

US00D733645S

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

(10) **Patent No.:** **US D733,645 S**
(45) **Date of Patent:** **** Jul. 7, 2015**

(54) **CORNER CONNECTOR FOR A PHOTOVOLTAIC MODULE FRAME**

(71) Applicant: **Dow Global Technologies LLC**,
Midland, MI (US)

(72) Inventors: **Jie Cai**, Shanghai (CN); **YongJin Guo**,
Shanghai (CN); **YanLi Huo**, Shanghai
(CN); **Shaofu Wu**, Sugar Land, TX
(US); **Wenbin Yao**, Shanghai (CN)

(73) Assignee: **Dow Global Technologies LLC**,
Midland, MI (US)

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

(21) Appl. No.: **29/476,869**

(22) Filed: **Dec. 18, 2013**

(30) **Foreign Application Priority Data**

Jun. 28, 2013 (CN) 2013 3 0292191

(51) **LOC (10) Cl.** **13-02**

(52) **U.S. Cl.**
USPC **D13/102**

(58) **Field of Classification Search**
USPC D13/101, 10, 118, 154, 155, 184;
D8/349, 354-356; D25/119, 123-125;
D21/484, 493, 499; 403/169; 52/173.3,
52/460; 136/206, 244-251, 256, 291
CPC F24J 2/464; F24J 2/521; F24J 2/523;
H02S 30/10; H01L 23/13; H01L 31/04
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,049,260 A 8/1962 Stone
D234,519 S * 3/1975 Rynk D13/156
4,204,523 A 5/1980 Rothe
D270,660 S 9/1983 Ort

5,071,491 A 12/1991 Stein et al.
5,272,236 A 12/1993 Lai et al.
5,278,272 A 1/1994 Lai et al.
5,344,496 A 9/1994 Stern et al.
5,571,338 A 11/1996 Kadonome et al.
5,685,151 A 11/1997 Ross
D391,921 S 3/1998 Zimmer et al.
5,986,028 A 11/1999 Lai et al.
6,034,320 A 3/2000 Malcherczyk et al.
6,105,316 A 8/2000 Bottger et al.
6,172,295 B1 1/2001 Hattori et al.
6,283,542 B1 9/2001 Pätz
6,653,553 B2 11/2003 Reimer
6,672,018 B2 1/2004 Shingleton
D547,262 S 7/2007 Ullman
D562,225 S 2/2008 Almy et al.

(Continued)

FOREIGN PATENT DOCUMENTS

CA 2738960 A1 12/2011
CN 201252106 Y 6/2009

(Continued)

Primary Examiner — Thomas Johannes

Assistant Examiner — Shawn T Gingrich

(74) *Attorney, Agent, or Firm* — Whyte Hirschboeck Dudek
S.C.

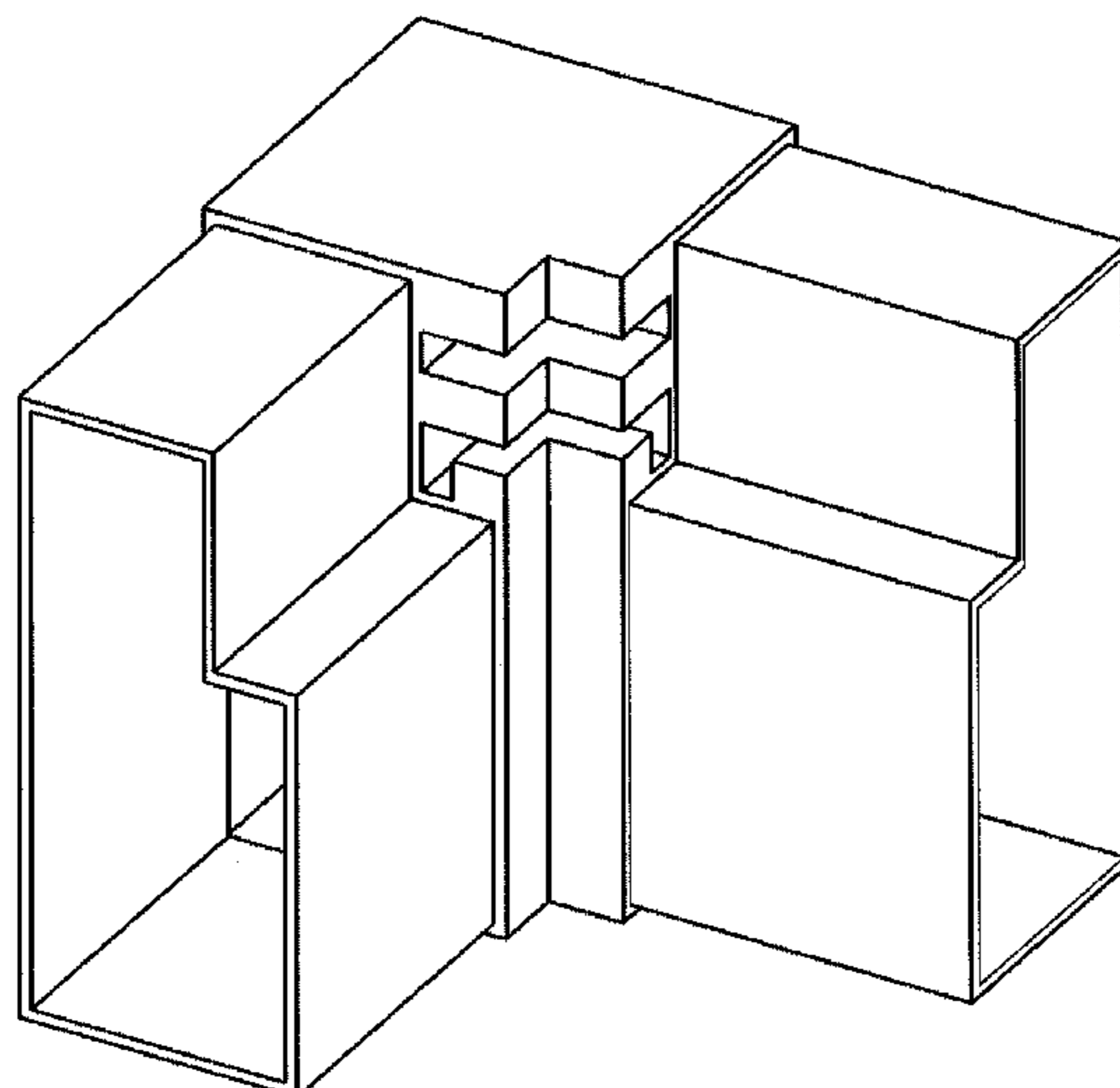
(57) **CLAIM**

The ornamental design for corner connector for a photovoltaic module frame, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a corner connector for a photovoltaic module frame showing our new design; FIG. 2 is a top plan view thereof; FIG. 3 is a front elevation view thereof; FIG. 4 is a rear elevation view thereof; FIG. 5 is a right side elevation view thereof; FIG. 6 is a left side elevation view thereof; and, FIG. 7 is a bottom plan view thereof.

1 Claim, 3 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D565,505	S	4/2008	Shugar et al.	
7,435,134	B2	10/2008	Lenox	
7,487,771	B1	2/2009	Eiffert et al.	
7,506,477	B2	3/2009	Flaherty et al.	
7,642,449	B2	1/2010	Korman et al.	
D652,789	S	1/2012	Kawai et al.	
D658,120	S	4/2012	Kawai et al.	
D669,035	S *	10/2012	Ruddick	D13/155
D673,903	S	1/2013	Kobayashi	
D683,318	S *	5/2013	Ruddick	D13/155
D686,978	S	7/2013	Nicholson et al.	
D710,793	S *	8/2014	Cai et al.	D13/102
2005/0284467	A1	12/2005	Patterson	
2006/0042680	A1	3/2006	Korman et al.	
2008/0041442	A1	2/2008	Hanoku	
2008/0149168	A1	6/2008	Flaherty et al.	
2008/0302928	A1	12/2008	Haddock	
2009/0205704	A1	8/2009	Flaherty et al.	
2009/0281215	A1	11/2009	Kaul	
2009/0283136	A1	11/2009	Munch et al.	
2009/0320907	A1	12/2009	Botkin	
2010/0127142	A1	5/2010	Genschorek	
2010/0193029	A1	8/2010	Murphy et al.	
2010/0269891	A1	10/2010	Kinard et al.	
2011/0000524	A1	1/2011	Busch et al.	
2011/0048584	A1	3/2011	Katsura et al.	
2011/0067754	A1	3/2011	Luch	

2011/0070768	A1	3/2011	Zantout	
2011/0091707	A1	4/2011	Jouset et al.	
2011/0100436	A1	5/2011	Cleereman et al.	
2011/0100438	A1	5/2011	Gaston et al.	
2011/0108083	A1	5/2011	Ravestain et al.	
2011/0194886	A1 *	8/2011	Wu et al.	403/23
2011/0259404	A1 *	10/2011	Jang	136/251
2012/0187058	A1	7/2012	Almy	
2012/0298817	A1	11/2012	West et al.	
2013/0087519	A1 *	4/2013	Sung	211/41.1
2014/0048497	A1 *	2/2014	Hong et al.	211/41.1
2014/0238489	A1 *	8/2014	Buettner et al.	136/259
2014/0352763	A1 *	12/2014	Chen et al.	136/251

FOREIGN PATENT DOCUMENTS

CN	101826577	A	9/2010
CN	201689892	U	12/2010
CN	102496640	A	6/2012
DE	202004019681	U1	3/2005
EP	2040014	A3	3/2009
EP	1742274	B1	9/2010
EP	2360741	A2	8/2011
JP	2007224538	A	9/2007
WO	2006121559	A2	11/2006
WO	2009/016129	A1	2/2009
WO	2010/019742	A2	2/2010
WO	2010/019754	A2	2/2010
WO	2011/096810	A1	8/2011

* cited by examiner

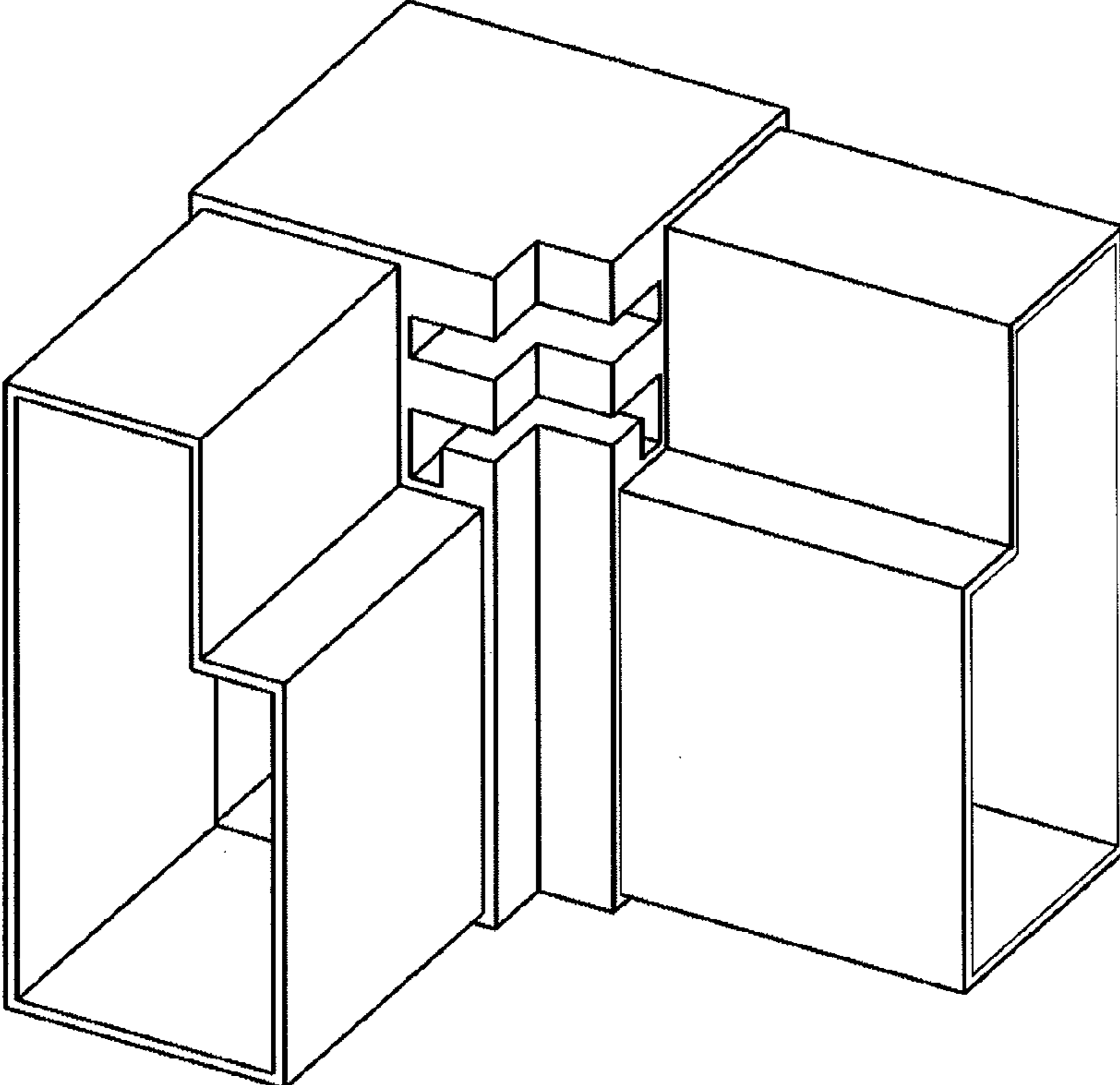


FIG. 1

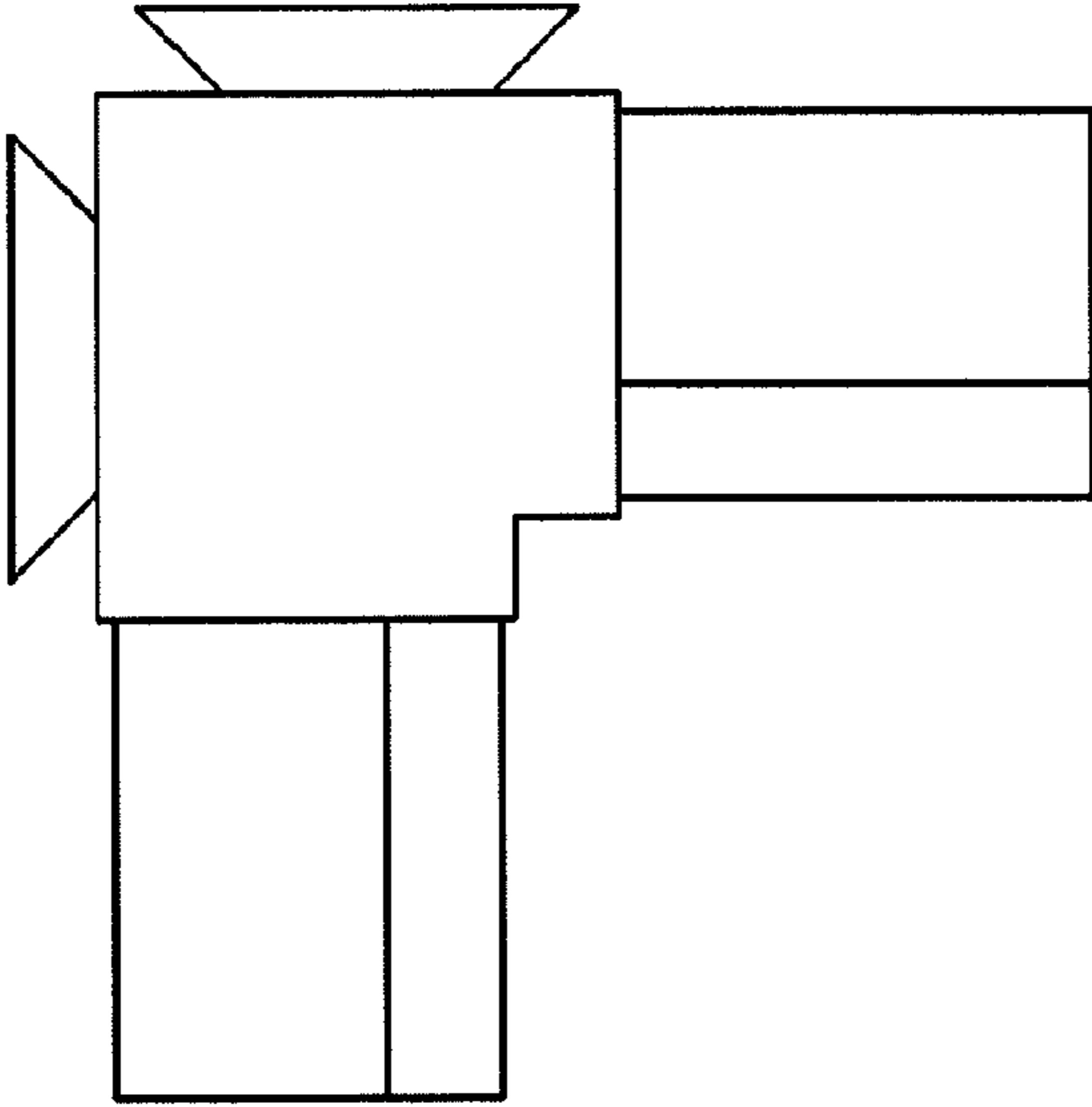


FIG. 2

FIG. 3

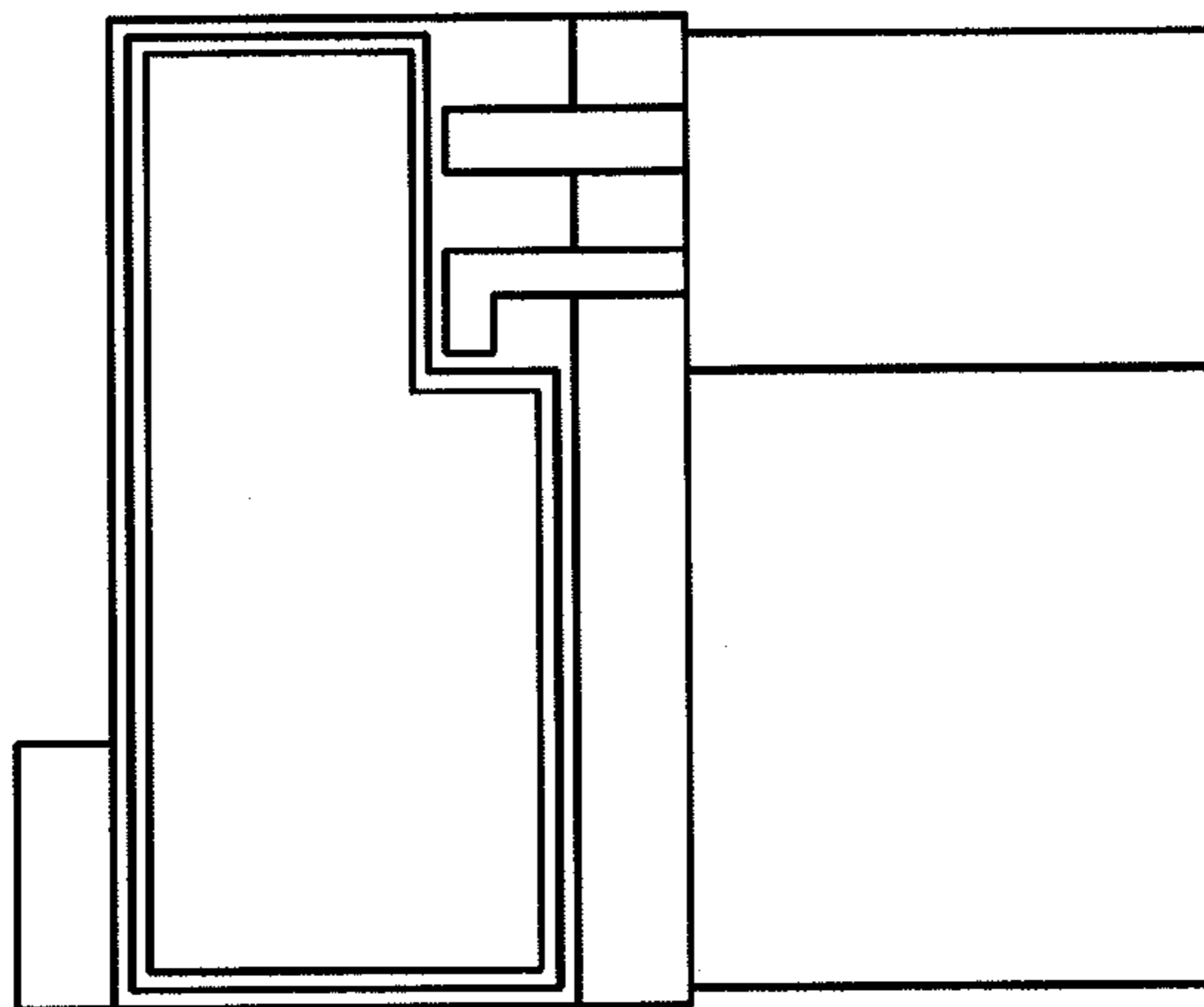


FIG. 4

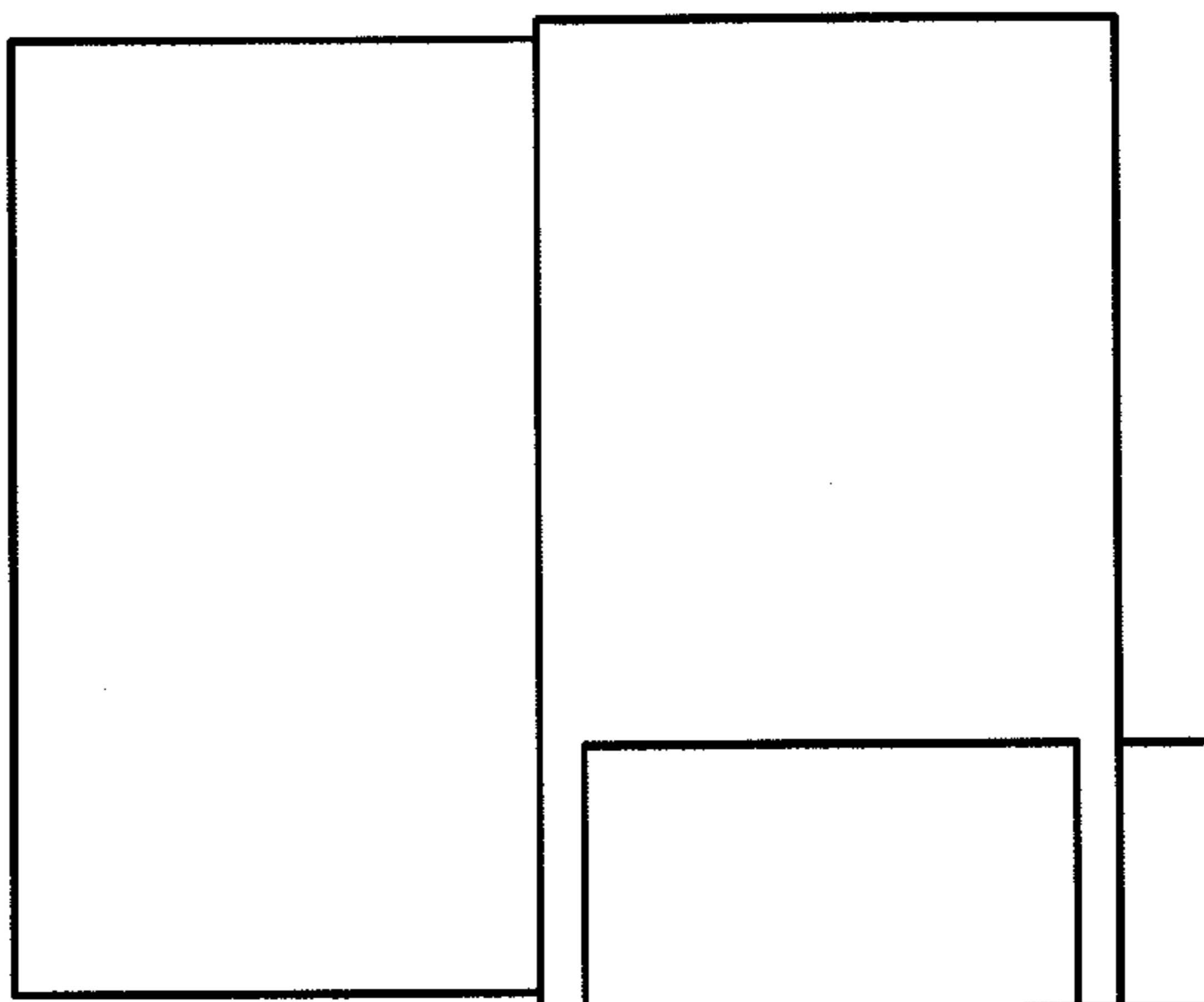


FIG. 5

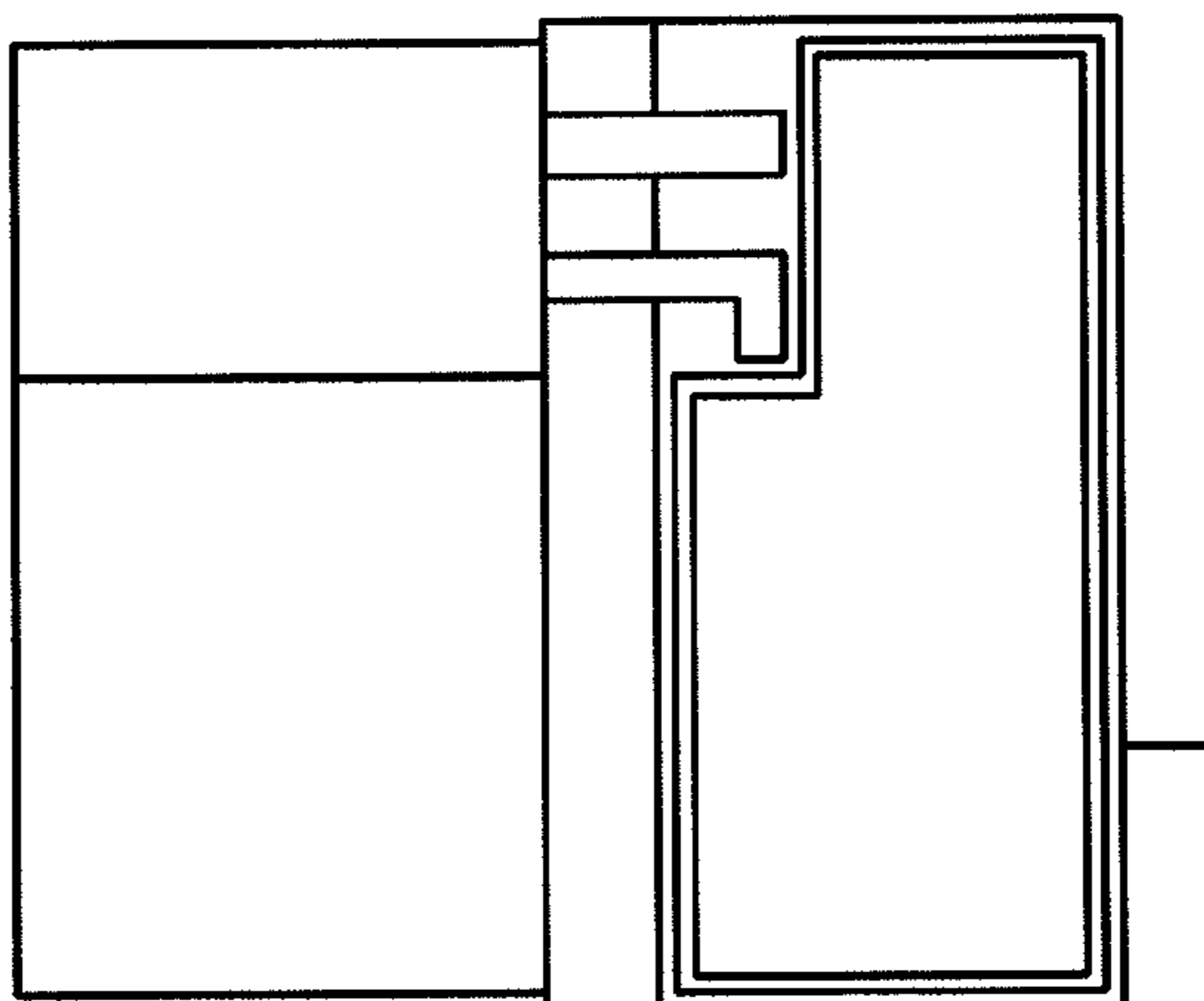


FIG. 6

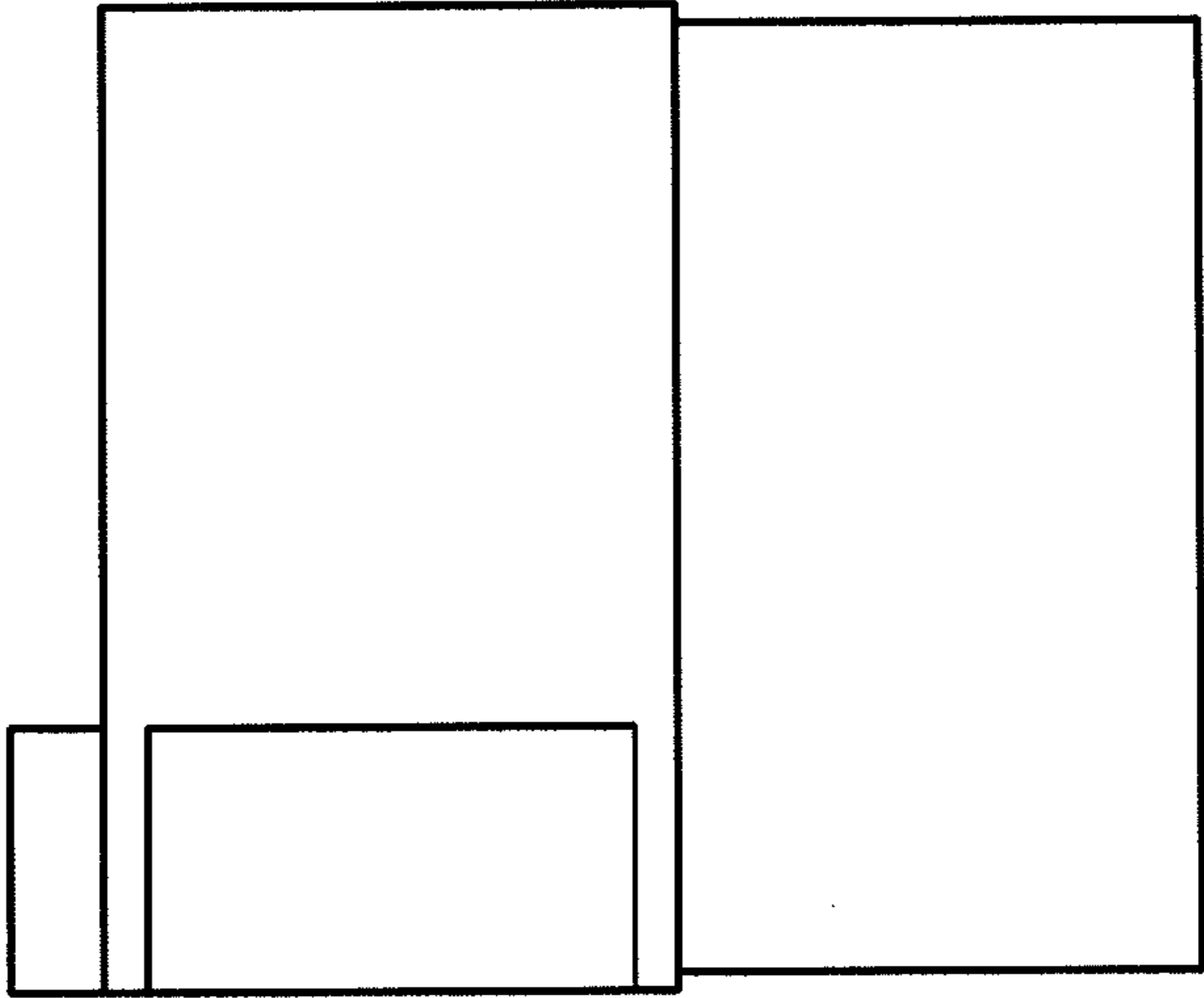


FIG. 7

