TABLE 2-continued

ASCII TD BRAILLE CONVERSION

Character	ASCII Decimal Value	Braille Decimal Value	Braille Binary Value	Character	ASCII Decimal Value	Braille Decimal Value	Braille Binary Value
#	035	074	00111100	S	083	078	01001110
$	036	000	00000000	T	084	094	01011110
%	037	000	00000000	U	085	101	01100101
&	038	000	00000000	V	086	103	01100110
'	039	004	00000100	W	087	122	01111010
(	040	054	00110110	X	088	109	01101101
)	041	054	00110110	Y	089	125	01111101
*	042	000	00000000	Z	090	117	01110101
+	043	000	00000000	[	091	000	00000000
,	044	002	00000010				
	092	000	00000000				
-	045	036	00100100	]	093	000	00000000
.	046	050	00110010		094	000	00000000
/	047	012	00001100		095	000	00000000
0	048	154	10011010		096	008	00001000
1	049	129	10000001	a	097	001	00000001
2	050	131	10000011	b	098	003	00000011
3	051	137	10001001	c	099	009	00001001
4	052	153	10011001	d	100	025	00011001
5	053	145	10010001	e	101	017	00010001
6	054	139	10001011	f	102	011	00001011
7	055	155	10011011	g	103	027	00011011
8	056	147	10010011	h	104	019	00010010
9	057	138	10001010	i	105	010	00001010
:	058	018	00010010	j	106	026	00011010
;	059	006	00000110	k	107	005	00000101
<	060	000	00000000	l	108	007	00000111
=	061	000	00000000	m	109	013	00001101
>	062	000	00000000	n	110	029	00011101
?	063	038	00100110	o	111	021	00010101
@	064	000	00000000	p	112	015	00001111
A	065	065	01000001	q	113	031	00011111
B	066	067	01000011	r	114	023	00010111
C	067	073	01001001	s	115	014	00001110
D	068	089	01011001	t	116	030	00011110
E	069	081	01010001	u	117	037	00100101
F	070	075	01001011	v	118	039	00100111
G	071	091	01011011	w	119	058	00111010
H	072	083	01010011	x	120	045	00101101
I	073	074	01001010	y	121	061	00111101
J	074	090	01011010	z	122	053	00110101
K	075	069	01000101	{	123	000	00000000
L	076	071	01000111	|	124	000	00000000
M	077	077	01001101	}	125	000	00000000
N	078	093	01011101		126	000	00000000
O	079	085	01010101	DEL	127	000	00000000

The ASCII codes 0 through 31 represent handshake and control sequences that are non-printable and executed by the computer system. Characters 32 through 127 are the printable character set.

To convert ASCII to Braille, the code for an ASCII letter must have a corresponding Braille value. This is accomplished by creating a sequential list of elements within a computer program. This list of elements is known as an array. These array elements are sequentially numbered from 0–127. Therefore, if the ASCII code for the letter "z" is 122, the program will read array element **122** and extract the number **65** which is the Braille equivalent.

As indicated in Table 1, special Braille characters exist that change the case of the letters that follow. When designing a Braille character display, firmware would have to be developed that recognizes the case of the character and, if there is a case change, the Braille control code would be inserted into the character string that changes the case. The translated character string would then be passed along a six bit data bus for display on the Braille unit. Driver circuitry would be developed that would correlate a logic 1 (High) to a positive voltage that would raise a desired pin and a logic 0 (Low) as a negative voltage that would lower a desired pin.

While a preferred embodiment of the invention has been disclosed in detail, it should be understood by those skilled in the art that various modifications may be made to the illustrated embodiment without departing from the scope as described in the specification and defined in the appended claims.

What is claimed is:

1. Tactile display apparatus comprising:

a reference surface;

an electromagnet distant from said reference surface having first and second spaced poles of opposite, selectively reversible, polarity;

rotatable cam means proximate to said electromagnet having an axis of rotation transverse to said reference surface and including an integral permanent magnet with third and fourth spaced poles of opposite polarity equidistant from said axis of rotation, said cam means being rotatable between an active position at which said third and fourth poles, respectively, are attracted to and positioned adjacent said first and second poles, and an inactive position at which said fourth and third poles, respectively,