



US00D849215S

(12) **United States Design Patent** (10) **Patent No.:** **US D849,215 S**  
**Huan et al.** (45) **Date of Patent:** **\*\* May 21, 2019**

(54) **HEAT EXCHANGER**

7/06; F28D 7/10; F28D 2001/0266; B21D  
53/02; F28B 1/06

See application file for complete search history.

(71) Applicant: **Danfoss Micro Channel Heat Exchanger (Jiaxing) Co., Ltd.**, Zhejiang (CN)

(56) **References Cited**

U.S. PATENT DOCUMENTS

(72) Inventors: **Jin Huan**, Zhejiang (CN); **Jin Junfeng**, Zhejiang (CN); **Lu Xiangxun**, Zhejiang (CN)

5,787,973 A \* 8/1998 Kado ..... F28F 9/182  
165/153  
5,910,167 A \* 6/1999 Reinke ..... F25B 39/028  
165/174

(73) Assignee: **DANFOSS MICRO CHANNEL HEAT EXCHANGER (JIAXING) CO., LTD.**, Zhejiang (CN)

D717,932 S 11/2014 Mross et al.  
D787,033 S \* 5/2017 Huan ..... D23/323  
2006/0131009 A1 6/2006 Nies  
2006/0196052 A1 9/2006 Lesage  
2006/0196647 A1 \* 9/2006 Mathur ..... F28D 1/0435  
165/140  
2008/0173434 A1 \* 7/2008 Matter ..... F28D 1/0417  
165/150  
2009/0314475 A1 \* 12/2009 Jeon ..... F28D 1/0391  
165/109.1  
2011/0139425 A1 6/2011 Beamer  
(Continued)

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

(21) Appl. No.: **29/637,666**

(22) Filed: **Feb. 21, 2018**

*Primary Examiner* — Karen S Acker  
*Assistant Examiner* — Steven B Reinholdt, Jr.  
(74) *Attorney, Agent, or Firm* — McCormick, Paulding & Huber LLP

**Related U.S. Application Data**

(62) Division of application No. 29/588,656, filed on Dec. 22, 2016.

**Foreign Application Priority Data**

Jul. 5, 2016 (CN) ..... 2016 3 0303271

(51) **LOC (11) Cl.** ..... **23-03**

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

(58) **Field of Classification Search**  
USPC ..... D23/323, 322, 324, 325, 326, 327, 330,  
D23/386, 352, 354, 449; D7/407;  
D13/179

CPC ..... F28F 1/06; F28F 1/16; F28F 1/21; F28F  
9/02; F28D 1/047; F28D 13/12; F28D

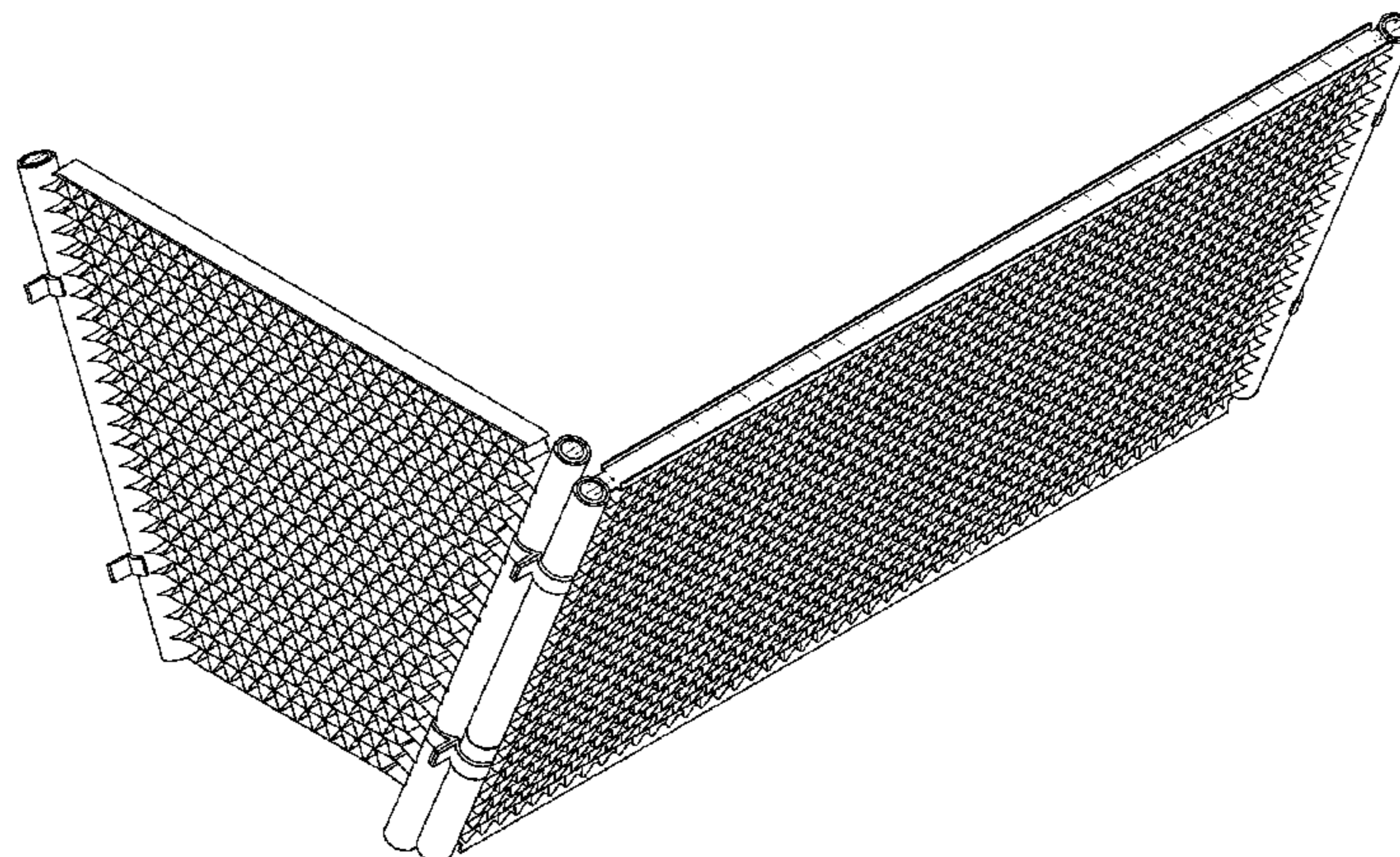
(57) **CLAIM**

The ornamental design for a heat exchanger, substantially as shown and described.

**DESCRIPTION**

FIG. 1 is a front, left side and top perspective view of a heat exchanger comprising a new, original and ornamental design;  
FIG. 2 is a front view thereof;  
FIG. 3 is a rear view thereof;  
FIG. 4 is a left side view thereof;  
FIG. 5 is a right side view thereof;  
FIG. 6 is a top view thereof; and,  
FIG. 7 is a bottom view thereof.

(Continued)



The broken lines show portions of the heat exchanger that form no part of the claimed design.

**1 Claim, 7 Drawing Sheets**

(56)

**References Cited**

U.S. PATENT DOCUMENTS

2011/0247791	A1*	10/2011	Jiang .....	F28D 1/047 165/173
2012/0227944	A1*	9/2012	Moisidis .....	F28D 1/047 165/172
2013/0199760	A1	8/2013	Kadle et al.	
2013/0292103	A1*	11/2013	Eindhoven .....	F28B 1/06 165/173
2014/0366571	A1*	12/2014	Gao .....	F25B 39/02 62/498
2014/0374077	A1*	12/2014	Lee .....	F28F 1/12 165/173
2015/0168071	A1	6/2015	Gao et al.	
2017/0160016	A1	6/2017	Lee et al.	
2017/0299266	A1	10/2017	Eindhoven	
2018/0126822	A1	5/2018	Nishino et al.	
2018/0149432	A1	5/2018	Kono et al.	

\* cited by examiner

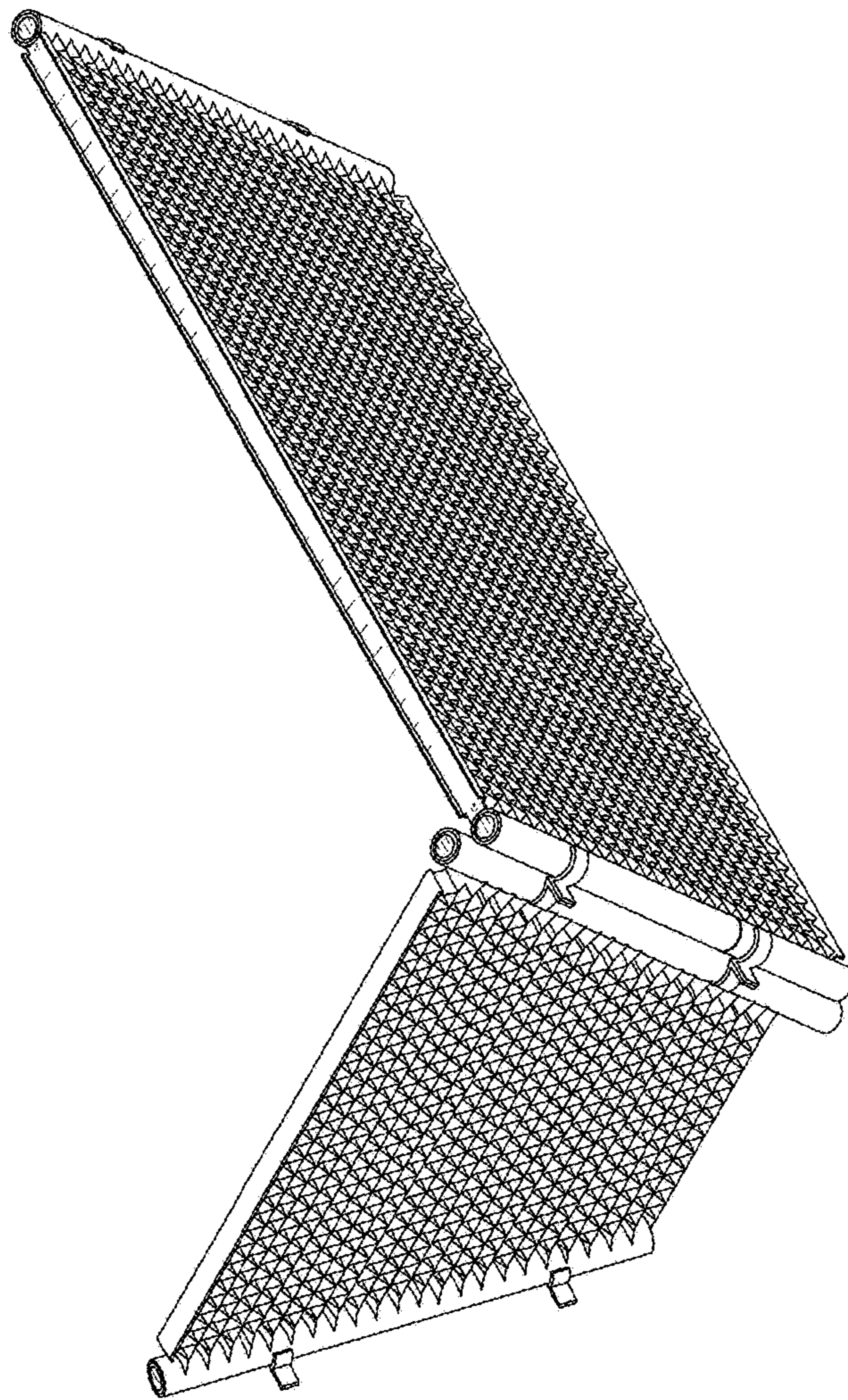


FIG. 1

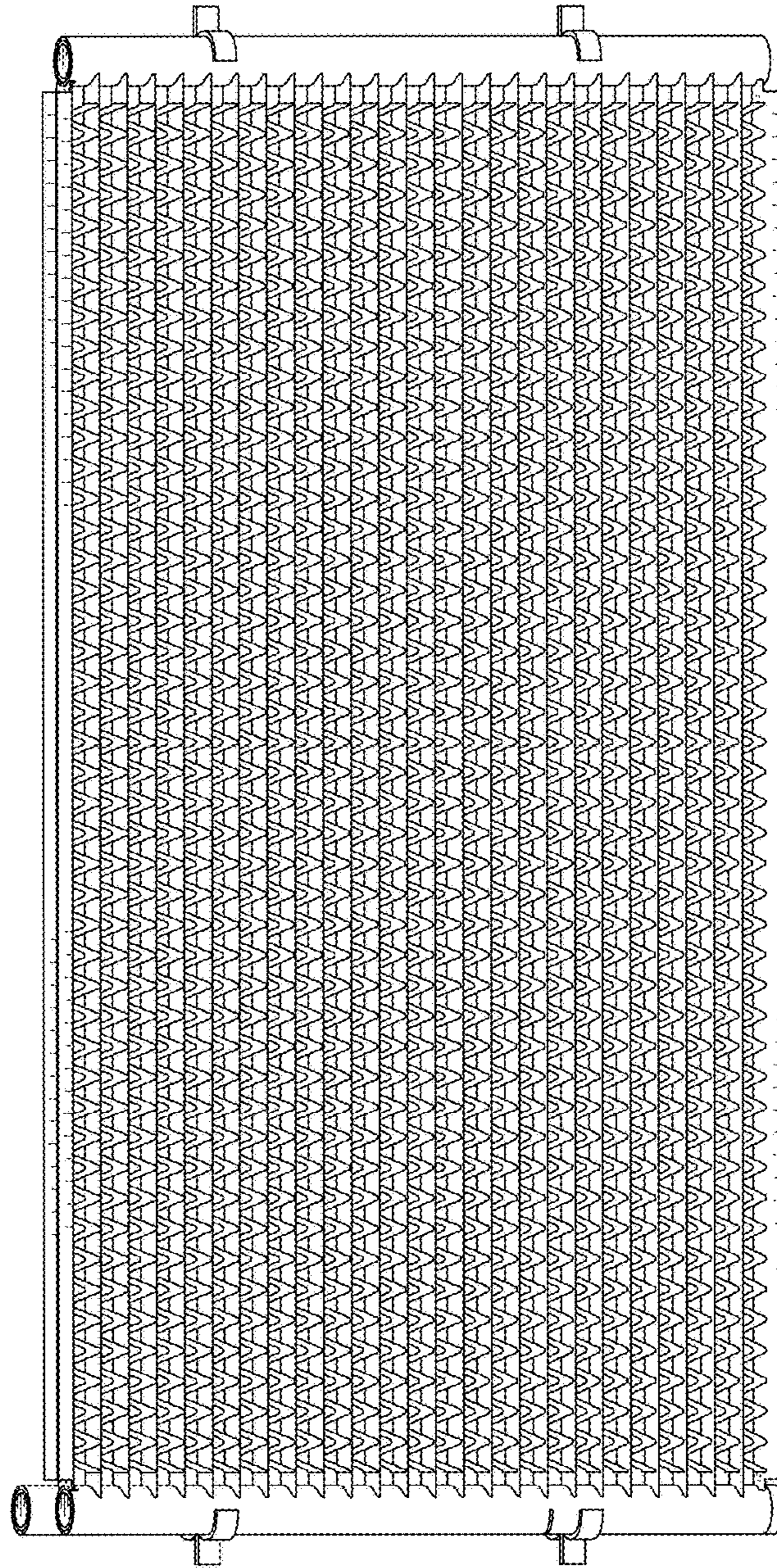


FIG. 2

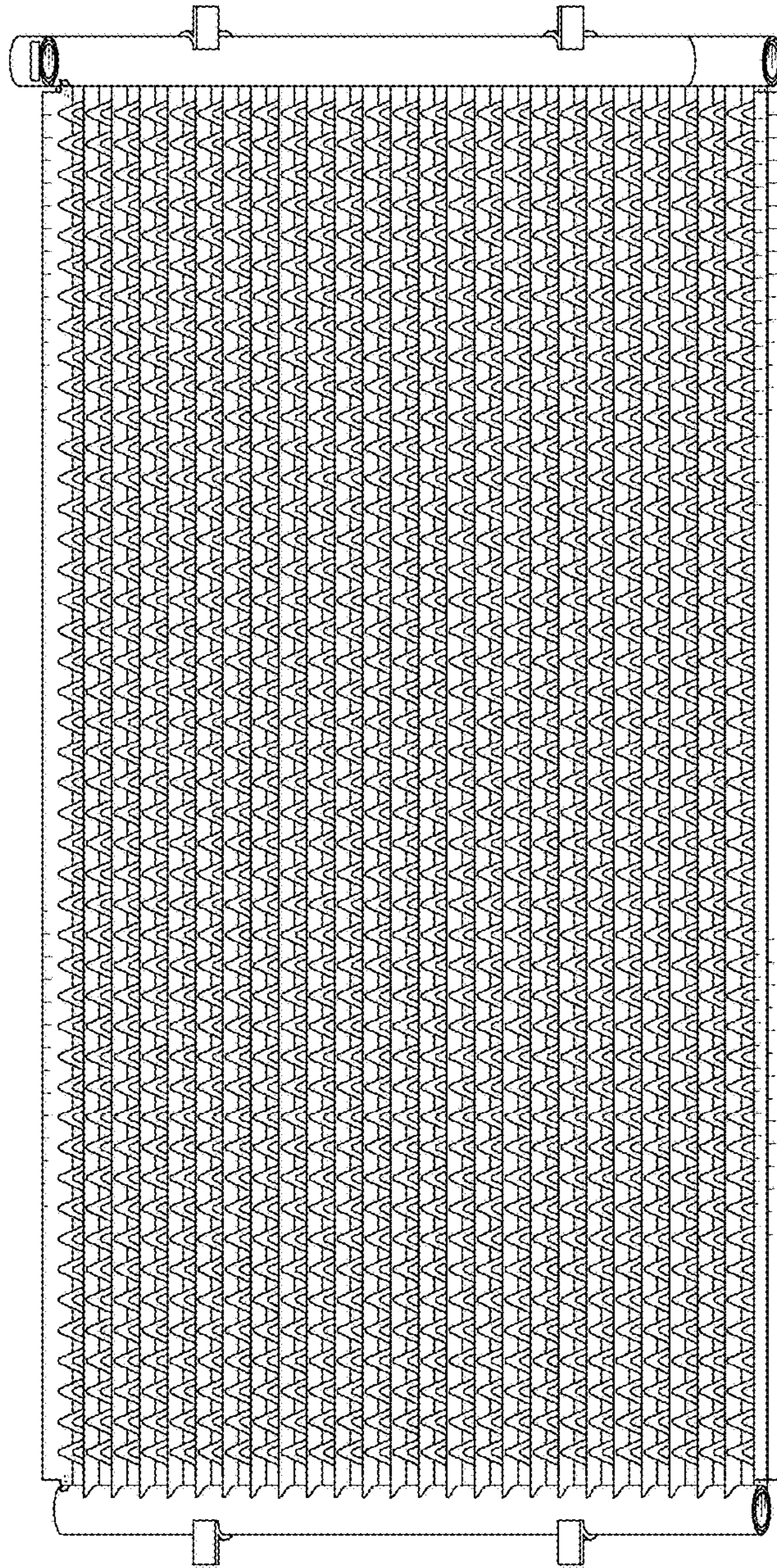


FIG. 3

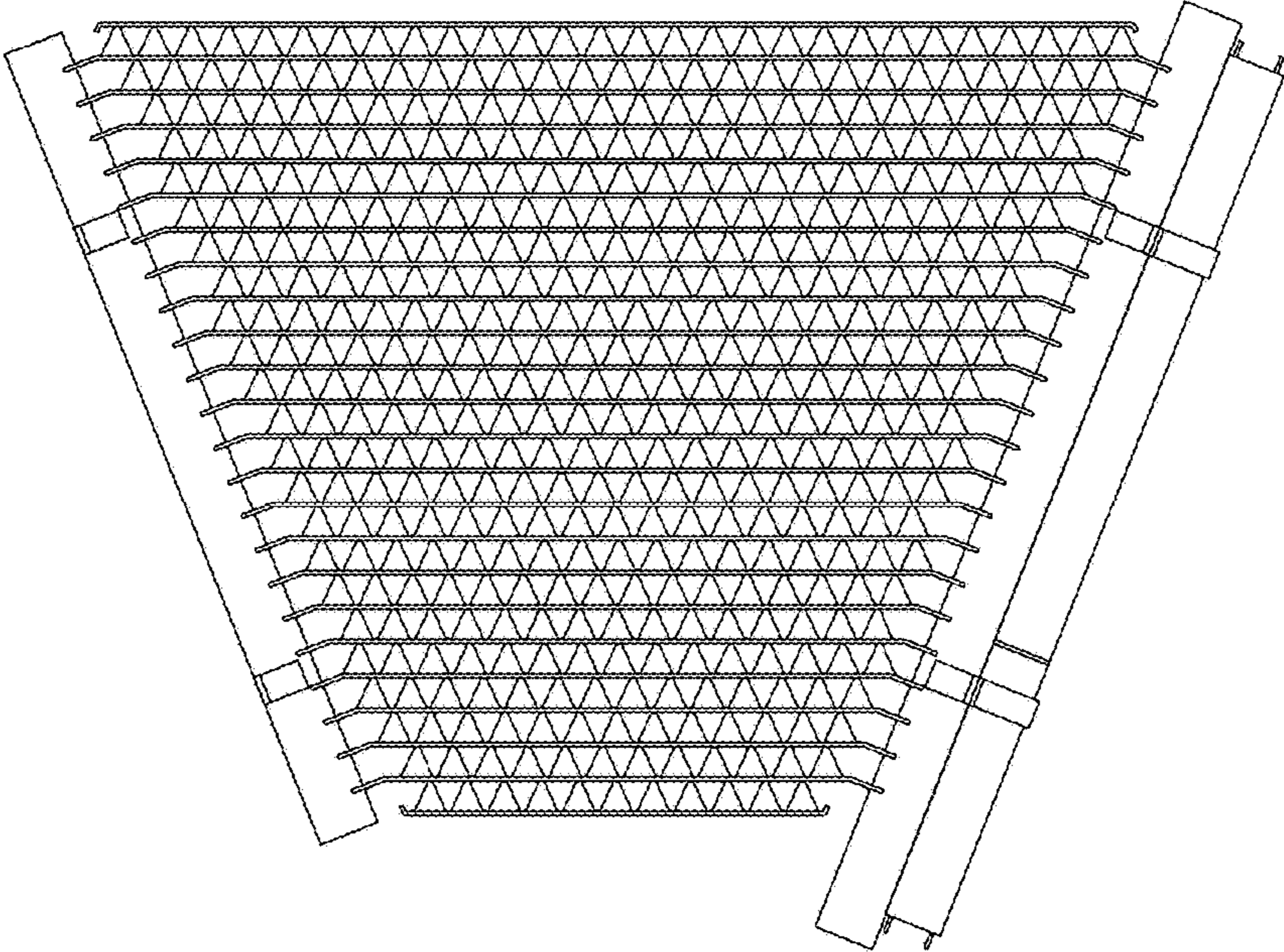


FIG. 4

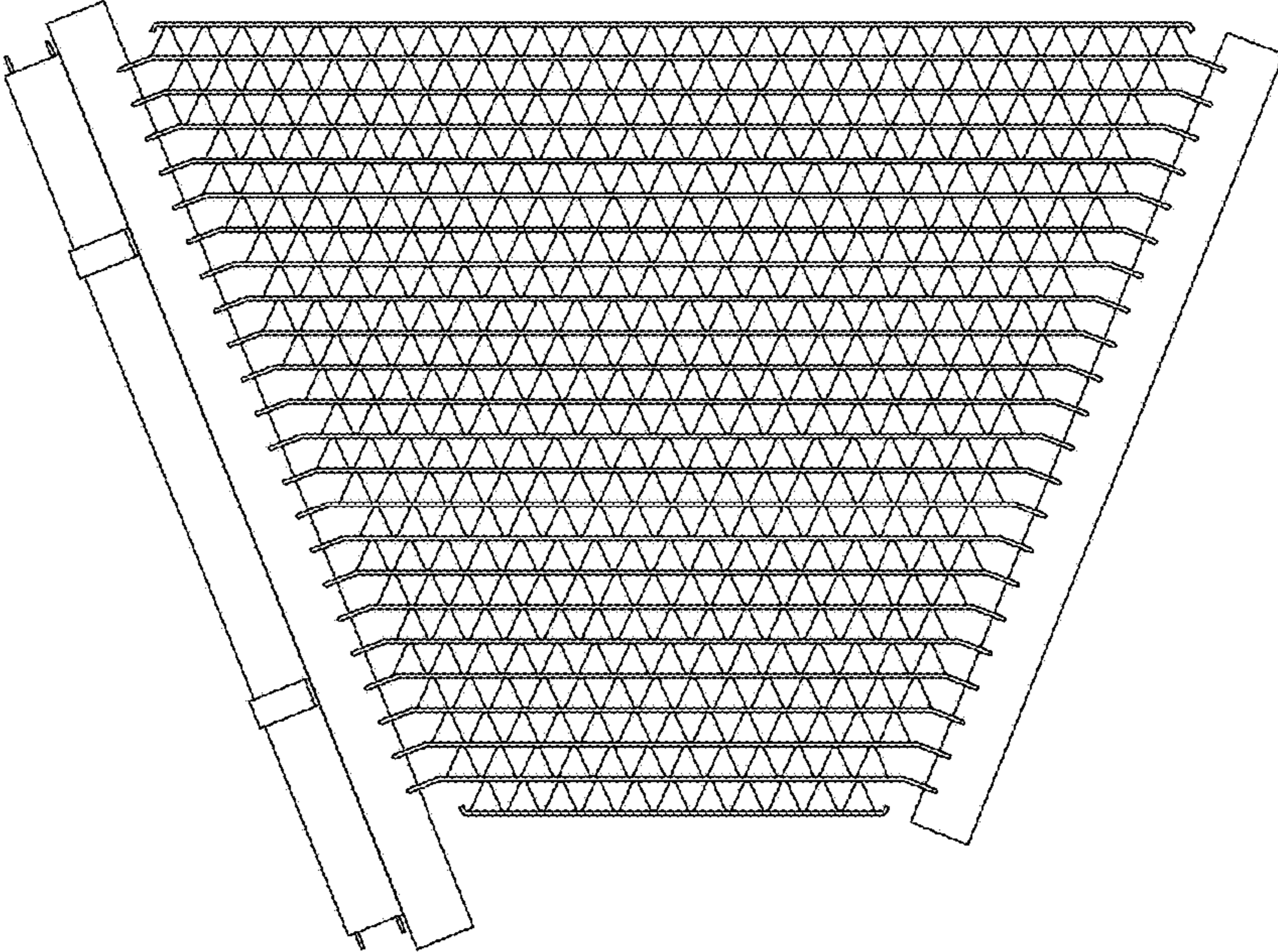


FIG. 5

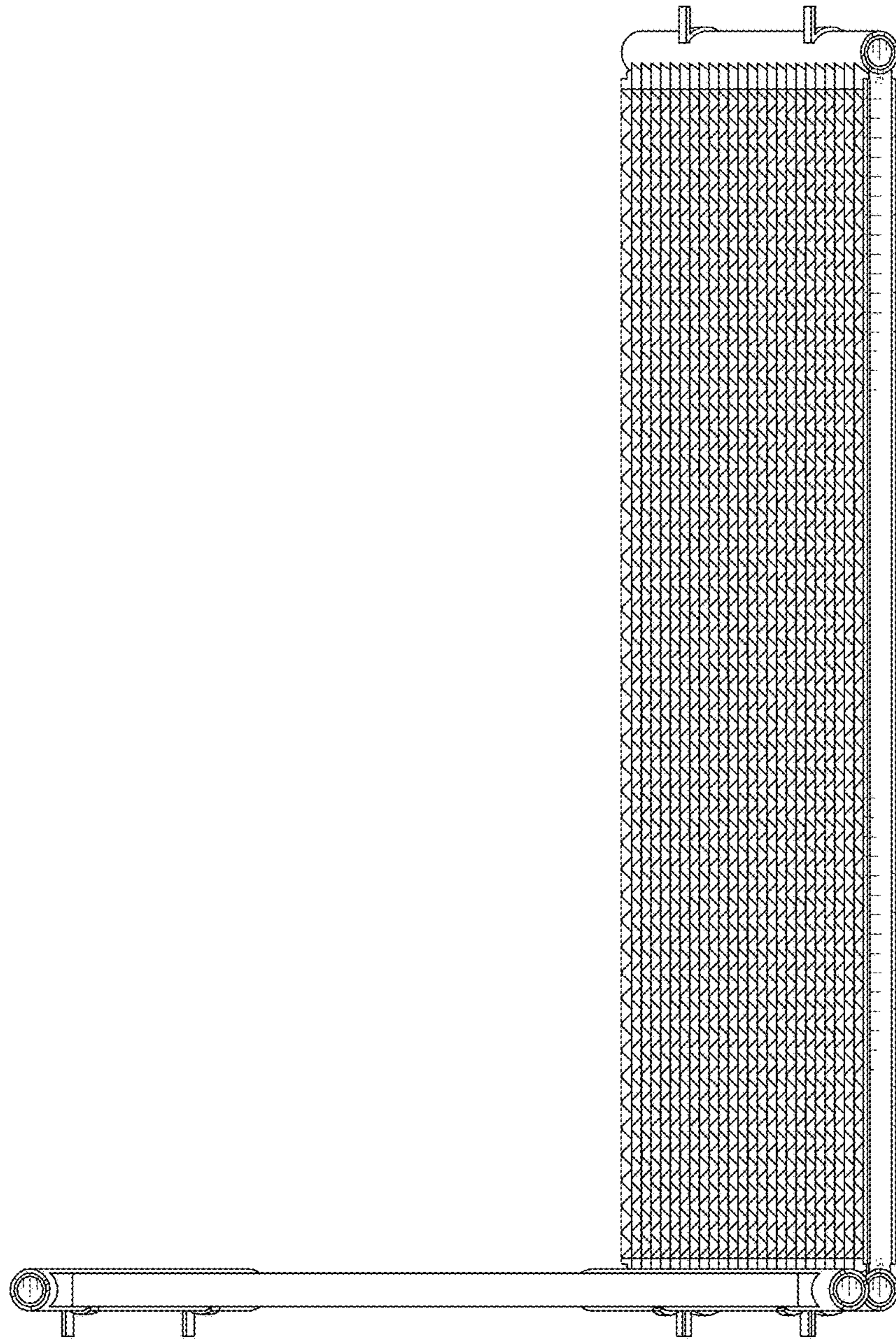


FIG. 6



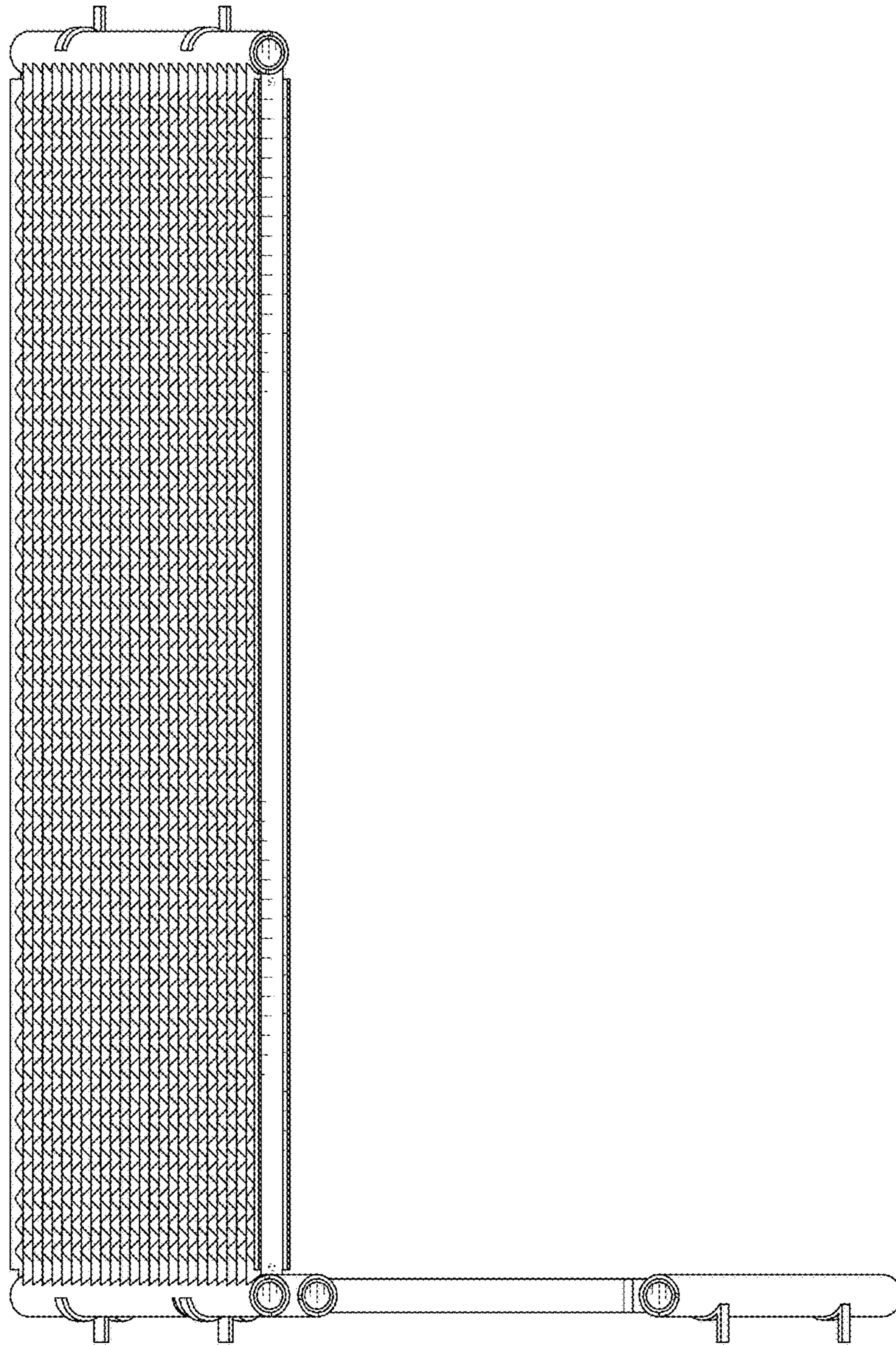


FIG. 7