US00D946540S

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

(10) **Patent No.: US D946,540 S**
(45) **Date of Patent: ** Mar. 22, 2022**

---

(54) **TEMPORARY PROTECTIVE FILM FOR MANUFACTURING SEMICONDUCTOR DEVICES**

(71) Applicant: **Showa Denko Materials Co., Ltd.**, Tokyo (JP)

(72) Inventor: **Naoki Tomori**, Tokyo (JP)

(73) Assignee: **SHOWA DENKO MATERIALS CO., LTD.**, Tokyo (JP)

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

(21) Appl. No.: **35/512,768**

(22) Filed: **Apr. 22, 2021**

(80) **Hague Agreement Data**

Int. Filing Date:	**Apr. 22, 2021**
Int. Reg. No.:	**DM/214171**
Int. Reg. Date:	**Apr. 22, 2021**
Int. Reg. Pub. Date:	**Oct. 22, 2021**

(30) **Foreign Application Priority Data**

Nov. 2, 2020 (JP) .... 2020-023696 D

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

(52) **U.S. Cl.**
USPC **D13/182**; D13/199

(58) **Field of Classification Search**
USPC D13/182, 180; D19/69, 67; D24/189
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,080,052 A *	5/1937	Lemaster	A61F 15/002 83/597	
2,082,546 A *	6/1937	Machate	A61F 15/002 225/45	

(Continued)

OTHER PUBLICATIONS

"Establishing . . . " reference dated Sep. 13, 2018 found by RMS on the internet at: https://www.mc.showadenko.com/english/information/2018/n_180913uo3.html.*

(Continued)

Primary Examiner — Rhea Shields
(74) *Attorney, Agent, or Firm* — Fitch, Even, Tabin & Flannery, LLP

(57) **CLAIM**

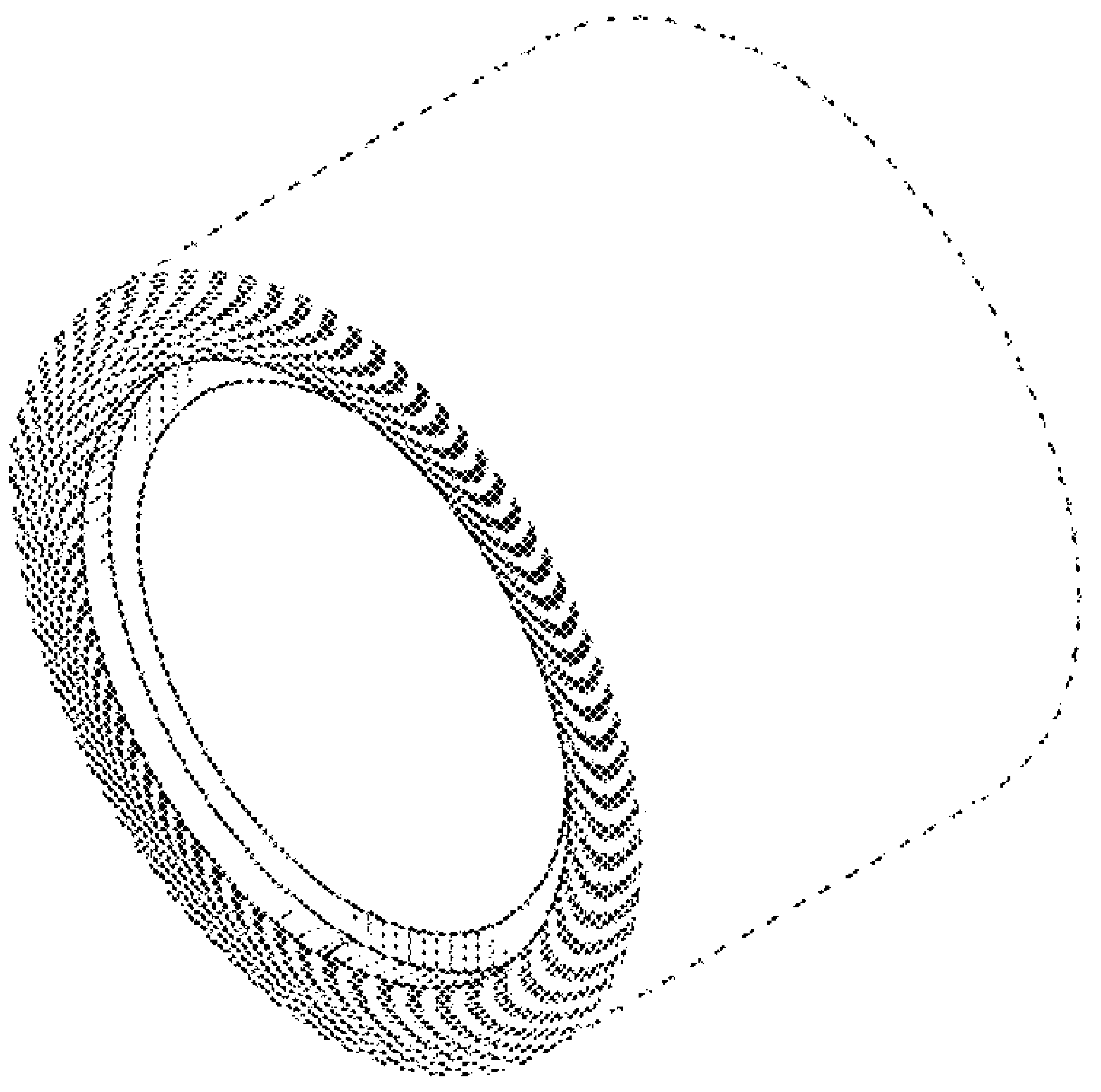
The ornamental design for a temporary protective film for manufacturing semiconductor devices, as shown and described.

DESCRIPTION

1. Temporary protective film for manufacturing semiconductor devices
1.1 : Perspective
1.2 : Perspective
1.3 : Front
1.4 : Back
1.5 : Top
1.6 : Bottom
1.7 : Left
1.8 : Right
1.9 : A-A Sectional view

The article includes a core part and a film part, and is shown with the width of the core part as smaller than the width of the film part, and the film part is wound while partially protruding from the core part; this article is temporarily attached to a back of a lead frame when manufacturing a semiconductor device with only one side encapsulated and the lead frame on the back side exposed; the film part of this article has an adhesive layer on one side; since the core part does not protrude from the film part, this article can be easily positioned when set to equipment for manufacturing semiconductor devices, and it is possible to prevent this article from being misaligned when it is temporarily adhered to the back surface of the lead frame; reproduction **1.9** is a cross-sectional view taken along the line A-A of reproduction **1.7**; the parts shown with solid lines in the drawings are parts for

(Continued)



which a partial design registration is sought; the broken lines shown in the drawings are for the purpose of illustrating portions of the article that form no part of the claimed design; the parallel thin lines in the representation represent contours only and do not illustrate an ornamentation or decoration on the surface of the product.

1 Claim, 9 Drawing Sheets

(58) **Field of Classification Search**
CPC B65H 35/0033; B65H 35/0026; B65H 35/008; A61F 15/002; B42F 21/00; B65D 85/672; G11C 11/06; H05K 7/209; C09J 7/385; C09J 133/068
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,229,961	A	*	1/1941	Deane	B65H 35/008 225/19
2,414,333	A	*	1/1947	Schieman	B65D 85/672 225/66
2,626,666	A	*	1/1953	Coldiron	B65H 35/008 225/65
2,694,533	A	*	11/1954	Zucker	B65H 35/0026 242/588.6
2,699,251	A	*	1/1955	Rizza	B65H 35/0026 225/34
3,001,306	A	*	9/1961	Wilkinson	B42F 21/00 40/641
3,187,968	A	*	6/1965	Favre	B65H 35/0033 225/56
3,216,634	A	*	11/1965	Lausa	B65H 35/0026 225/19
3,237,174	A	*	2/1966	Di Matteo	G11C 11/06 365/59
4,983,932	A	*	1/1991	Kitagawa	H01F 17/06 324/127
5,258,888	A	*	11/1993	Korinsky	H05K 7/209 361/690
D433,061	S	*	10/2000	Shen	D19/67
D571,859	S	*	6/2008	Harmston	D19/69
7,669,631	B2	*	3/2010	Bailey	B65H 35/0033 156/523
D621,051	S	*	8/2010	Kase	D24/189
D621,803	S	*	8/2010	Maruyama	D13/182
D656,909	S	*	4/2012	Taniguchi	D13/182
D656,910	S	*	4/2012	Taniguchi	D13/182
D664,511	S	*	7/2012	Taniguchi	D13/182
D664,512	S	*	7/2012	Taniguchi	D13/182
D680,505	S	*	4/2013	Taniguchi	D13/182
D689,831	S	*	9/2013	Taniguchi	D13/180
D690,278	S	*	9/2013	Taniguchi	D13/180
D741,406	S	*	10/2015	Doucette	D19/69
D804,435	S	*	12/2017	Taniguchi	D13/180
D847,258	S	*	4/2019	Kang	D19/69
2007/0241436	A1	*	10/2007	Ookubo	C09J 133/068 257/678
2010/0080989	A1	*	4/2010	Asai	C09J 7/385 428/345

OTHER PUBLICATIONS

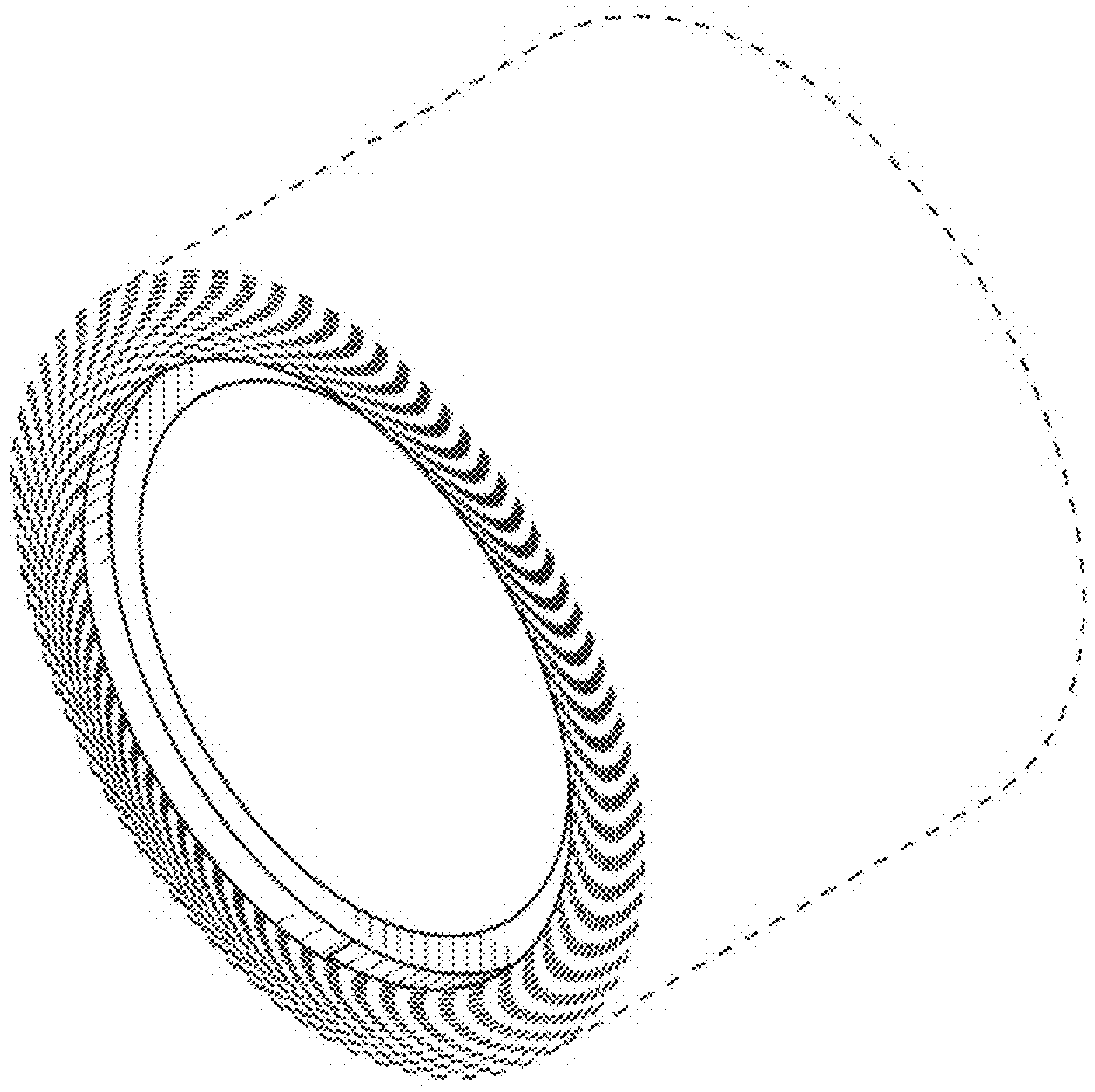
"RD Series . . . " reference dated Nov. 6, 2021 found by RMS on the internet at: https://www.mc.showadenko.com/english/products/pm/015.html.*

"Disposal . . . " reference dated Nov. 6, 2021 found by RMS on the internet at: https://www.pvawatersolublefilm.com/sale-11363692-disposable-high-temperature-water-soluble-plastic-film-for-mold-release.html.*

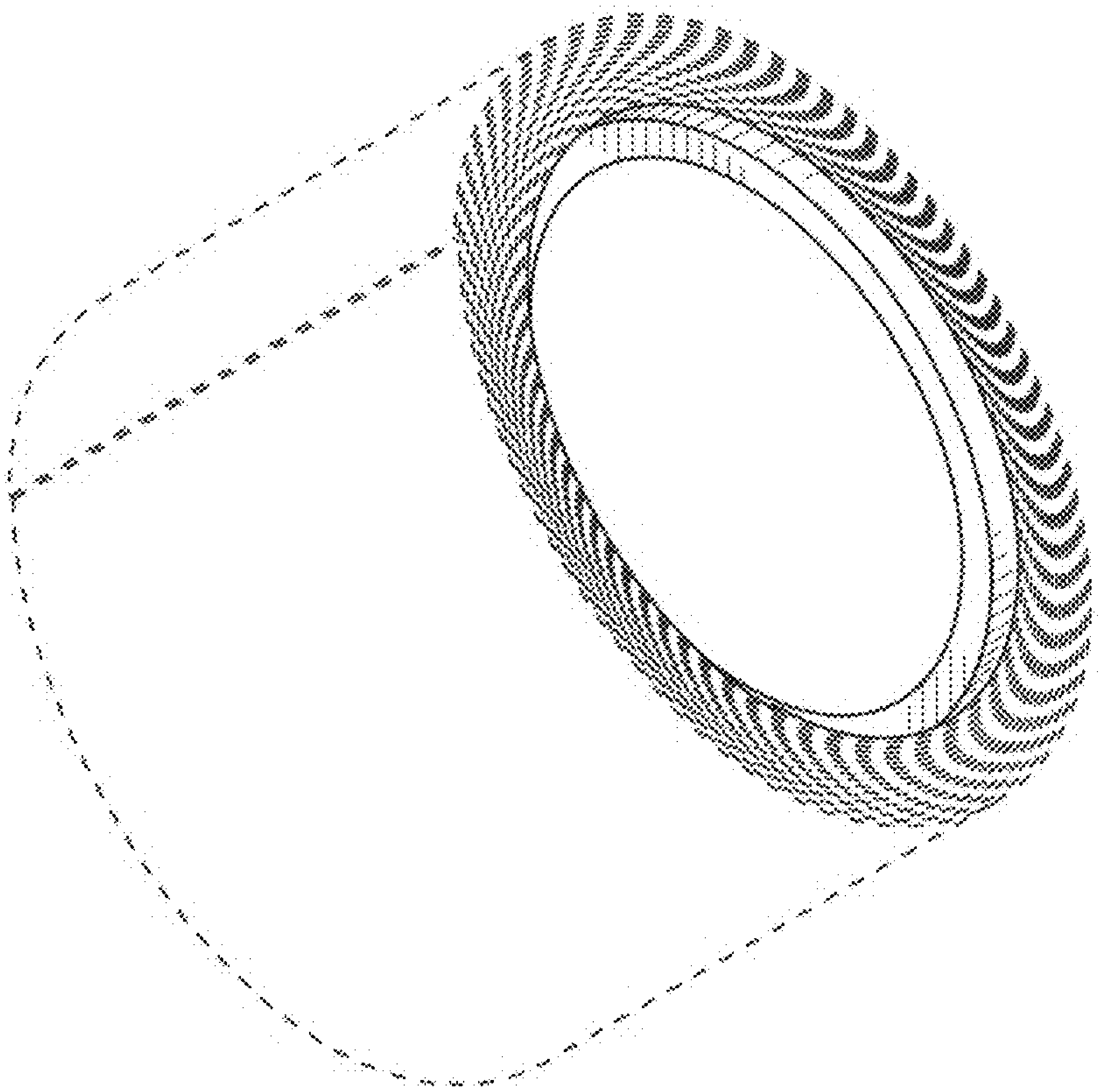
"Back-grinding tape with heat resistance is for special heating process after wafer grinding", Nov. 6, 2021 (cited in an office action dated Nov. 9, 2021 in Design U.S. Appl. No. 35/512,766).

* cited by examiner

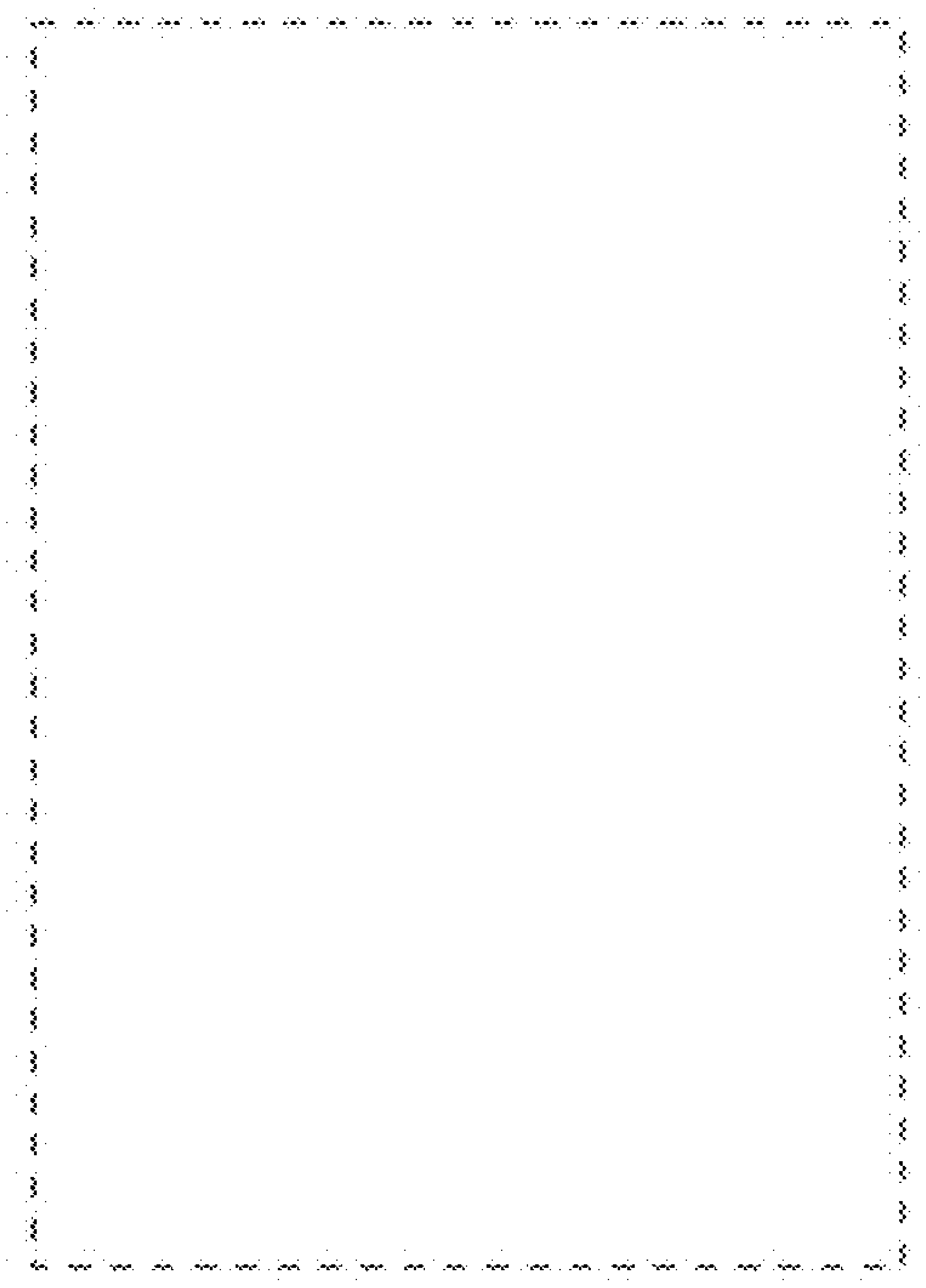
1.1



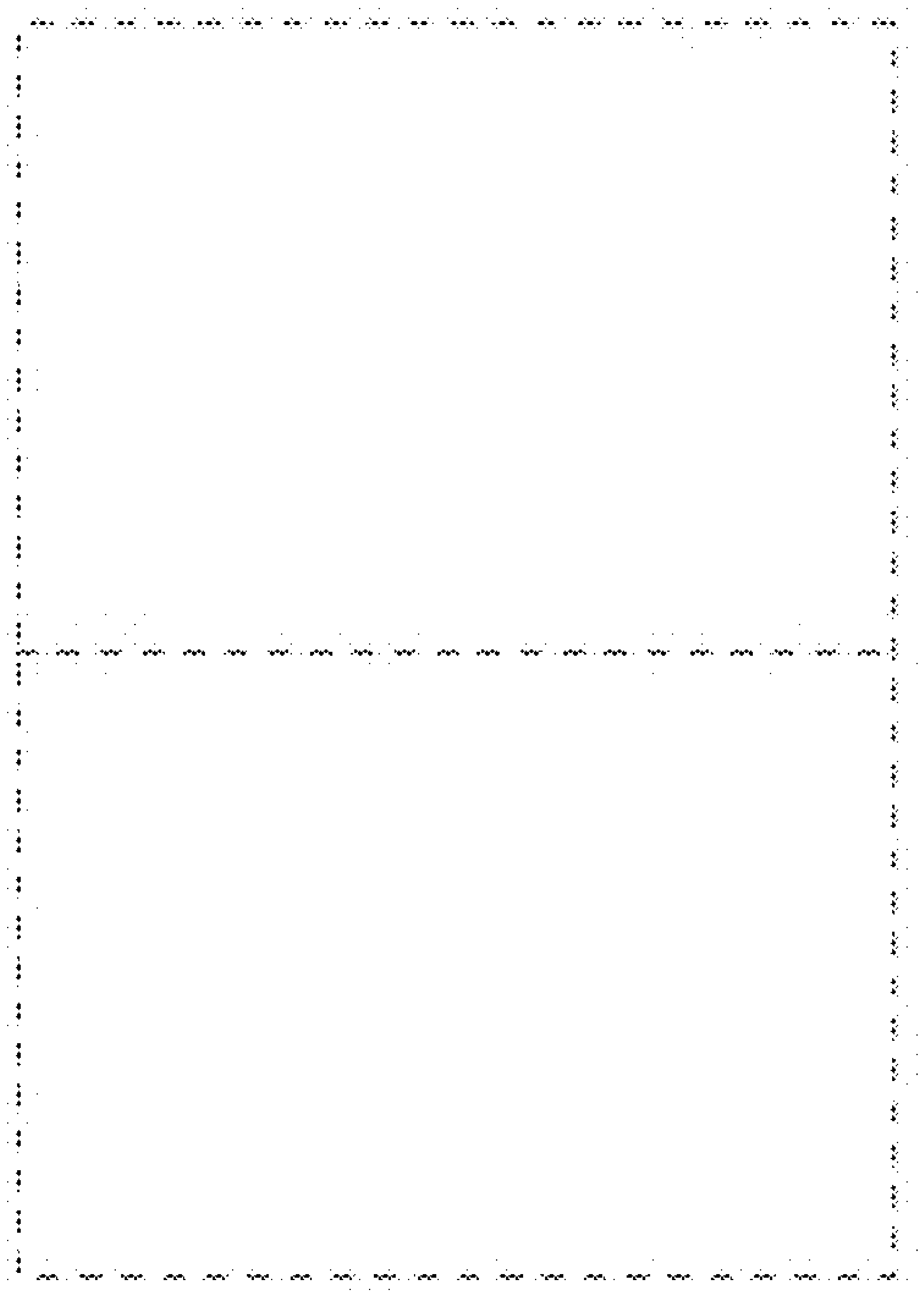
1.2



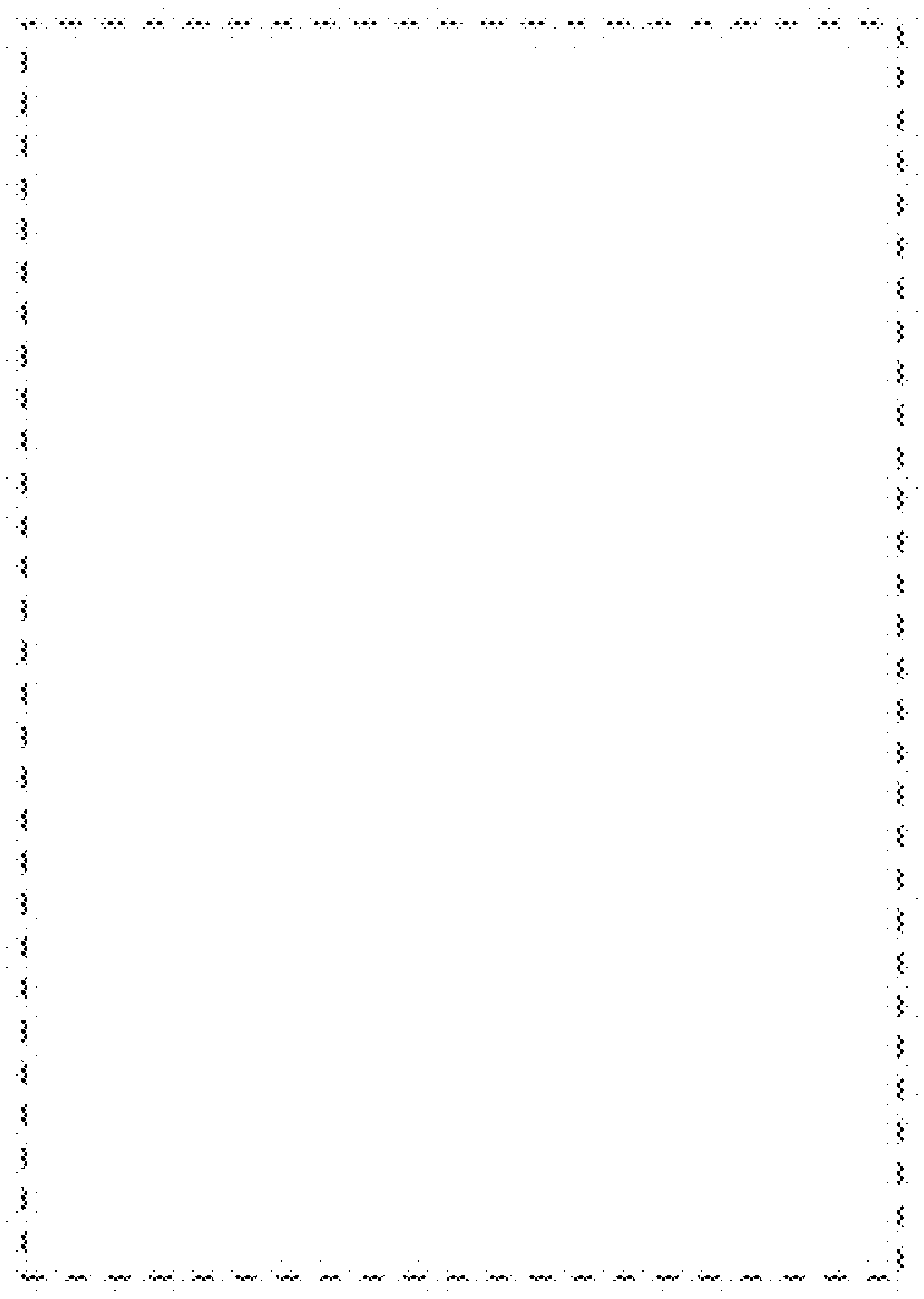
1.3



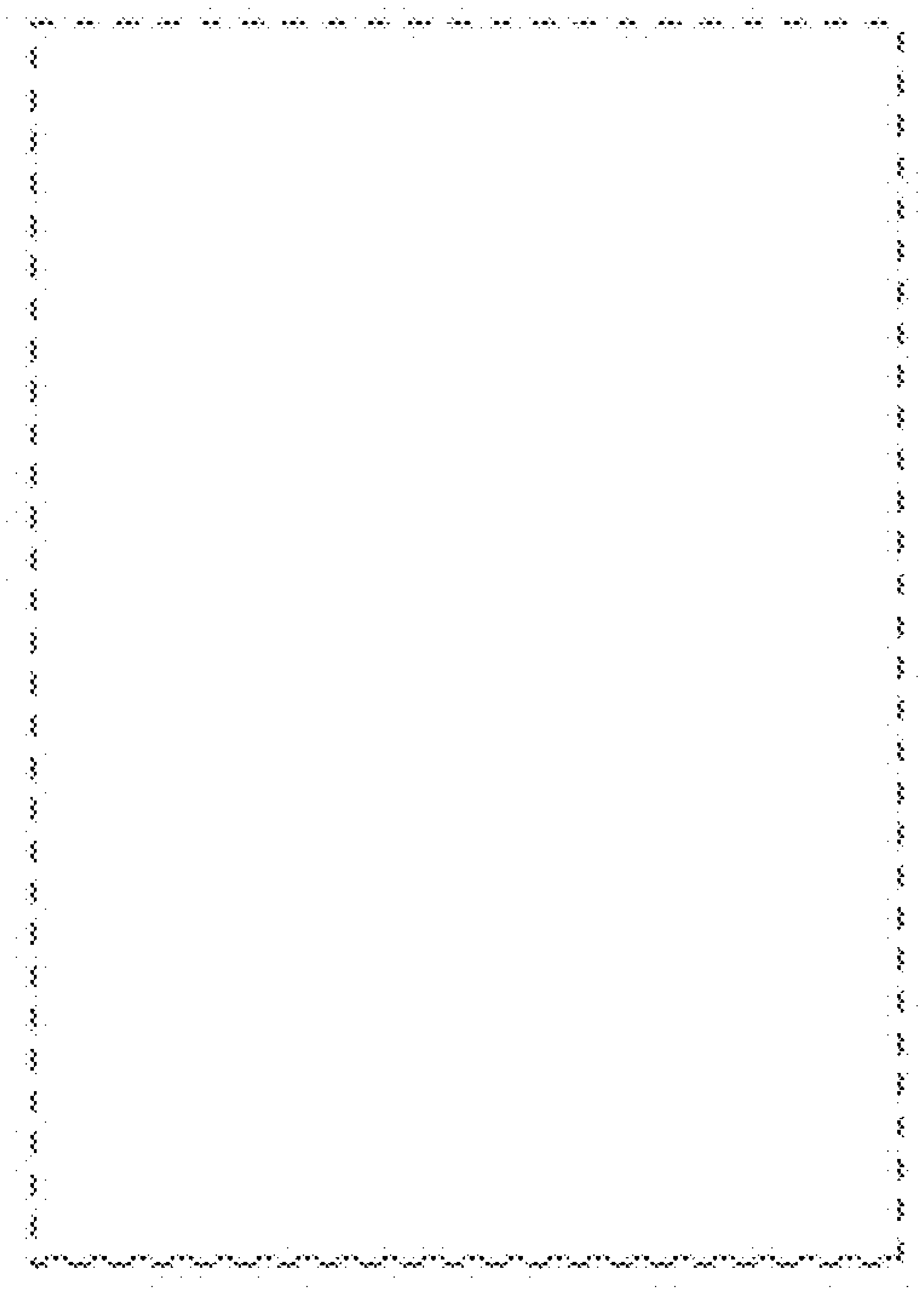
1.4



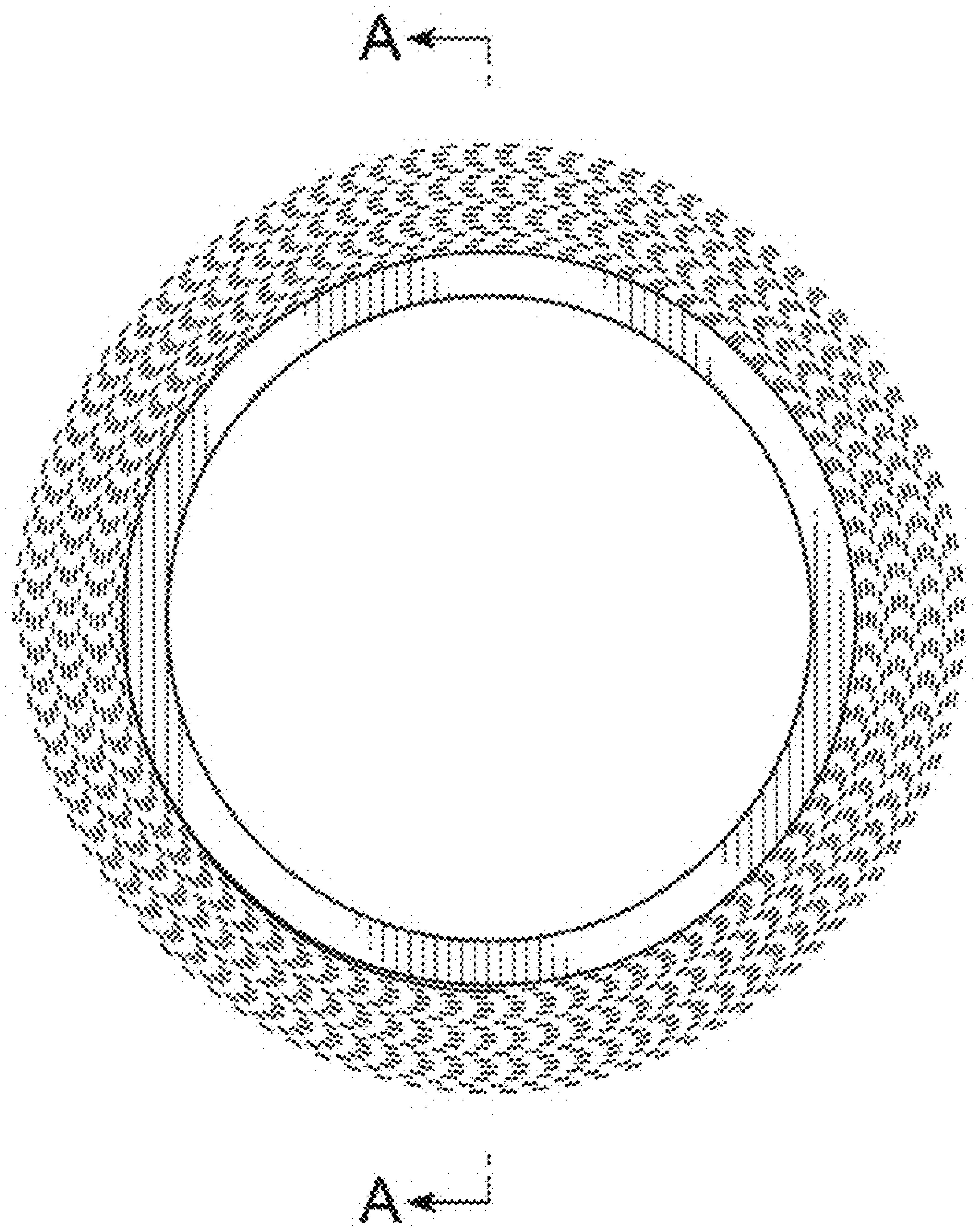
1.5



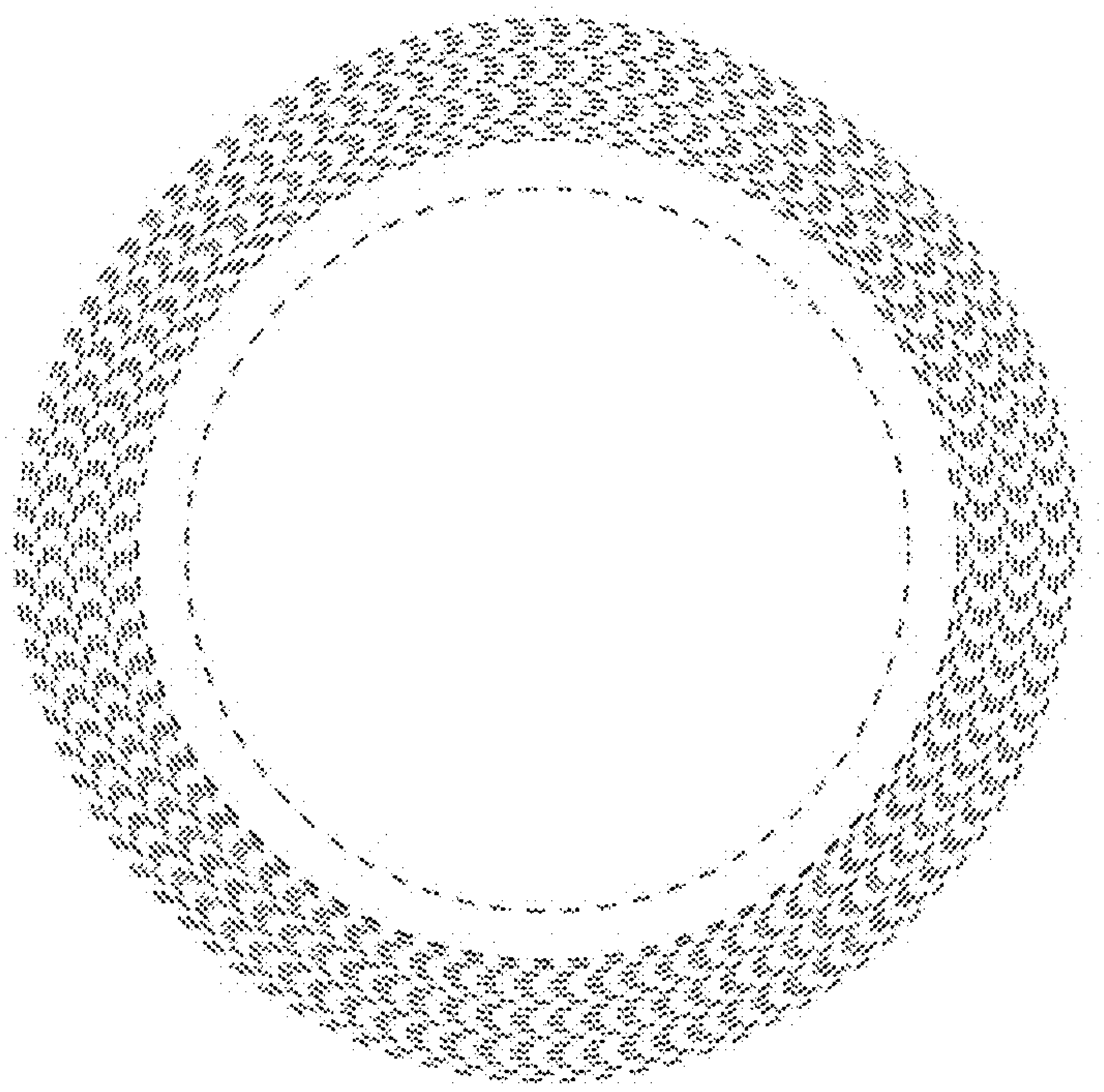
1.6



1.7



1.8



1.9