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

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(54) **BALL RETAINER BELT**

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

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(30) **Foreign Application Priority Data**

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(51) **LOC (13) Cl.** **08-05**

(52) **U.S. Cl.**
USPC **D8/354**; D15/199

(58) **Field of Classification Search**
USPC D8/349, 354, 356, 382, 383, 499;
D13/158, 162, 184; D15/5, 7, 9, 143,
D15/148, 199

CPC .. F16C 29/008; F16C 29/065; F16C 2240/80;
F16C 29/0602; F16C 33/40; F16C
29/063; F16C 29/0609; F16C 29/0647;
F16C 29/005; F16C 33/3825; F16C 29/06
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 1,096,531 A * 5/1914 Hess F16C 33/40
384/523
- 1,321,687 A * 11/1919 Westman F16C 33/41
384/533
- 1,412,453 A * 4/1922 Cooper F16C 33/40
384/523
- 1,427,225 A * 8/1922 Mueller F16C 23/086
384/528

- 1,467,063 A * 9/1923 Nelson F16C 33/40
384/512
- D360,424 S * 7/1995 Bauer D15/199
- D361,338 S * 8/1995 Bauer D15/199

(Continued)

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(57) **CLAIM**

The ornamental design for a ball retainer belt, as shown and described.

DESCRIPTION

FIG. 1 is a front elevation view of a ball retainer belt showing the new design;

FIG. 2 is a rear elevation view thereof;

FIG. 3 is a left side elevation view thereof;

FIG. 4 is a right side elevation view thereof;

FIG. 5 is a top plan view thereof;

FIG. 6 is a bottom plan view thereof;

FIG. 7 is an enlarged view of section 7-7 shown in FIG. 1,

FIG. 8 is an enlarged view of section 8-8 shown in FIG. 2,

FIG. 9 is an enlarged view of section 9-9 shown in FIG. 5,

FIG. 10 is an enlarged view of section 10-10 shown in FIG. 6,

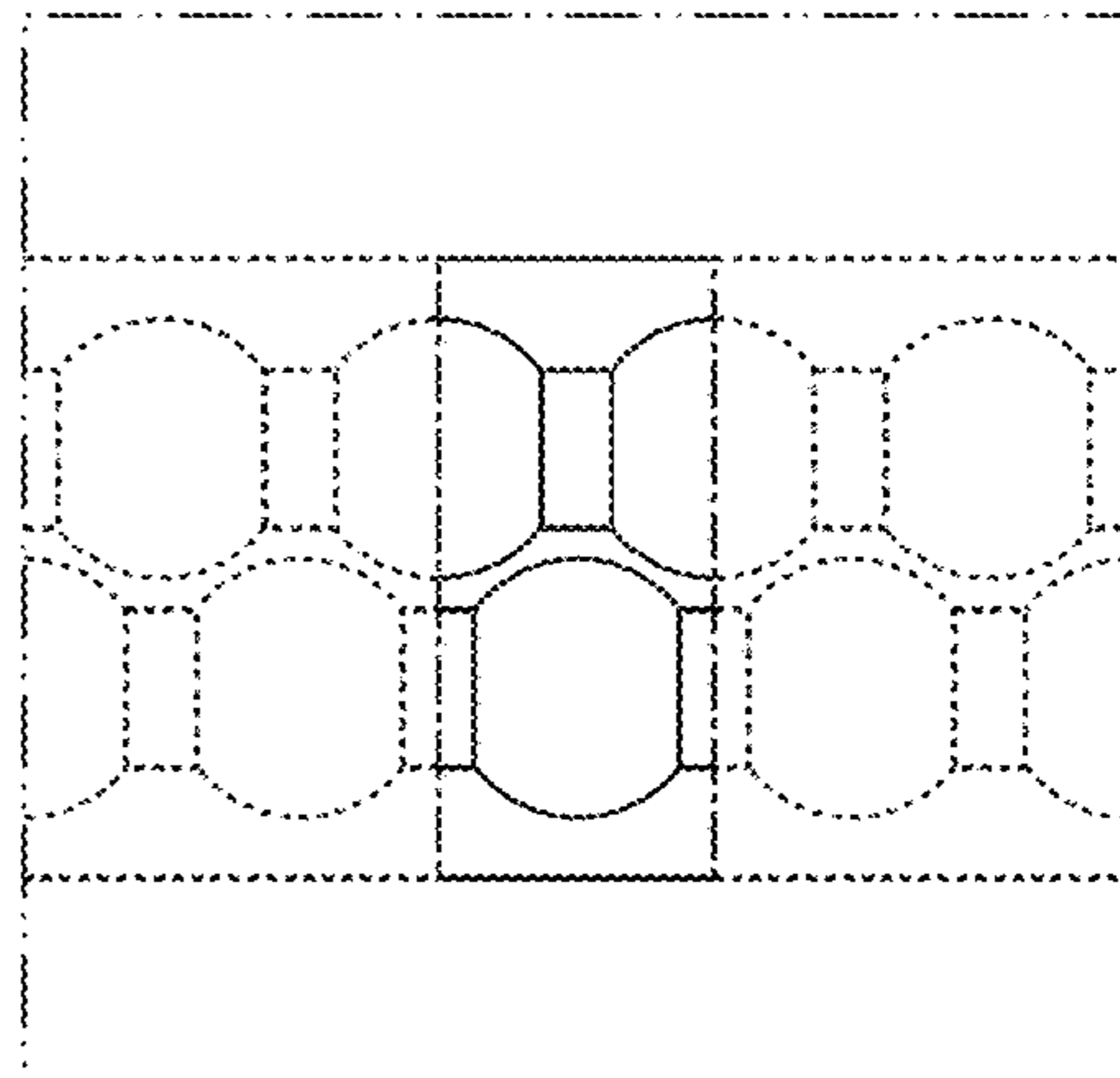
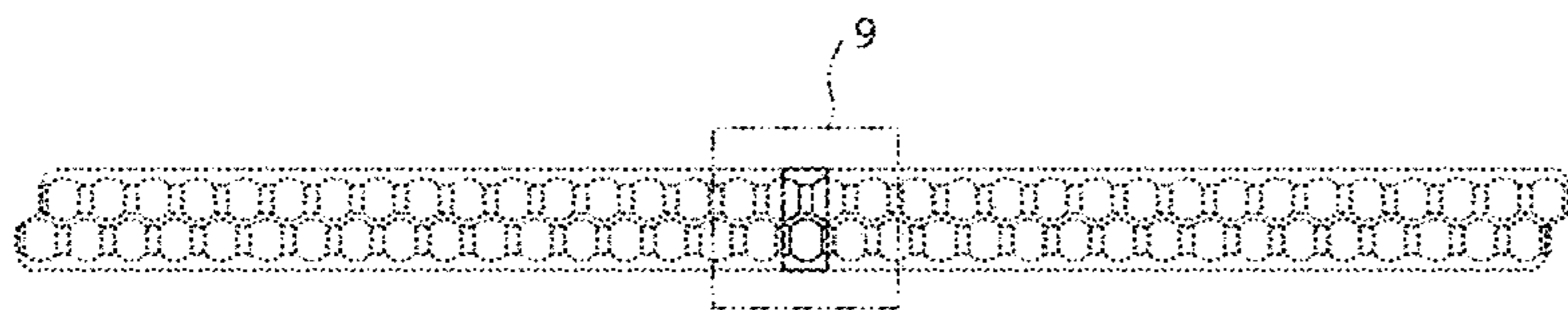
FIG. 11 is a cross-sectional view taken through line 11-11 shown in FIG. 7;

FIG. 12 is an enlarged left side elevation view; and,

FIG. 13 is an enlarged right side elevation view thereof.

The evenly spaced broken lines in the drawings illustrate portions of the ball retainer belt and form no part of the claimed design. The dot-dash broken lines in the drawings define the bounds of the claim and form no part thereof. The dot-dot-dash lines in the drawing are for the purposes of illustrating the areas from which portions the enlarged views are taken and form no part thereof.

1 Claim, 13 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

5,988,883 A * 11/1999 Takamatu F16C 29/0659
384/45
6,053,062 A * 4/2000 Ishikawa F16C 29/064
384/45
6,070,479 A * 6/2000 Shirai F16C 29/0659
74/424.88
6,152,602 A * 11/2000 Honma F16C 29/0695
384/45
6,155,718 A * 12/2000 Takamatsu F16C 33/3825
384/45
6,247,846 B1 * 6/2001 Shirai F16C 29/0642
384/45
6,652,146 B2 * 11/2003 Lee F16C 29/0664
384/45
6,685,354 B2 * 2/2004 Michioka F16C 29/0609
384/45
6,733,179 B2 * 5/2004 Michioka F16C 29/065
384/44
7,329,047 B2 * 2/2008 Michioka F16C 29/064
384/43
7,513,687 B2 * 4/2009 Keller F16C 29/0607
384/43
7,563,028 B2 * 7/2009 Liao F16C 29/06
384/45
7,632,018 B2 * 12/2009 Chen F16C 33/3825
384/43
7,837,389 B2 * 11/2010 Lin F16C 29/0647
384/45
D686,260 S * 7/2013 Wu D15/143
8,764,302 B2 * 7/2014 Masumura B29C 45/36
384/527

8,821,020 B2 * 9/2014 Aida F16C 29/0602
384/43
8,858,083 B2 * 10/2014 Takahashi F16C 29/0611
384/45
9,133,877 B2 * 9/2015 Yamazaki F16C 33/506
9,458,883 B2 * 10/2016 Kadono F16C 29/0647
9,581,194 B2 * 2/2017 Maki F16C 29/0609
9,593,715 B2 * 3/2017 Mochizuki F16C 29/005
D807,157 S * 1/2018 Bhatta D8/382
9,863,478 B2 * 1/2018 Sakagami F16C 29/086
D818,354 S * 5/2018 Desrochers D8/382
D839,937 S * 2/2019 Zhuang D15/143
D847,236 S * 4/2019 Chen D15/148
10,330,150 B2 * 6/2019 Aoki F16C 33/3825
D853,460 S * 7/2019 Zhuang D15/148
10,371,202 B2 * 8/2019 Hoshide F16C 41/00
10,371,203 B2 * 8/2019 Kishi F16C 29/005
10,690,183 B2 * 6/2020 Mochizuki F16C 29/10
2002/0090152 A1 * 7/2002 Shirai F16C 33/3825
384/45
2004/0057640 A1 * 3/2004 Michioka F16C 33/506
384/43
2005/0036721 A1 * 2/2005 Wu F16C 33/3825
384/51
2006/0159373 A1 * 7/2006 Matsumoto F16C 29/0647
384/45
2007/0160313 A1 * 7/2007 Kuo F16C 29/0638
384/51
2014/0301677 A1 * 10/2014 Furusawa F16C 29/086
384/15
2018/0355915 A1 * 12/2018 Aoki F16C 29/0666
2020/0191199 A1 * 6/2020 Takahashi F16C 29/06
2020/0200217 A1 * 6/2020 Takahashi F16C 29/0609

* cited by examiner

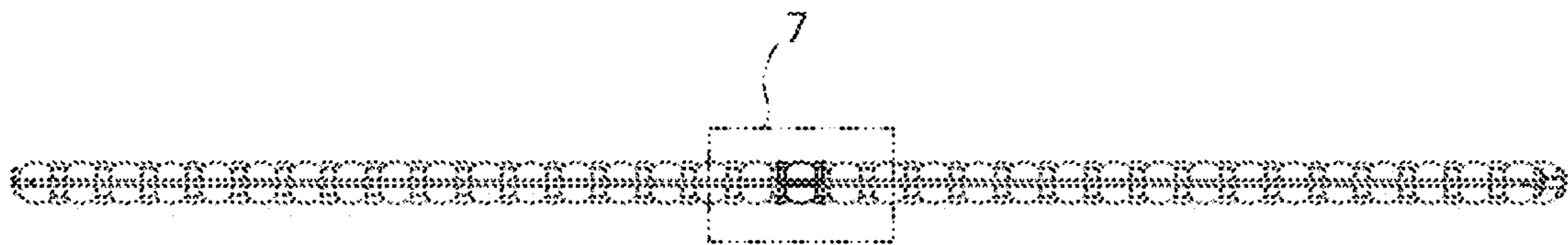


FIG. 1

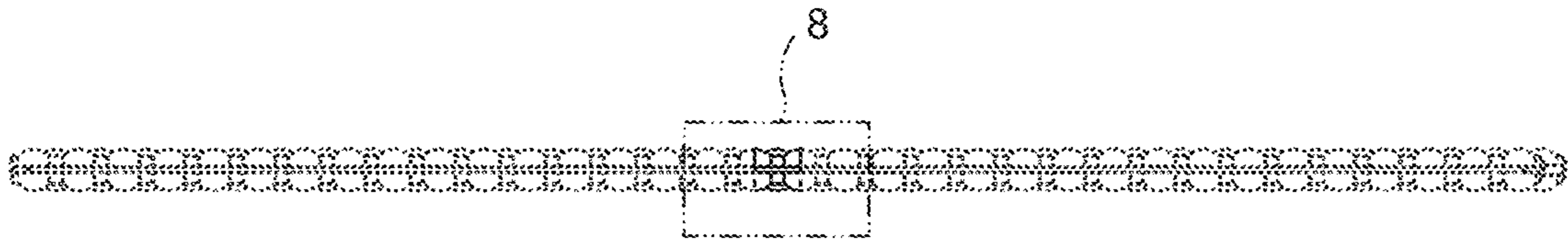


FIG. 2



FIG. 3



FIG. 4

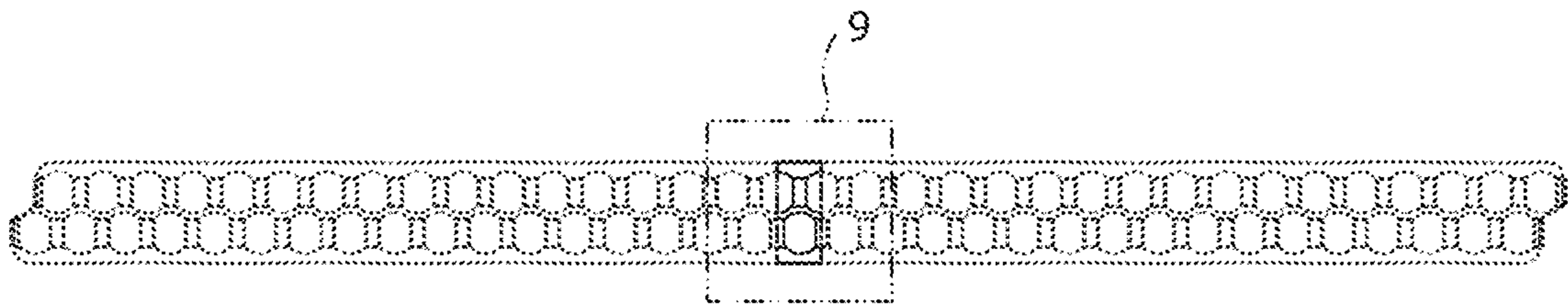


FIG. 5

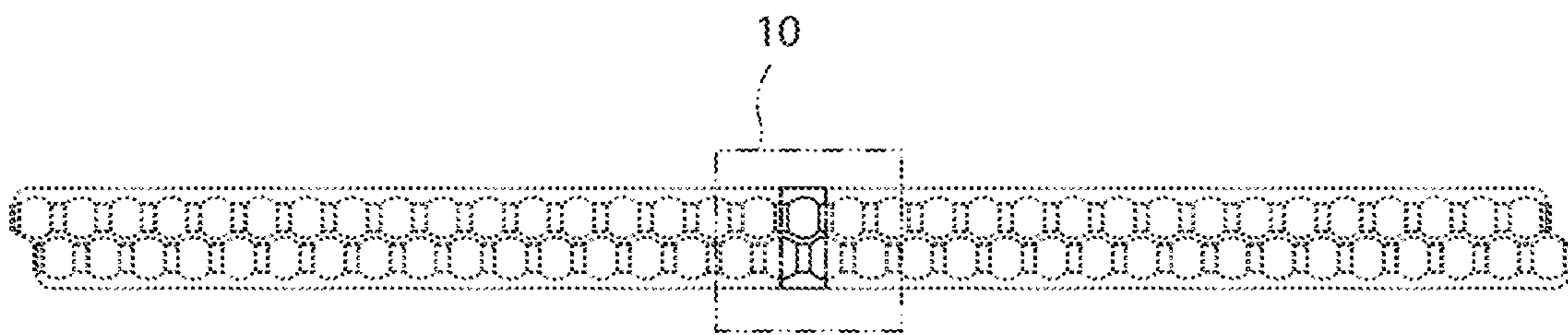


FIG. 6

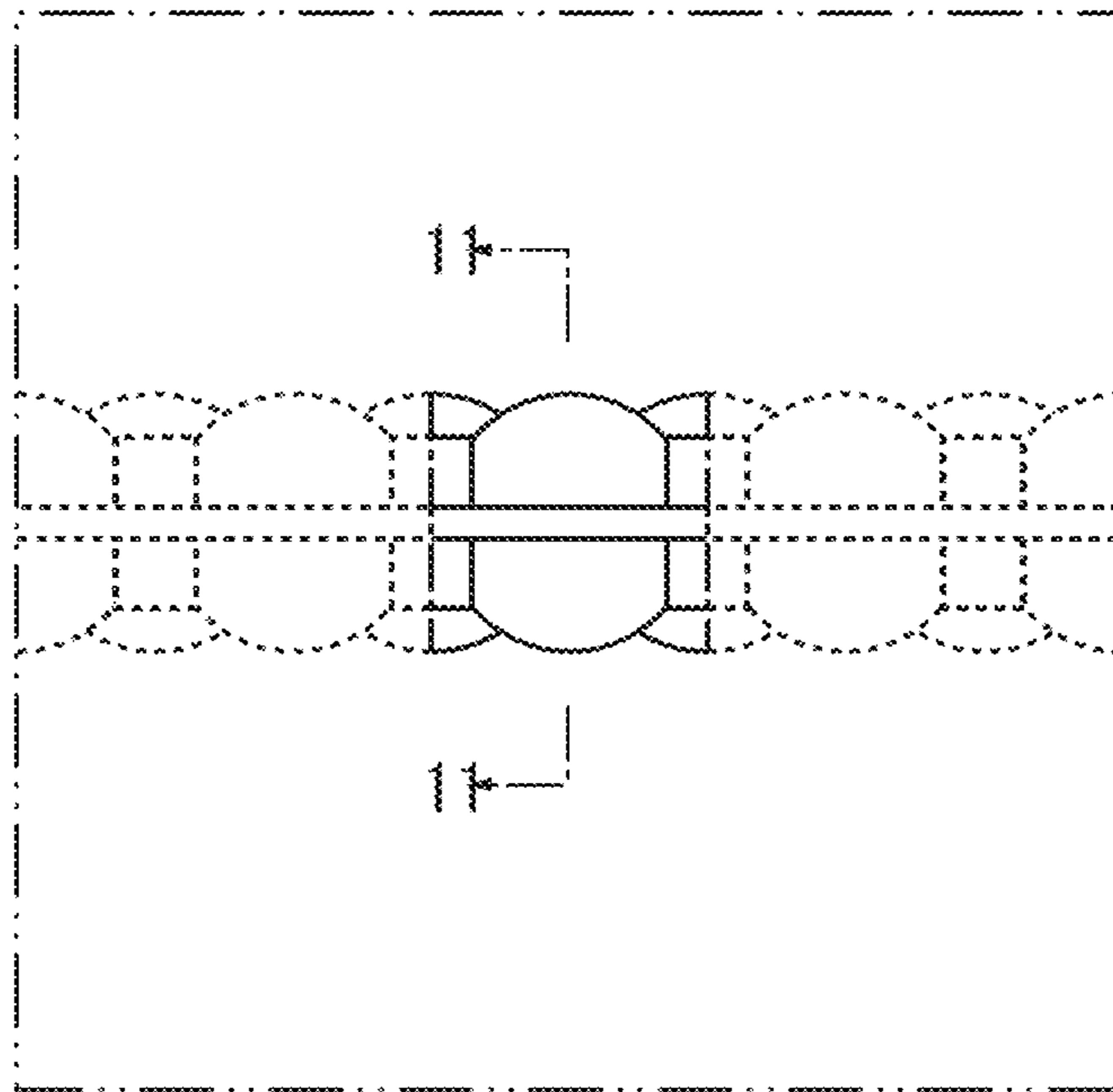


FIG. 7

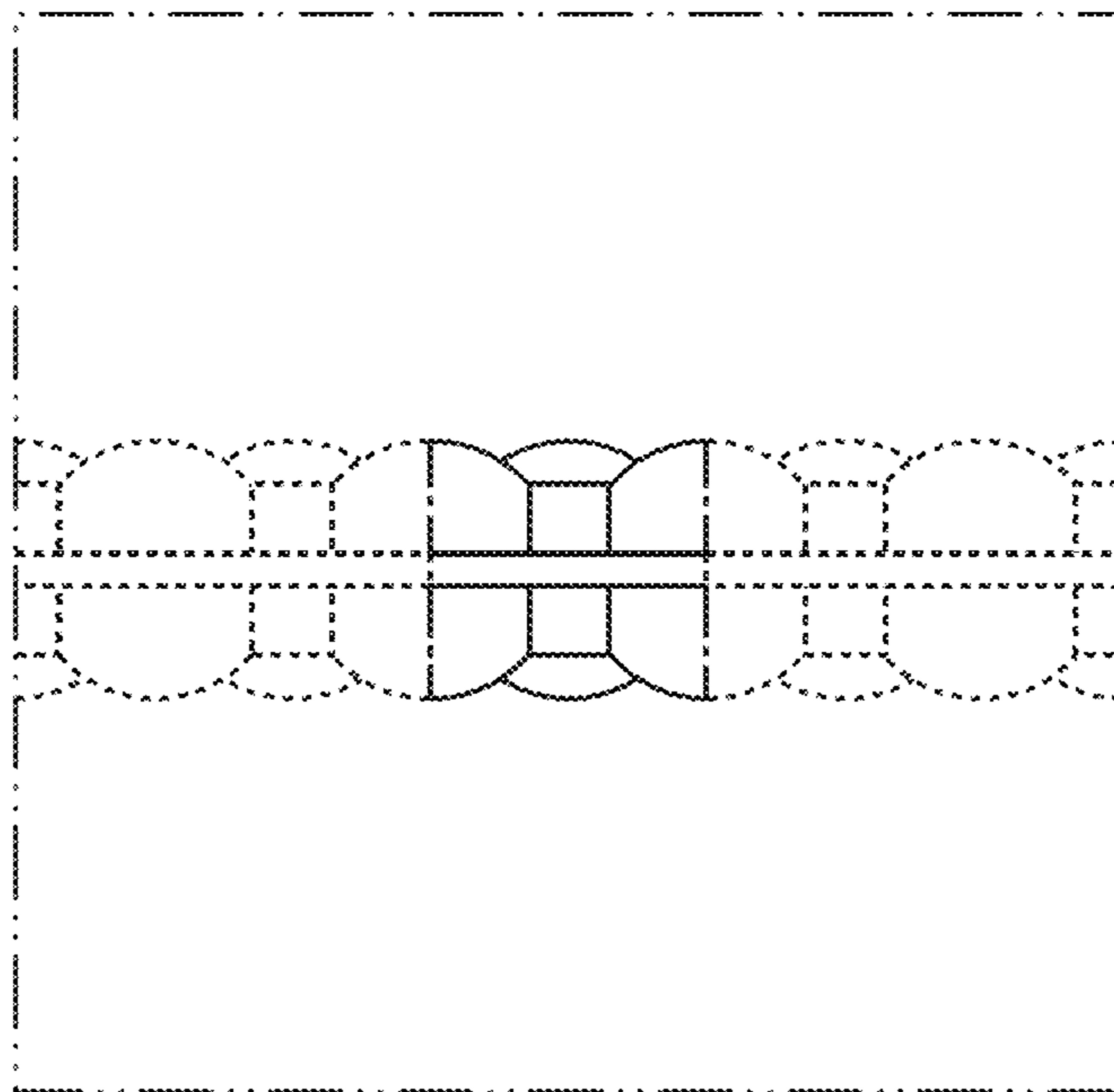


FIG. 8

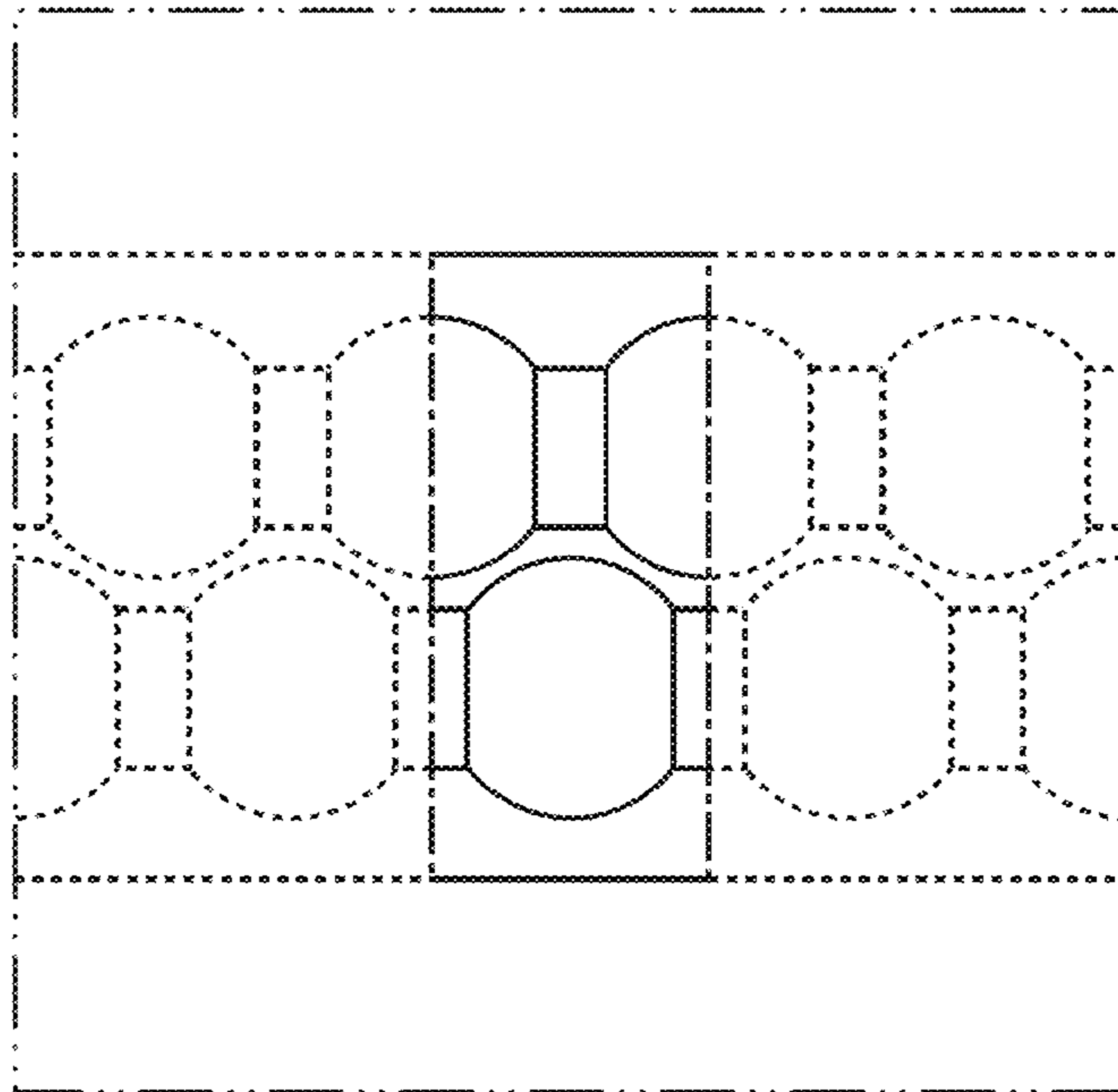


FIG. 9

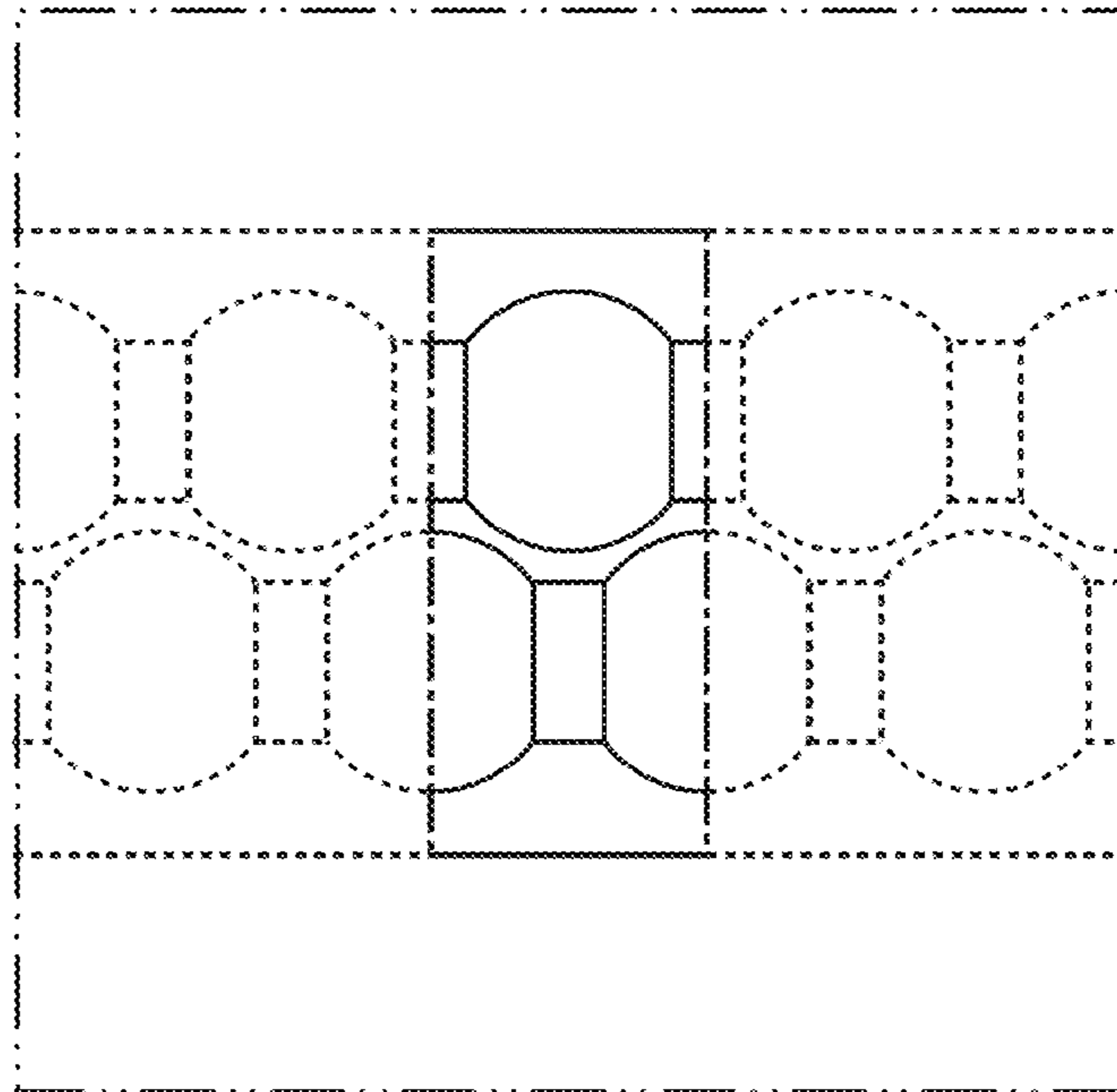


FIG. 10

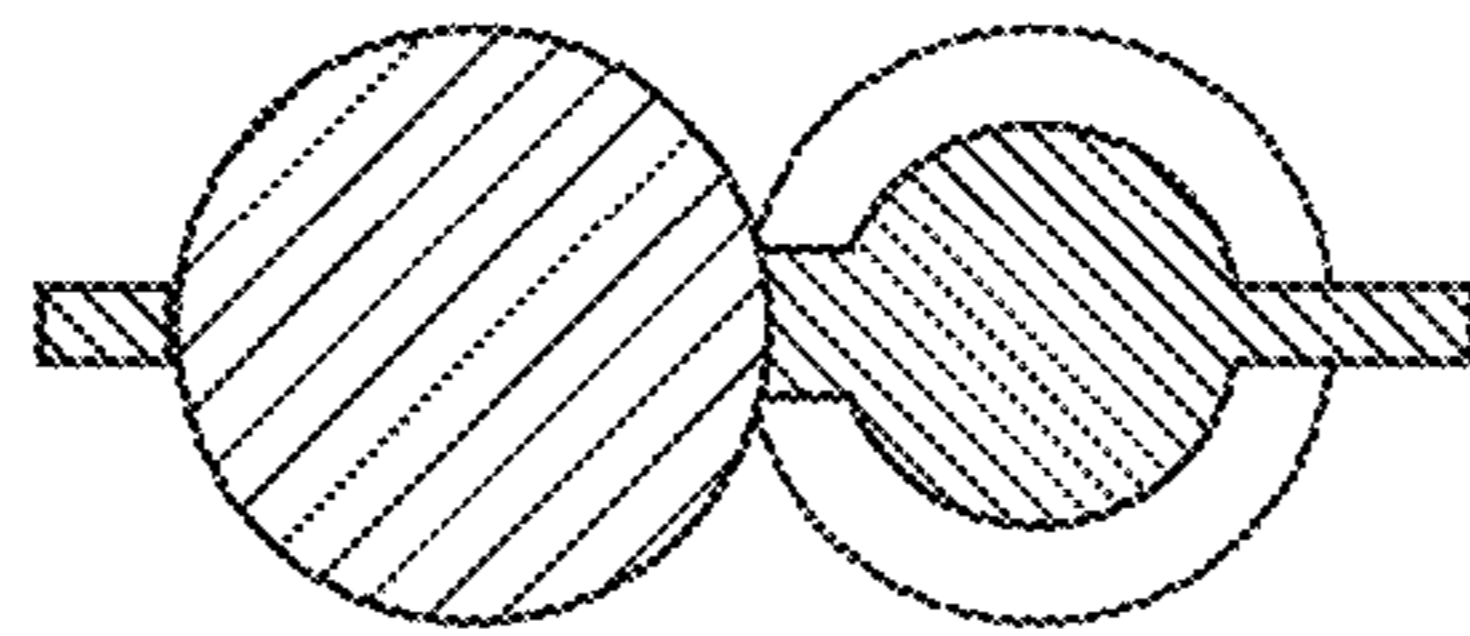


FIG. 11

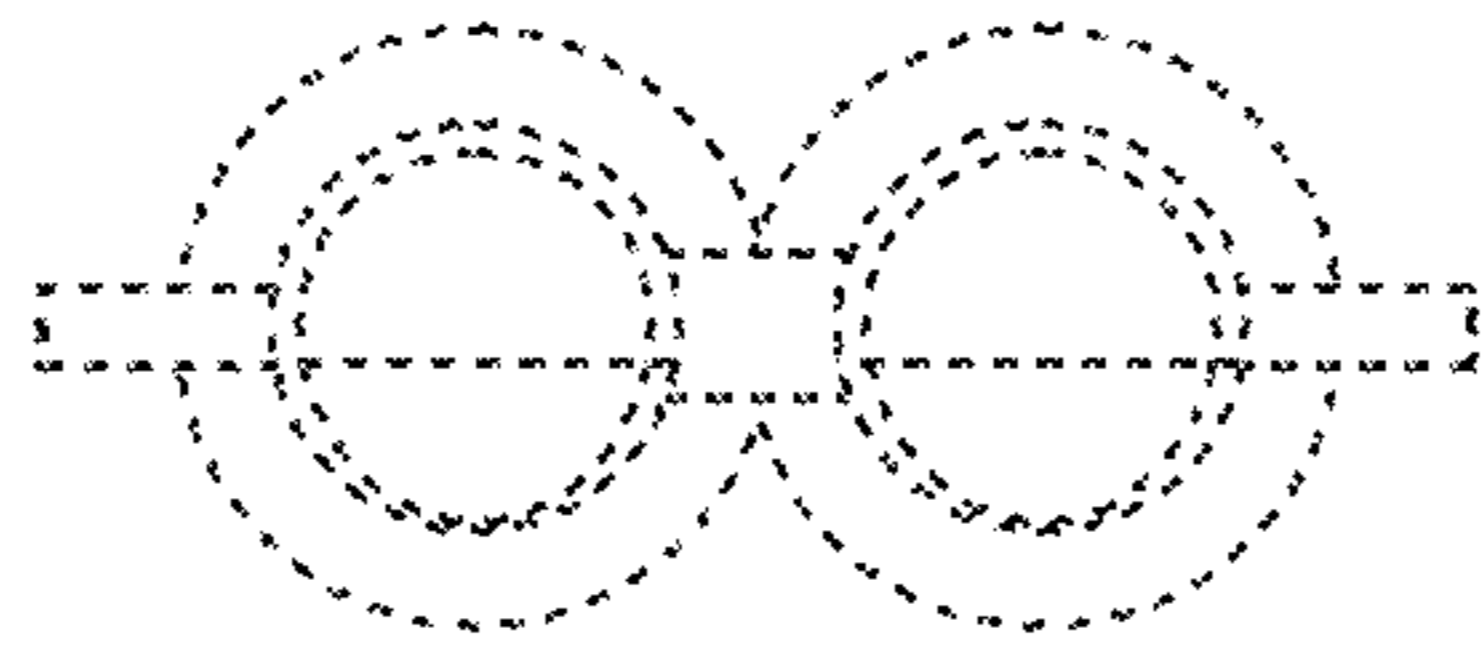


FIG. 12

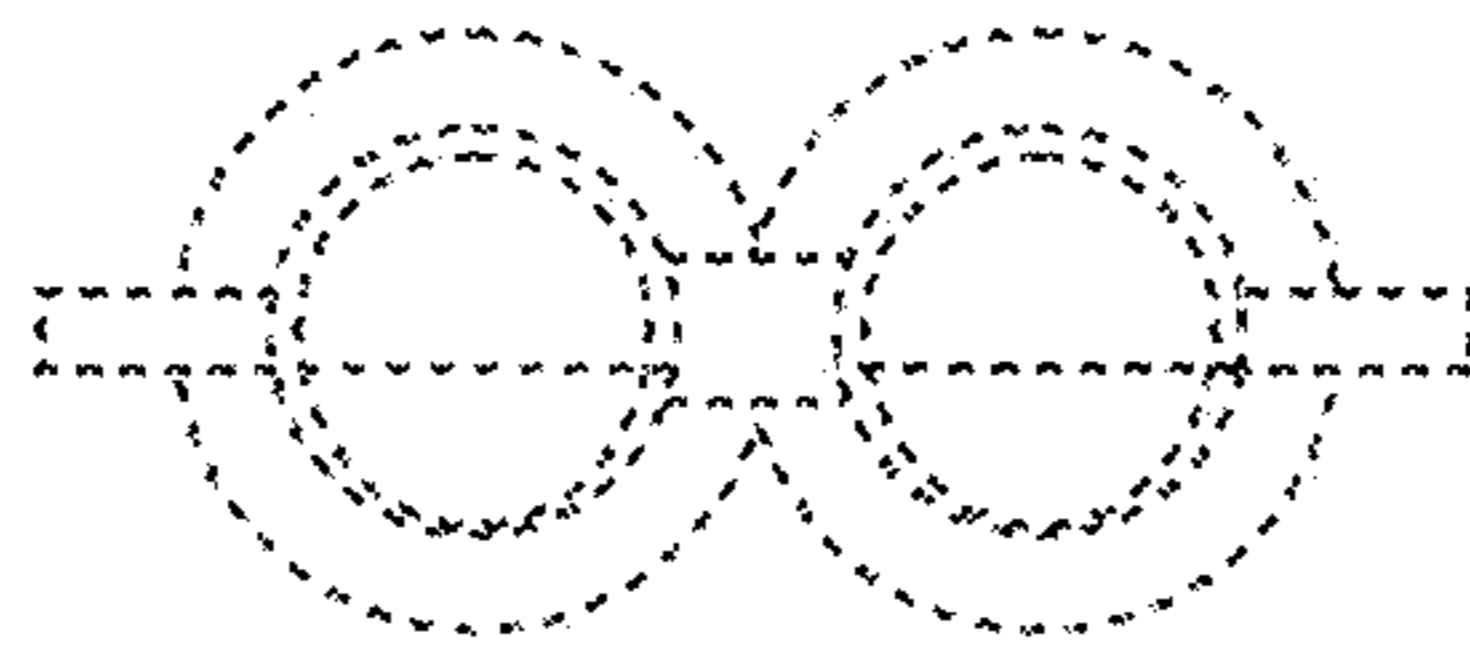


FIG. 13