

US00D505114S

(12) **United States Design Patent**  
**Vinciarelli et al.**

(10) **Patent No.:** **US D505,114 S**  
(45) **Date of Patent:** **\*\* May 17, 2005**

(54) **BALL GRID ARRAY**

(75) Inventors: **Patrizio Vinciarelli**, Boston, MA (US);  
**Michael B. Lafleur**, East Hampstead,  
NH (US); **Charles I. McCauley**,  
Andover, MA (US); **Paul V. Starenas**,  
Windham, NH (US)

(73) Assignee: **VLT, Inc.**, Sunnyvale, CA (US)

(\*\*) Term: **14 Years**

(21) Appl. No.: **29/180,338**

(22) Filed: **Apr. 22, 2003**

**Related U.S. Application Data**

(63) Continuation-in-part of application No. 10/303,613, filed on  
Nov. 25, 2003.

(51) **LOC (7) Cl.** ..... **13-02**

(52) **U.S. Cl.** ..... **D13/110**

(58) **Field of Search** ..... D13/101, 110,  
D13/112, 199; 307/150, 151; 340/473;  
363/132, 141, 146; 439/638, 668, 952

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

D297,928 S	*	10/1988	Harpley et al.	.....	D13/110
D339,104 S	*	9/1993	Jackson	.....	D13/110
D340,222 S	*	10/1993	Bedell	.....	D13/110
D340,907 S	*	11/1993	Smith et al.	.....	D13/110
D344,928 S	*	3/1994	Vinciarelli et al.	.....	D13/110
D363,056 S	*	10/1995	Vinciarelli et al.	.....	D13/110
D371,110 S	*	6/1996	Harris et al.	.....	D13/110
D407,066 S	*	3/1999	Renk	.....	D13/110

6,025,768 A	2/2000	Martich	
6,052,045 A	4/2000	Martich	
6,294,971 B1	9/2001	Martich	
D466,076 S	*	11/2002	Nagashima et al. .... D13/110
D469,059 S	*	1/2003	Ando et al. .... D13/110

**OTHER PUBLICATIONS**

Coto Technology B40 4-Channel RF Relays, printed from  
Coto Technology website at [http://www.cotorelay.com/html/reed\\_b40\\_rf\\_series.htm](http://www.cotorelay.com/html/reed_b40_rf_series.htm).

Coto Technology Product Selector Chart, printed from Coto  
Technology website at [http://www.cotorelay.com/html/reed\\_relay\\_dry\\_reed\\_switch\\_p.htm](http://www.cotorelay.com/html/reed_relay_dry_reed_switch_p.htm).

\* cited by examiner

*Primary Examiner*—Prabhakar Deshmukh

*Assistant Examiner*—Daniel Bui

(74) *Attorney, Agent, or Firm*—Fish & Richardson P.C.

(57) **CLAIM**

The ornamental design for a ball grid array, as shown and  
described.

**DESCRIPTION**

FIG. 1 is a perspective view of a ball grid array, showing our  
new design;

FIG. 2 is a top plan view thereof.

FIG. 3 is a bottom plan view thereof.

FIG. 4 is a right side elevational view thereof.

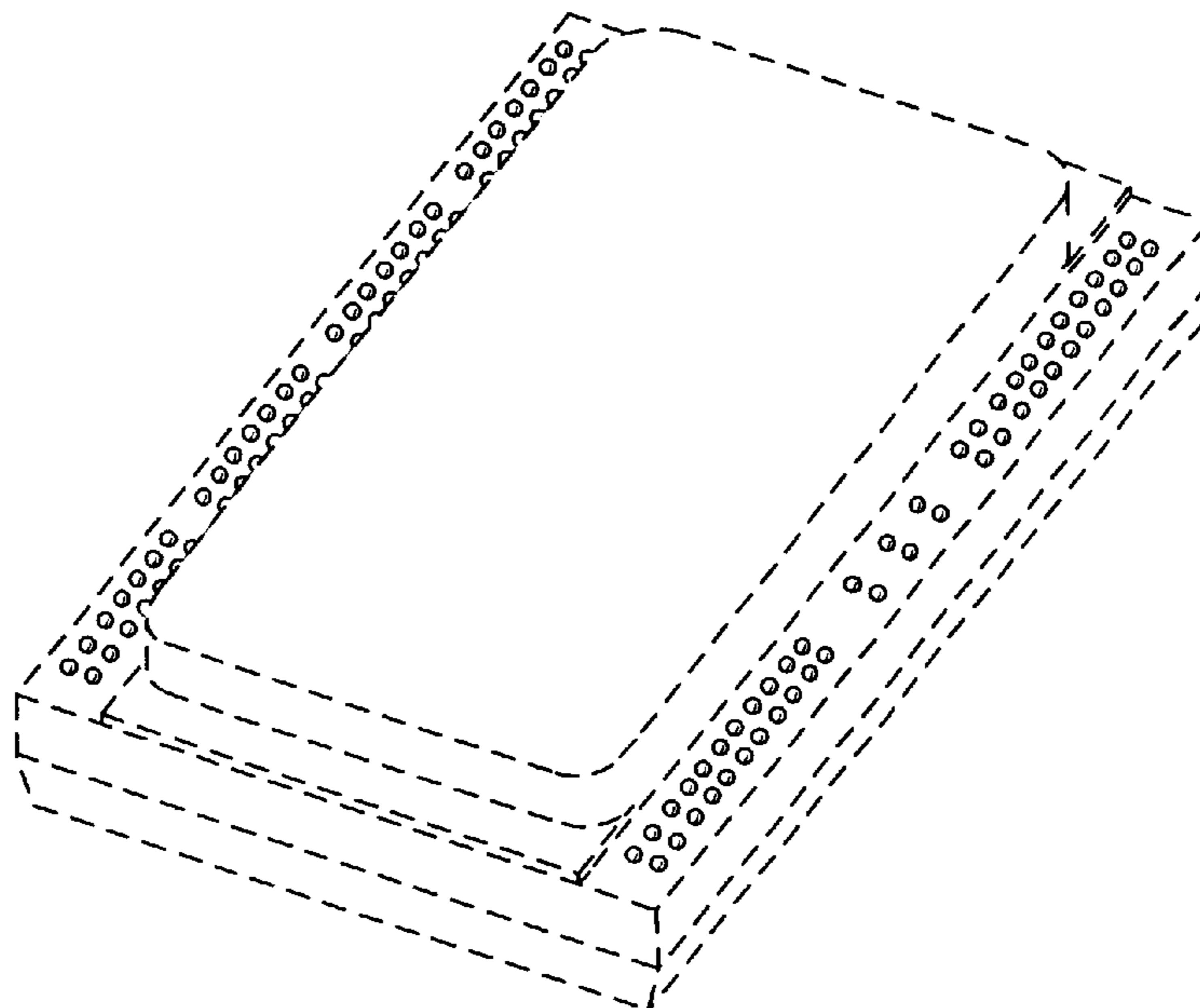
FIG. 5 is a left side elevational view thereof.

FIG. 6 is a front elevational view thereof; and,

FIG. 7 is a rear elevational view thereof.

The broken line showing of the environment is for illustra-  
tive purposes only and forms no part of the claimed design.

**1 Claim, 1 Drawing Sheet**



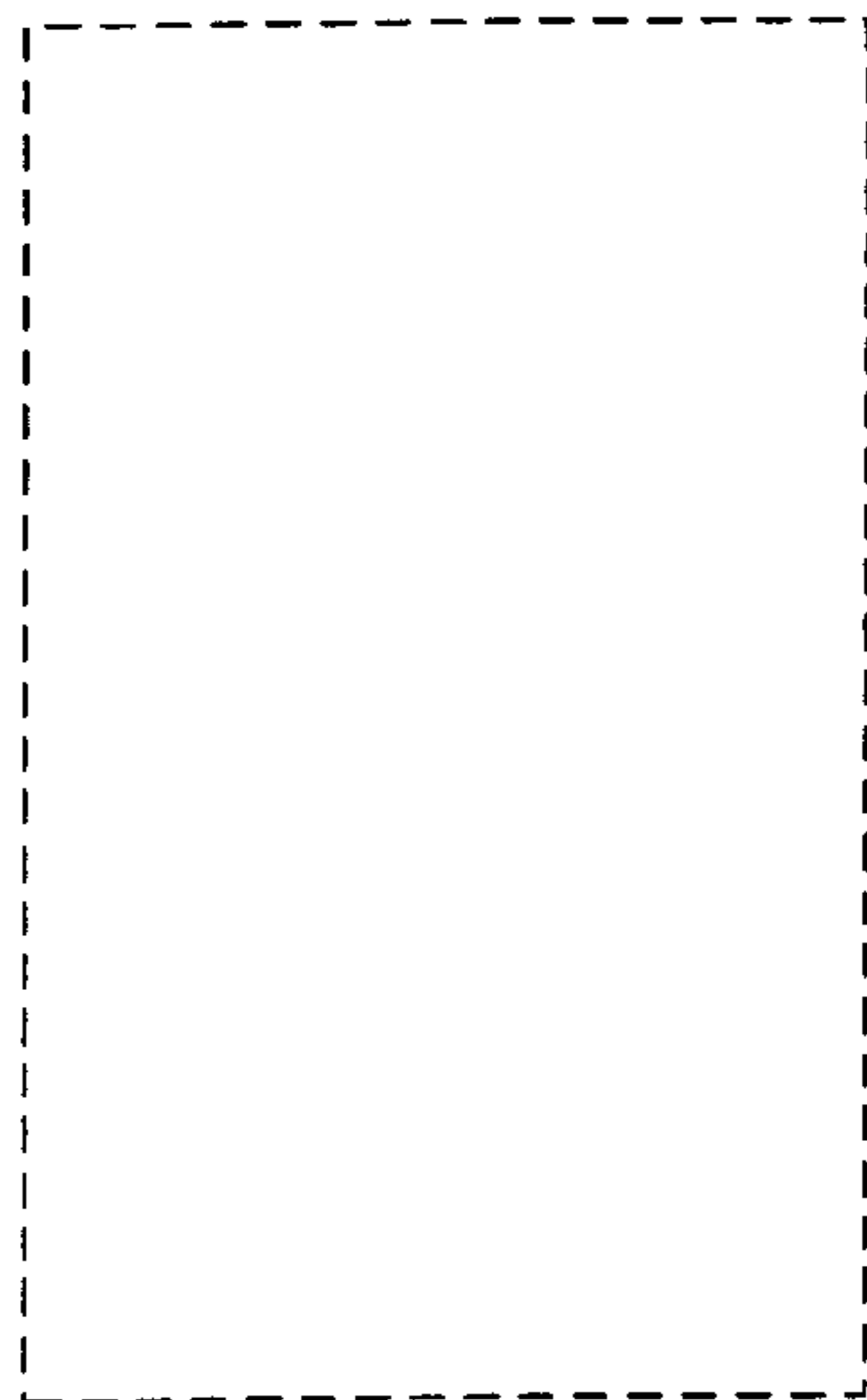


FIG. 2

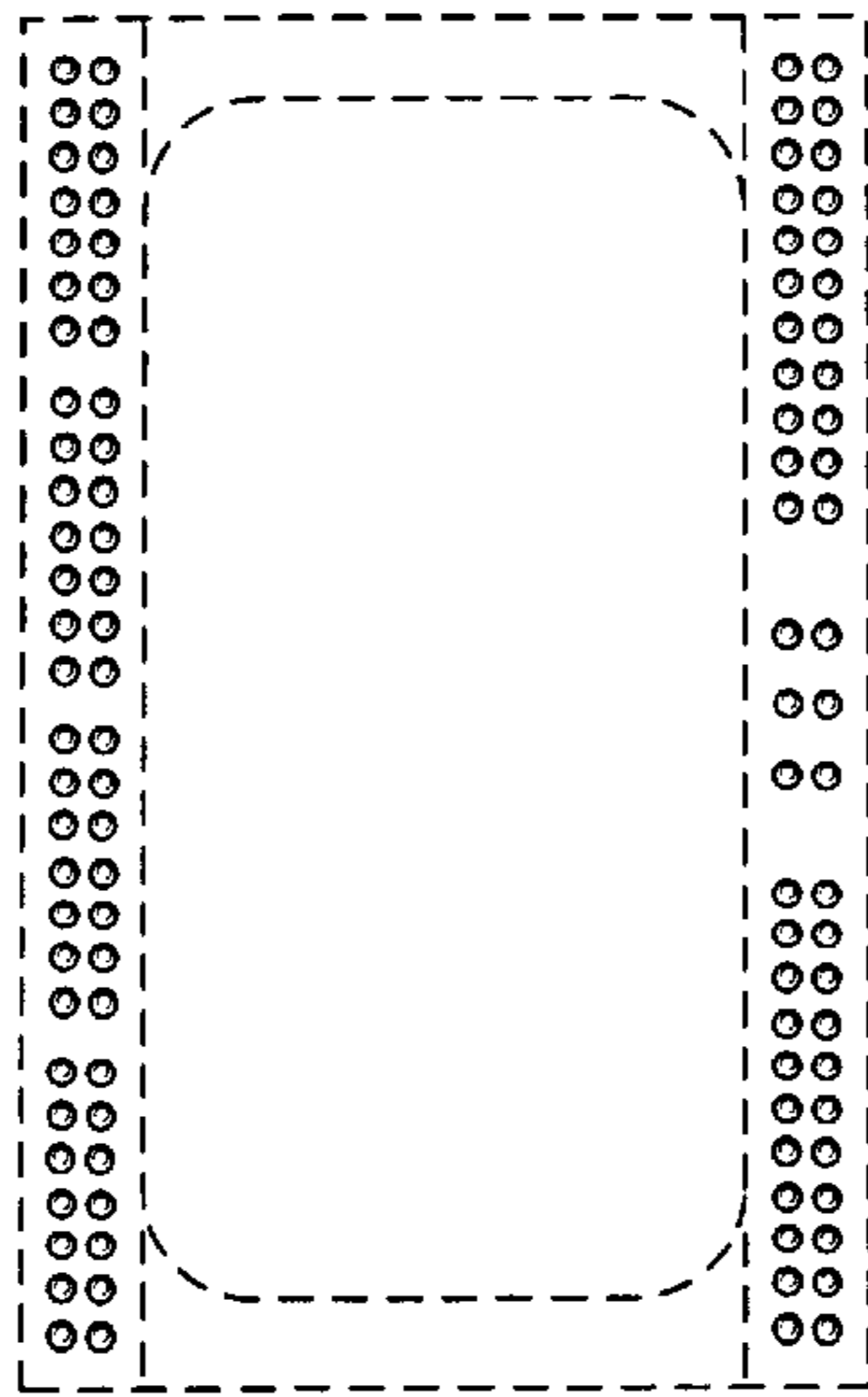


FIG. 3

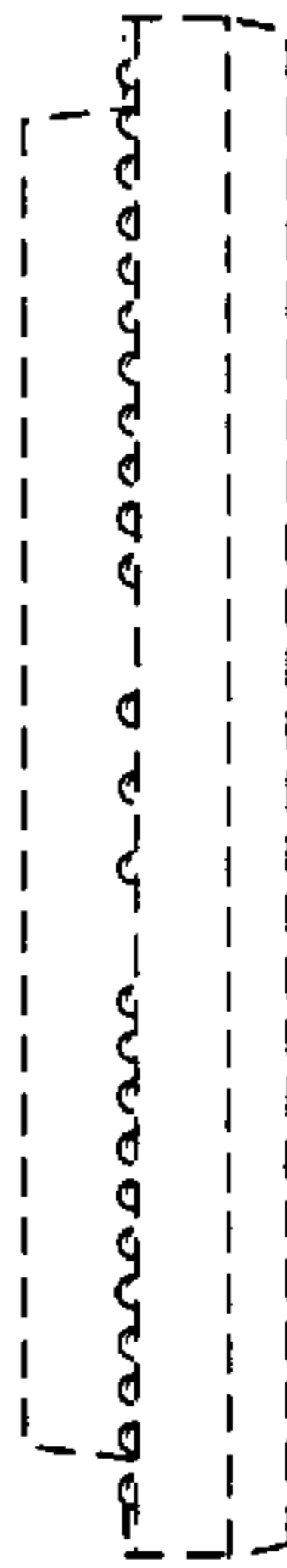


FIG. 4

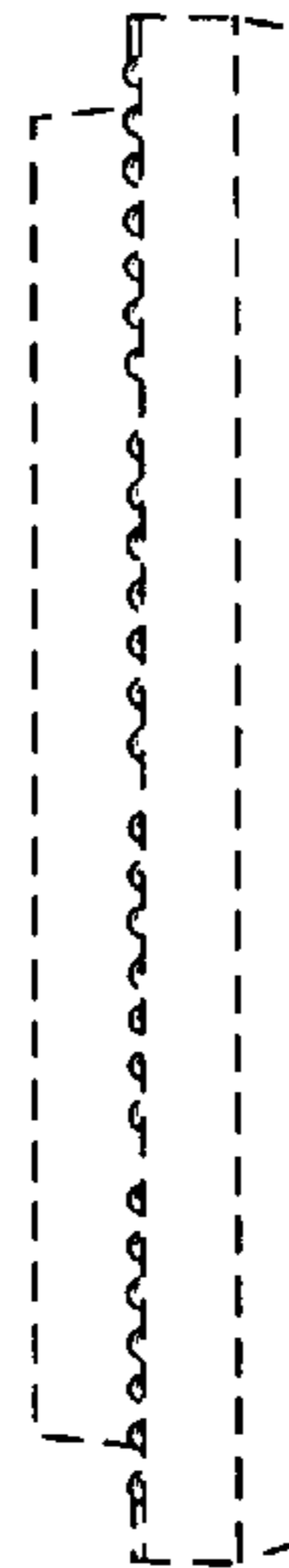


FIG. 5

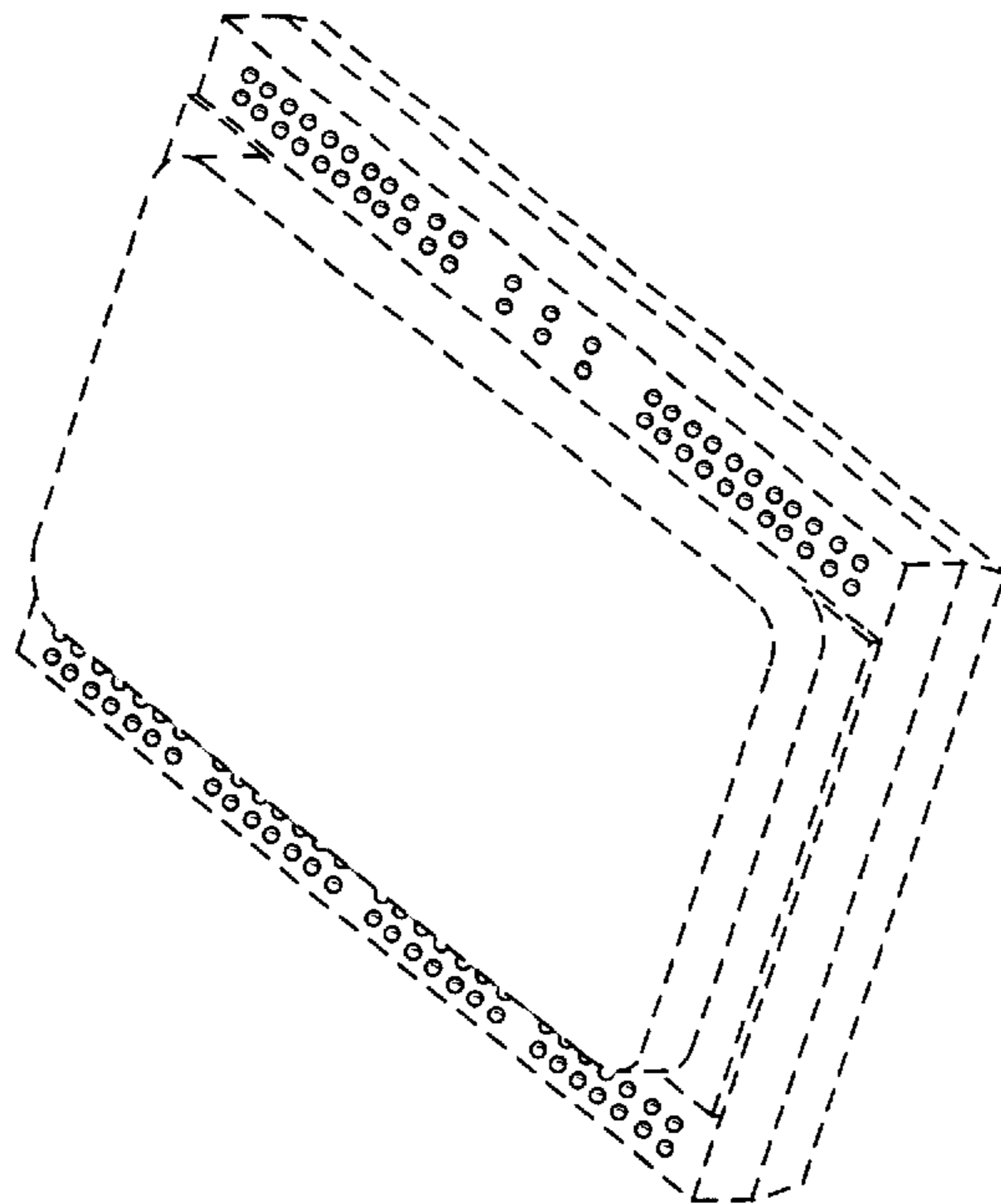


FIG. 1

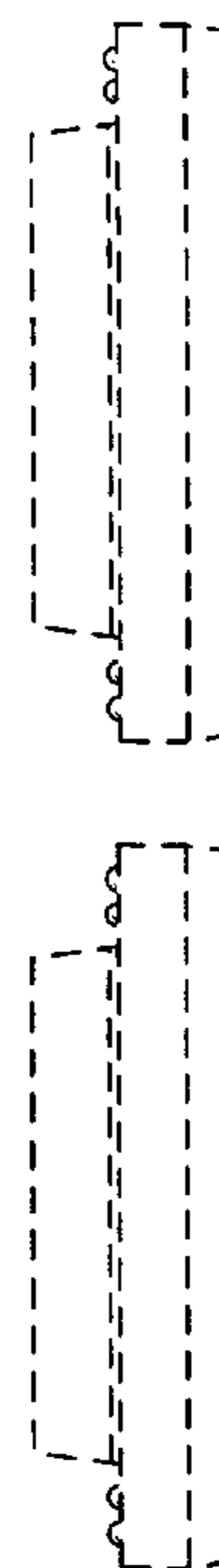


FIG. 6

FIG. 7