



US00D696752S

(12) **United States Design Patent**  
**Towiwat**

(10) **Patent No.:** **US D696,752 S**  
(45) **Date of Patent:** **\*\* Dec. 31, 2013**

(54) **HEAT EXCHANGER**

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(72) Inventor: **Dhiti Towiwat**, Bangkok (TH)

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

(21) Appl. No.: **29/453,849**

(22) Filed: **May 3, 2013**

(30) **Foreign Application Priority Data**

Nov. 8, 2012 (TH) ..... 1202002951

(51) **LOC (9) Cl.** ..... **23-03**

(52) **U.S. Cl.**  
USPC ..... **D23/323**

(58) **Field of Classification Search**  
USPC ..... D23/314, 323, 330, 386, 499; 165/499,  
165/450, 152, 182, DIG. 501, 176, 165;  
23/293 R; 423/500, 522, 539, 579,  
423/658.2

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

3,315,739	A *	4/1967	Kearney	.....	165/165
7,168,481	B2 *	1/2007	Ishiyama et al.	.....	165/165
7,981,168	B2 *	7/2011	Ishiyama et al.	.....	23/293 R
D686,710	S	7/2013	Towiwat		
D686,711	S	7/2013	Towiwat		
D686,712	S	7/2013	Towiwat		

2005/0056410	A1 *	3/2005	Ishiyama et al.	.....	165/165
2007/0107888	A1 *	5/2007	Ishiyama et al.	.....	165/165
2009/0025919	A1 *	1/2009	Ishiyama et al.	.....	165/165

\* cited by examiner

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(57) **CLAIM**

I claim the ornamental design for heat exchanger, as shown and described.

**DESCRIPTION**

FIG. 1 is a front view of the heat exchanger of the claimed design.

FIG. 2 is a back view of the heat exchanger.

FIG. 3 is a left side view of the heat exchanger.

FIG. 4 is a right side view of the heat exchanger.

FIG. 5 is a top view of the heat exchanger.

FIG. 6 is a bottom view of the heat exchanger.

FIG. 7 is a front perspective view of the heat exchanger.

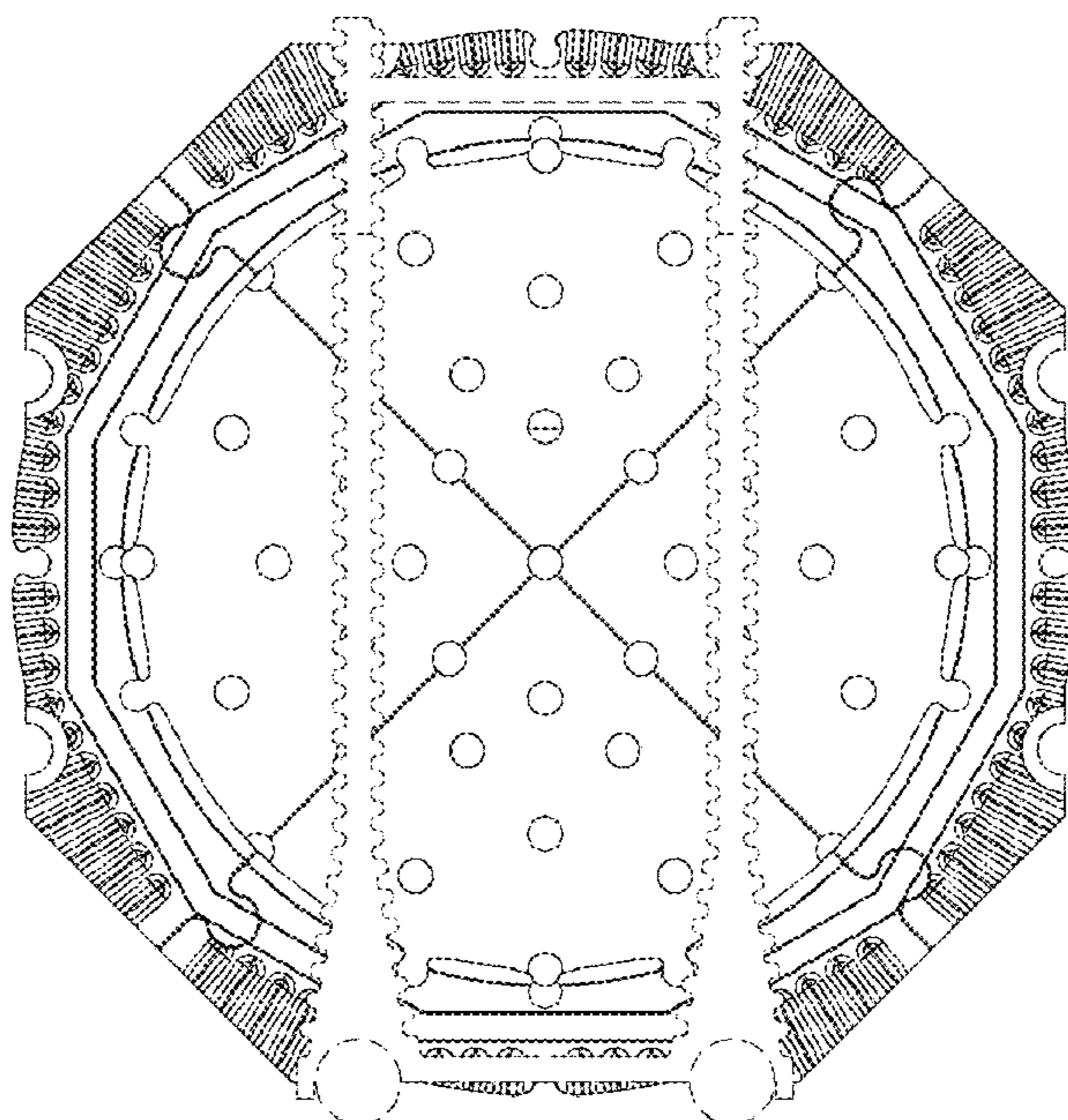
FIG. 8 is a back perspective view of the heat exchanger; and,

FIG. 9 is a cut-away perspective view of the heat exchanger.

The broken lines are included for the purpose of illustrating portions of the heat exchanger that form no part of the claimed design.

The product “heat exchanger” is positioned within a boiler or burner such that after heating, the heat storage can facilitate the transfer of heat to the boiler or burner in a delayed and uniform manner.

**1 Claim, 9 Drawing Sheets**



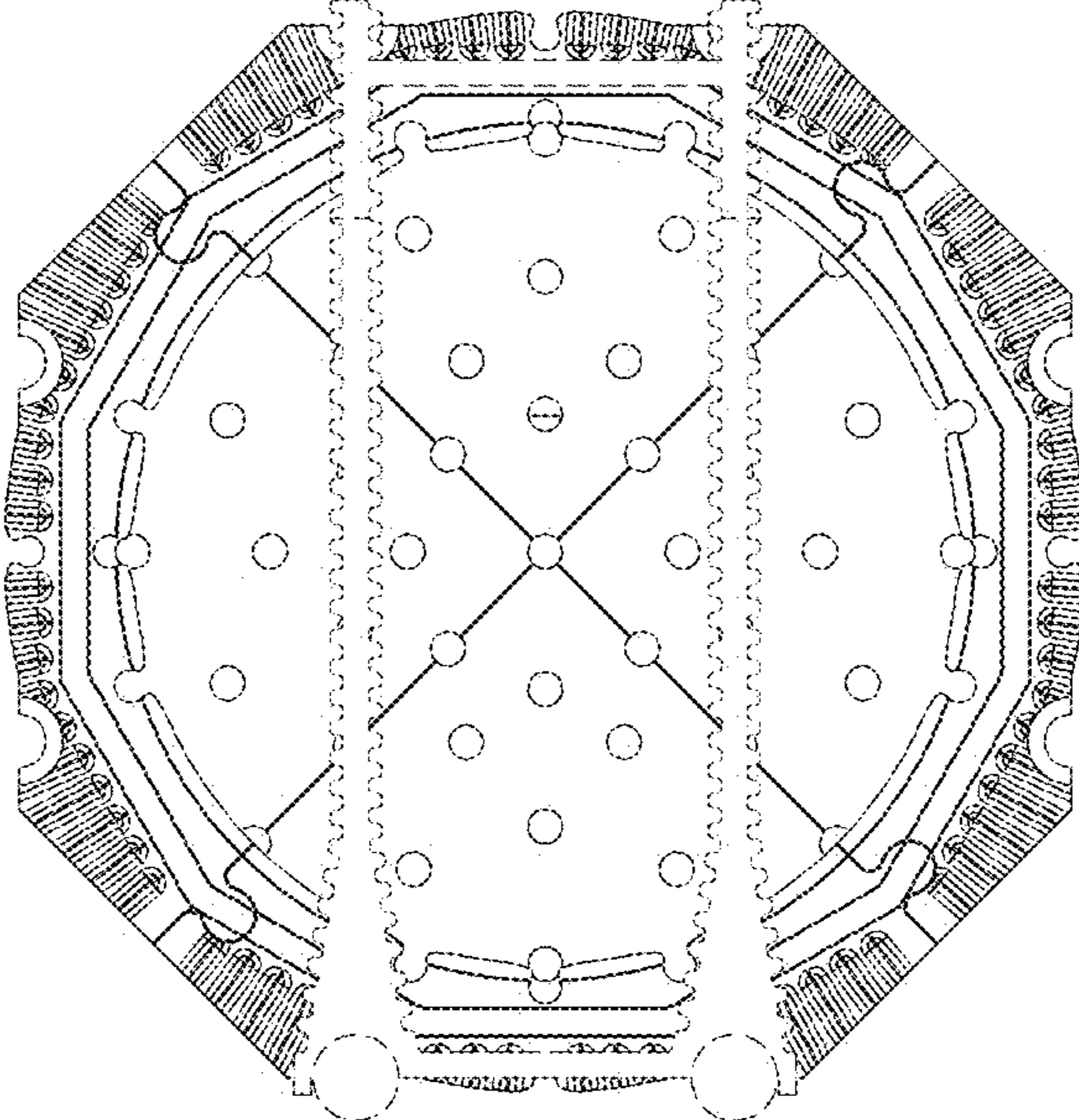


Figure 1

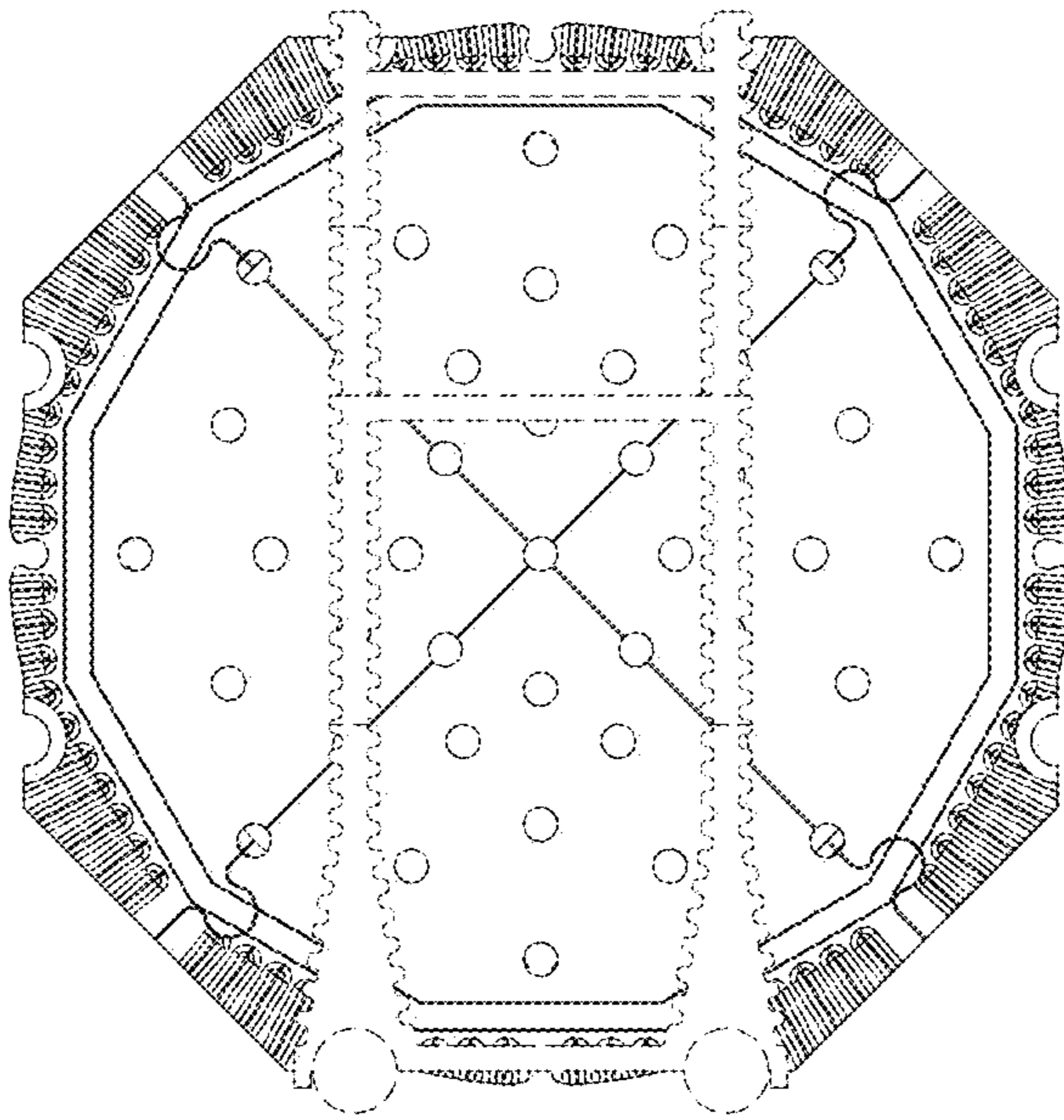


Figure 2

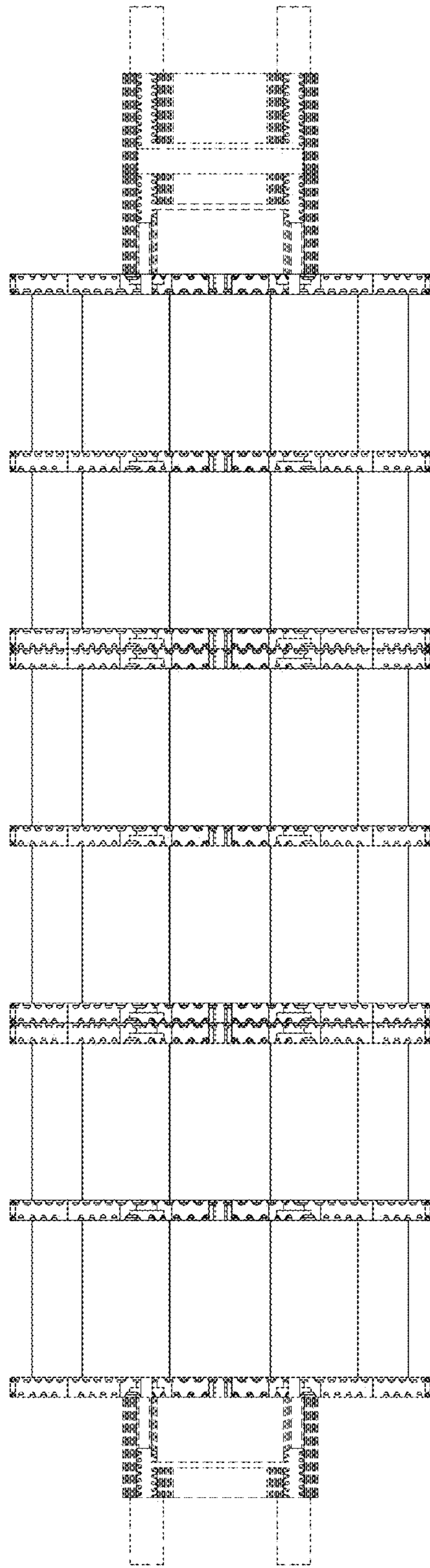


Figure 3

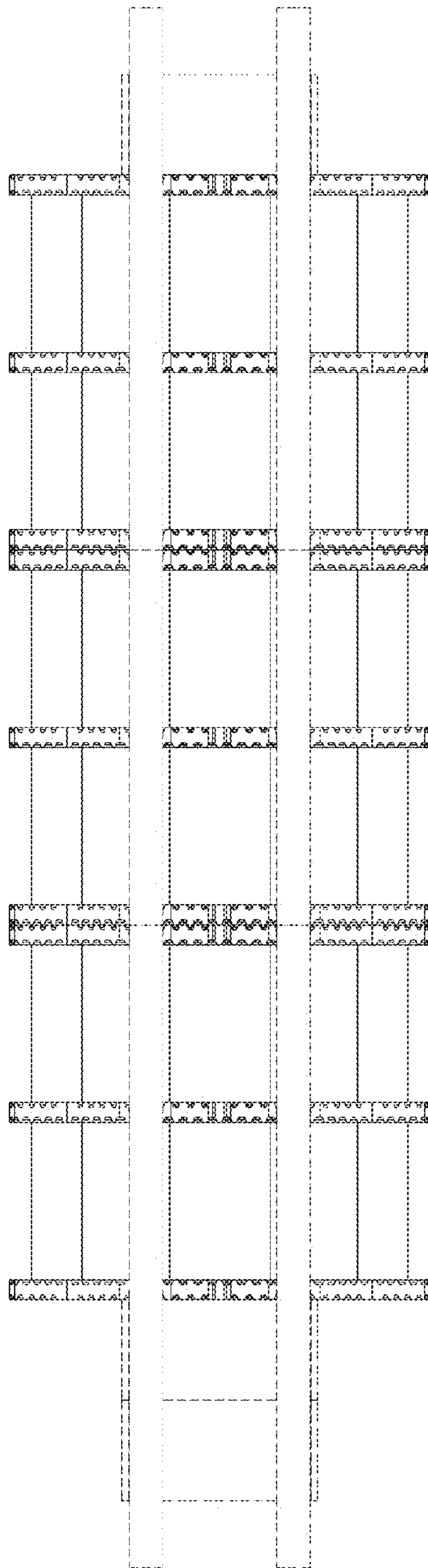


Figure 4

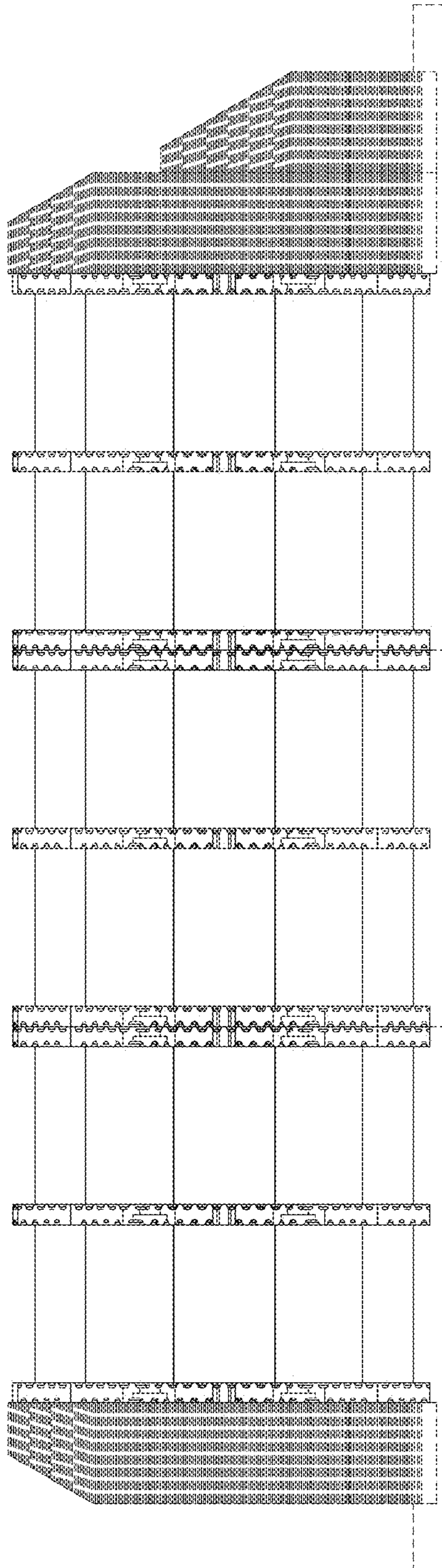


Figure 5

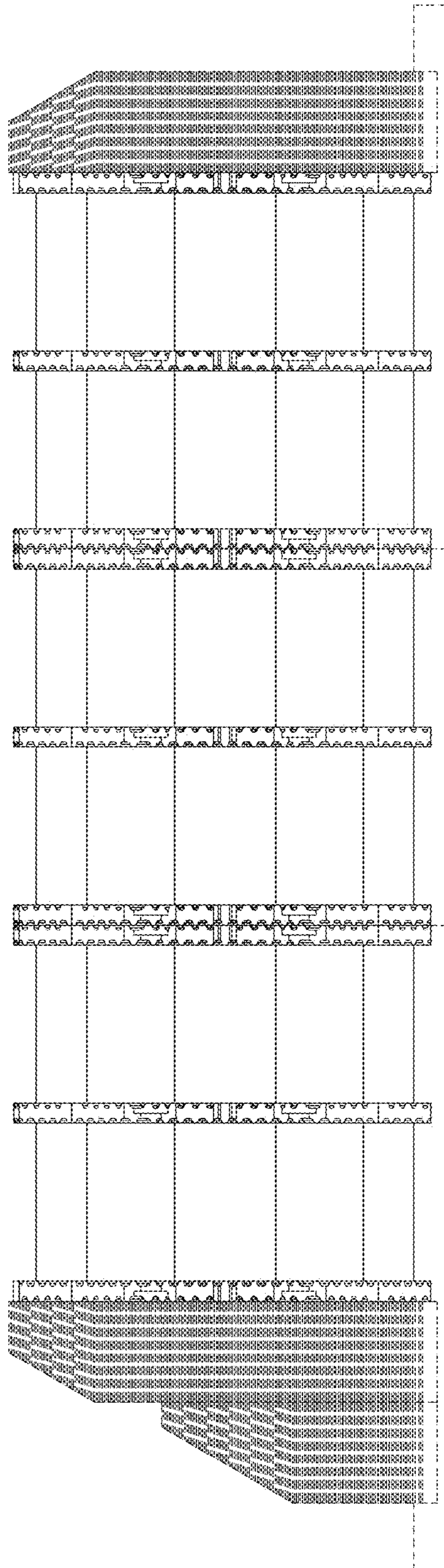


Figure 6

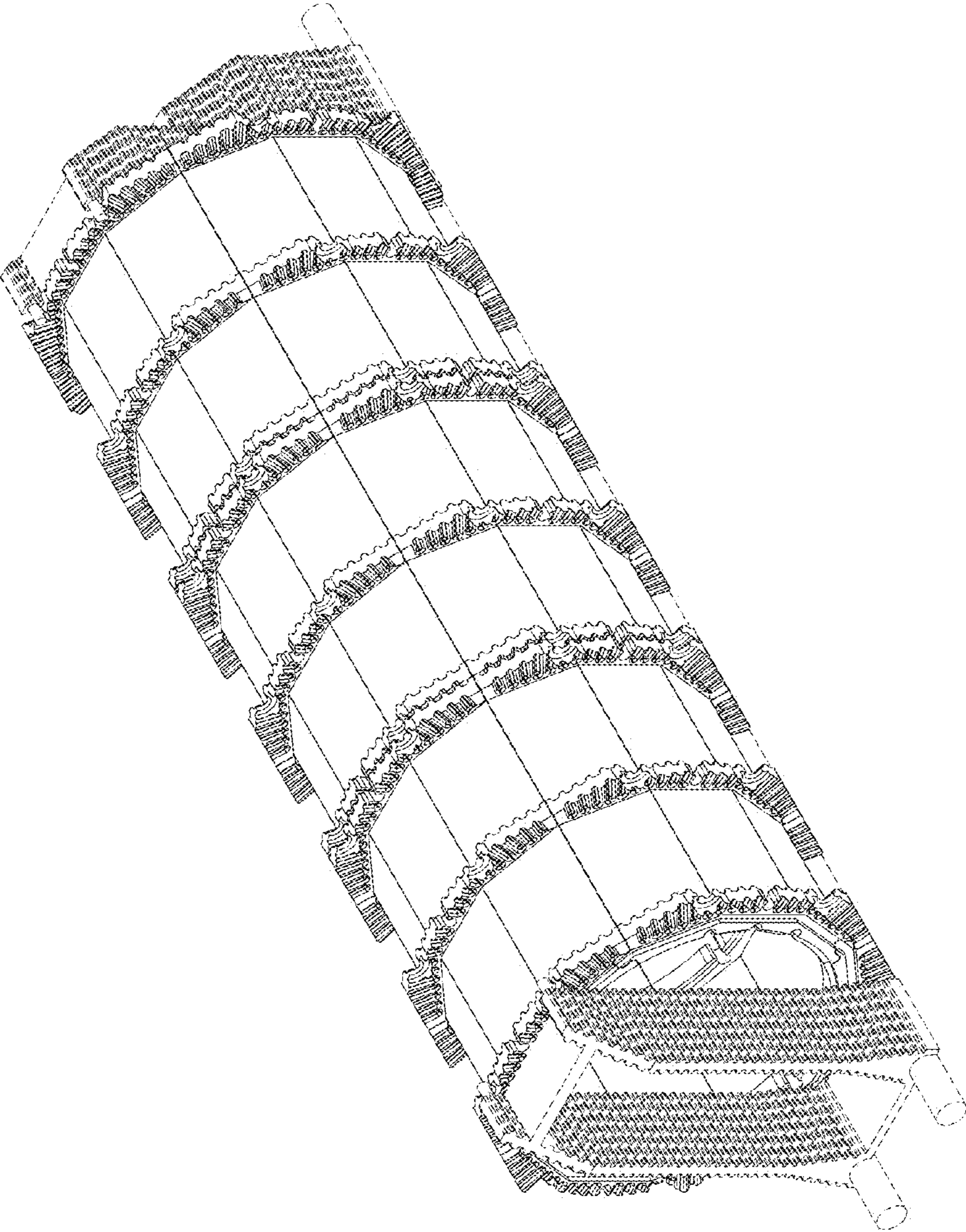


Figure 7



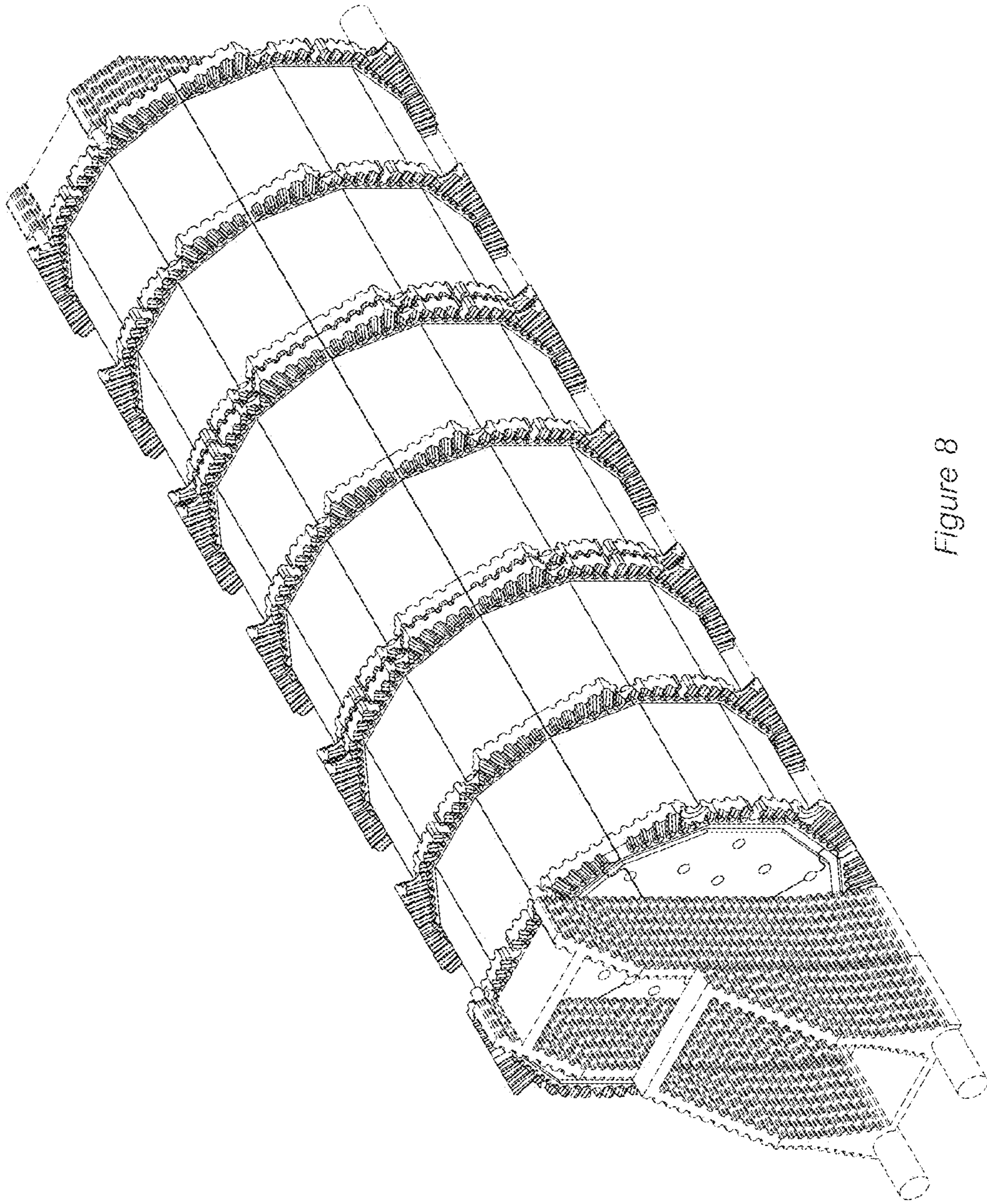


Figure 8

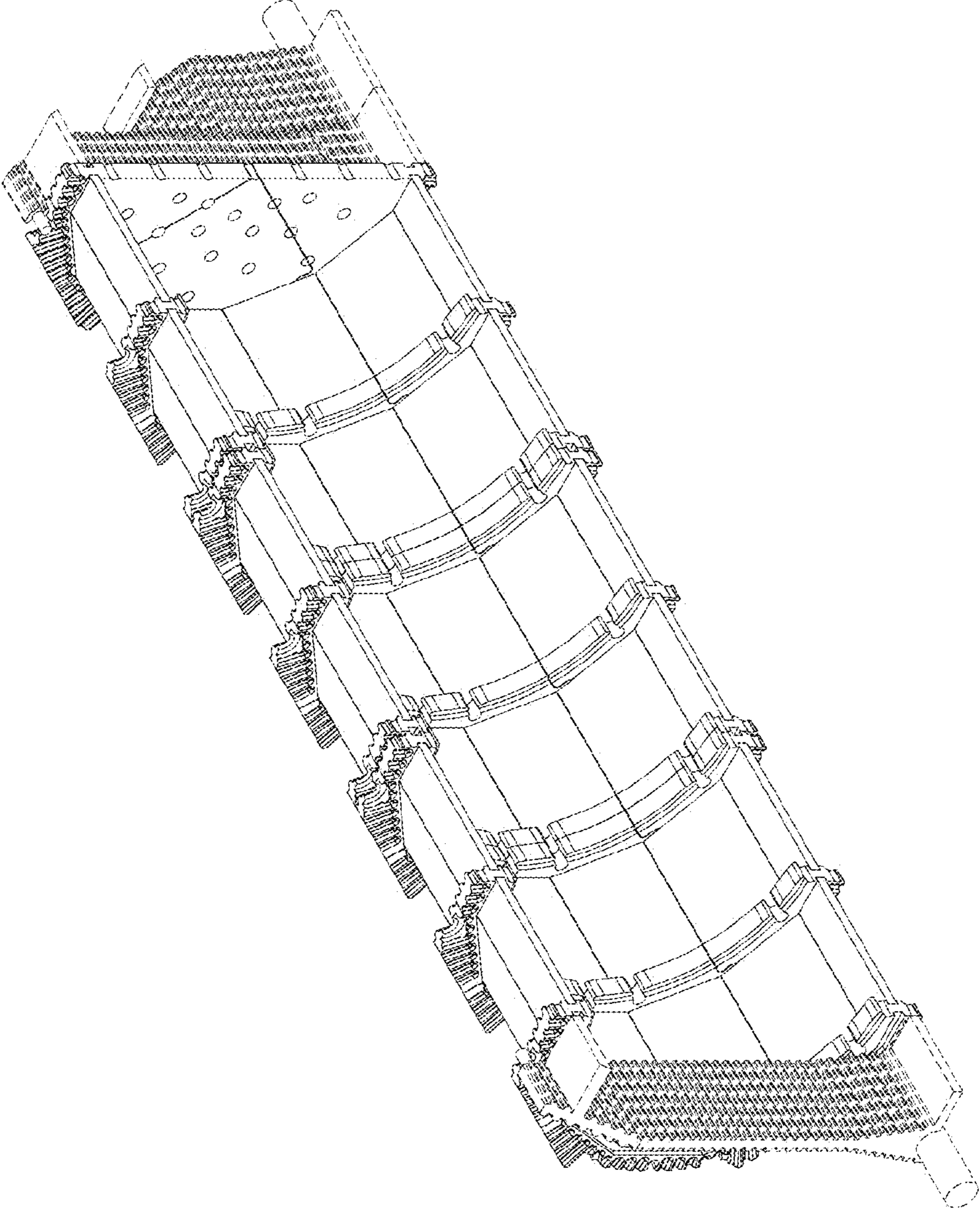


Figure 9