



US00D943507S

(12) **United States Design Patent** (10) **Patent No.:** **US D943,507 S**
Conley et al. (45) **Date of Patent:** **** Feb. 15, 2022**

(54) **PHOTOVOLTAIC DEVICE**

FOREIGN PATENT DOCUMENTS

(71) Applicant: **First Solar, Inc.**, Tempe, AZ (US)

JP 1396907 S 9/2010
JP 1495627 S 4/2014

(72) Inventors: **Joshua Conley**, Perrysburg, OH (US);
Benjamin De Fresart, Chandler, AZ (US);
Peter Hruby, Scottsdale, AZ (US);
Matthew Kuzila, Pheonix, AZ (US);
Weixin Li, Waterville, OH (US);
Joseph Lindgren, Perrysburg, OH (US);
Daniel Smith, Gilbert, AZ (US);
Thomas Truman, Toledo, OH (US);
Charles Wickersham, Perrysburg, OH (US)

OTHER PUBLICATIONS

Bredder et al., "The Shape of Things to Come", Web Article, LinkedIn, Aug. 2017, pp. 1-4, <https://www.linkedin.com/pulse/shape-things-come-roger-bredder/>.

(Continued)

Primary Examiner — Derrick E Holland

(74) *Attorney, Agent, or Firm* — MacMillan, Sobanski & Todd, LLC

(73) Assignee: **First Solar, Inc.**, Tempe, AZ (US)

(57) **CLAIM**

We claim the ornamental design for a photovoltaic device, substantially as shown and described.

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

DESCRIPTION

(21) Appl. No.: **29/710,449**

(22) Filed: **Oct. 23, 2019**

Related U.S. Application Data

(63) Continuation of application No. 29/687,646, filed on Apr. 15, 2019, which is a continuation of application (Continued)

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

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

(58) **Field of Classification Search**
USPC D13/102, 101, 103, 107, 108, 199 (Continued)

FIG. 1 is a top perspective view of a first embodiment of a photovoltaic device showing the new design; FIG. 2 is a left side elevational view thereof; FIG. 3 is a right side elevational view thereof; FIG. 4 is a front side elevational view thereof; FIG. 5 is a back side elevational view thereof; FIG. 6 is a top plan view thereof; and FIG. 7 is a bottom plan view thereof; FIG. 8 is a top perspective view of a second embodiment of a photovoltaic device showing the new design; FIG. 9 is a left side elevational view thereof; FIG. 10 is a right side elevational view thereof; FIG. 11 is a front side elevational view thereof; FIG. 12 is a back side elevational view thereof; FIG. 13 is a top plan view thereof; and FIG. 14 is a bottom plan view thereof; FIG. 15 is a top perspective view of a third embodiment of a photovoltaic device showing the new design; FIG. 16 is a left side elevational view thereof; FIG. 17 is a right side elevational view thereof; FIG. 18 is a front side elevational view thereof; FIG. 19 is a back side elevational view thereof;

(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

D389,454 S 1/1998 Mori
D524,727 S 7/2006 Yamashita et al.
(Continued)

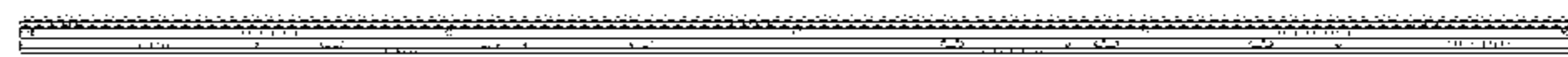
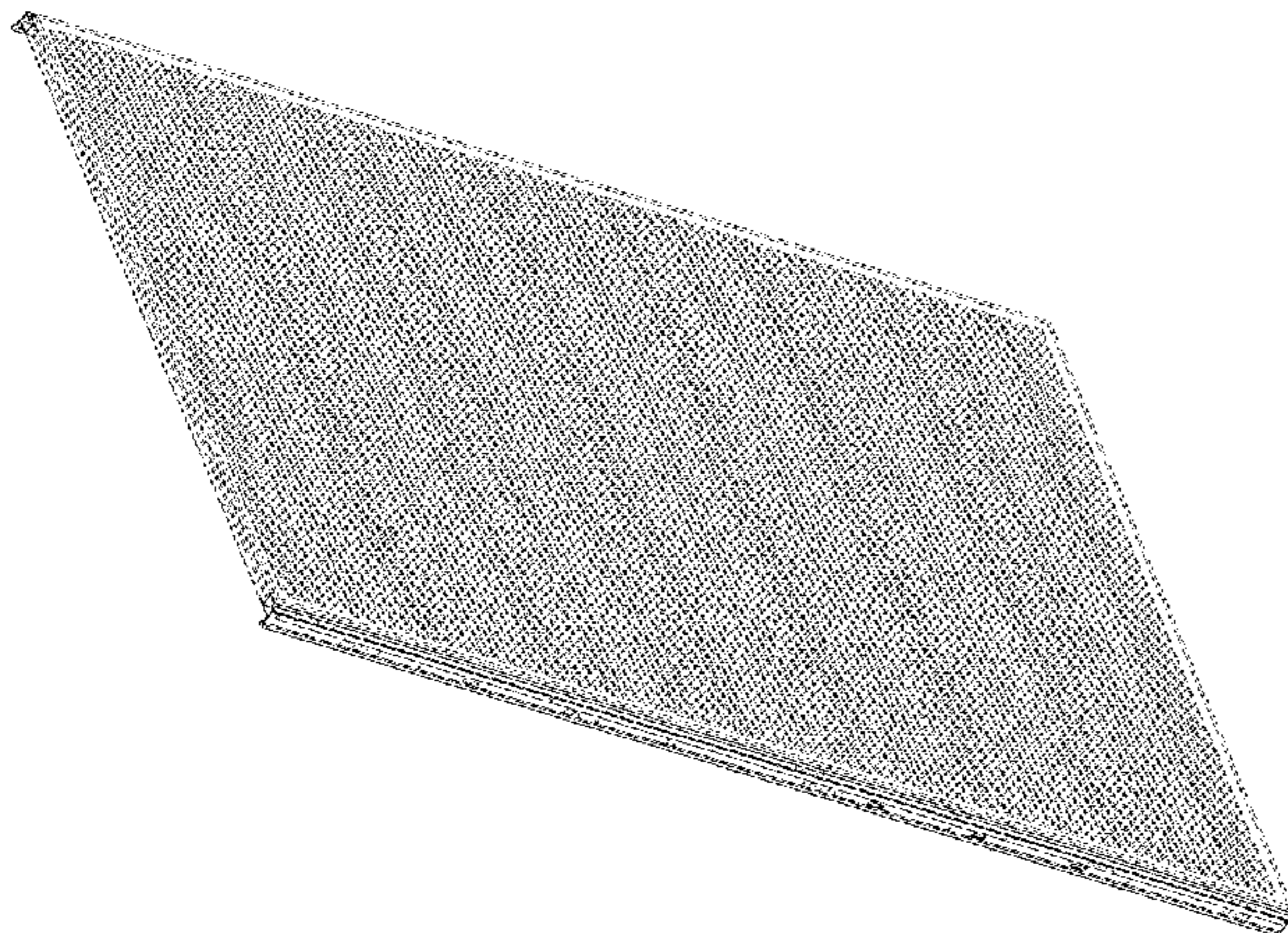


FIG. 20 is a top plan view thereof; and
 FIG. 21 is a bottom plan view thereof;
 FIG. 22 is a top perspective view of a fourth embodiment of a photovoltaic device showing the new design;
 FIG. 23 is a left side elevational view thereof;
 FIG. 24 is a right side elevational view thereof;
 FIG. 25 is a front side elevational view thereof;
 FIG. 26 is a back side elevational view thereof;
 FIG. 27 is a top plan view thereof; and,
 FIG. 28 is a bottom plan view thereof.
 The broken lines shown represent the portions of the photovoltaic device that form no part of the claimed design. All of the lines on the top surface of FIGS. 1, 6, 8, 13, 15, 20, 22, and 27 are broken lines and from no part of the claimed design.

1 Claim, 16 Drawing Sheets

Related U.S. Application Data

No. 29/628,278, filed on Dec. 4, 2017, now Pat. No. Des. 848,362.

(58) **Field of Classification Search**

CPC H01L 31/00; H01L 31/18; H01L 31/042; H01L 31/045; H01L 31/048; H01L 31/052; H01L 31/054; H01L 31/0475; H01L 31/0485; H01M 10/052; H01M 10/465; H02S 30/10; H02S 30/20; H02S 10/40; H02S 40/42; Y02E 10/50; Y02E 10/52; Y10S 136/291; Y10S 136/293; H02J 7/355; G06F 1/1628

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,644,552	B2 *	1/2010	Kuipers	E04B 2/7424 52/481.2
D625,695	S *	10/2010	Wieting	D13/182
D644,986	S	9/2011	Ross et al.	
D644,987	S *	9/2011	Easier	D13/102
D662,042	S	6/2012	Yeh	
D696,187	S	12/2013	Endoh et al.	
D697,022	S *	1/2014	Truthseeker	D13/102
D739,345	S	9/2015	Buller et al.	

D749,501	S *	2/2016	Endoh	D13/102
9,551,510	B2	1/2017	Hartelius et al.	
D781,230	S	3/2017	Gibson et al.	
D788,027	S	5/2017	Gibson et al.	
D812,554	S	3/2018	Gibson et al.	
D813,153	S	3/2018	Gibson et al.	
D848,362	S	5/2019	Conley et al.	
2002/0043277	A1 *	4/2002	Yamawaki	H02S 40/34 136/244
2009/0314330	A1 *	12/2009	Saha	H01L 31/0504 136/246
2011/0315184	A1 *	12/2011	Kabade	H01L 31/0201 136/244
2014/0352773	A1 *	12/2014	Chuang	H01L 31/022433 136/256
2015/0155822	A1 *	6/2015	Feng	H02S 20/00 136/259
2019/0158016	A1	5/2019	Conley et al.	

OTHER PUBLICATIONS

Design of a Solar Cell Panel, "QS50DGF/QS50DGU", QS Solar, dated Nov. 20, 2009.

"Experience the new Series 6 module and discover why it's the next generation of Solar PV technology", First Solar, Web video published on LinkedIn, video length 2 min. 35 sec., Sep. 2017, available at <https://www.linkedin.com/feed/update/urn:li:activity:6343846726914449409>.

"First Solar Series 6: Thin Film Modules Next Generation Solar Technology", Brochure, First Solar, Sep. 2017, pp. 1-4, <http://www.firstsolar.com/-/media/First-Solar/Technical-Documents/Series-6-Datasheets/Series-6-Brochure.ashx?la=en>.

"First Solar Series 6: Next Generation Thin Film Solar Technology", Datasheet, First Solar, Sep. 2017, pp. 1-2, <http://www.firstsolar.com/-/media/First-Solar/Technical-Documents/Series-6-Datasheets/Series-6-Datasheet.ashx?la=en>.

Decision of Refusal, dated Oct. 15, 2019, Japanese Design Application No. 2018-012225.

Office Action, dated Dec. 17, 2018, Japanese Design Application No. 2018-012225.

Notification of Preliminary Rejection, dated Apr. 1, 2019, Japanese Design Application No. 2018-012225.

"Series 6: Gaining Ground—the Rise of Thin Film PV", Webinar presentation, First Solar, Sep. 2017, pp. 1-29, <http://www.firstsolar.com/en/About-Us/Press-Center/2017/09/The-Shape-of-Things>.

Strevel, "The Optimal PV Module Size", Series 6 Poster, Solar Power International conference, U.S., Sep. 2017, <http://www.firstsolar.com/-/media/First-Solar/Technical-Documents/Series-6-Datasheets/Series-6-Optimal-Module-Size-Factsheet.ashx>.

* cited by examiner

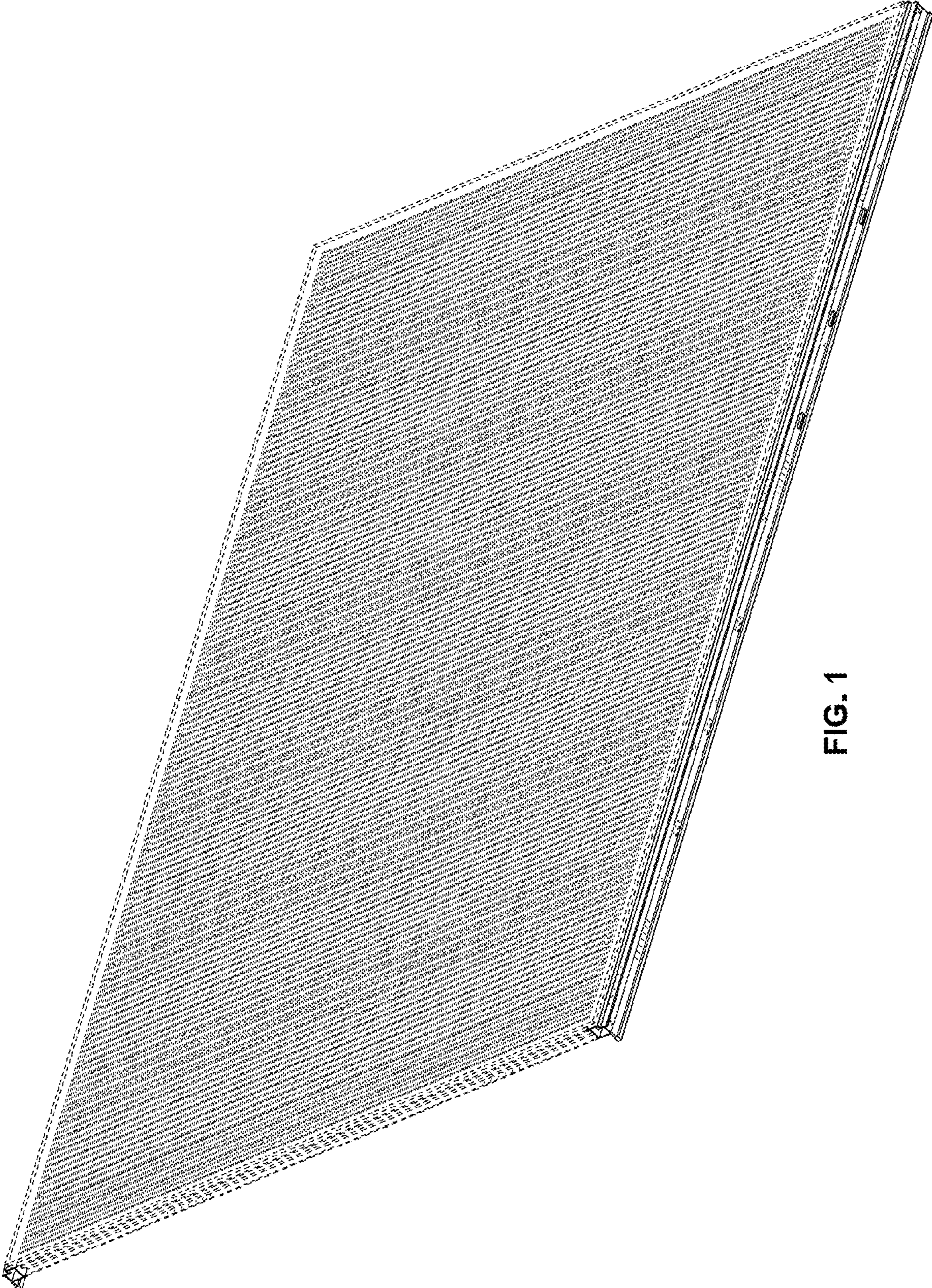


FIG. 1



FIG. 2

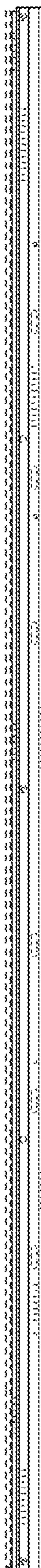


FIG. 3

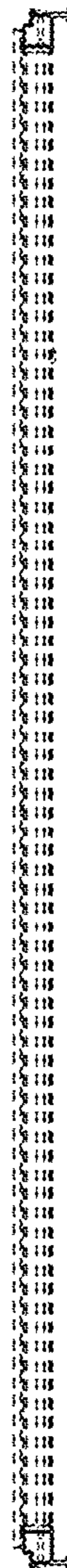


FIG. 4

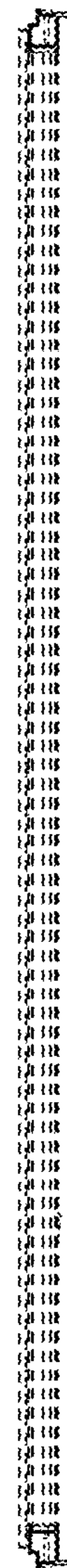


FIG. 5

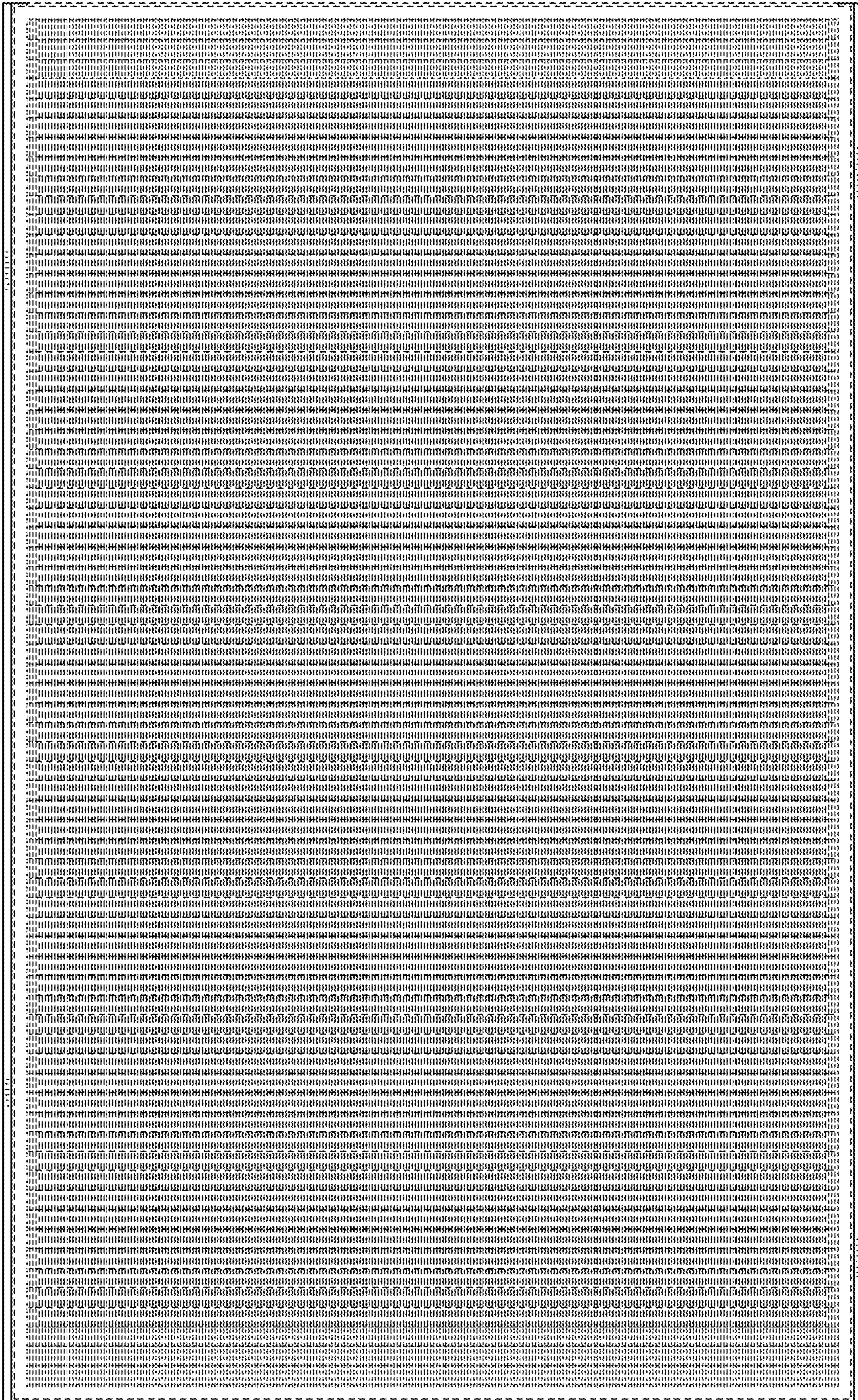


FIG. 6

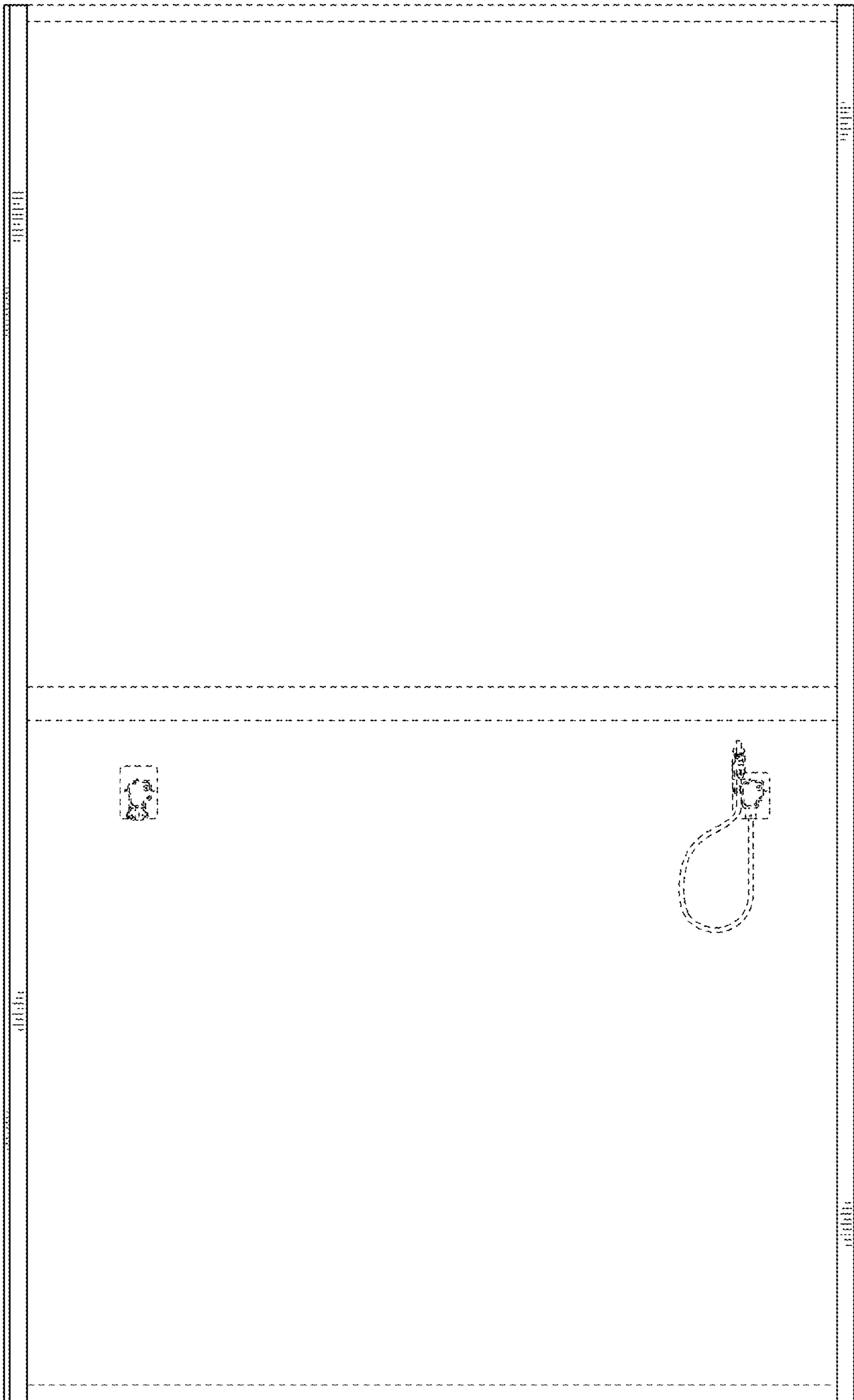


FIG. 7

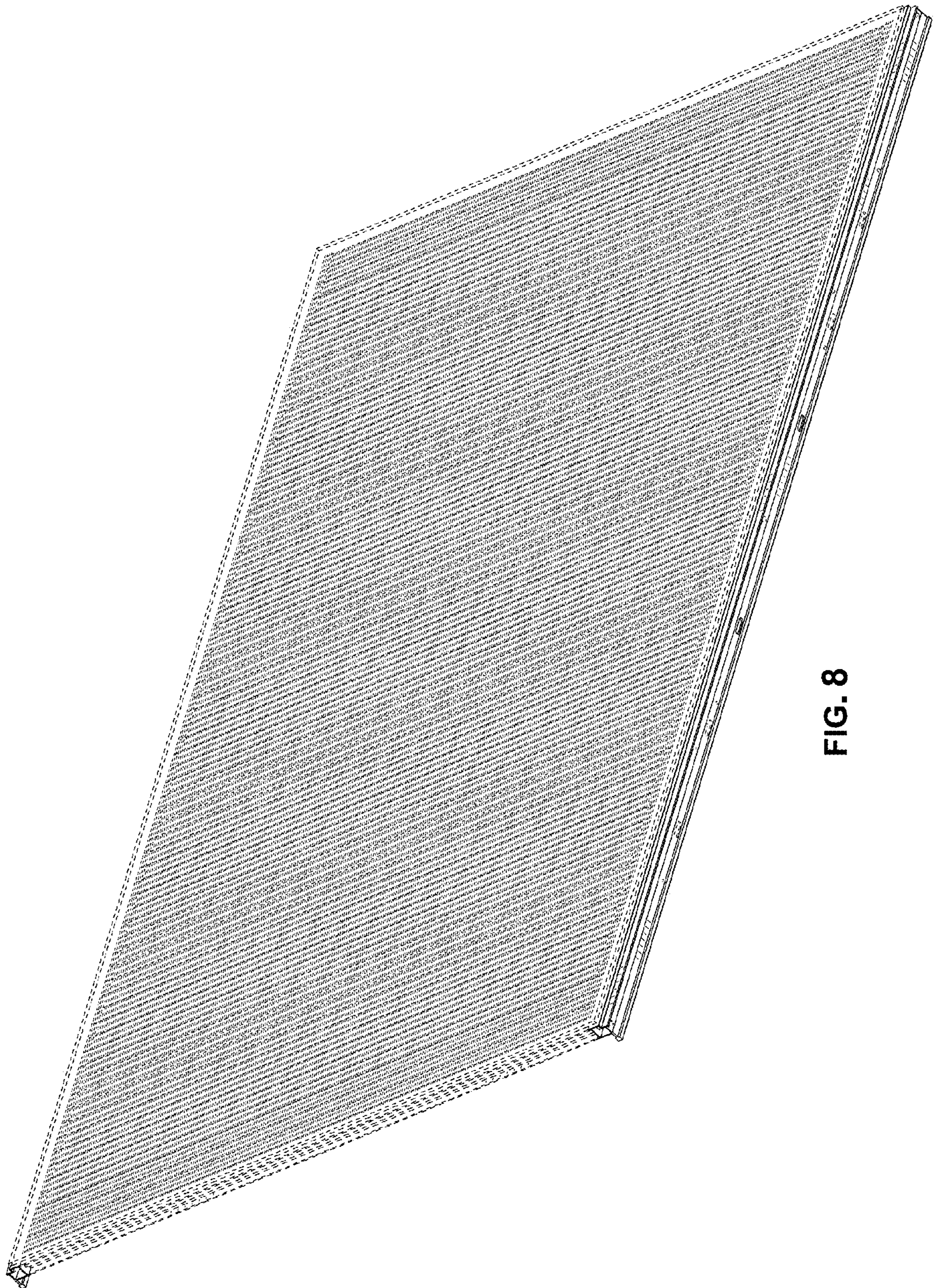


FIG. 8

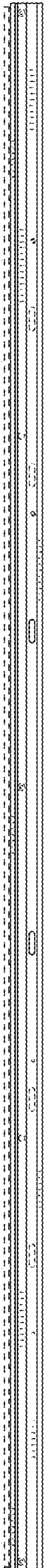


FIG. 9

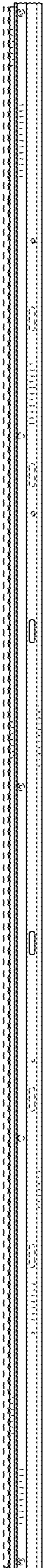


FIG. 10

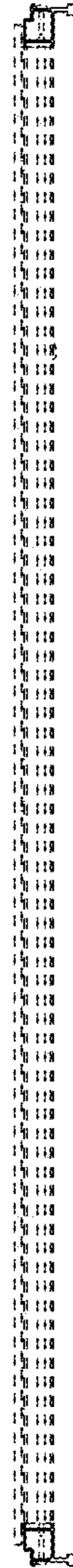


FIG. 11

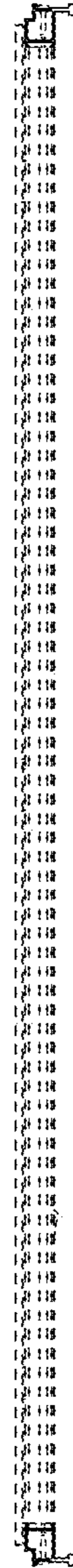


FIG. 12

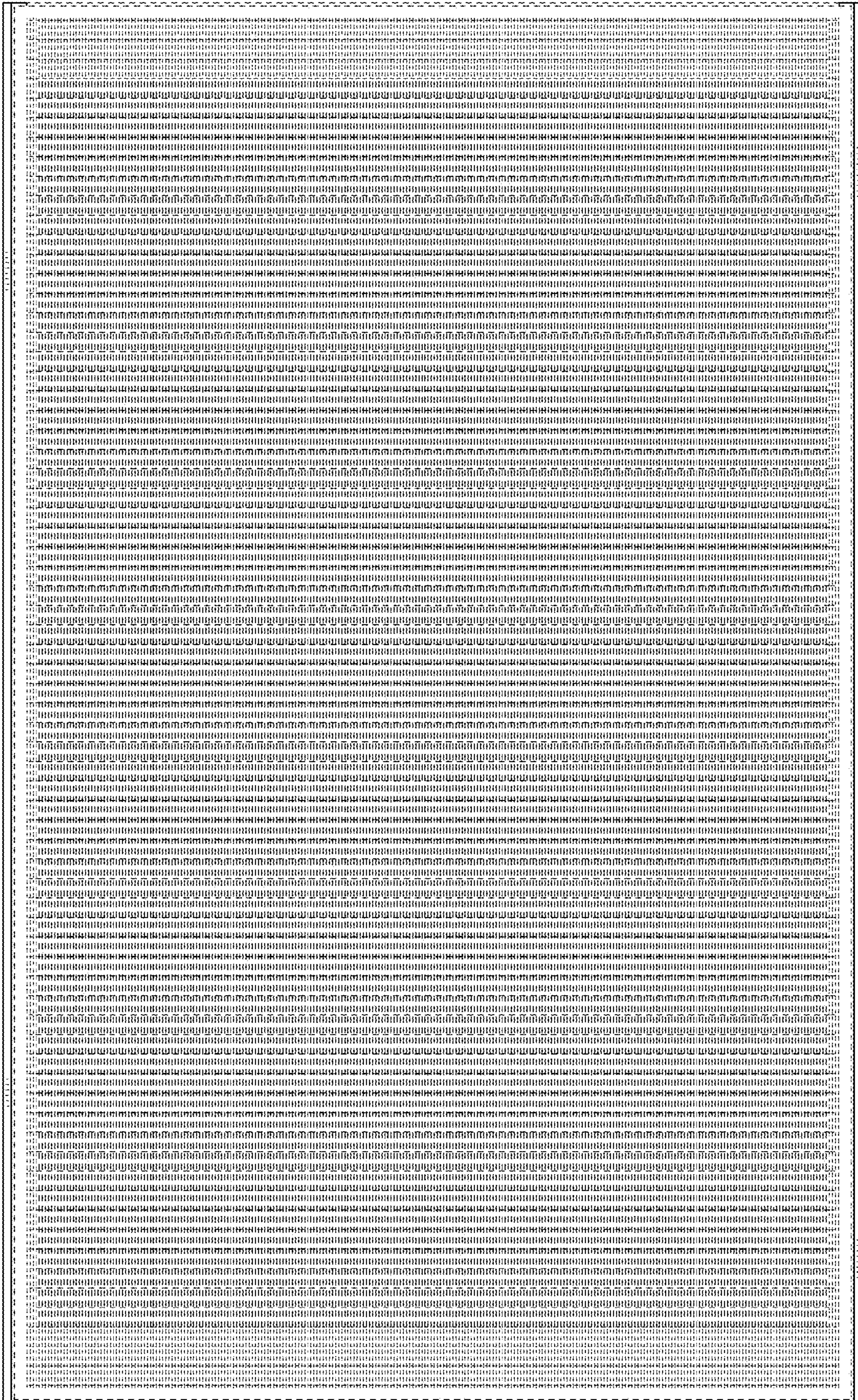


FIG. 13

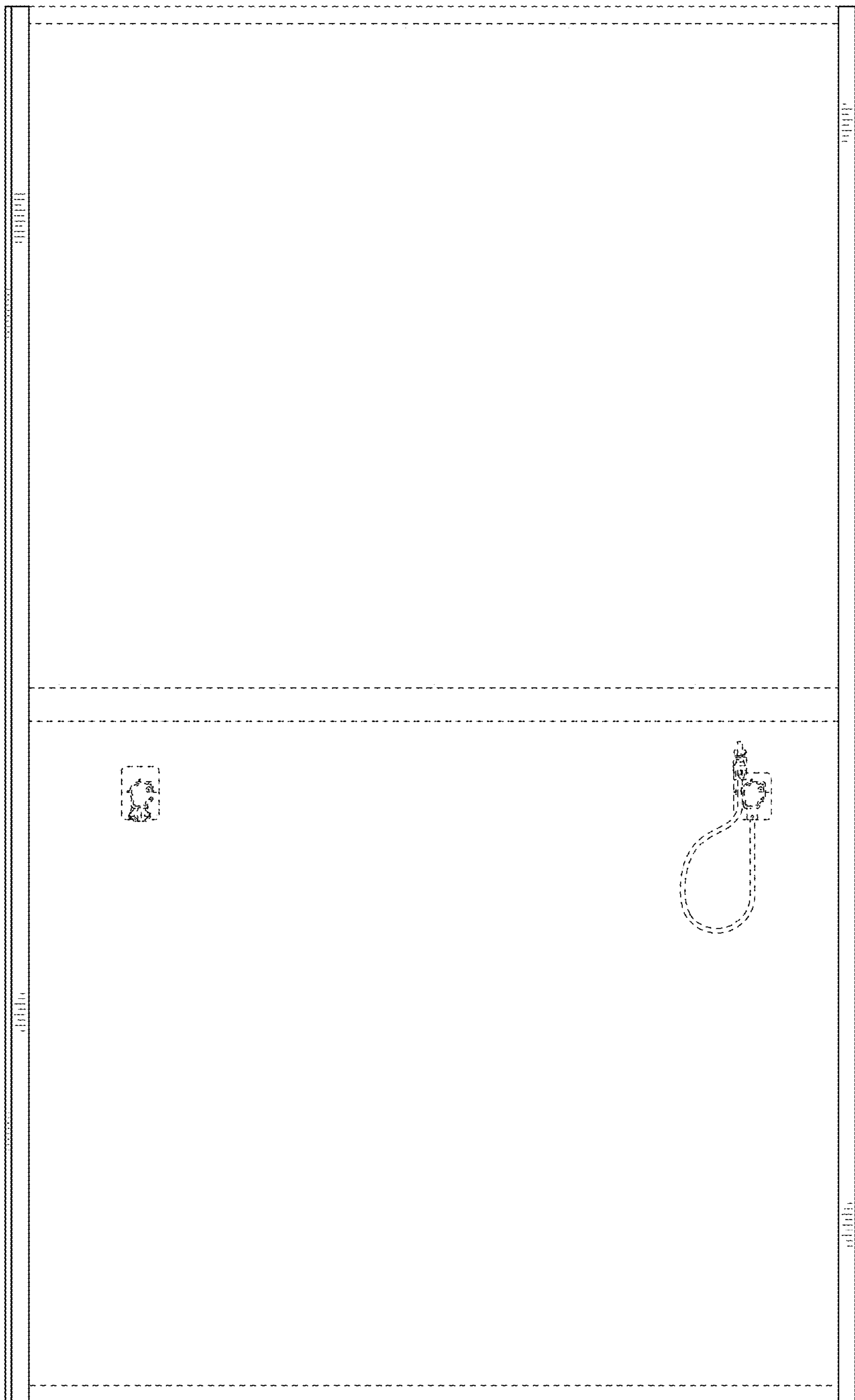


FIG. 14

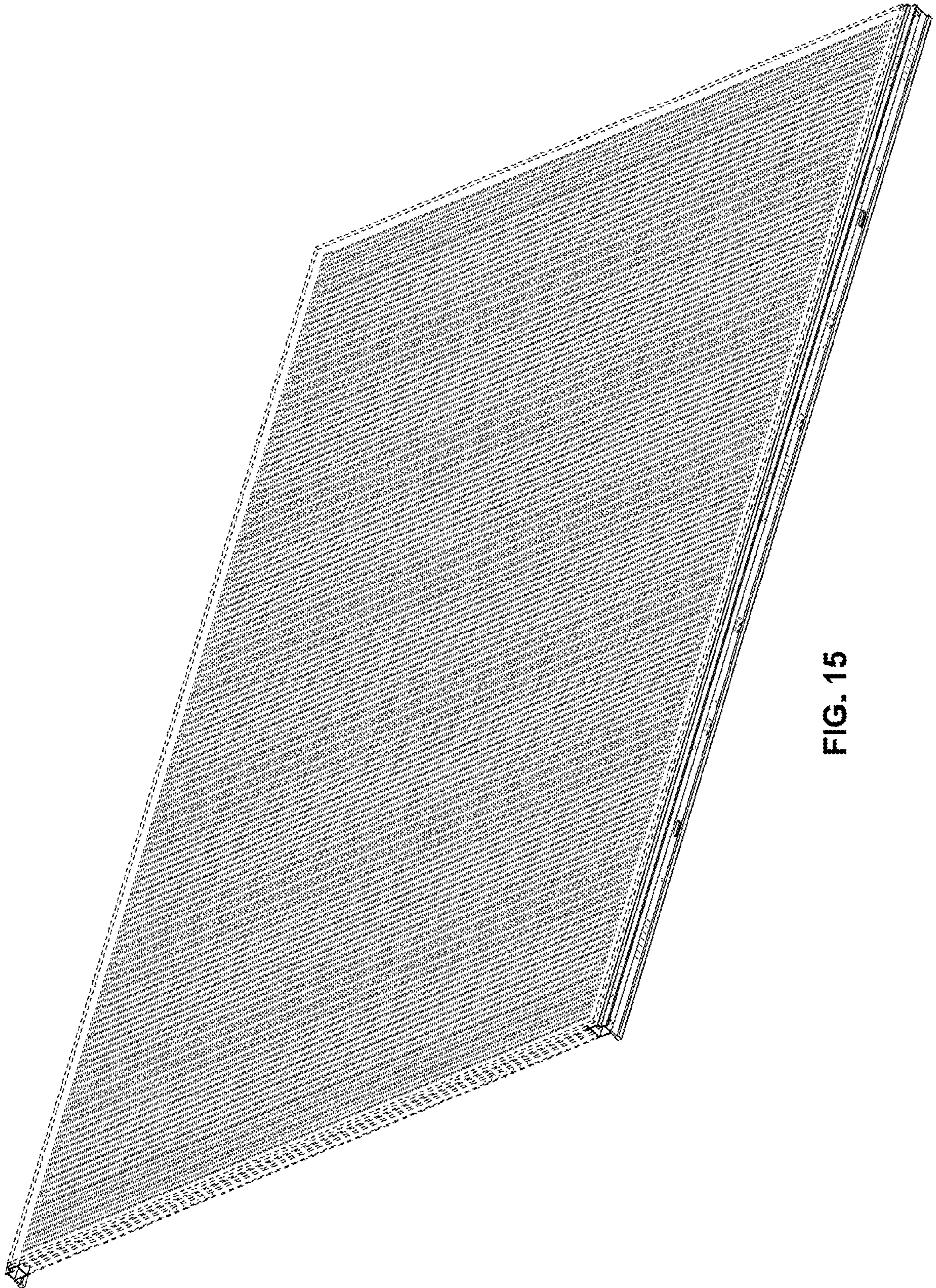


FIG. 15



FIG. 16

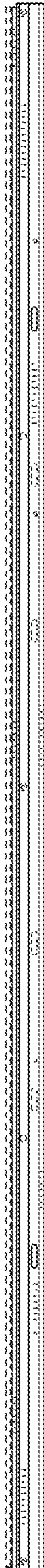


FIG. 17

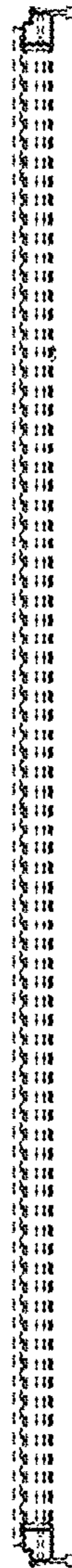


FIG. 18

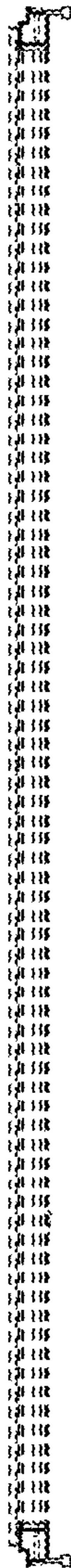


FIG. 19

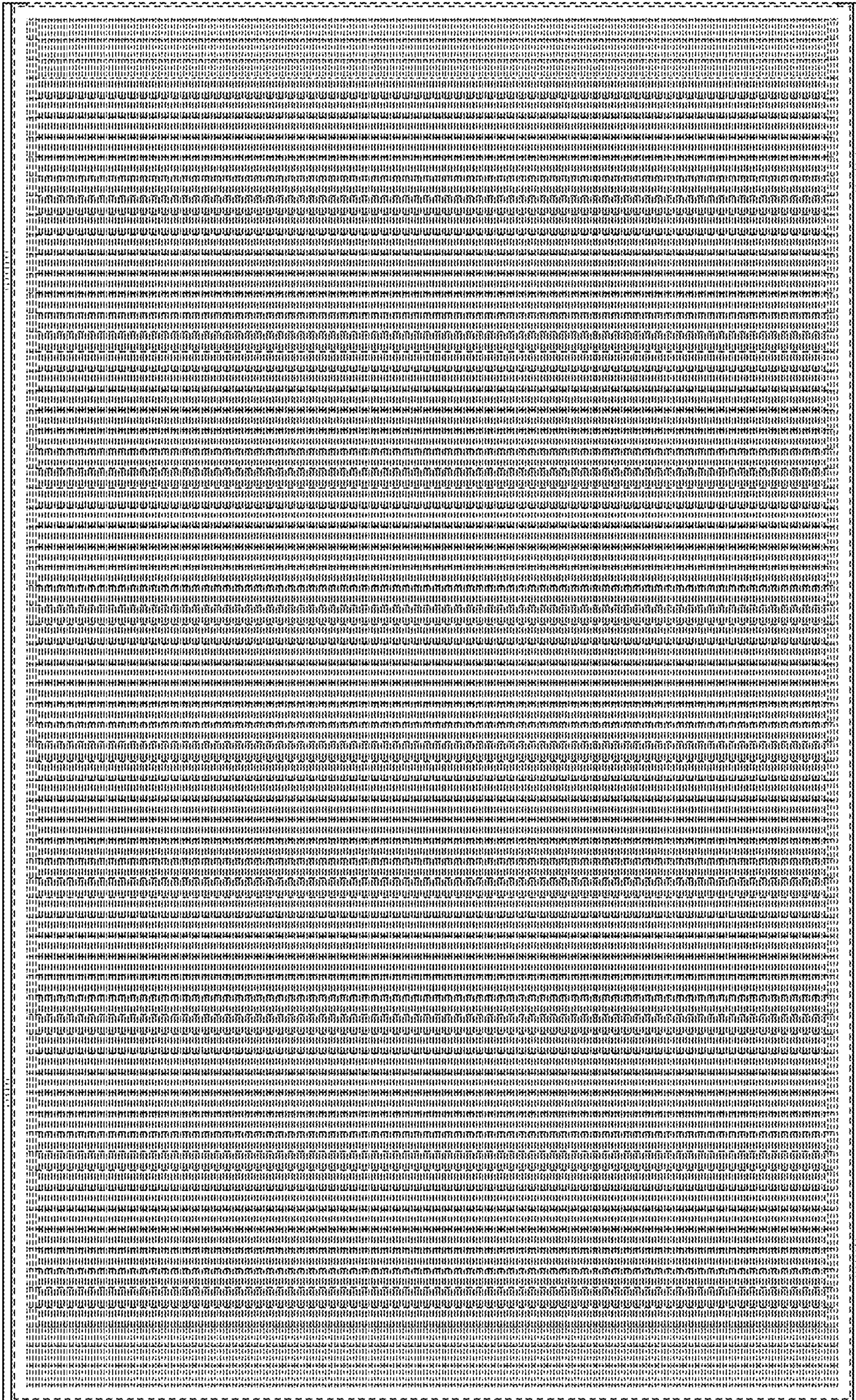


FIG. 20

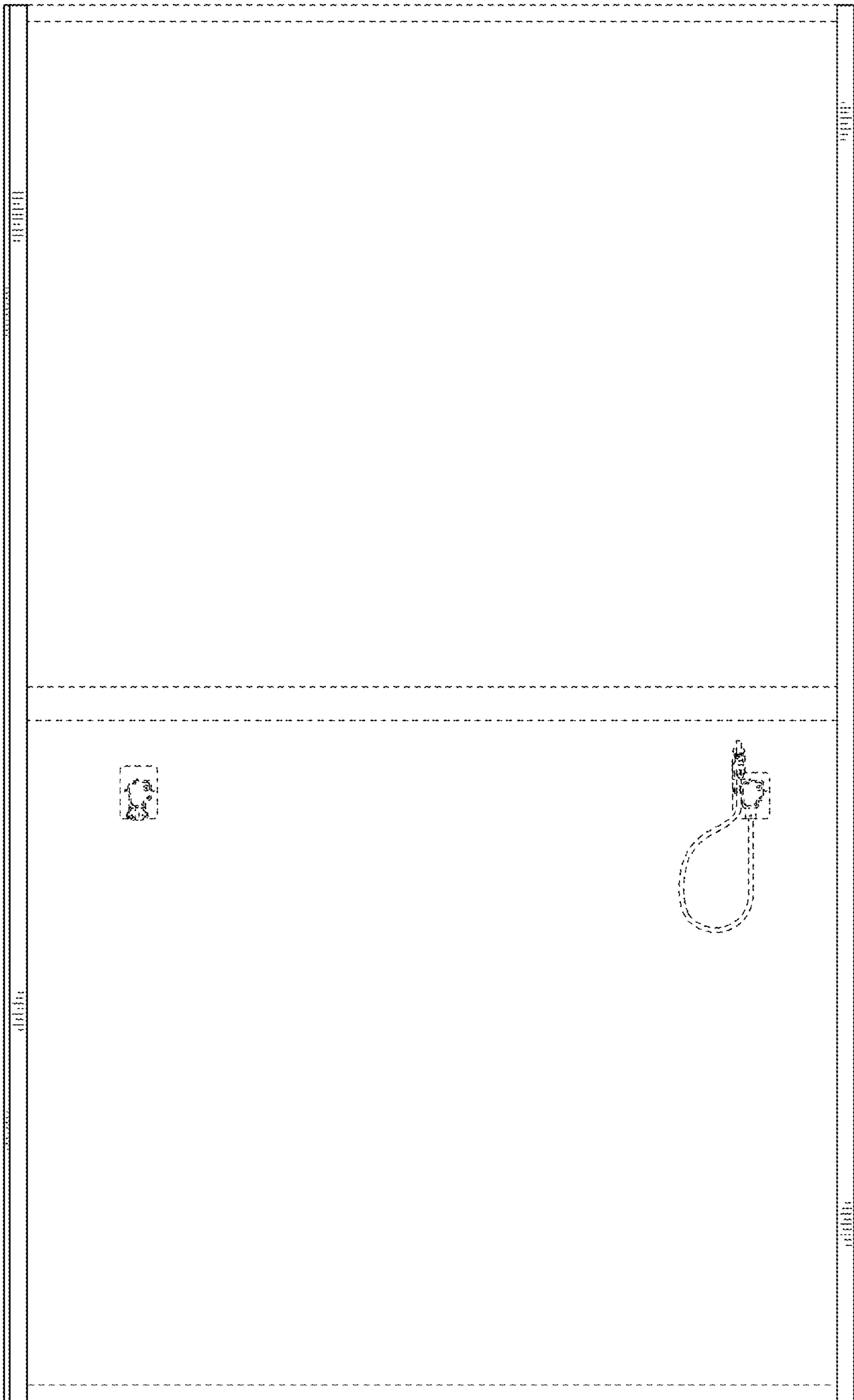


FIG. 21

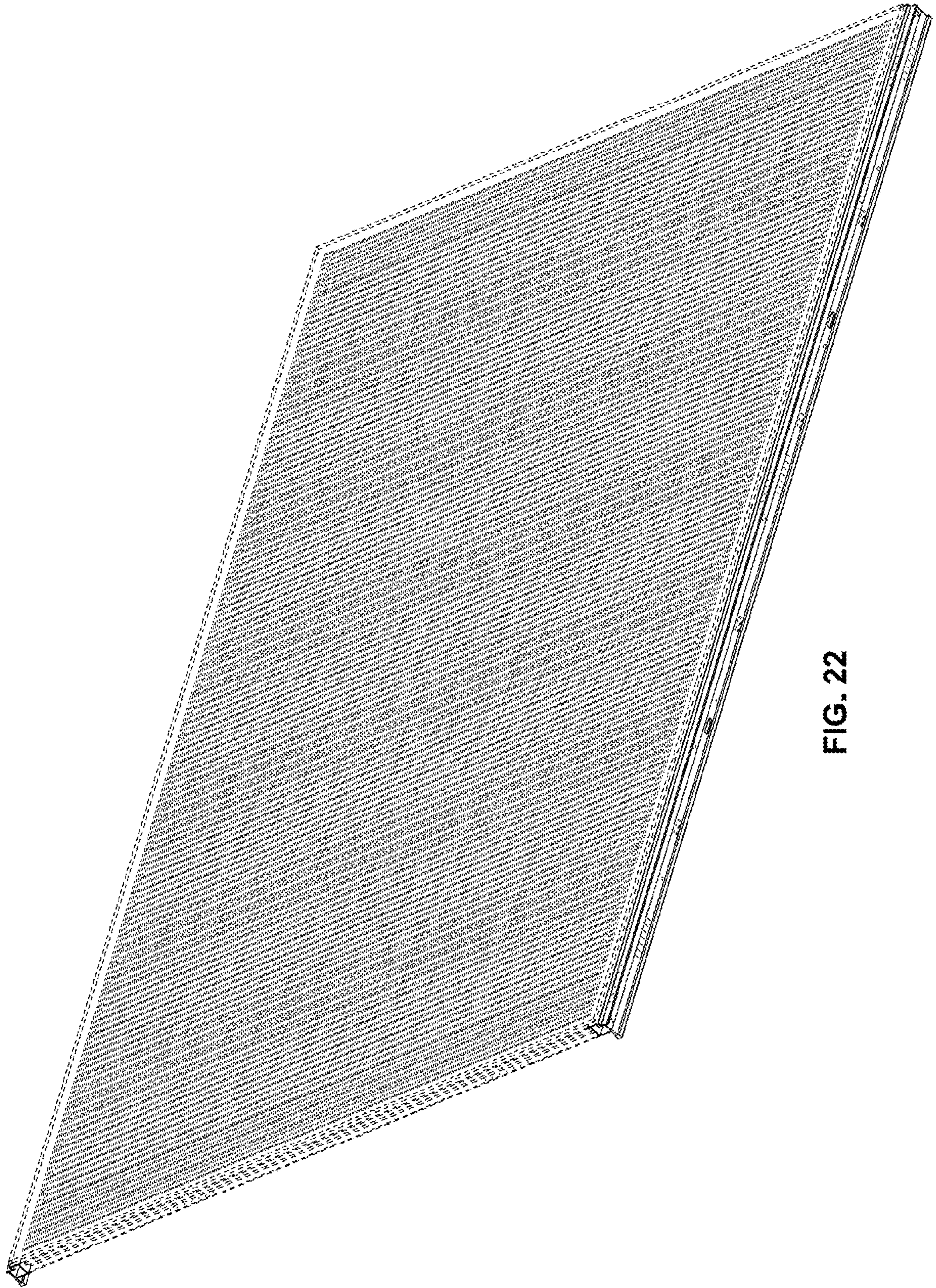


FIG. 22



FIG. 23

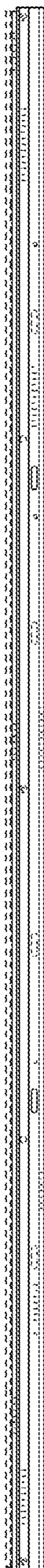


FIG. 24

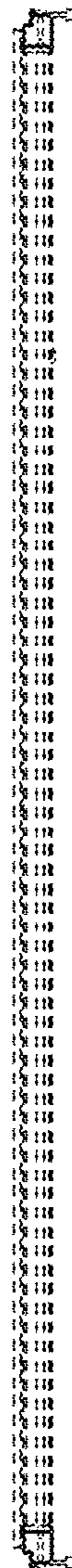


FIG. 25



FIG. 26

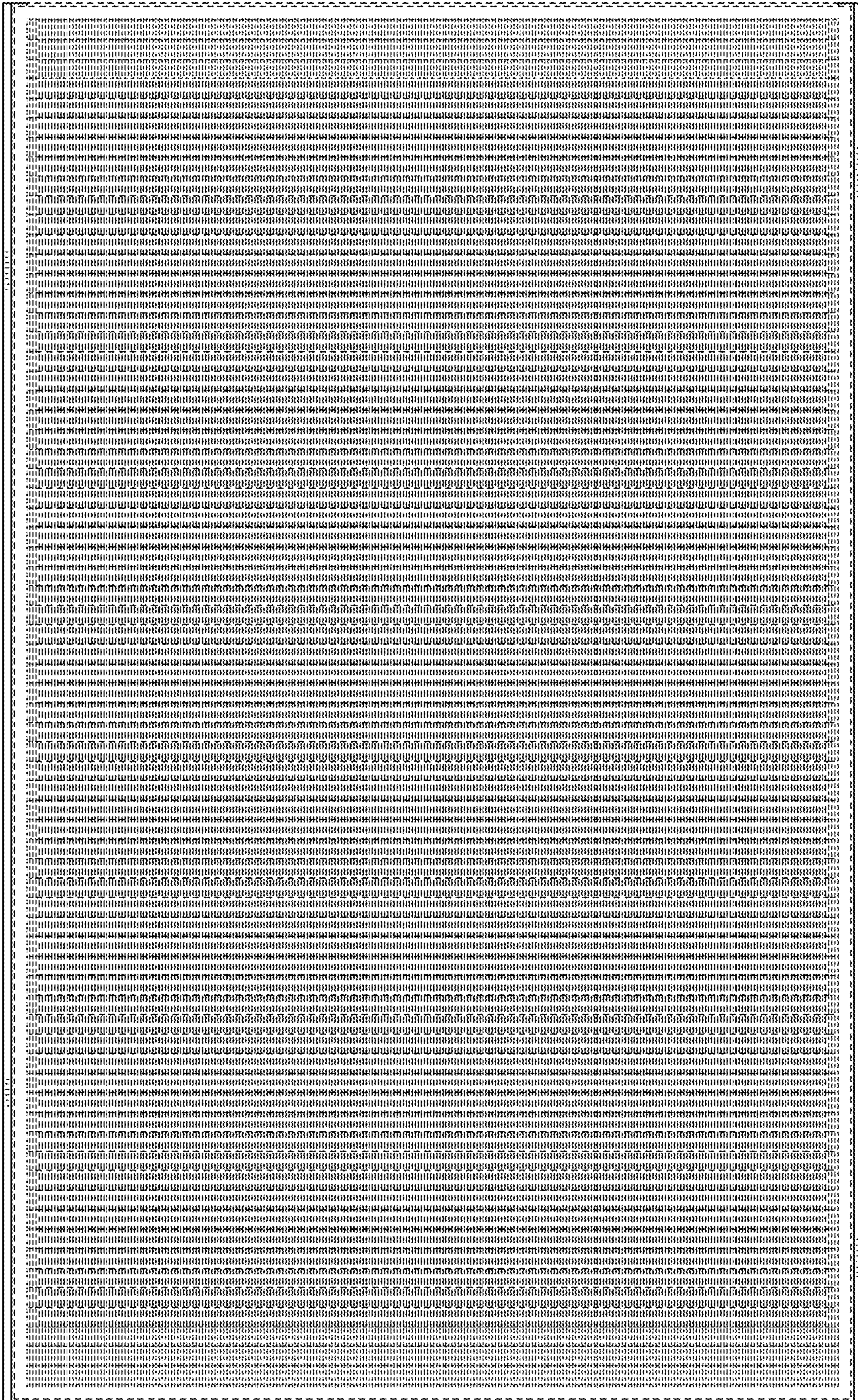


FIG. 27

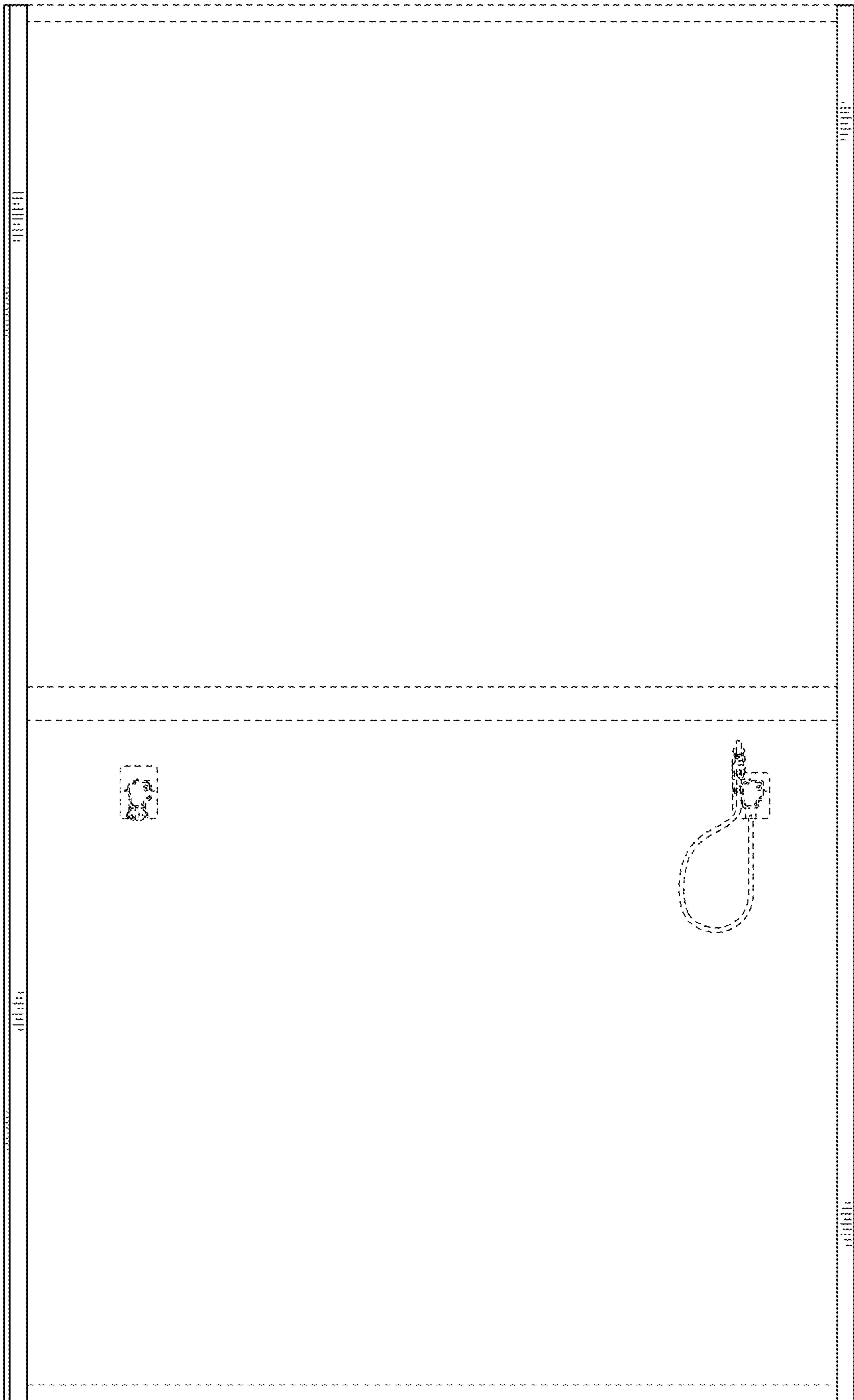


FIG. 28