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Chikamatsu et al.

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(54) **SEMICONDUCTOR MODULE**

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(52) **U.S. Cl.**
USPC **D13/182**

(58) **Field of Classification Search**

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361/775, 783, 820; 174/250, 253;
438/15, 25, 26, 51, 55, 63, 64, 106
CPC . H01L 21/00; H01L 2224/42; H01L 2224/32;
H01L 2021/00; H01L 2021/02; H01L
2021/04; H01L 21/4814; H01L 21/4846;
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23/58; H05B 41/14; H05K 1/142; H05K
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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D259,559	S	*	6/1981	Mochizuki	.....	D13/182
D259,560	S	*	6/1981	Mochizuki	.....	D13/182
D259,782	S	*	7/1981	Mochizuki	.....	D13/182
D259,783	S	*	7/1981	Mochizuki	.....	D13/182
D260,091	S	*	8/1981	Mochizuki	.....	D13/182
D260,986	S	*	9/1981	Mochizuki	.....	D13/182
4,663,833	A	*	5/1987	Tanaka	.....	G11C 16/18 257/667
5,105,257	A	*	4/1992	Michii	.....	H01L 23/495 257/691
5,347,160	A	*	9/1994	Sutrina	.....	H01L 24/72 257/678
D396,846	S	*	8/1998	Nakayama	D13/182
D396,847	S	*	8/1998	Nakayama	D13/182
D397,092	S	*	8/1998	Sano	D13/182

(Continued)

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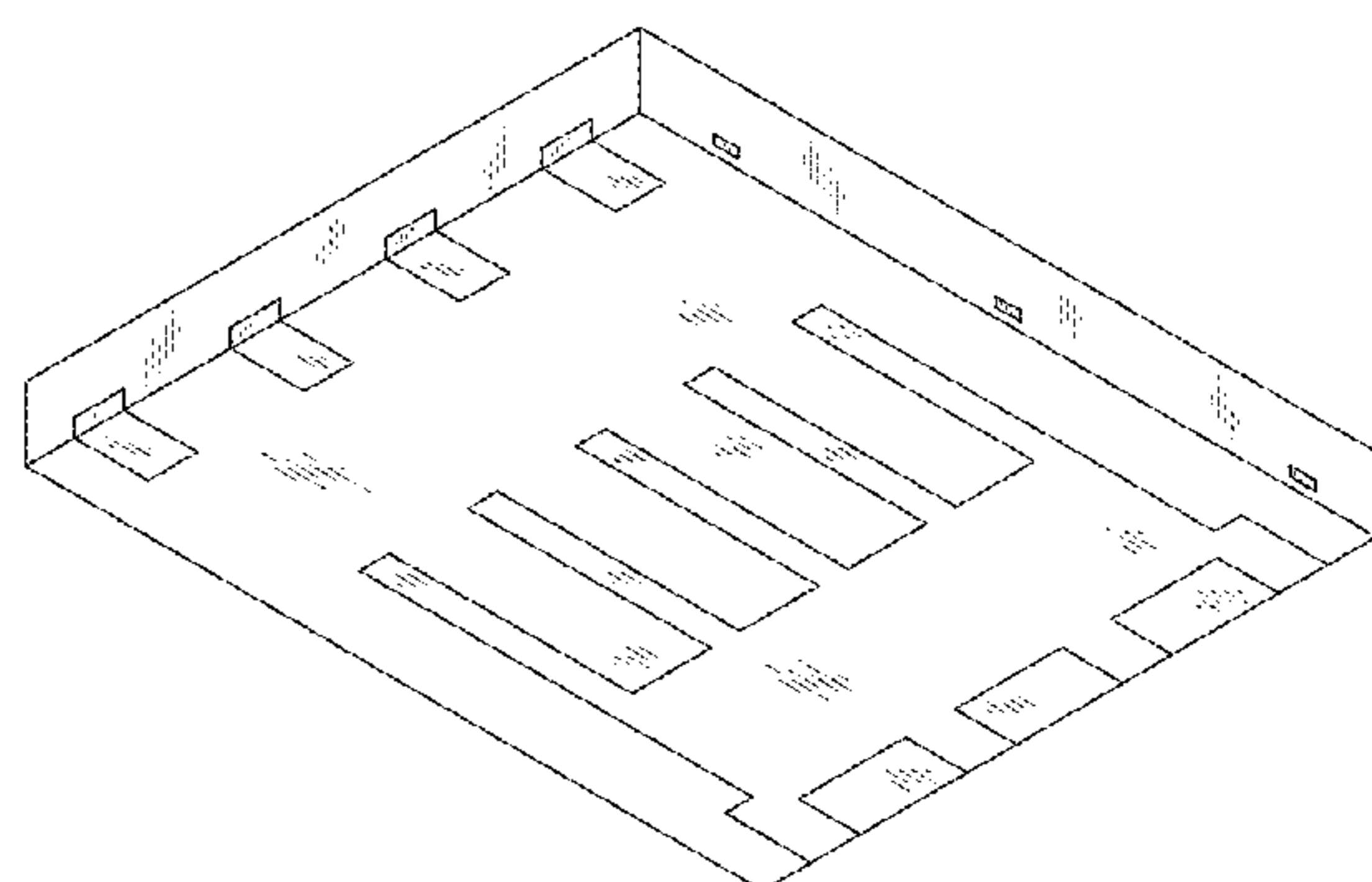
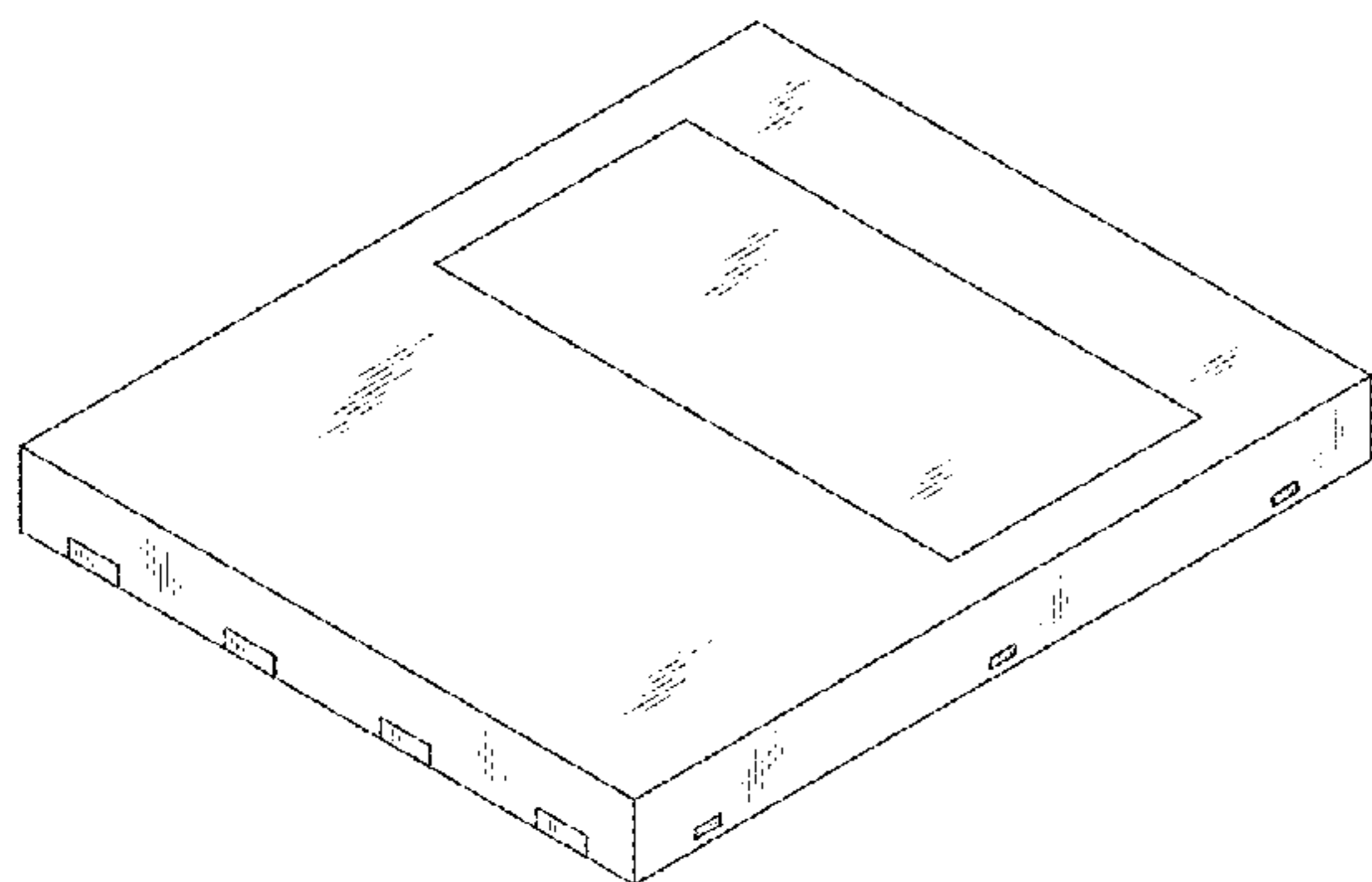
(57) **CLAIM**

The ornamental design for a semiconductor module, as shown and described.

DESCRIPTION

FIG. 1 is a front, top, and right side perspective view of a semiconductor module showing our new design;
FIG. 2 is a rear, bottom, and left side perspective view thereof;
FIG. 3 is a front view thereof, the rear view being an identical image of FIG. 3;
FIG. 4 is a top plan view thereof;
FIG. 5 is a bottom plan view thereof; and,
FIG. 6 is a right side view thereof, the left side view being a mirror image of FIG. 6.

1 Claim, 6 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

5,798,570 A * 8/1998 Watanabe H01L 21/565
257/705
D416,236 S * 11/1999 Kobayashi D13/182
6,093,957 A * 7/2000 Kwon H01L 23/49527
174/529
6,238,953 B1 * 5/2001 Tanaka H01L 23/3107
257/669
D444,132 S * 6/2001 Iwanishi D13/182
6,330,165 B1 * 12/2001 Kohjiro H01L 23/04
174/250
D466,485 S * 12/2002 Maehara D13/182
D466,873 S * 12/2002 Kasem D13/182
6,521,983 B1 * 2/2003 Yoshimatsu H01L 25/072
257/678
D472,528 S * 4/2003 Kasem D13/182

6,555,899 B1 * 4/2003 Chung H01L 23/3107
257/666
D475,028 S * 5/2003 Hori D13/182
D475,355 S * 6/2003 Hori D13/182
D475,982 S * 6/2003 Hori D13/182
D476,962 S * 7/2003 Yoshihira D13/182
D480,371 S * 10/2003 Sako D13/182
D489,338 S * 5/2004 Seddon D13/182
D504,874 S * 5/2005 Celaya D13/182
D509,810 S * 9/2005 Hsu D13/182
D510,728 S * 10/2005 Celaya D13/182
6,992,386 B2 * 1/2006 Hata H01L 23/49562
257/276
D587,662 S * 3/2009 Soutome D13/182
D648,290 S * 11/2011 Mori D13/182
D762,597 S * 8/2016 Bertalan D13/182
D796,459 S * 9/2017 Iwai D13/182
2001/0038143 A1 * 11/2001 Sonobe H01L 24/49
257/690

* cited by examiner

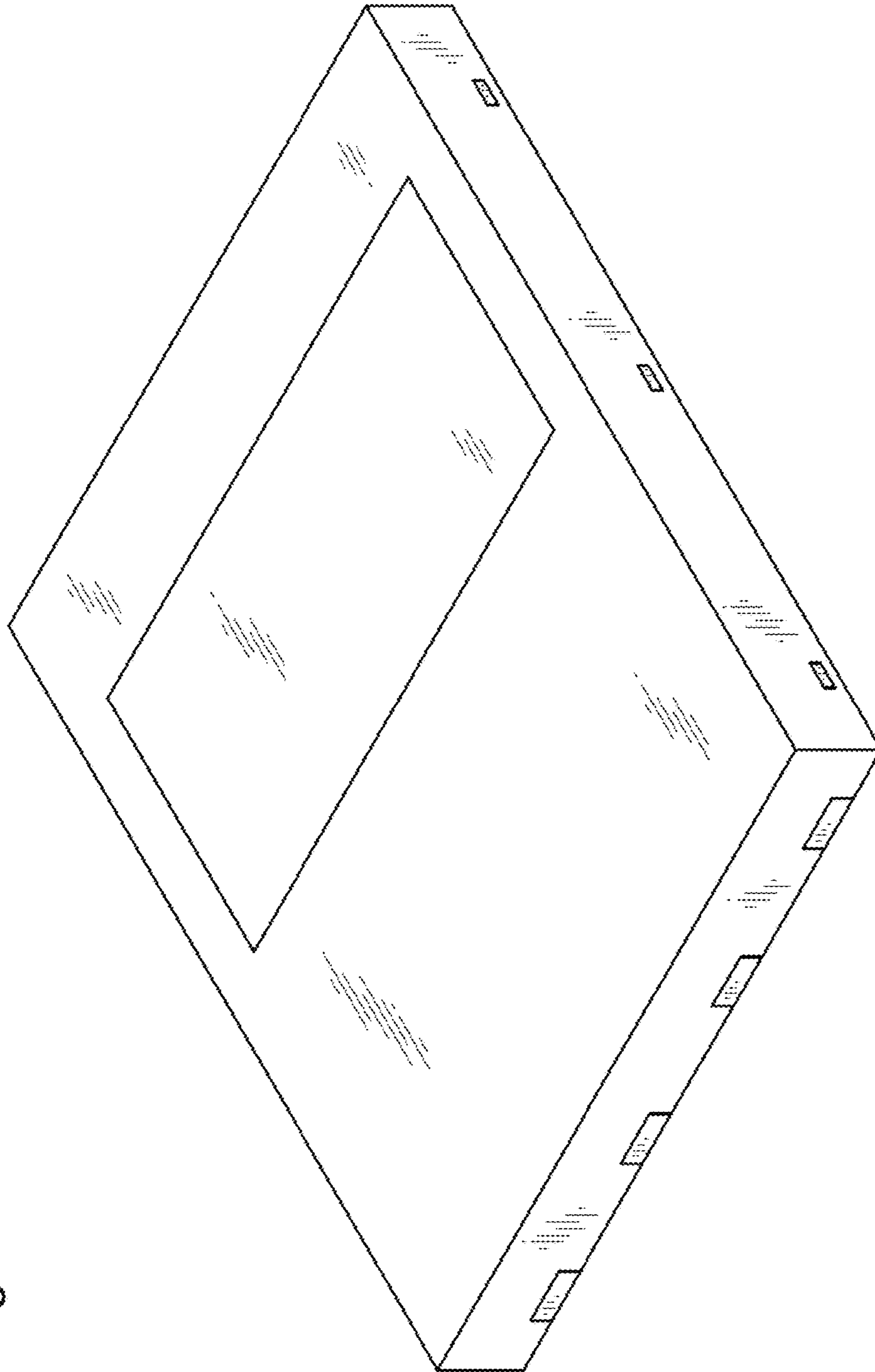


Fig.1

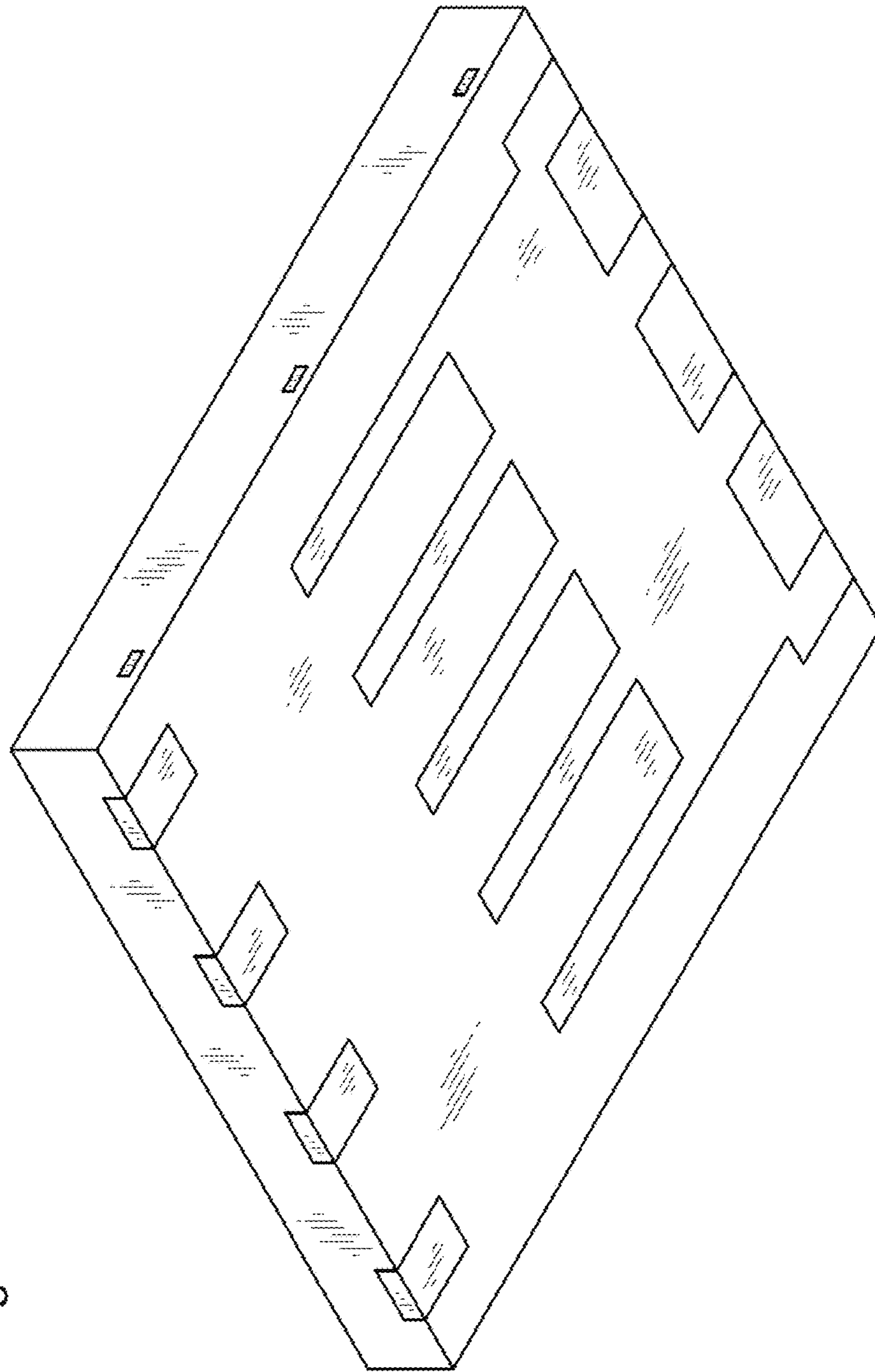


Fig.2

Fig.3



Fig.4

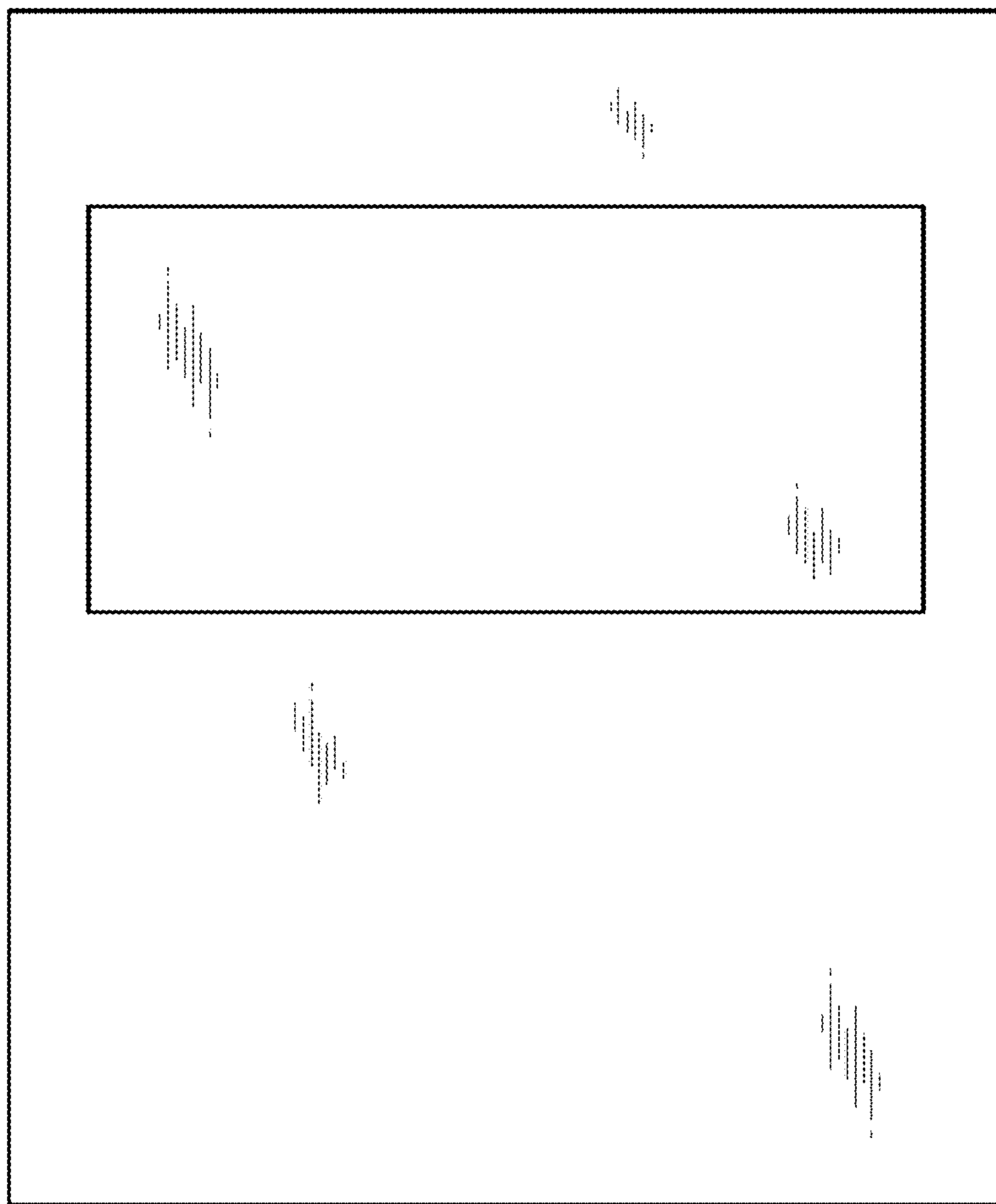


Fig.5

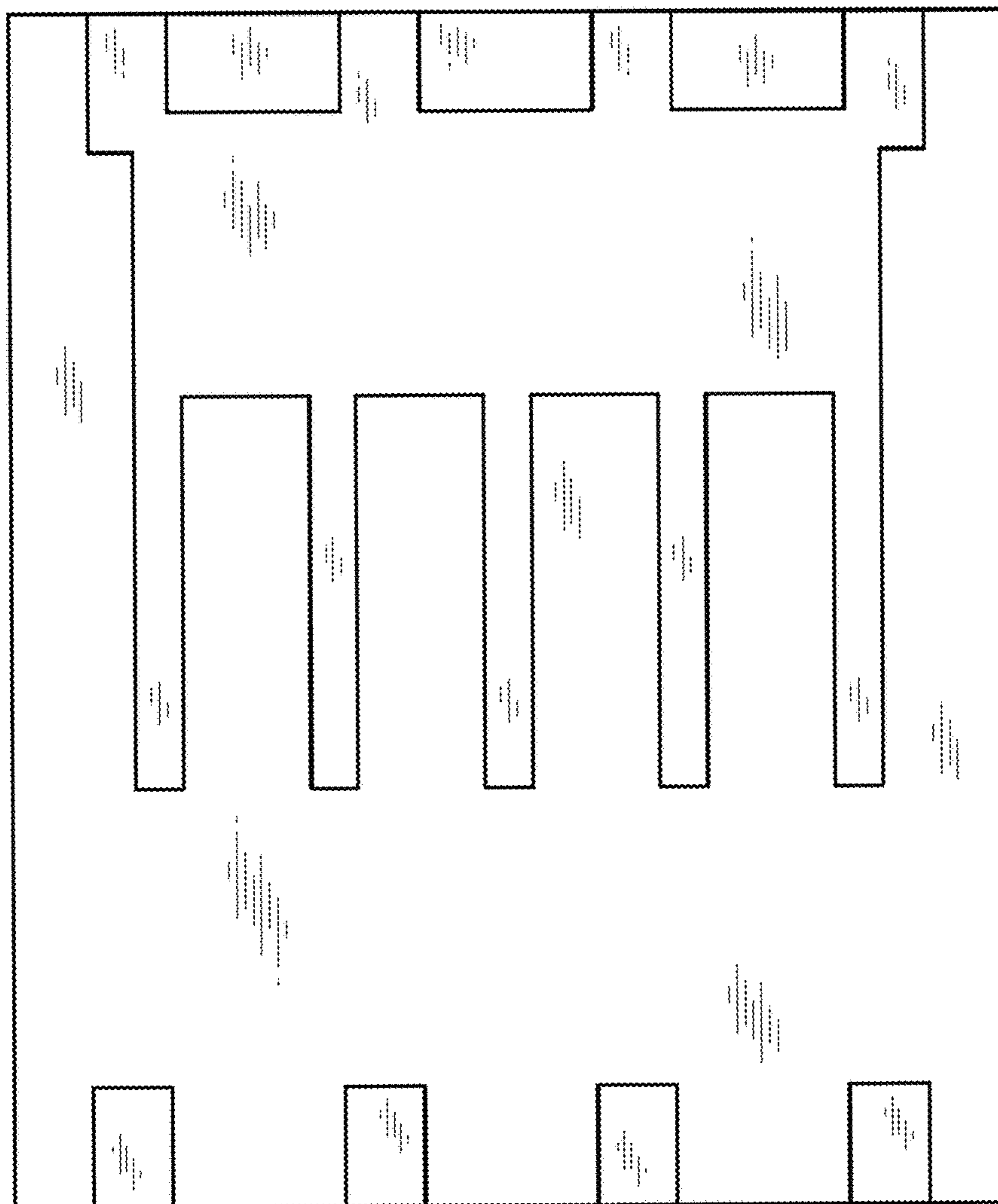


Fig.6

