



US00D847104S

(12) **United States Design Patent** (10) **Patent No.:** **US D847,104 S**
Sawada (45) **Date of Patent:** **** Apr. 30, 2019**

(54) **POWER SEMICONDUCTOR MODULE**

(56) **References Cited**

(71) Applicant: **ROHM CO., LTD.**, Kyoto-shi, Kyoto (JP)

U.S. PATENT DOCUMENTS

(72) Inventor: **Hideki Sawada**, Kyoto (JP)

4,218,724 A * 8/1980 Kaufman H05K 5/0091
361/709
D357,462 S * 4/1995 Terasawa D13/182
D357,671 S * 4/1995 Terasawa D13/182
D357,672 S * 4/1995 Terasawa D13/182
D360,619 S * 7/1995 Terasawa D13/182
D364,383 S * 11/1995 Yamada D13/146
D364,384 S * 11/1995 Shimizu D13/146
D364,385 S * 11/1995 Shimizu D13/146

(73) Assignee: **ROHM CO., LTD.**, Kyoto (JP)

(**) Term: **15 Years**

(Continued)

(21) Appl. No.: **29/639,439**

Primary Examiner — Elizabeth J Oswecki

(22) Filed: **Mar. 6, 2018**

(74) *Attorney, Agent, or Firm* — Hamre, Schumann,
Mueller & Larson, P.C.

(30) **Foreign Application Priority Data**

Sep. 29, 2017 (JP) 2017-021400

(51) **LOC (11) Cl.** **13-03**

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

(58) **Field of Classification Search**

USPC D13/182; 257/678, 684, 690, 691;
361/679.01, 713, 728, 736, 760, 761, 772,
361/775, 783, 820; 174/250, 253;
438/15, 25, 26, 51, 55, 63, 64, 106
CPC . H01L 21/00; H01L 2224/42; H01L 2224/43;
H01L 2021/00; H01L 2021/02; H01L
2021/04; H01L 21/4814; H01L 21/4846;
H01L 21/4871; H01L 21/67144; H01L
23/02; H01L 23/13; H01L 23/14; H01L
23/147; H01L 2924/171; H01L
2924/1711; H01L 2924/1715; H01L
2924/17151; H01L 2924/181; H01L
2924/1811; H01L 2924/1815; H01L
2924/19042; H01L 2924/1905; H01L
2224/08054; H01L 23/58; H05B 41/14;
H02B 6/4201; G02B 6/4256; G02B
6/4257; G02B 6/4261; G02B 6/4262;
G02B 6/428; G02B 6/4281; H05K 1/14;
H05K 1/141; H05K 1/142; H05K 1/144;
H05K 1/18; H05K 1/181; H05K 1/182;
H05K 1/026

See application file for complete search history.

(57) **CLAIM**

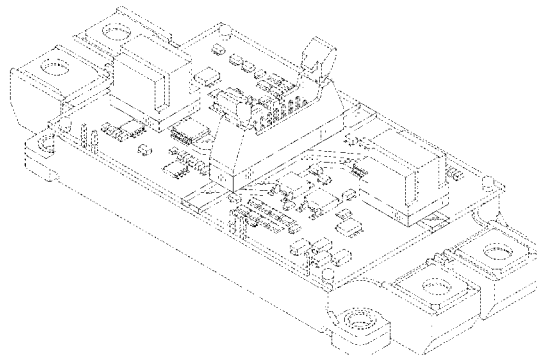
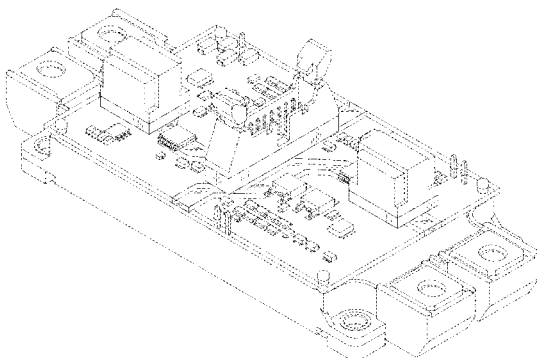
The ornamental design for a power semiconductor module,
as shown and described.

DESCRIPTION

FIG. 1 is a front, top, and right side perspective view of a power semiconductor module showing my new design; FIG. 2 is a rear, top, and left side perspective view thereof; FIG. 3 is a front view thereof; FIG. 4 is a rear view thereof; FIG. 5 is a top plan view thereof; FIG. 6 is a bottom plan view thereof; FIG. 7 is a right side view thereof; and, FIG. 8 is a left side view thereof.

The features shown in broken lines in the drawings depict portions of the article that form no part of the claimed design. The dash-dotted lines denote the boundary of the claim and form no part of the claimed design. The oblique line shading shown in the drawings indicates a transparent surface.

1 Claim, 8 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D389,808	S *	1/1998	Yamada	.....	D13/182	9,418,975	B1 *	8/2016	Yoneyama	.....	H01L 25/18
D396,450	S *	7/1998	Nishiura	.....	D13/182	D766,851	S *	9/2016	Yoneyama	.....	D13/182
6,078,501	A *	6/2000	Catrambone	.....	H02M 7/003	D767,516	S *	9/2016	Yoneyama	.....	D13/182
					174/50	D772,184	S *	11/2016	Soyano	.....	D13/182
6,521,983	B1 *	2/2003	Yoshimatsu	.....	H01L 25/072	D773,412	S *	12/2016	Yoneyama	.....	D13/182
					257/678	D774,479	S *	12/2016	Soyano	.....	D13/182
D476,959	S *	7/2003	Yamada	.....	D13/182	D775,091	S	12/2016	Edenharter et al.		
6,774,465	B2 *	8/2004	Lee	.....	H01L 23/049	D775,593	S	1/2017	Edenharter et al.		
					257/671	D776,071	S	1/2017	Edenharter et al.		
D556,686	S *	12/2007	Matsuo	.....	D13/110	D785,577	S *	5/2017	Kawase	.....	D13/182
D587,662	S *	3/2009	Soutome	.....	D13/182	9,660,356	B1 *	5/2017	Nakamura	.....	H01L 23/49811
D606,951	S *	12/2009	Soyano	.....	D13/182	D790,491	S *	6/2017	Hayashida	.....	D13/182
D653,633	S *	2/2012	Soyano	.....	D13/182	D798,832	S *	10/2017	Hayashida	.....	D13/182
D653,634	S *	2/2012	Soyano	.....	D13/182	D799,439	S *	10/2017	Hayashiguchi	.....	D13/182
D686,174	S *	7/2013	Soyano	.....	D13/182	D810,706	S *	2/2018	Soyano	.....	D13/182
D689,446	S *	9/2013	Soyano	.....	D13/180	D814,431	S *	4/2018	Matsumoto	.....	D13/182
8,526,199	B2 *	9/2013	Matsumoto	.....	H01L 23/04	D814,433	S *	4/2018	Soyano	.....	D13/182
					361/783	D827,591	S *	9/2018	Ikeda	.....	D13/182
D704,670	S *	5/2014	Chen	.....	D13/182	D827,593	S *	9/2018	Soyano	.....	D13/182
D704,671	S *	5/2014	Chen	.....	D13/182	2001/0038143	A1 *	11/2001	Sonobe	.....	H01L 24/49
D710,317	S *	8/2014	Chen	.....	D13/182						257/690
D710,318	S *	8/2014	Chen	.....	D13/182	2004/0227231	A1 *	11/2004	Maly	.....	H01L 25/072
D710,319	S *	8/2014	Chen	.....	D13/182						257/724
D748,595	S *	2/2016	Bertalan	.....	D13/182	2008/0142948	A1 *	6/2008	Matsumoto	.....	H01R 4/04
D754,084	S *	4/2016	Kawase	.....	D13/182						257/690
D762,185	S *	7/2016	Muehlensiep	.....	D13/182	2016/0190915	A1 *	6/2016	Horiuchi	.....	H01L 29/7393
D762,597	S *	8/2016	Bertalan	.....	D13/182						363/132
						2016/0284618	A1 *	9/2016	Tsukamoto	.....	H01L 23/055
						2016/0336245	A1 *	11/2016	Egusa	.....	H01R 12/585

* cited by examiner

FIG.1

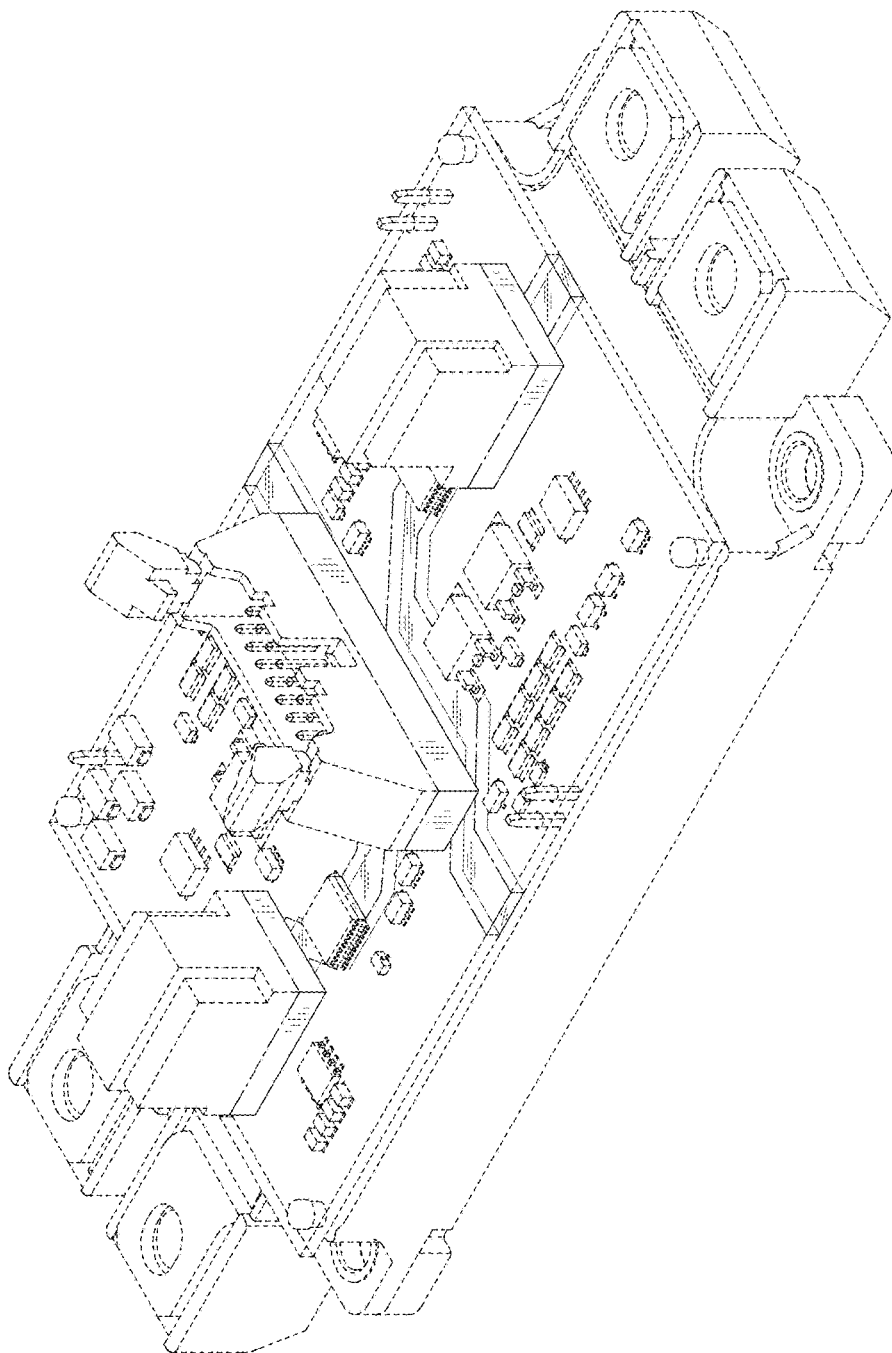


FIG.2

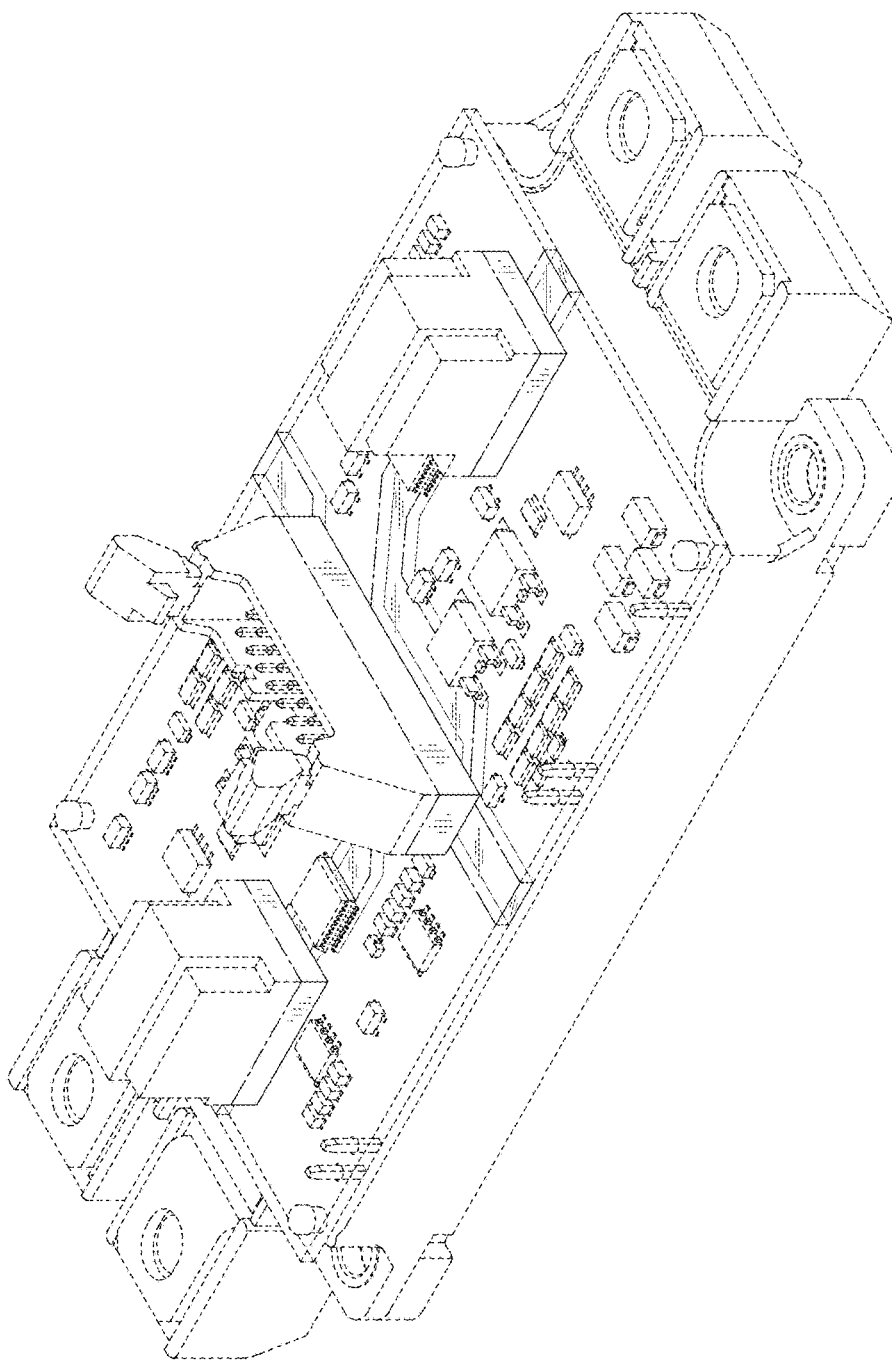


FIG.3

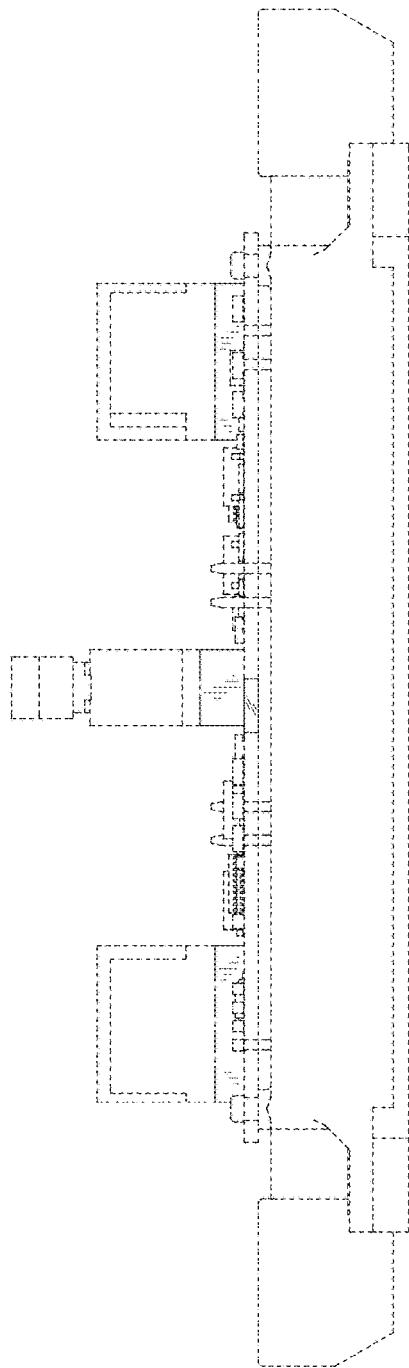


FIG.4

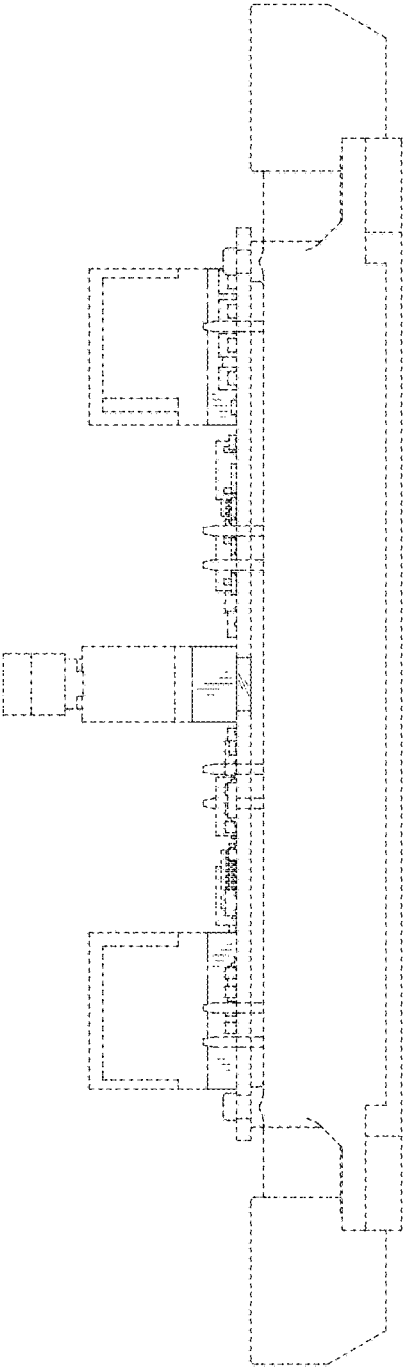


FIG.5

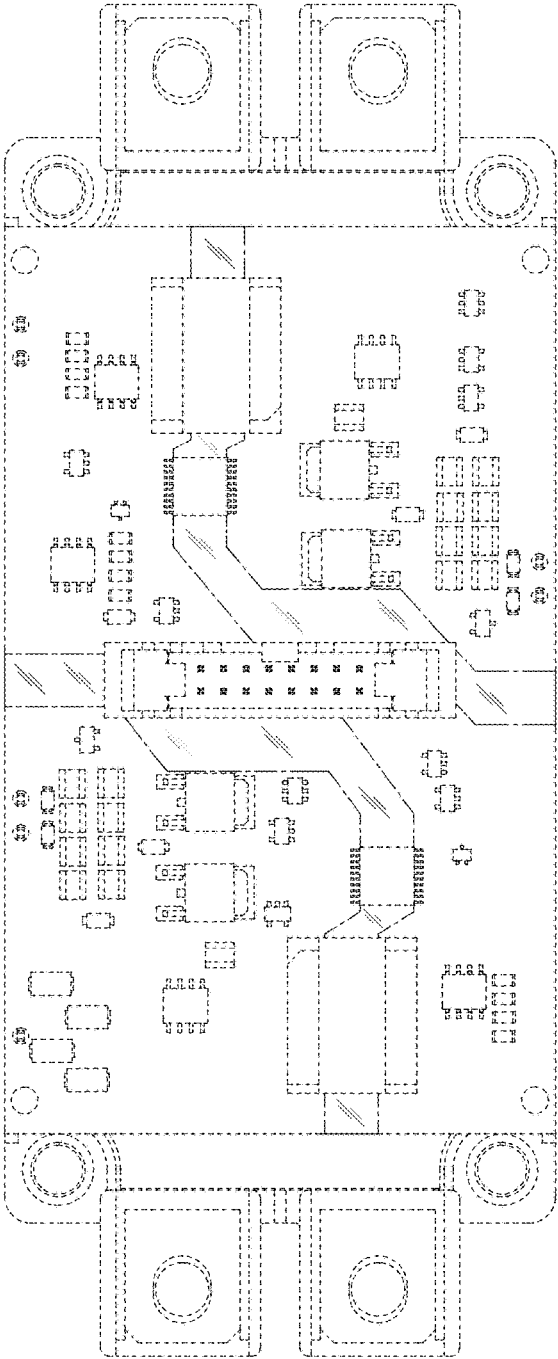


FIG.6

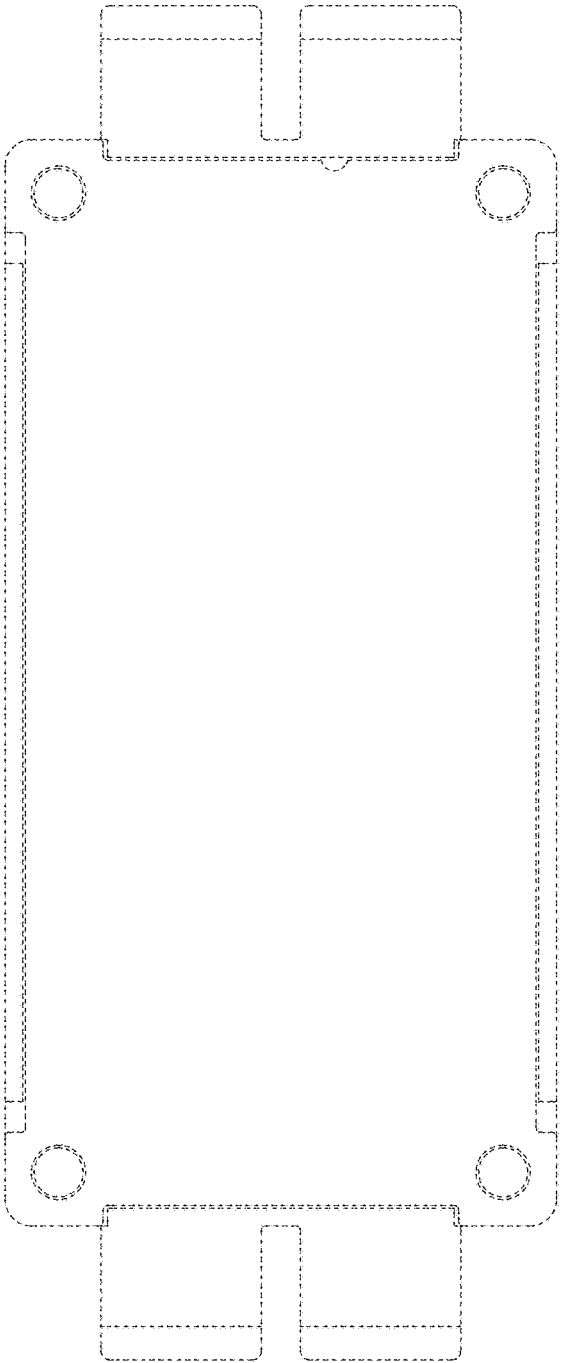


FIG.7

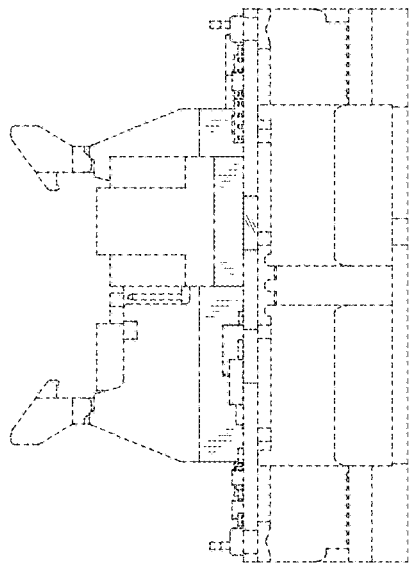


FIG.8

