18/19 =
16/18 = J
17/19 = U
16/18/17/19 = Y

SECTOR "b₂"

20 = A
21 = E
22 = O
23 = I
20/22 = J
21/23 = U
20/22/21/23 = Y

SECTOR "c₁"

24 = 6
25 = 8
26 = 0
27 = N
28 = R
29 = .
24/27 = ,
25/28 = L
26/29 = ^
24/25 = 7
25/26 = 9
27/28 = Z
28/29 = S
24/27/25/28 = ;
25/28/26/29 = .

SECTOR "c₂"

30 = G
31 = C
32 = M
33 = P
34 = T
35 = V
36 = GLI
30/33 = B
33/36 = '
31/34 = H
32/35 =
35/36 = Y
30/31 =)
31/32 =
33/34 = D
34/35 = F
30/33/36 =
30/33/31/34 = X
31/34/32/35 = .
30/31/33 =
31/32/34 =
30/31/34 =
31/32/35 =
33/34/36 =

SECTOR "c₃"

30/34 =
31/35 = /
31/33 = K
32/34 = %
30/36 =
31/36 =
34/36 =
30/35 =
32/33 =

SECTOR "c₄"

37 = space
38 = space
39 =

SPECIAL KEYS FOR CONTROLLING EXTERNAL EQUIPMENT (SECTOR "d")

A-B-C-D-E-F-G-H-I-L-M-N-O-P-Q-R

The functions of these keys are defined and correspond to those required by the external machine to be controlled. (Video - Change characters, recording, etc.)

SPANISH LANGUAGE CODES

SECTOR "a₁"

1 = QUE
2 = S
3 = ES
1/2 = QUI
2/3 = EX

SECTOR "a₂"

4 = N
5 = C
6 = H
7 = V
8 = T
9 = P
4/5 = G
5/6 = CH
7/8 = F
7/9 = D
4/7 = B
5/8 = Z
6/9 = K
5/4/7 = (
4/5/8 =
5/6/9 =
5/6/8 =
4/5/7/8 = J
5/8/6/9 = X

SECTOR "a₃"

10 = A
11 = L
12 = M
13 = U
14 = R
15 =
10/11 = LL
11/12 = I
13/14 = RR
14/15 = Y
10/13 = A
11/14 = N
12/15 = E
10/13/11/14 = S
11/14/12/15 = J

SECTOR "b₁"

16 = O
17 = E
18 = A
19 = I
16/18 = J
17/19 = U
16/18/17/19 = Y

SECTOR "b₂"

20 = A
21 = O
22 = I
23 = E
20/21 = J
20/22 = I
21/23 = E
22/23 = U
22/23/24/25 = Y

SECTOR "c₁"

27 = .
28 = L
29 = M
24 = :
25 = R
26 = '
27/28 = LL
28/29 = F
24/25 = RR
25/26 = V
24/27 = B
25/28 = N
26/29 = P
24/27/25/28 = G
25/28/26/29 = C

SECTOR "c₂"

33/36 = .
30/33/36 = .AC
30/36 =)
30/33 = CH
31/34 = D
30/31 = ?
33/34 = !
30/33/31/34 = :
31/30/33 = Q
31/34/33 = X
31/33 = Y
30/34 = W
30 = i
33 = .
31 = T
34 = Z

SECTOR "c₃"

32 = S
35 = A
32/36 = ES

SPECIAL KEY SECTOR FOR
OPERATING COMMANDS "c₄"

37
38
39

SPECIAL KEYS FOR CONTROLLING
EXTERNAL EQUIPMENT (SECTOR
"d")

A-B-C-D-E-F-G-H-I-L-
M-N-O-P-Q-R

The function of these keys
are defined and correspond
to those required by the
external machine to be
controlled. (Video -
Change characters, recording,
etc).

Basic structure of the codes

The basic structure under consideration is alphabetic writing with keying of several letters at each stroke (or even a syllable at a time) with the possibility of electronic abbreviation of the word with the aid of 3 operating commands and abbreviation of the word as part of a situational discourse. For the various codes, 39 keys are distributed in 8 operating sectors a_1 , a_2 , a_3 , b_1 , b_2 , c_1 , c_2 , c_3 (Fig. 1) plus a sector (c_4) for operating commands and a d sector for controlling external equipment. The code for English has the following distribution:

1st sector (a_1) (left hand) (keys (2-3))

Sector for initial letter S of a word or syllable, or group of letters with the letter SH and a.

2nd sector (a_2) (left hand)

Comprises keys 1-4-5-6-7-8-9 of the keyboard. Therefore 7 keys for initial consonants of a word or syllable or group of letters (except for S, SH, N, R, M, L).

3rd sector (a_3) (left hand)

Comprises keys 10-11-12-13-14-15 and letters R, M, L, N, S and punctuation marks.

4th sector (b_1) (left hand)

Consists of 4 keys (16-17-18-19). Comprises vowels A-E-I-O-U and semivowel J. They constitute the first part of a pair of vowels. Also the group of vowels AI, IOU and Y.

5th sector (b_2) (right hand)

Consists of 4 keys (20-21-22-23). Comprises the vowels A-E-I-O-U and letter Y.

5 The vowels are used to form syllables; initials of words or syllables and as the second vowel of a pair of vowels (END, BEL, COUNT).

6th sector (c_1) (right hand)

10 Consists of 6 keys (24-25-26-27-28-29) and represents the consonants B, L, C, P, R, T, F, N, H, M, G, S, D, W, GH which follow the vowel (or vowels).

15 7th sector (c_2) (right hand)

Consists of keys 30-31-32-33-34-35-36 and forms terminal consonants of a word, or stroke (or syllable) F, T, G, K, TH, N, V, P, M, X, Z, L, B, D.

20

8th sector (c_3) (right hand)

Consists of keys 32-35 and indicates the consonant S of plurals, vowel E, together they form the group ES.

25

Operating commands (c_4) right hand)

key 37 space, 38 space, 39 abbreviation key.

37/38 = 'S possessive case + space.

30

38/39 = E automatically inserted before last consonant keyed.

BROTHER = BROTHR

OPEN = OPN

FORMATION OF WORDS

Words are formed by the following rules:

Short words (i.e. words up to 6/7 letters long)

are written with a single stroke and use several fingers.

Example:

age all alone always

bright brother shrouded should

Words longer than 7 letters

are written with two or more strokes.

Example:

breakfast = break-fast

background = back-ground

Words with frequent suffixes (provided by the code)

Frequent suffixes provided by the code are abbreviated in the writing, so that long words that would require several strokes are abbreviated.

The abbreviation process is activated by pressing key 39 simultaneously with the other letter.

Example:

Geography = geogy (1 stroke) Chronology = chronly (1 stroke)

Agronomy = agrny (1 stroke) Forward = forw (1 stroke)

Democracy = demcy (1 stroke)

Abbreviation of frequent entire words

The code provides for writing very frequent words with a single stroke (also in this case the stroke is completed with key 39).

beautiful=bf + key 39 engineer = eng examination = ext

holiday = hl telephone = tph television = tv

Thursday =thy

The writing can also be done in syllables.

List of abbreviations provided. However, other abbreviations of two types can be added for specific languages.

Abbreviated suffixes:

able = b	after = a	ative = v
atively = vy	cracy = cy	crat = c
down = d	eous = eo	ever = e
form = f	graph = gph	graphy = gy
hood = h	ing = i	ious = io
less = l	ment = m	mental = ml
ness = n	ology = ly	onomy = ny
over = o	philia = ph	phobia = pho
phone = phn	phonic = phc	scape = sp
ship = sh	some = s	tive = tv
tude = td	ture = tr	under = un
upon = u	ward = w	wise = ws
with = wh	worth = wth	worthy = wy

Abbreviated words:

about = ab	across = ac	address = ad
after = af	afternoon = aft	again = ag
another = an	apple = apy	anybody = any
anyone = ao	anything = ath	anythese = ayh
before = bf	between = bt	breakfast = brf
business = bs	dictionary = dc	difficult = df
examination = ext	forexample = fe	gentlemen = gn
holiday = hl	meeting = mee	necessary = nc
nobody = nby	nothing = nth	number = nb
office = oc	often = of	perhaps = ph
question = qus	somebody = sby	someone = so
something = sth	sometimes = st	telephone = tph
television = tv	thank = t	beautiful = bf

Days of the week (Sd, Md, Td, Wd, Thd, Frd, St) und months (Jn, Fb, Mch, Ap, Ju, Jl, Au, Sp, Oc, No, De).

As already pointed out, Fig. 2 diagrammatically represents the connections of the keyboard with the microprocessor which sequentially reads the various groups of keys and memorizes the corresponding sequences.

Fig. 3 represents the time scanning diagram of the keyboard.

10

Fig. 4 represents the diagrammatic detail of the key.

In Fig. 5 the various letters indicate: The feeder of the KEYBOARD (T), MICROPROCESSOR (MSC), BUFFER 1 (BU 1) for controlling the printing head, BUFFER 2 (BU 2) for controlling the printer motor, PRINTER (ST) in which is seen MOTOR (M) since it requires a specific control (BU 2). The microprocessor sequentially scans the keyboard (the functional groups of the keyboard) and memorizes the pressed keys as long as a key on the entire keyboard remains pressed, then it proceeds to decoding the combination and memorizes them.

At each complete scan of the keyboard, it verifies the contents of the storage: when the storage content reaches a present number of characters, it gives an execution order to the printer, or proceeds to the transmission of the data to external connections (video, processor, photocomposer, electronic, typewriter, etc.). In case a printer is used, it verifies the maximum number of complete words that can be contained in a line of print and possibly decides that the last characters contained in the line are printed successively.

It is further provided that the equipment under discussion can automatically generate abbreviations either of the ending or entire word by omitting the central vowel of the syllable so that the microprocessor automatically recognizes by what is not written what is to be written.

For example, considering the word "graph" if the vowel "a" is omitted, the microprocessor will identify the irregularity by the lack of "a", will then search in its memory the code "graph" which can correspond to a word such as graphic or similar precoded words.

The microprocessor will interpret this as an abbreviation and will make the search as provided, by pressing key 40, whereby it will automatically generate the complete and correct word, graph, eliminating the error.

It is provided that elements known in se can be replaced by other equivalent known elements without going outside the scope of protection of the invention.

Claims

1. Electronic equipment for high-speed writing on electric typewriters, incorporated or external printers, photocomposers and the like, and as a rapid means of communication for those with a verbal handicap, comprising at least a
5 keyboard for abbreviated, simultaneous keying of several letters or numbers by the operator, characterized in that: the keyboard is divided into sectors making possible the abbreviated, simultaneous keying of words or parts of words by a determined code, so that they can be written at high
10 speed by a single stroke, i.e., greater than the speed possible on traditional keyboards and, with a possible prior recording, are automatically transcribed by decoding in an orthographically and linguistically correct and complete, i.e. unabbreviated, form on electronic typewriters,
15 incorporated or external printers, photocomposers, processors and the like.

2. Electronic equipment as in claim 1, wherein the keyboard comprises 8 operating sectors, 4 for the right hand and 4
20 for the left hand, and further comprises a sector for special operating commands (C_4) and one (d) for commands to the external equipment, each sector comprising at least a key.

25 3. Electronic equipment as in claim 1 and 2, wherein the riting code is such that simultaneous depressing of one or more keys in the same sector generates a letter or symbol provided by the code and depressing of one or more keys in different sectors, depending on the writing code,
30 generates several letters forming a word or part of a word.

4. Electronic equipment as in claims 1, 2 and 3, charac-

terized by a decoder consisting of a microprocessor that, in an orderly manner, reads the letters and numbers input by the keys in sequential order from the first to the last sector and transmits them, by decoding them, to
5 the writing or photocomposing equipment or processor or the like.

5. Electronic equipment as in claims 2, 3, 4 wherein the sector of the keyboard for functional commands in such as
10 to control the photocomposition functions and video and character management provided by the photocomposition process, or recording by the mass storage of the processors.

6. Electronic equipment as in claims 1 to 5, characterized
15 by a magnet recorder that records the keying of the characters by the operator on the keyboard, making possible the subsequent connection to electronic typewriters, printers, photocomposers, processors and the like for reproduction.

20

7. Electronic equipment as in claims 1 to 6, characterized by the use of suitable codes for writing in any languages.

8. Codes for linguistic keying by the electronic equipment
25 defined by claims 1 to 7, wherein for each sector consonant or vowel codes are provided by order of frequency and by the orthographic and grammatical logic of the language whereby a maximum of 8 letters is obtained in a single stroke.

30 9. Equipment as in claim 1, characterized by the possibility of automatically generating abbreviations either of the ending or entire word by omitting the central vowel of the syllable so that the microprocessor automatically recognizes by what is not written what is to be written.

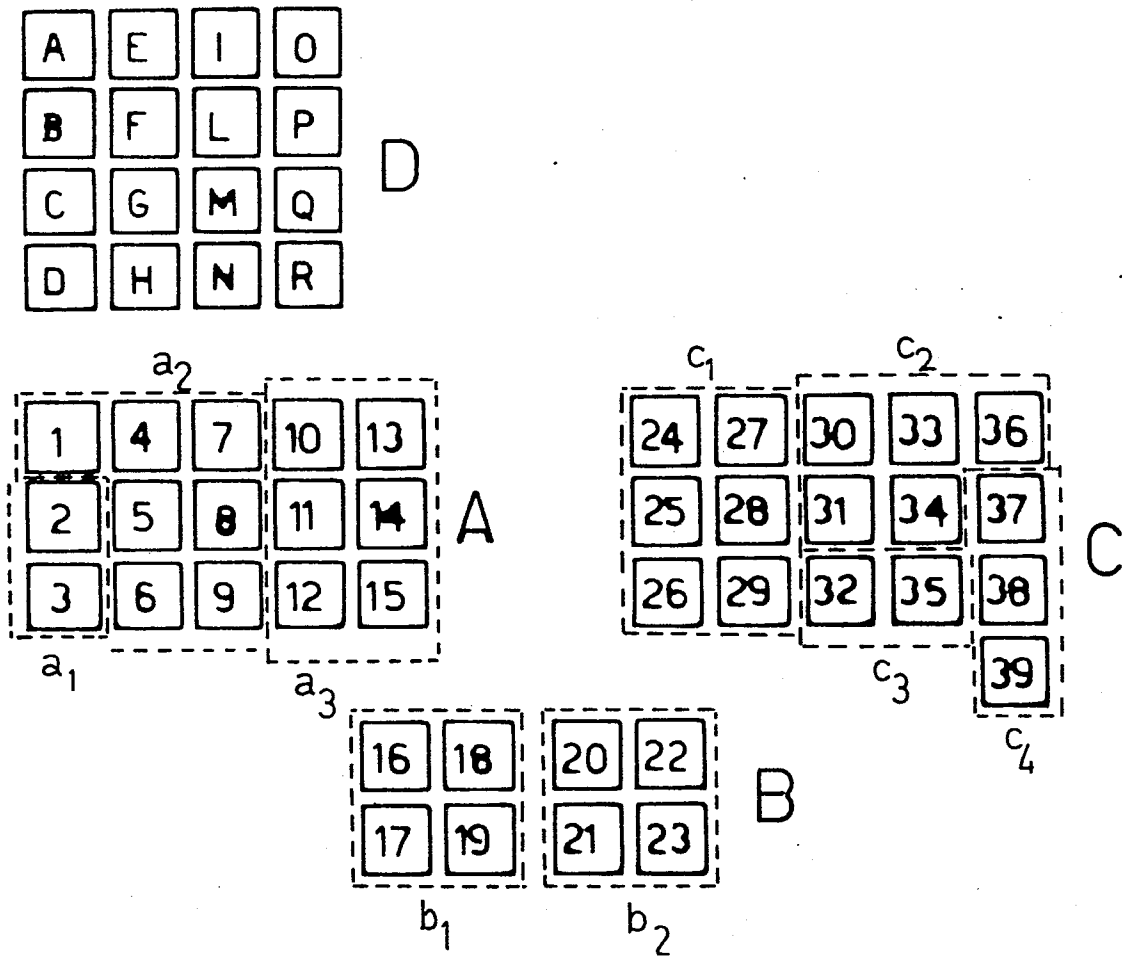


FIG1

-2/3-

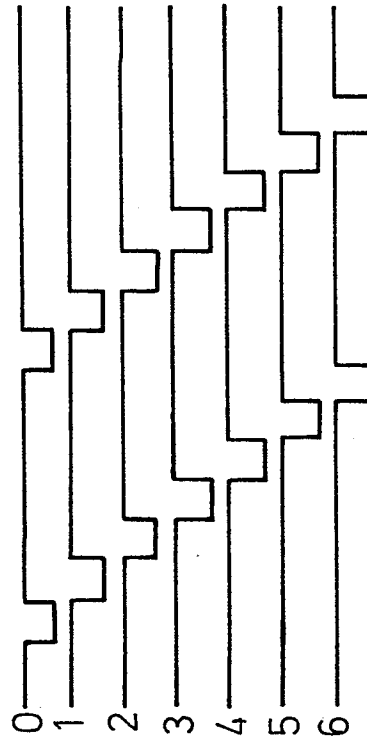


Fig.3

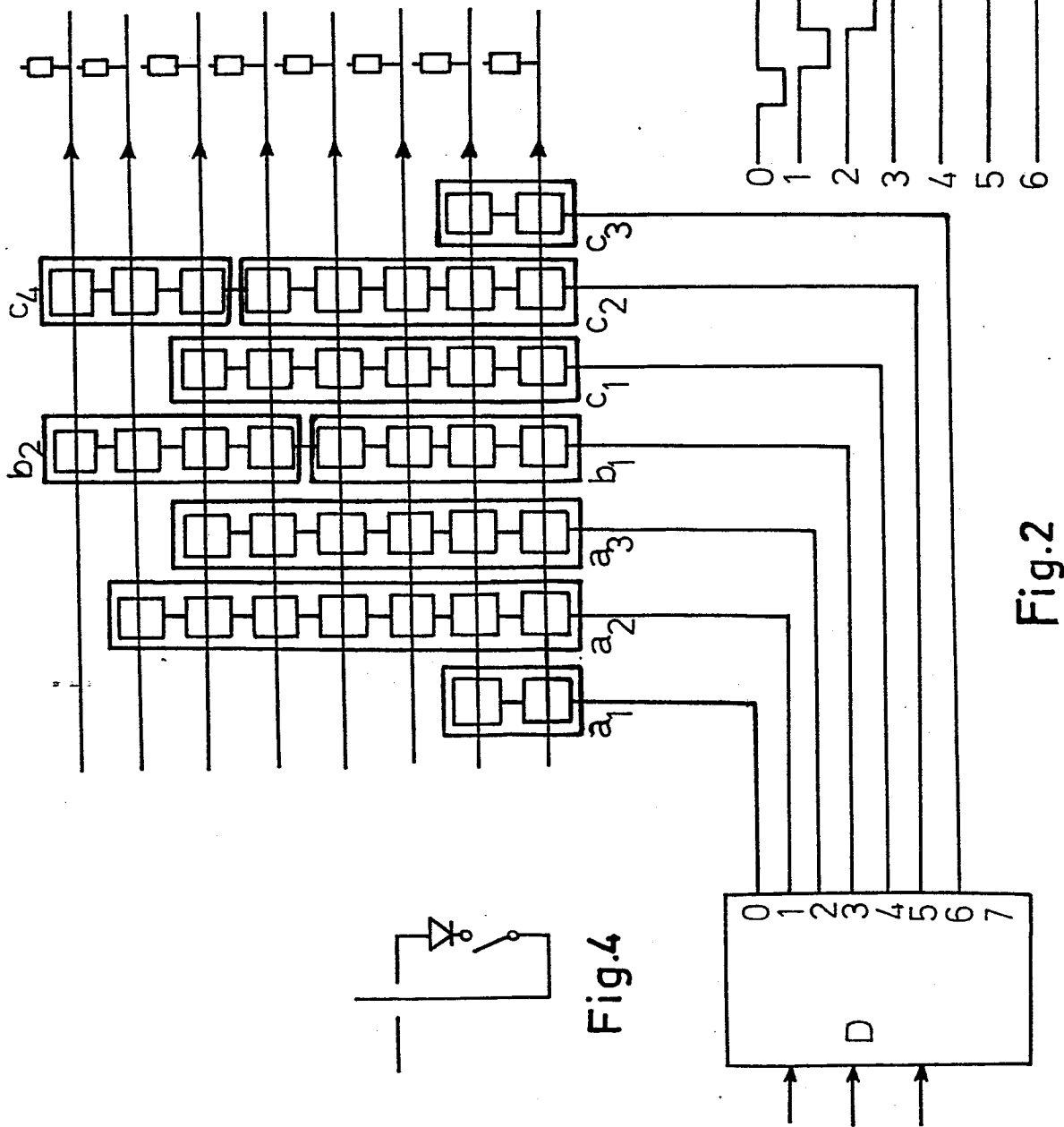


Fig.2

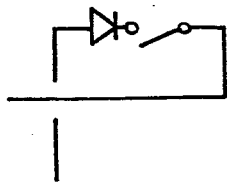


Fig.4

