



US00D878944S

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

(10) **Patent No.:** **US D878,944 S**
(45) **Date of Patent:** **** Mar. 24, 2020**

- (54) **PIPE SENSOR UNIT**
- (71) Applicant: **Orbis Intelligent Systems, Inc.**, San Diego, CA (US)
- (72) Inventors: **Daniel Milne Krywyj**, La Jolla, CA (US); **Jeffrey A. Prsha**, San Diego, CA (US)
- (73) Assignee: **Orbis Intelligent Systems, Inc.**, San Diego, CA (US)
- (**) Term: **15 Years**
- (21) Appl. No.: **29/650,752**
- (22) Filed: **Jun. 8, 2018**
- (51) **LOC (12) Cl.** **10-04**
- (52) **U.S. Cl.**
USPC **D10/102**
- (58) **Field of Classification Search**
USPC D10/46, 99, 102

(Continued)

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Primary Examiner — Antoine Duval Davis
(74) *Attorney, Agent, or Firm* — Weaver Austin Villeneuve & Sampson LLP

(57) **CLAIM**

We claim the ornamental design for a pipe sensor unit, as shown and described.

DESCRIPTION

FIG. 1 depicts an isometric view of a pipe sensor unit.
FIG. 2 depicts a front view of the pipe sensor unit of FIG. 1; the front and back views are mirror images of each other.

FIG. 3 depicts an off-angle view of the pipe sensor unit of FIG. 1.

FIG. 4 depicts a top view of the pipe sensor unit of FIG. 1.
FIG. 5 depicts another off-angle view of the pipe sensor unit of FIG. 1.

FIG. 6 depicts a bottom view of the pipe sensor unit of FIG. 1.

FIG. 7 depicts a side view of the pipe sensor unit of FIG. 1; the left side and right side views are mirror images of each other.

FIG. 8 depicts an isometric exploded view of the pipe sensor unit of FIG. 1.

FIG. 9 depicts an isometric view of a pipe sensor housing of the pipe sensor unit of FIG. 1.

FIG. 10 depicts an off-angle view of the pipe sensor housing of FIG. 9.

FIG. 11 depicts a front view of the pipe sensor housing of FIG. 9; the front and back views are mirror images of each other.

FIG. 12 depicts a side view of the pipe sensor housing of FIG. 9; the left side and right side views are mirror images of each other.

FIG. 13 depicts a bottom view of the pipe sensor housing of FIG. 9.

FIG. 14 depicts a top view of the pipe sensor housing of FIG. 9.

FIG. 15 depicts an isometric view of a pipe clamp of the pipe sensor unit of FIG. 1.

FIG. 16 depicts a front view of the pipe clamp of FIG. 15; the front and back views are mirror images of each other.

FIG. 17 depicts a top view of the pipe clamp of FIG. 15.

FIG. 18 depicts a bottom view of the pipe clamp of FIG. 15.

FIG. 19 depicts a side view of the pipe clamp of FIG. 15; the left side and right side views are mirror images of each other.

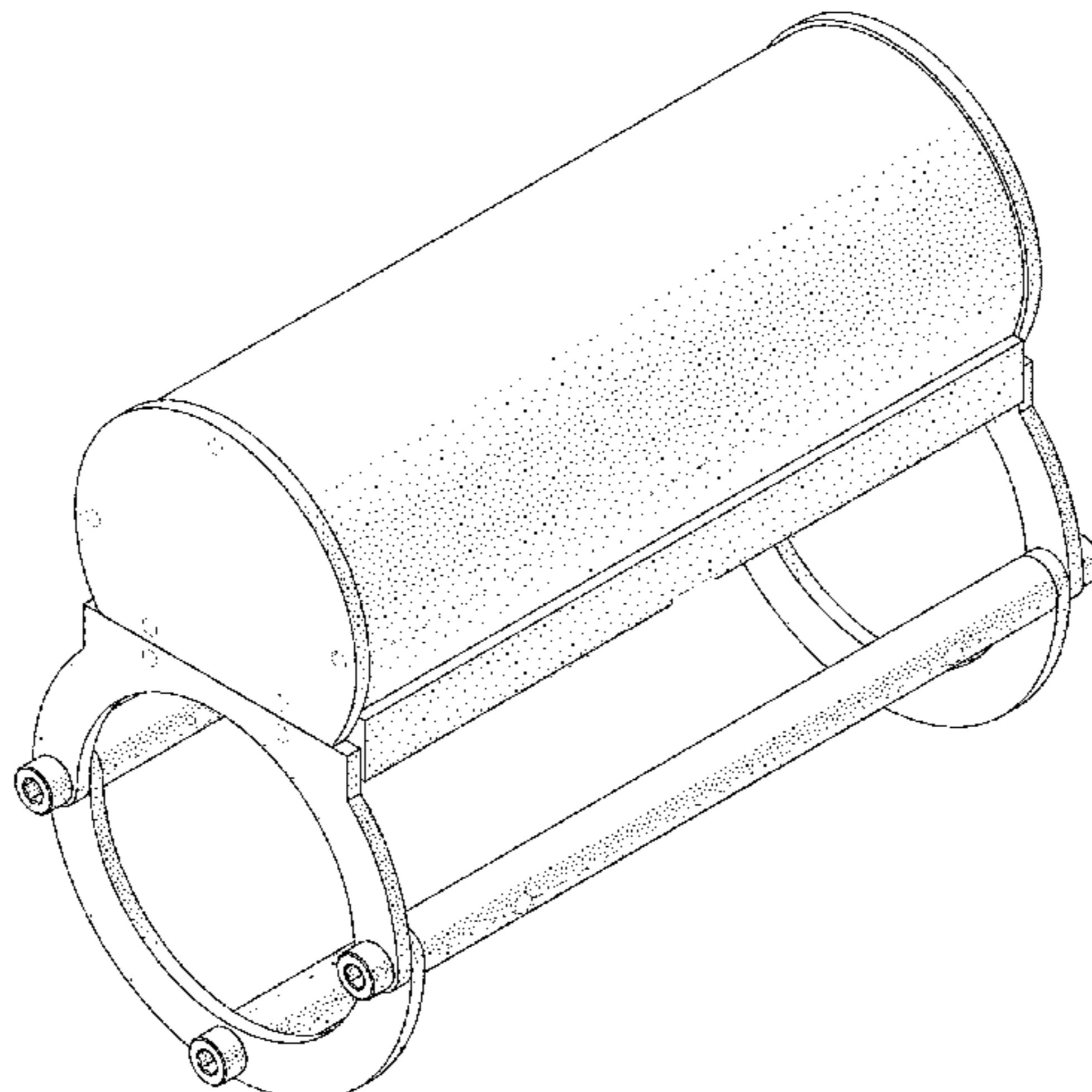
FIG. 20 depicts an isometric view of the pipe clamp of FIG. 15 shown in a partially open position and without one bar and two screws;

FIG. 21 depicts an off-angle exploded view of the pipe claim of FIG. 15.

FIG. 22 depicts an isometric view of the pipe sensor housing of FIG. 9 with a bridge.

FIG. 23 depicts an isometric exploded view of the pipe sensor housing of FIG. 22.

(Continued)



FIGS. 24-33 depict different views of the pipe sensor housing of FIGS. 9 and 13, with various lines changed to broken lines to indicate that such lines are disclaimed subject matter and with various dash-dash-dot lines indicating boundary lines between claimed subject matter and unclaimed subject matter. The shading from these Figures has been removed for clarity issues. FIGS. 24-33 also depict views of the pipe sensor housing with various features and lines removed

FIGS. 34-38 depict views of the pipe sensor unit and pipe sensor housing with screws,

FIG. 39 depicts an isometric view of a pipe sensor housing face plate of the pipe sensor unit of FIG. 1.

FIG. 40 depicts a top view of the pipe sensor housing face plate of FIG. 39.

FIG. 41 depicts a bottom view of the pipe sensor housing face plate of FIG. 39.

FIG. 42 depicts a side view of the pipe sensor housing face plate of FIG. 39; the left side and right side views are mirror images of each other.

FIG. 43 depicts a front view of the pipe sensor housing face plate of FIG. 39; the front and back views are mirror images of each other.

FIG. 44 is a top view of the pipe sensor housing face plate of FIG. 39 shown with cross-section lines indicating the section planes for FIGS. 45 and 46.

FIG. 45 is a cross-sectional view taken along line 45-45 of FIG. 44; and,

FIG. 46 is a cross-sectional view taken along line 46-46 of FIG. 44.

The pipe sensor unit in the accompanying figures may be positioned on a fluid conduit, such as a pipe or a standpipe. The pipe sensor unit of FIGS. 1-8 may include a pipe sensor housing that has a face plate with a face, and a pipe clamp attached to the pipe sensor housing. The pipe sensor unit may be positioned on the fluid conduit, such as a pipe, so that the face of the pipe sensor housing, seen in FIGS. 3, 5, 6, 8, 10, may face the pipe.

Stipple shading is used in the accompanying Figures to convey surface contouring and not texture. The tangent edges, for the sake of clarity, represent transitions between a surface and a rounded surface, i.e., where these two surfaces are tangent to one another.

Broken lines are used to depict features or elements that are not considered to be part of the claimed design, as evidenced

by the removal of shading within the disclaimed features and elements, and the presence of shading outside of the disclaimed features and elements. Dash-dot-dash boundary lines are used herein to indicate a transition from claimed subject matter to unclaimed subject matter, as evidenced by the absence of shading within the boundary shape and the presence of shading outside of the boundary shape.

1 Claim, 22 Drawing Sheets

(58) **Field of Classification Search**

CPC F04B 49/10; F04B 2205/05; F04B 2205/063; F04D 15/02; G01H 11/08; G01H 13/00; G01H 13/003; G01H 13/006; G01H 1/12; G01M 7/025; G01M 13/028; G08B 21/187; G08B 13/1427; G08B 13/1438; G08B 21/023; G08B 21/028; G08B 25/10; G01R 31/343; G01R 33/028; G07C 3/00; H02K 11/0078; H02K 11/001; H02K 11/0094; H05K 5/0017; F16L 55/32; H04N 7/185; E03F 7/10

See application file for complete search history.

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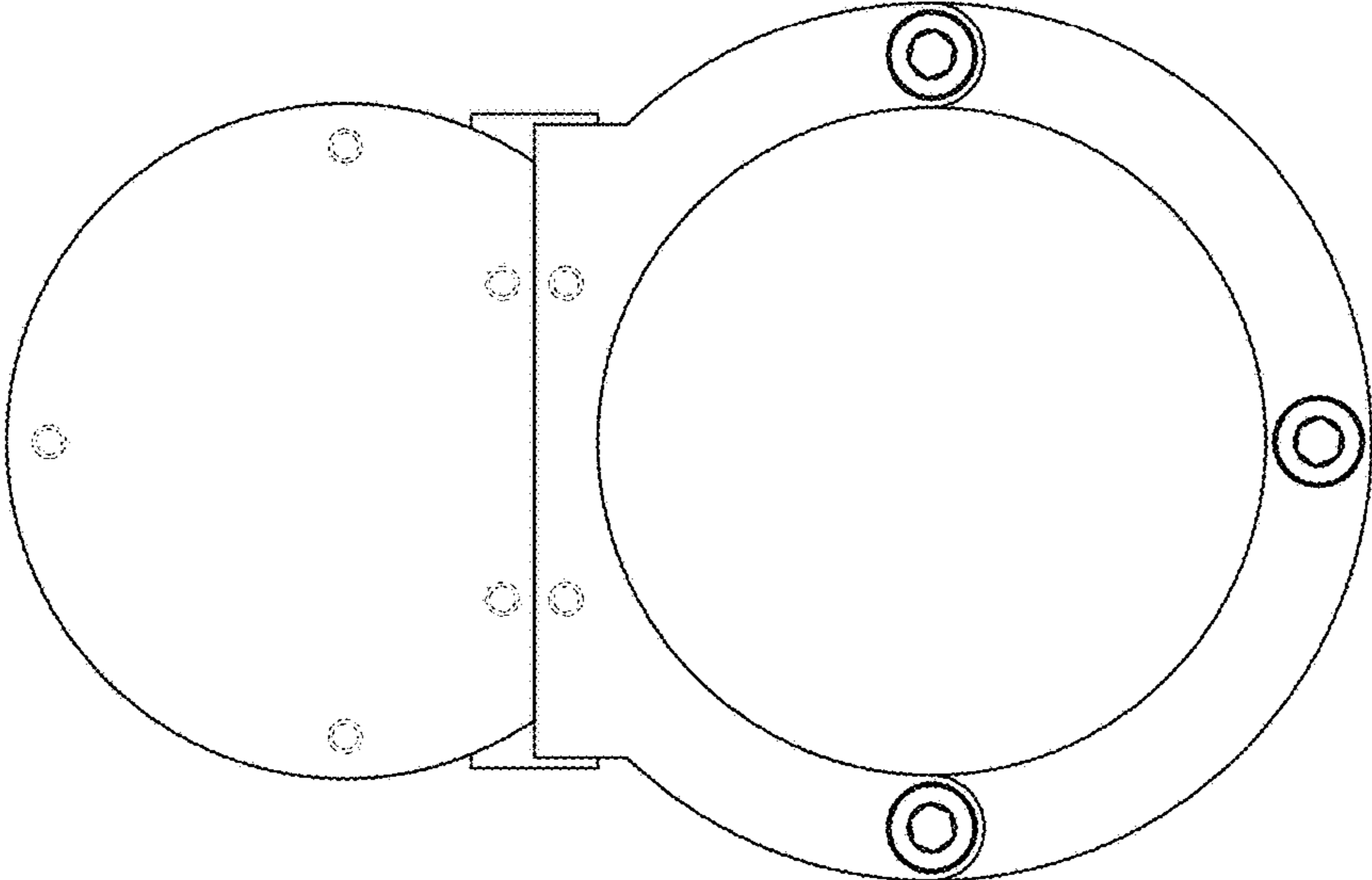


Figure 2

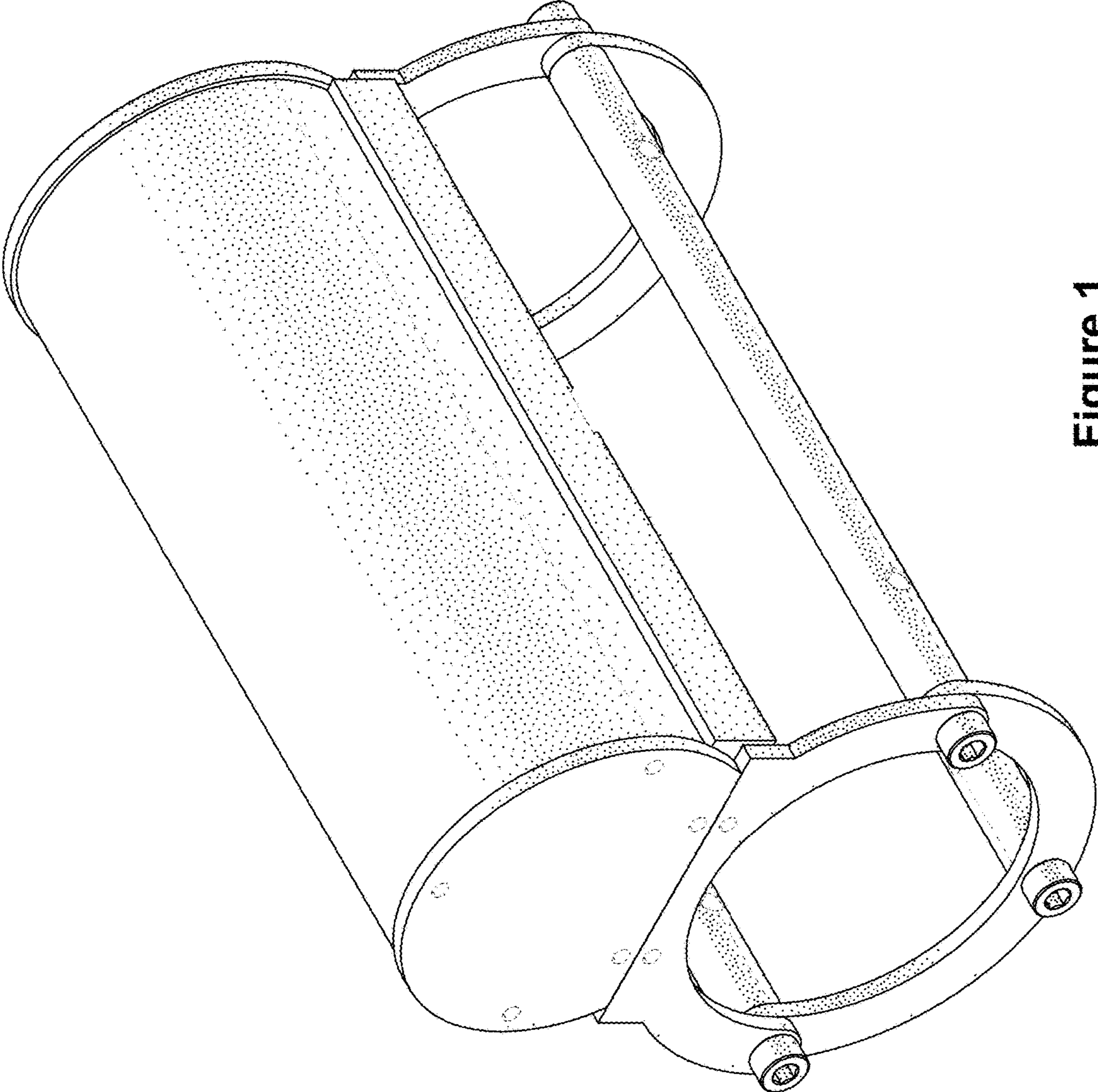


Figure 1

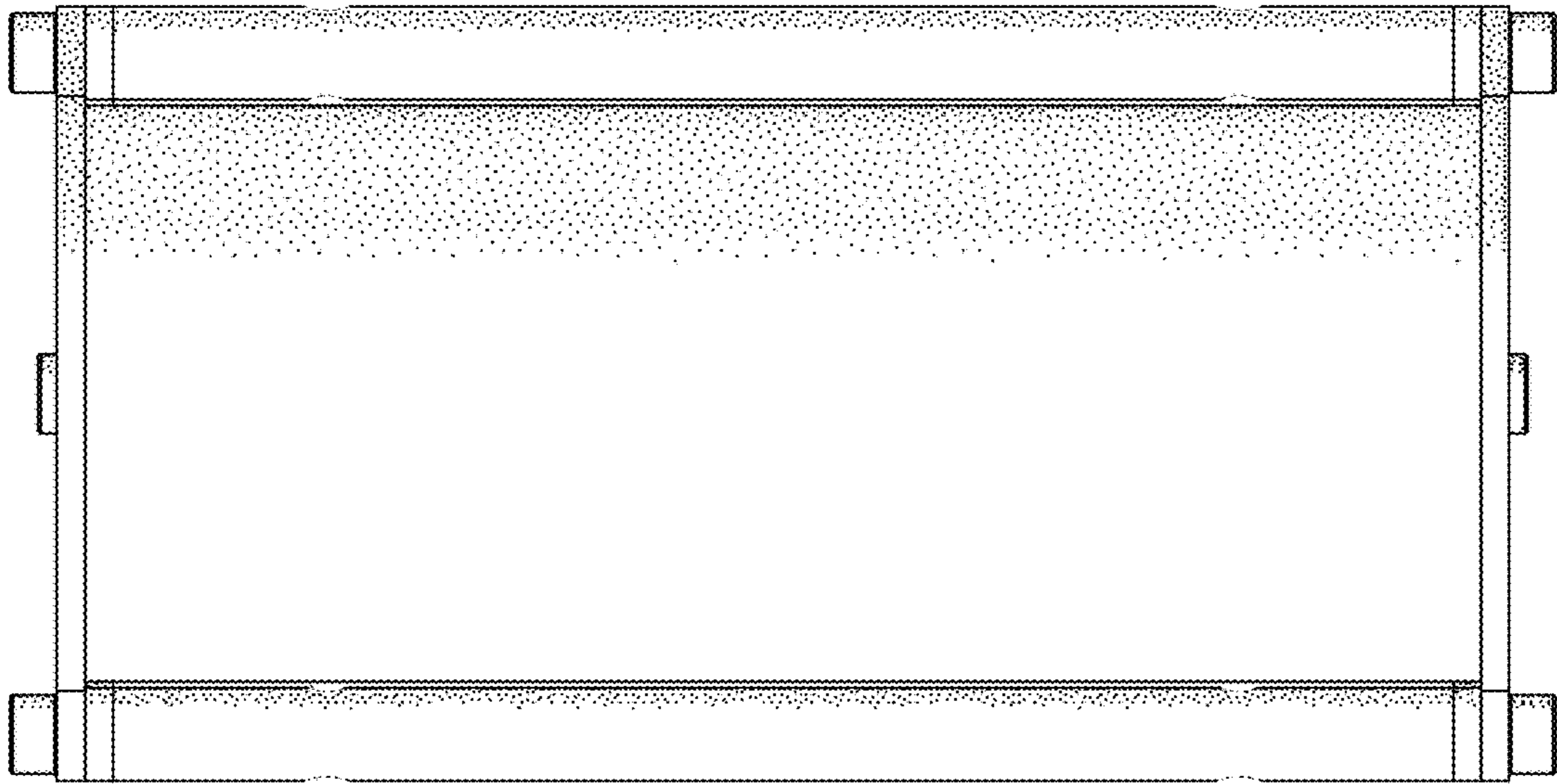


Figure 4

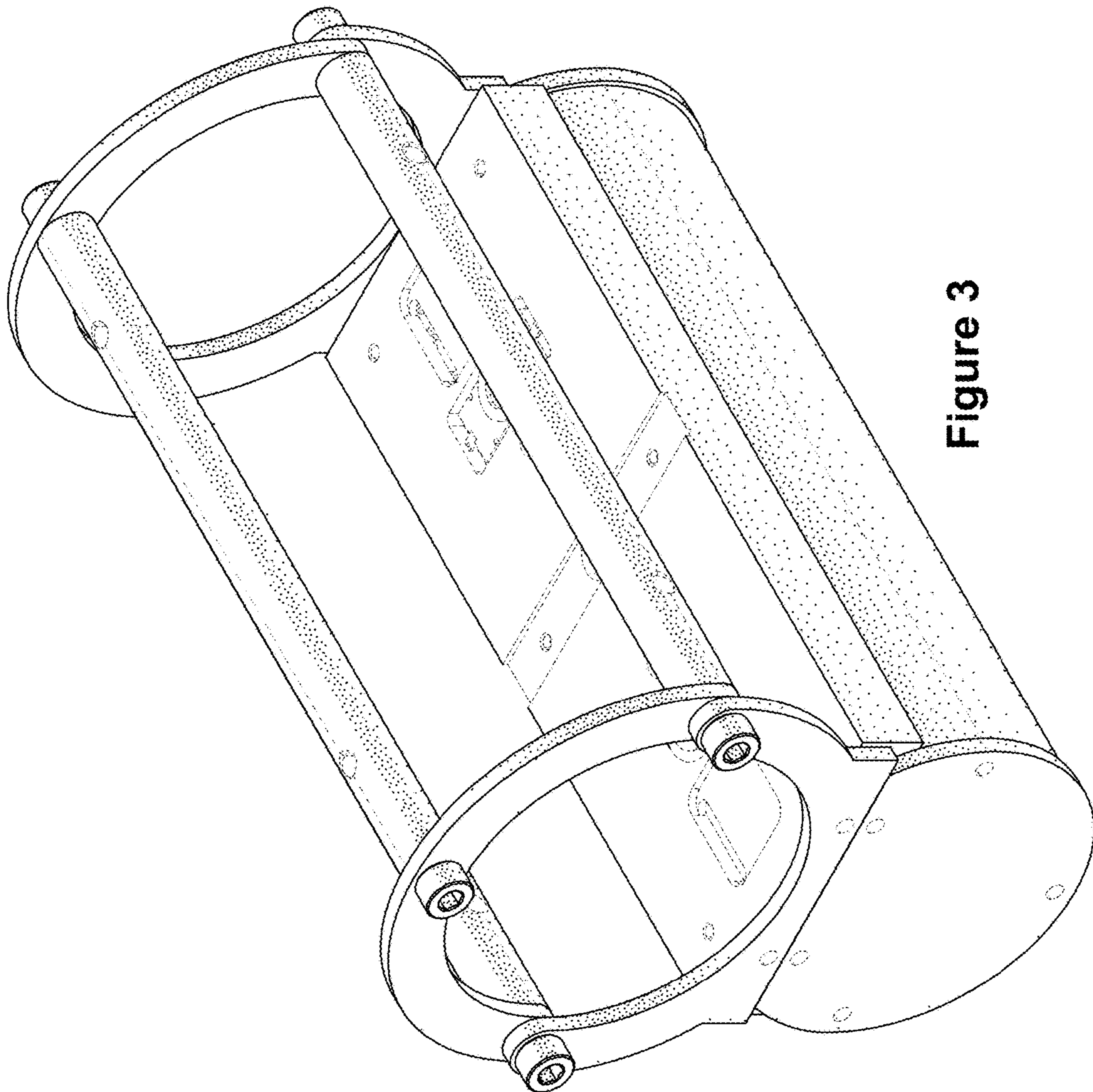


Figure 3

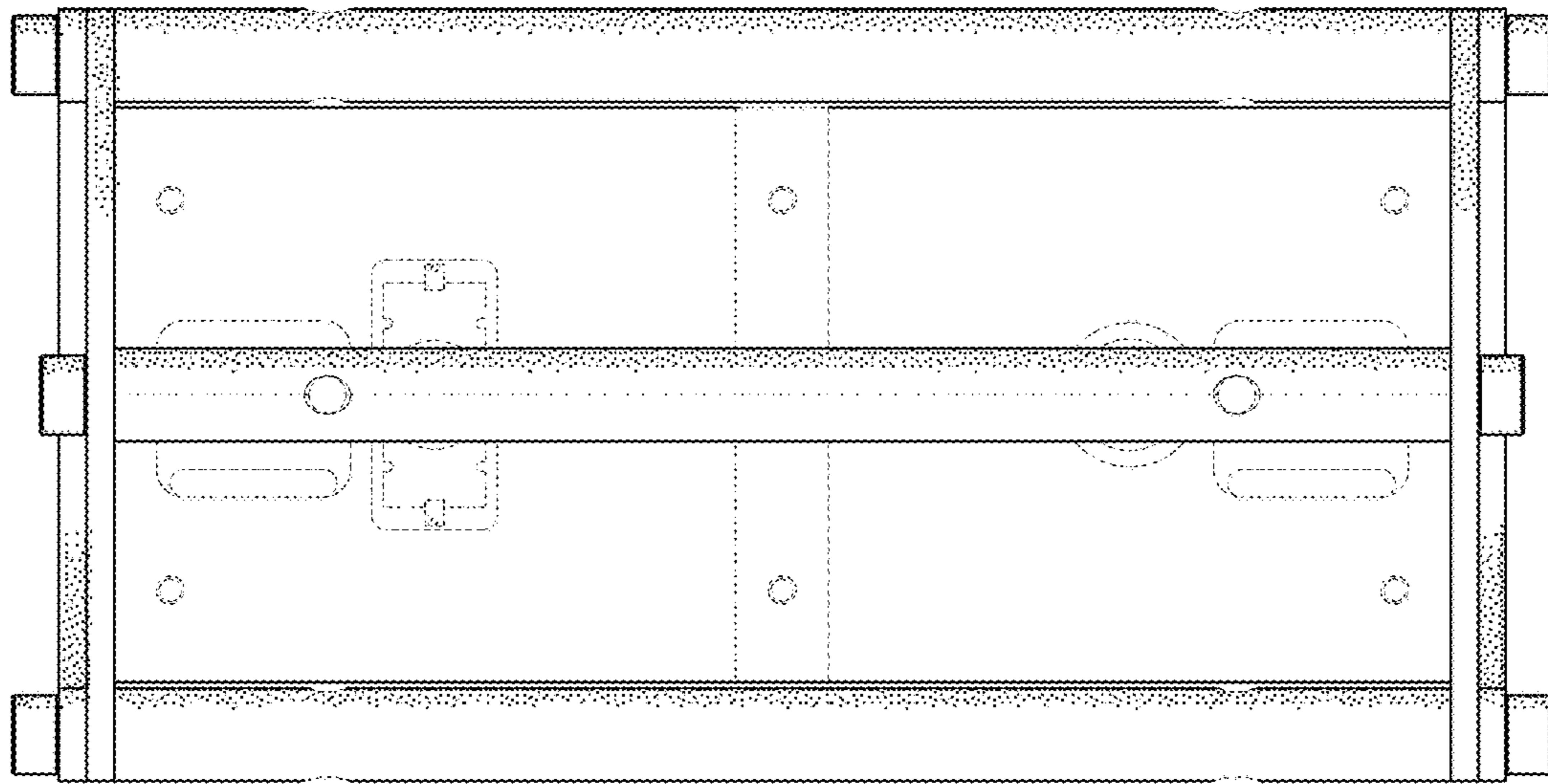


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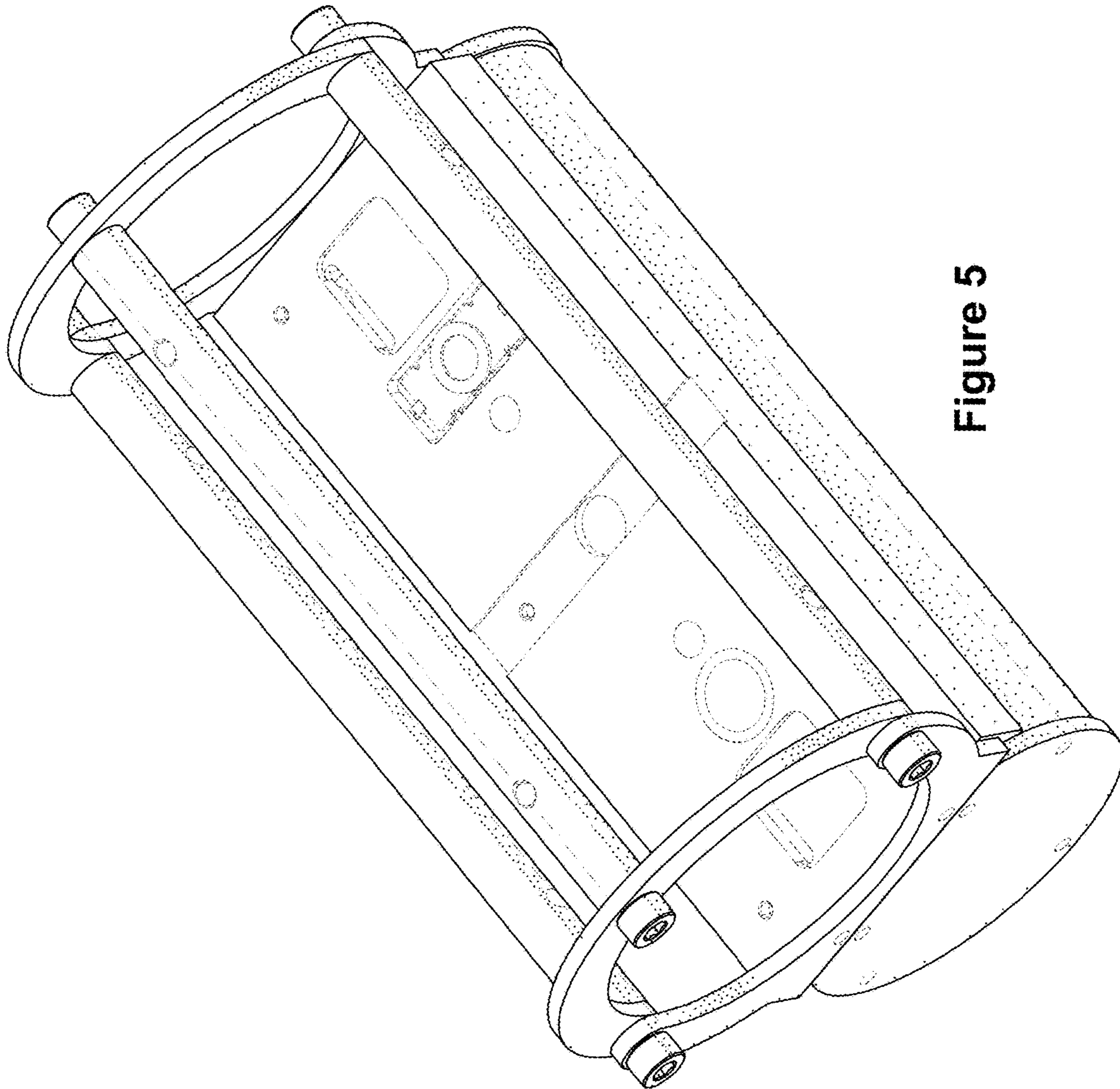


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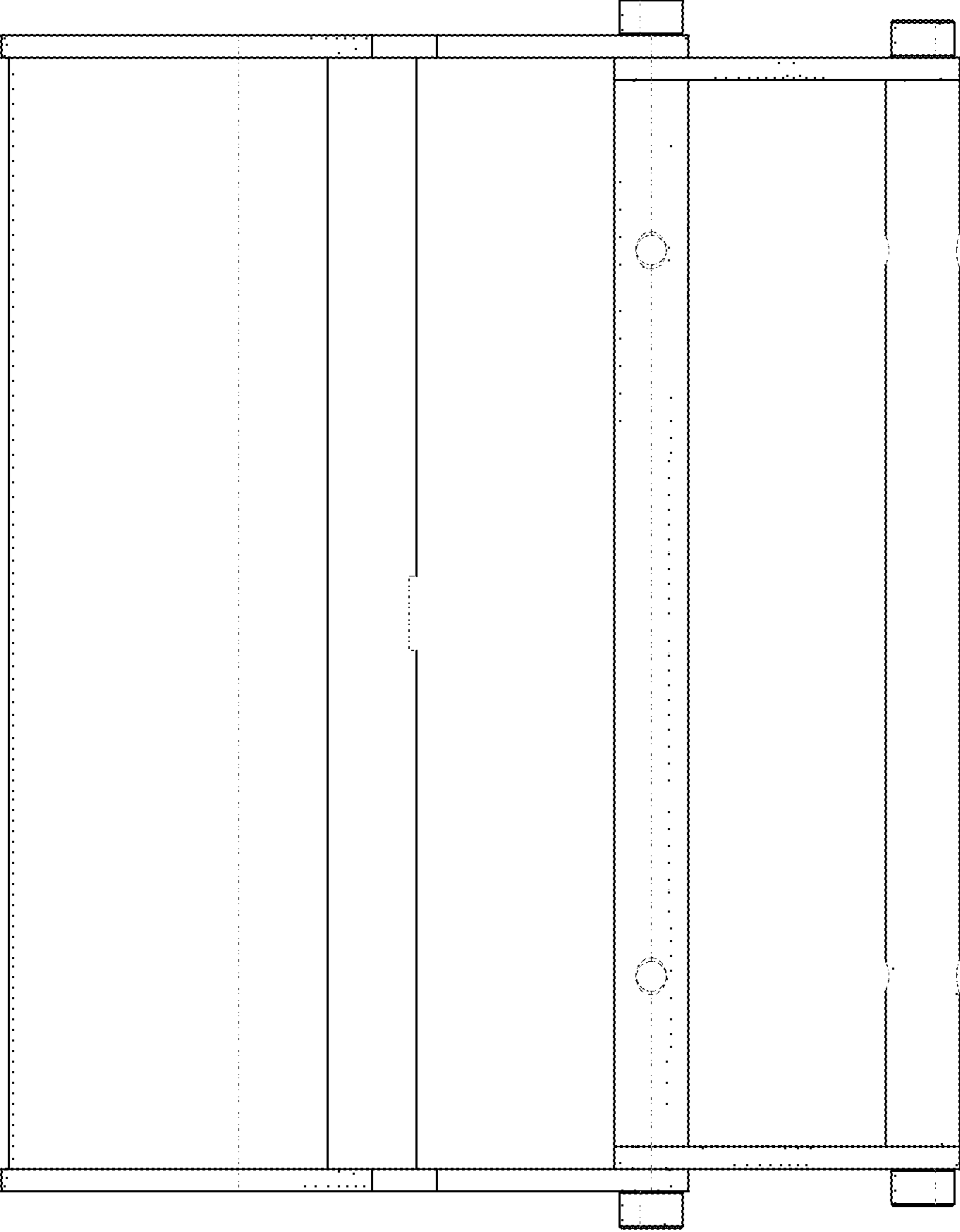


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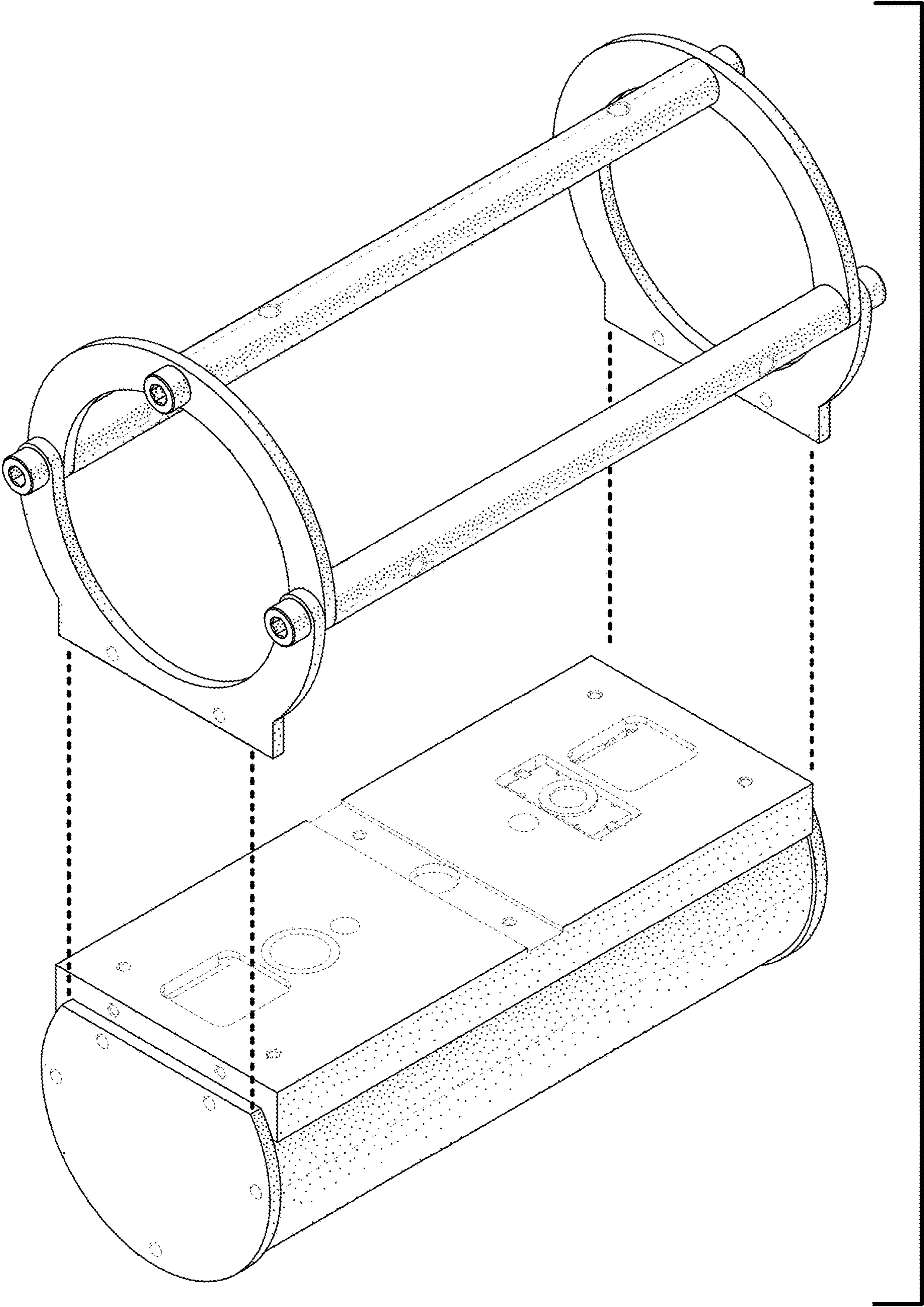


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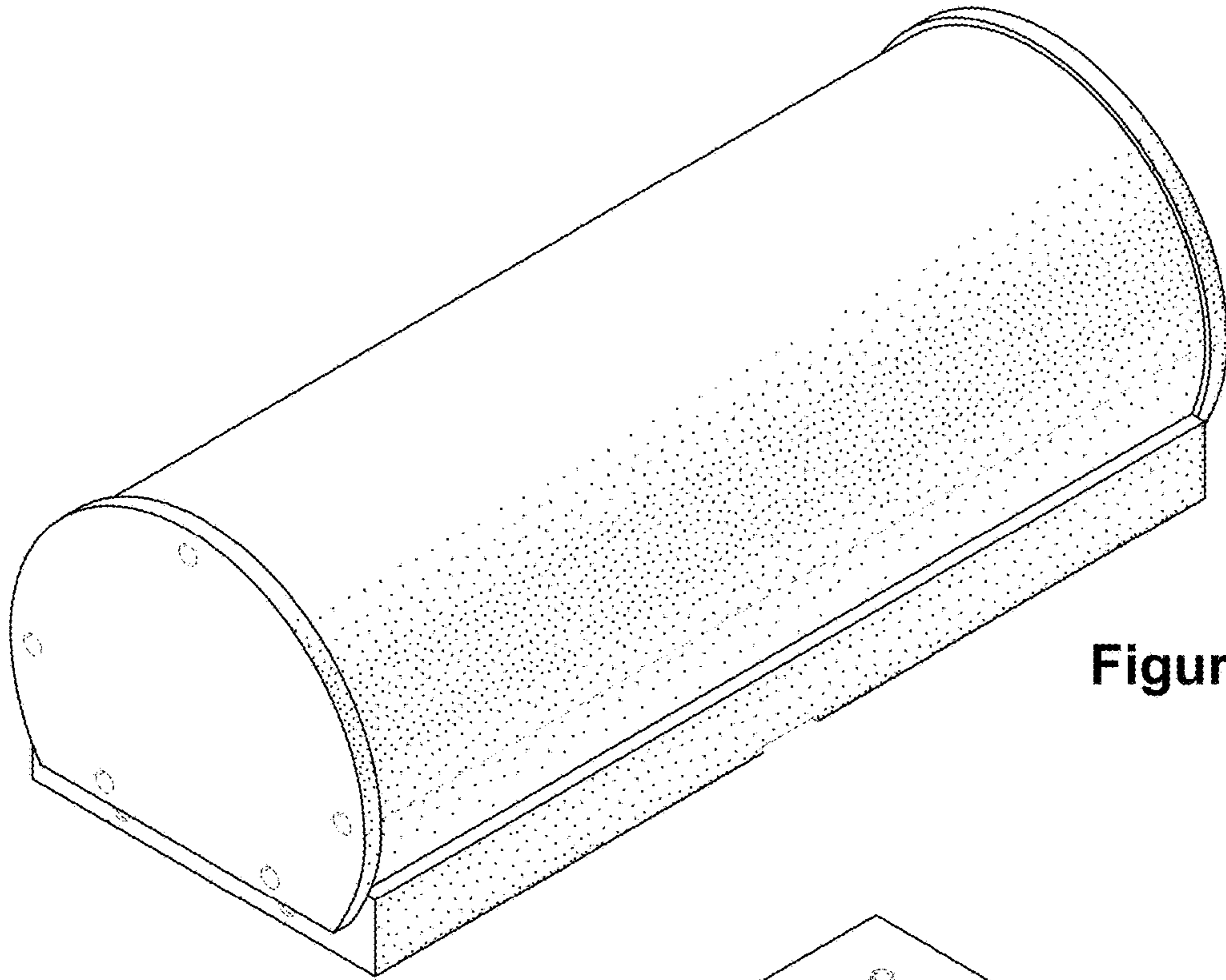


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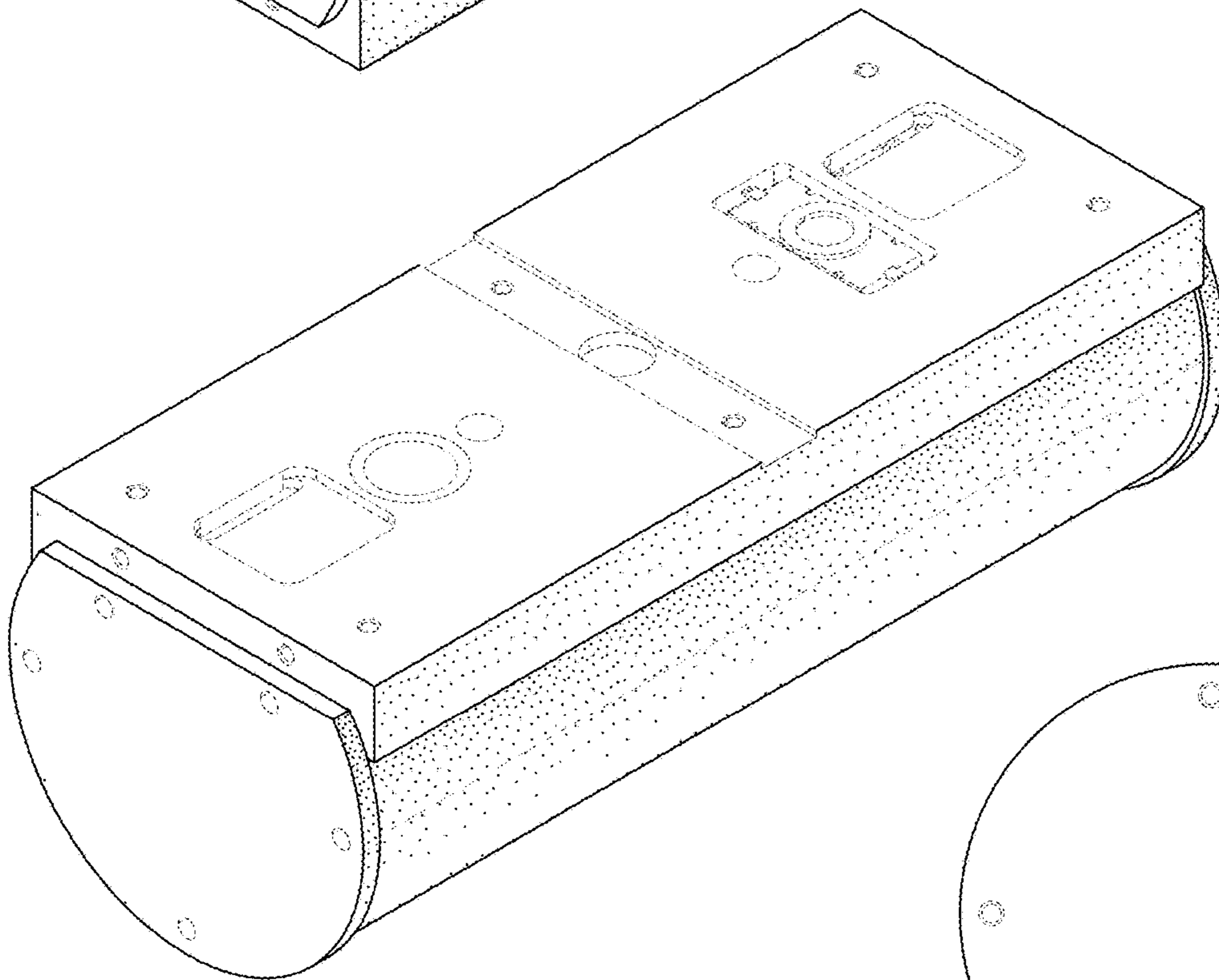


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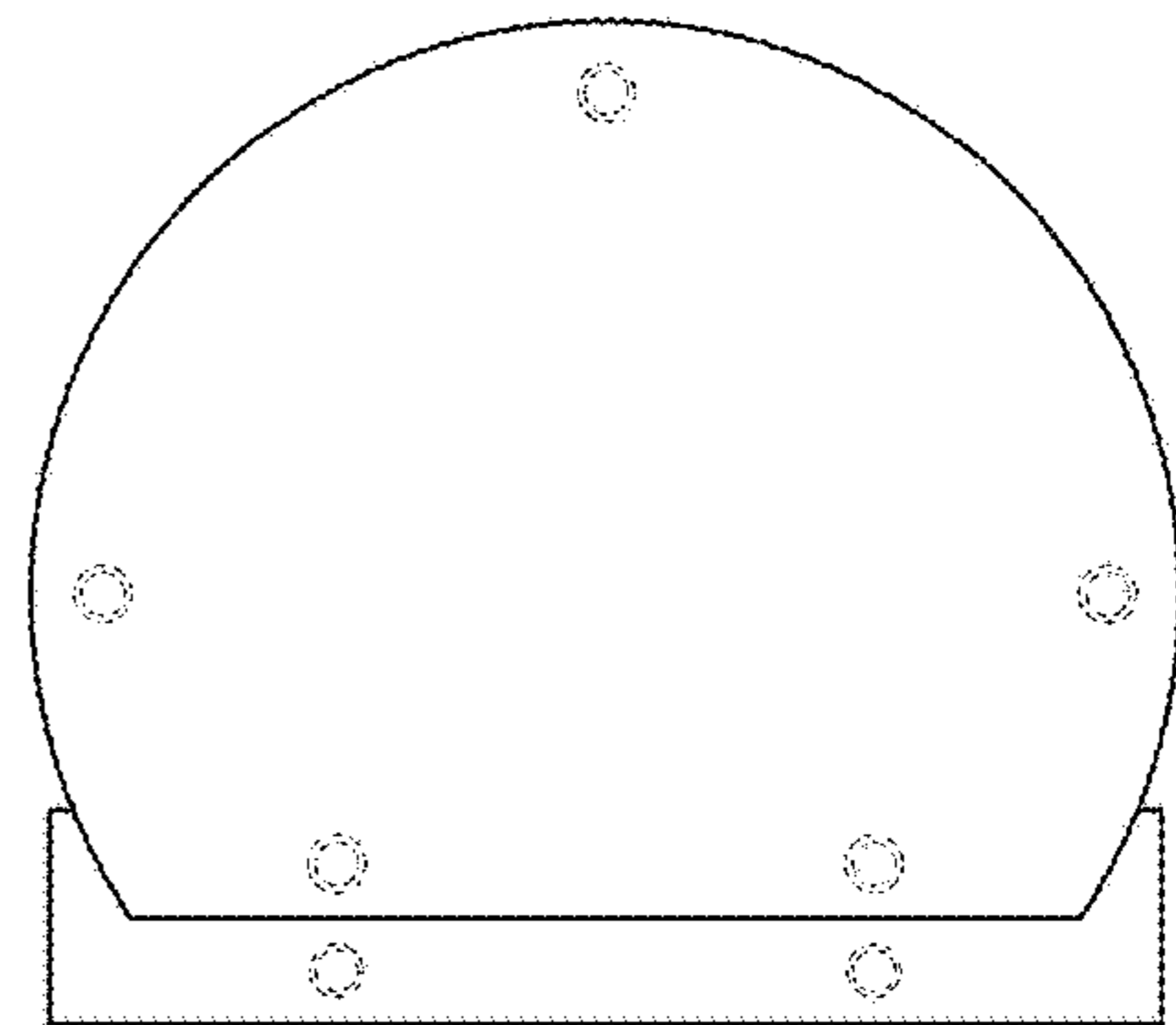


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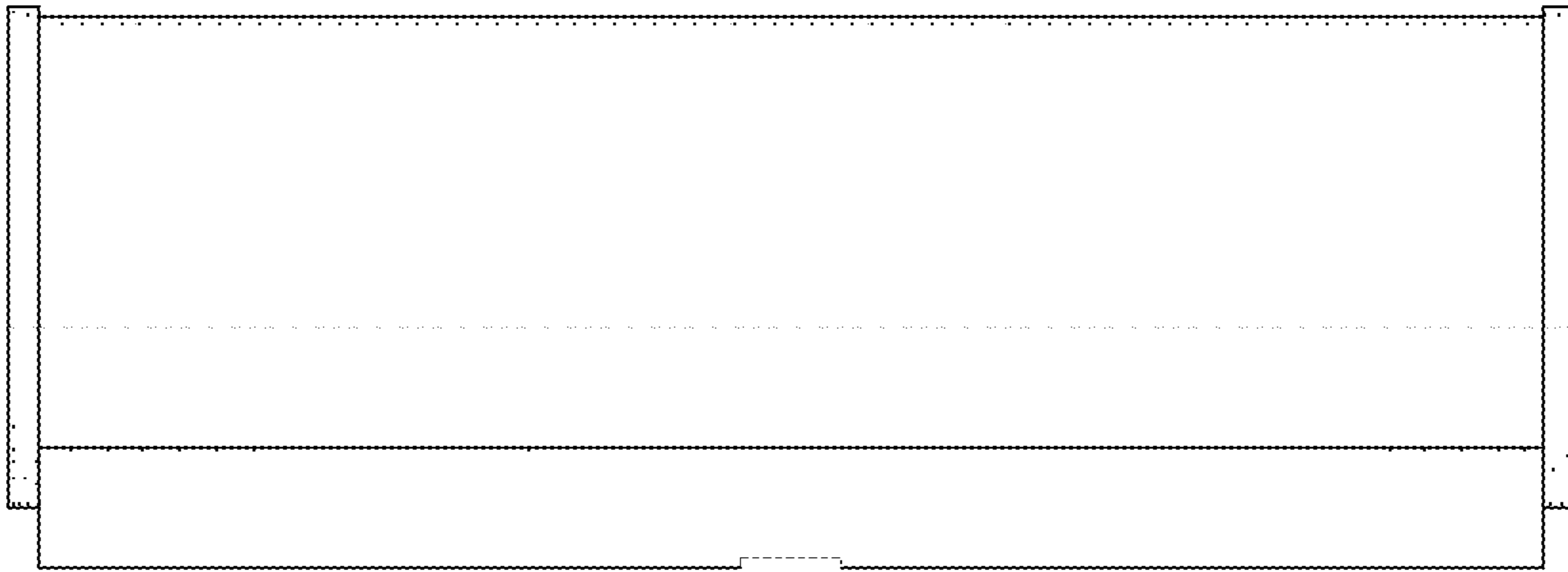


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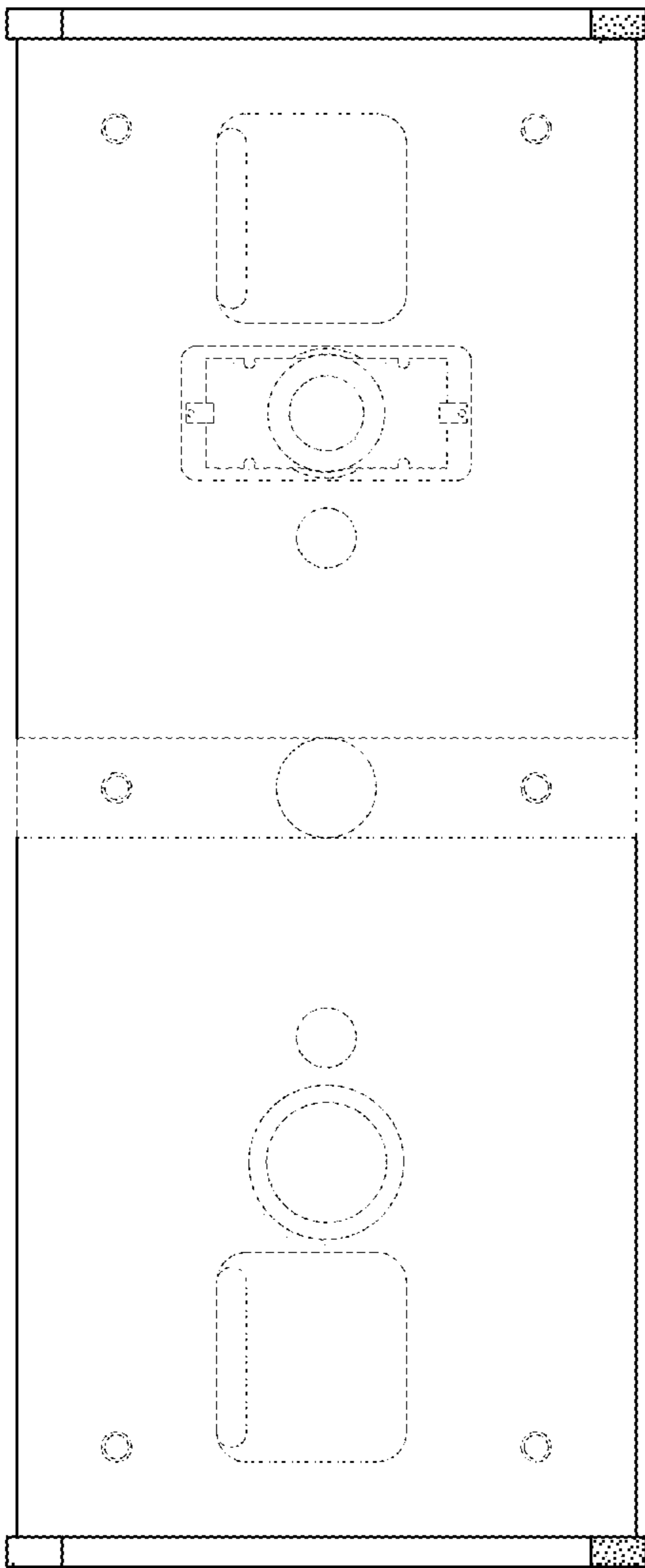


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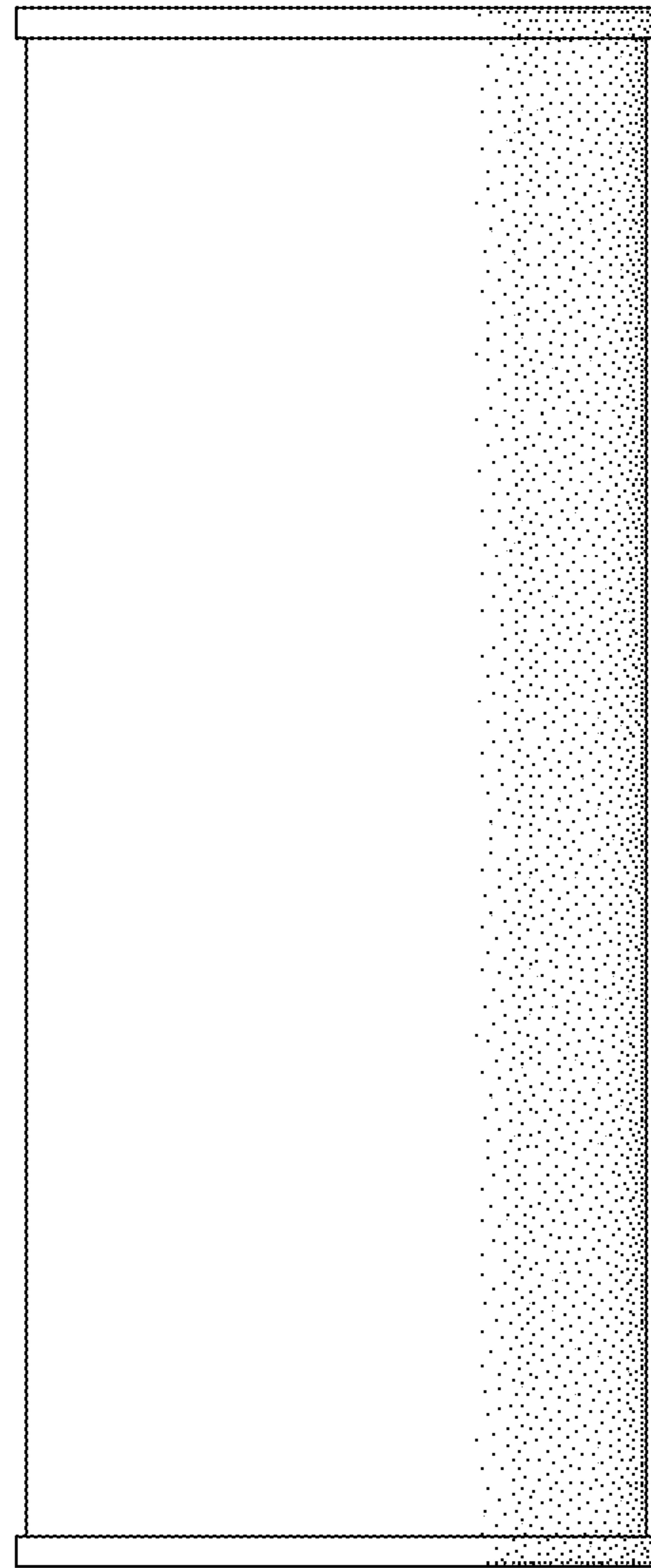


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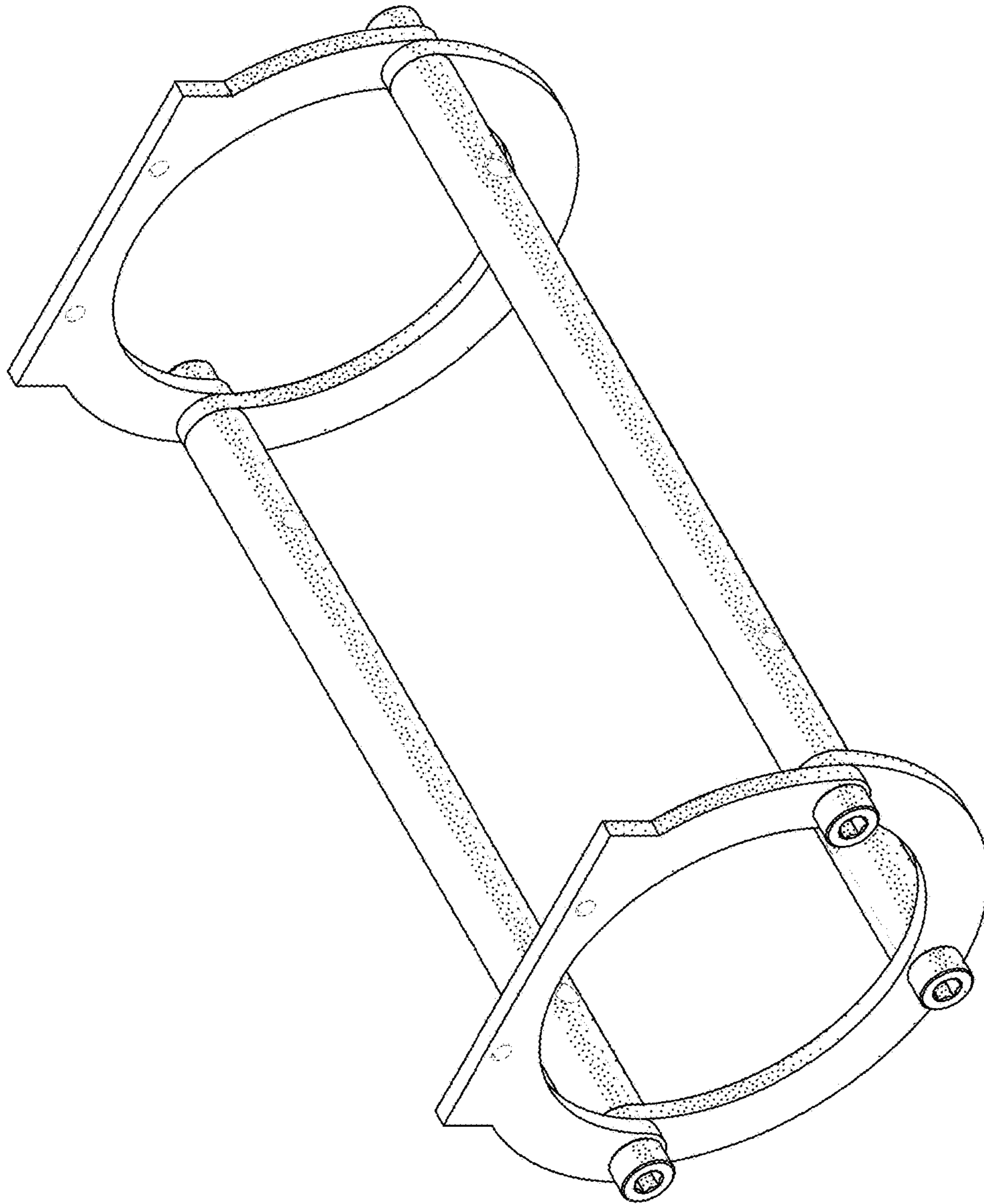


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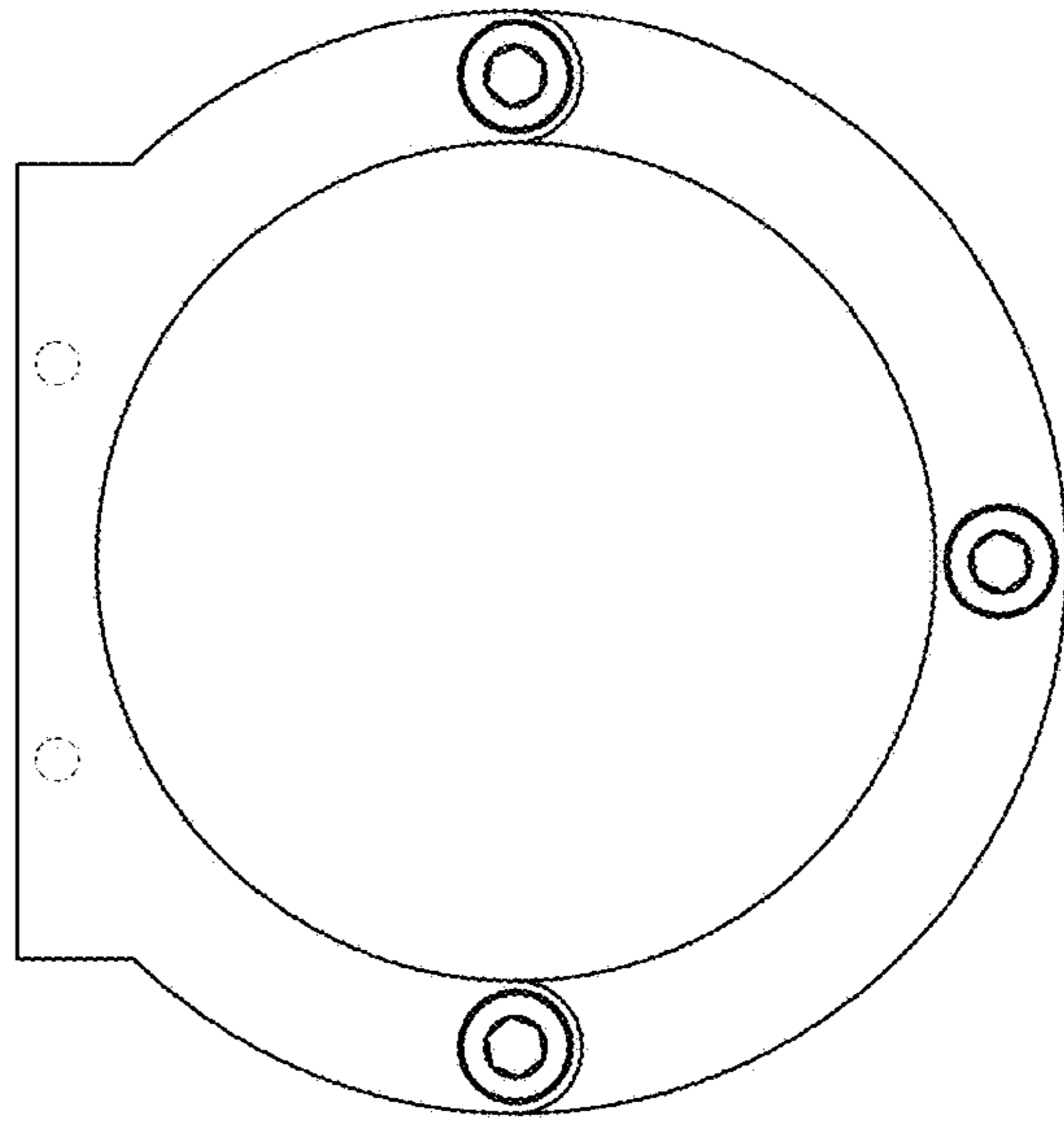


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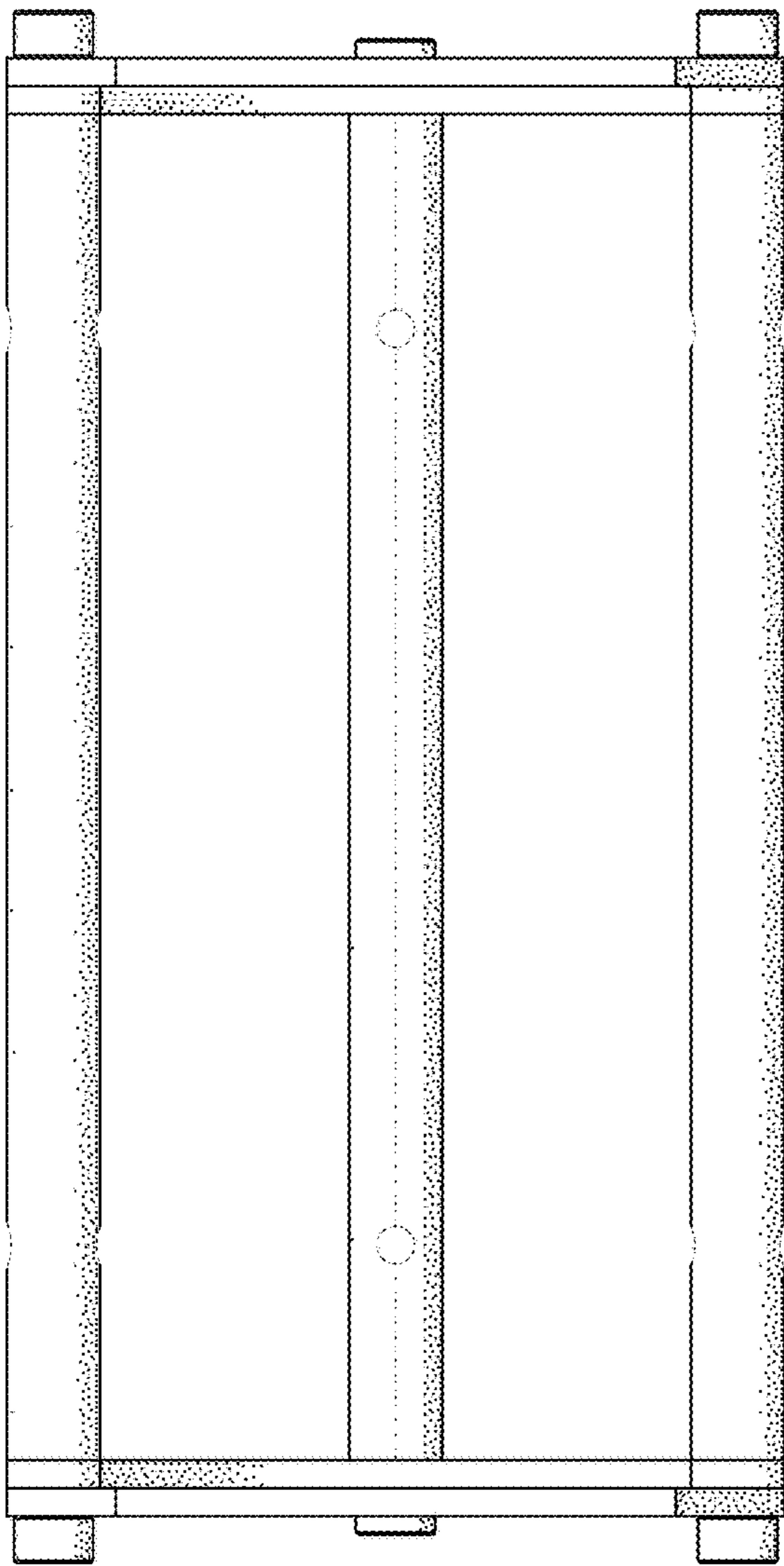


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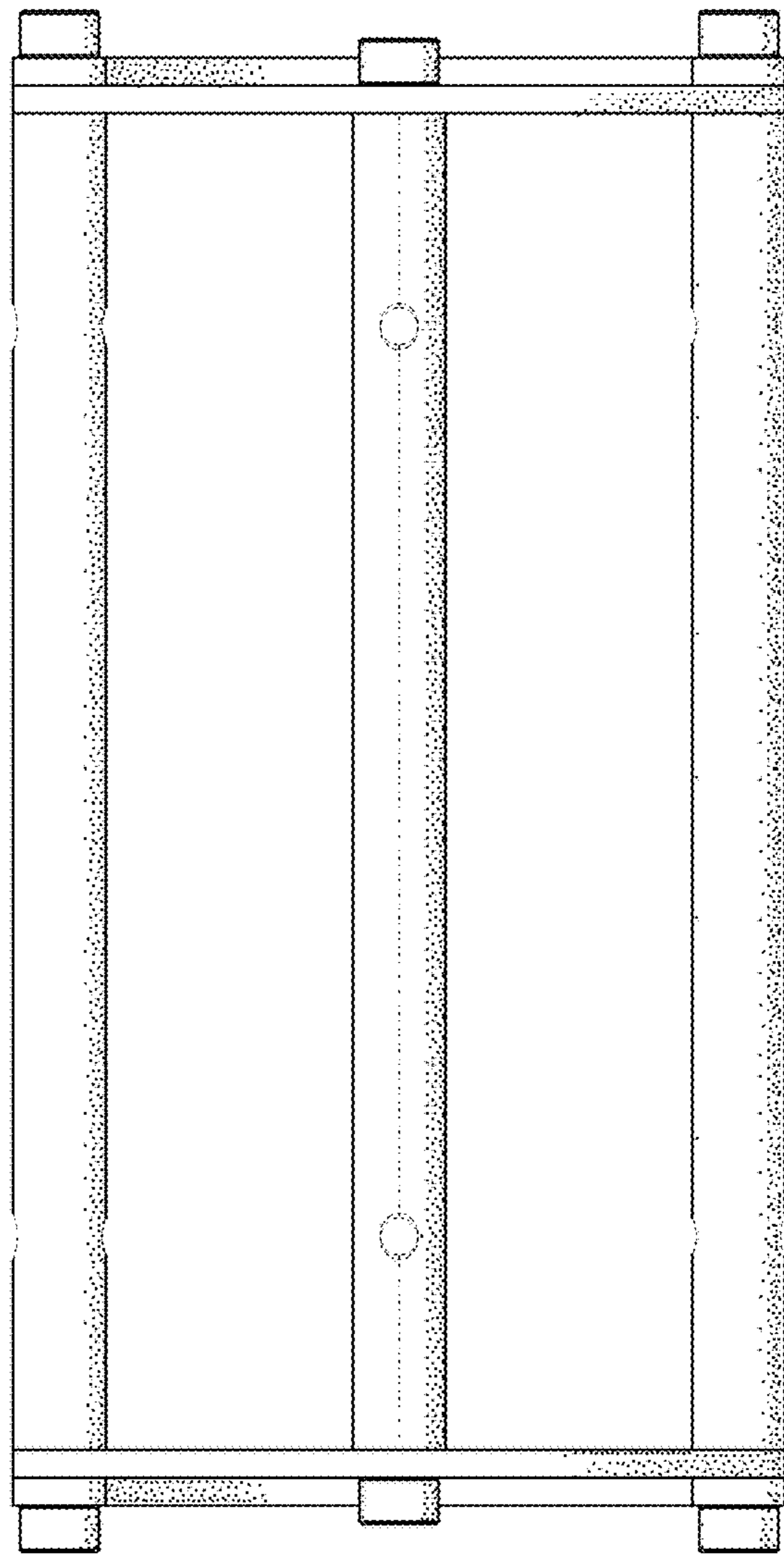


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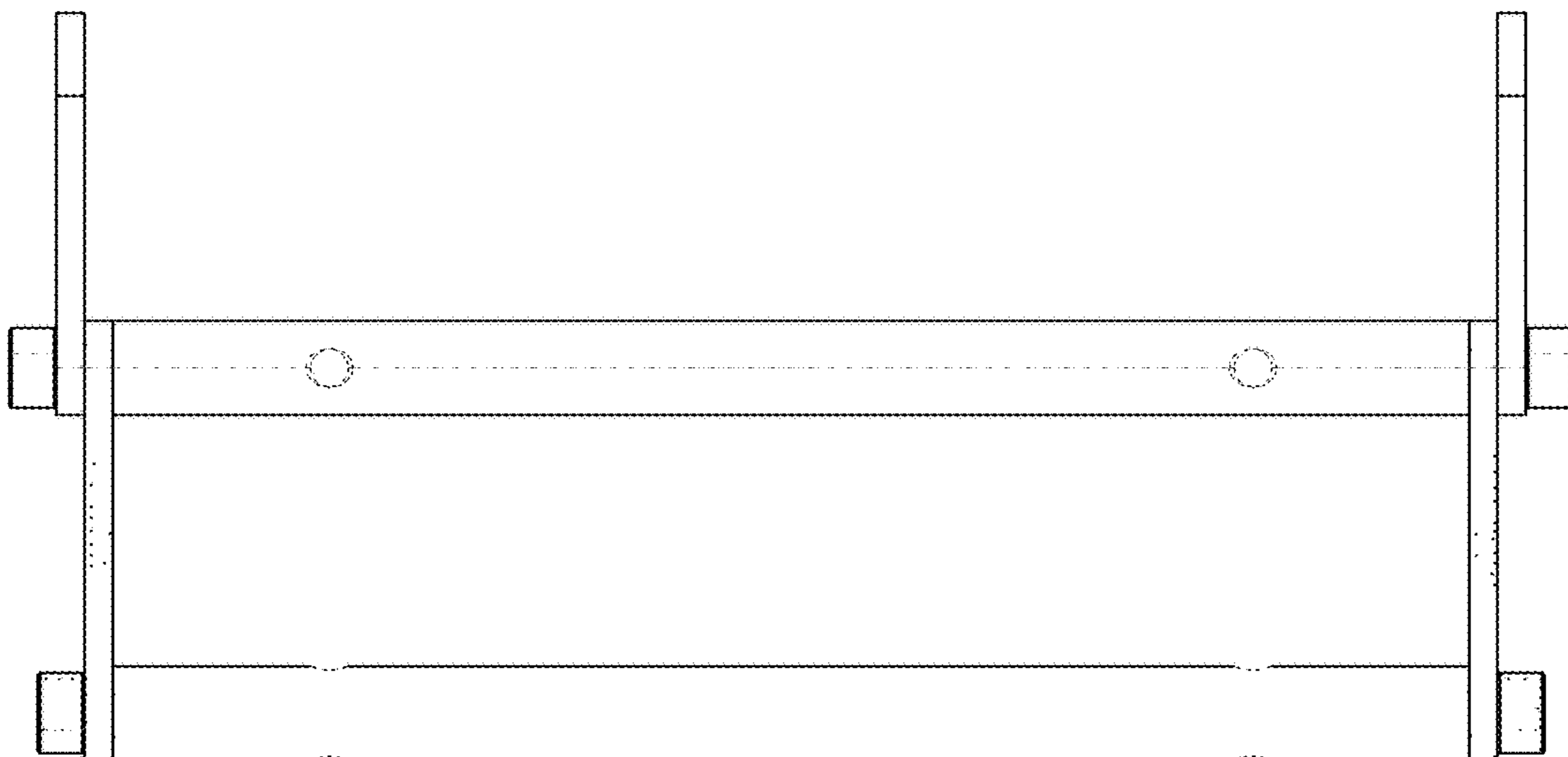


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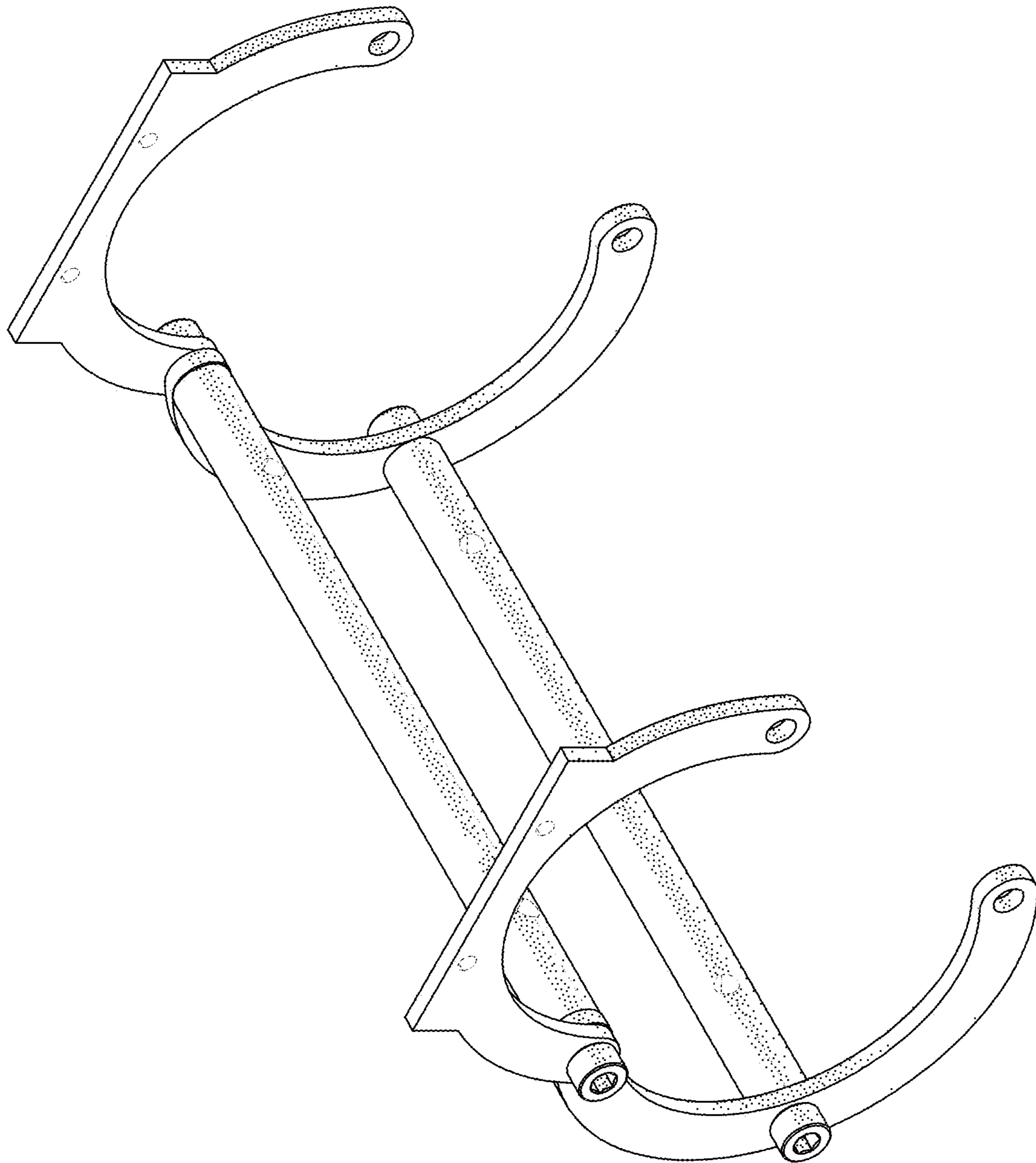


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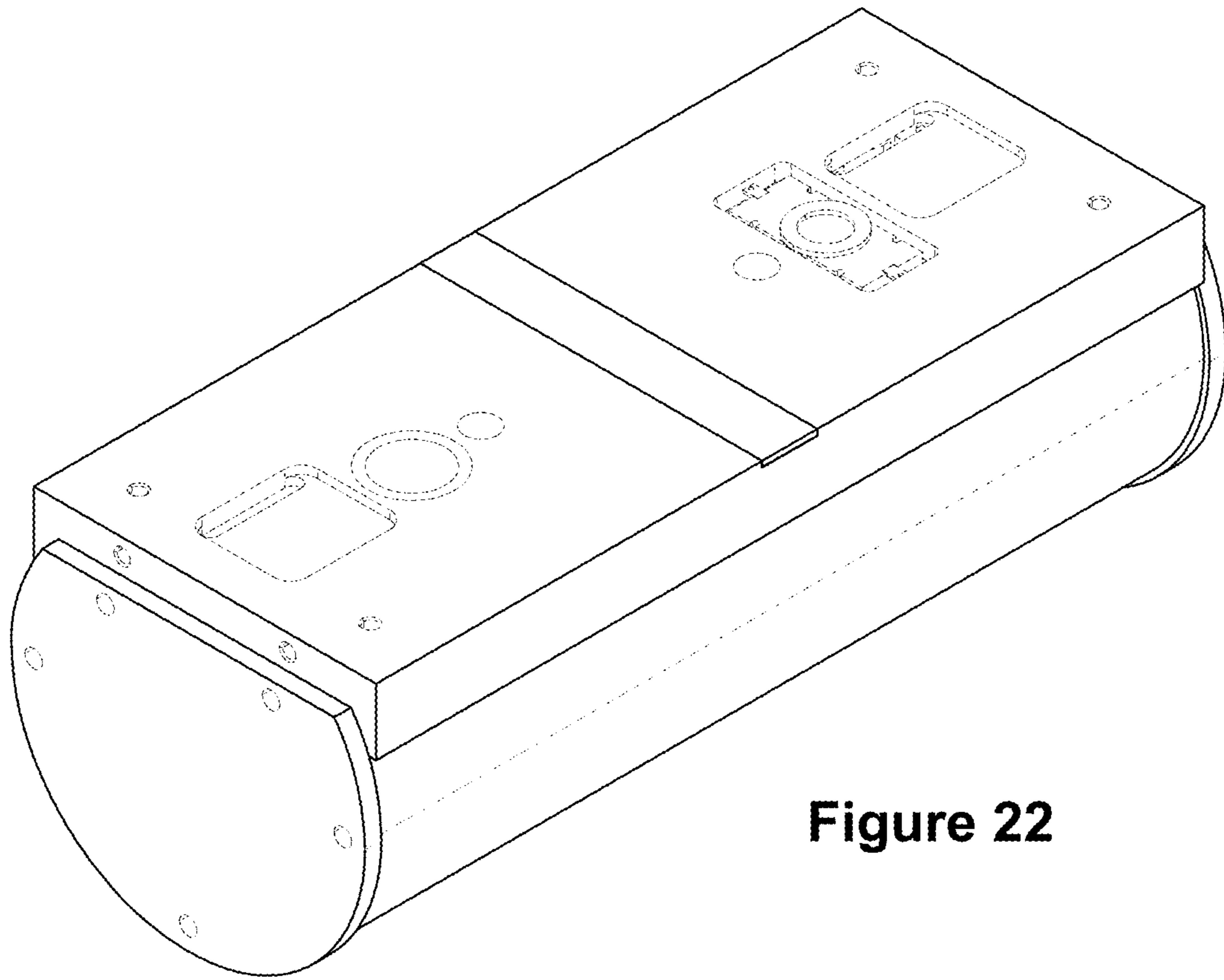


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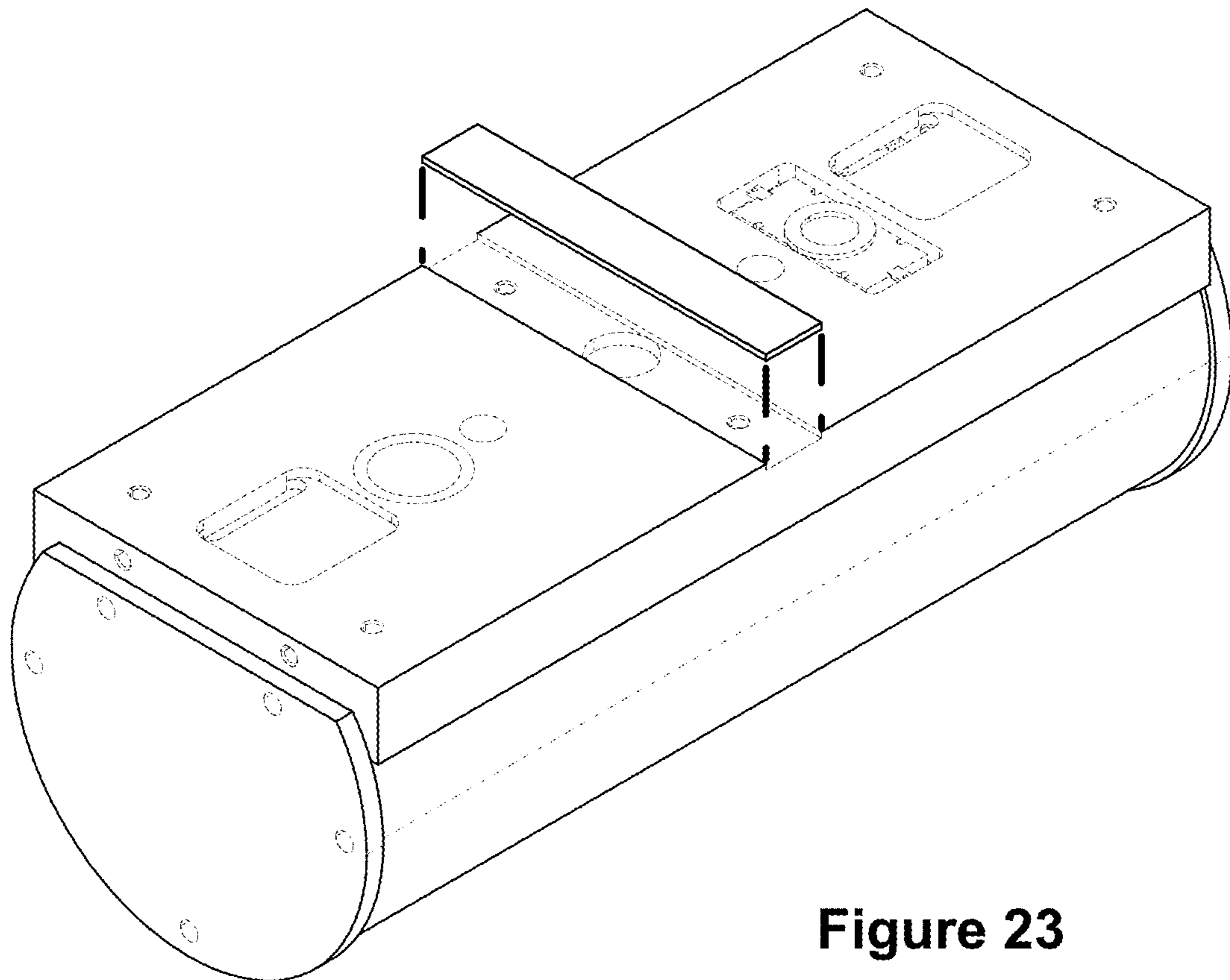


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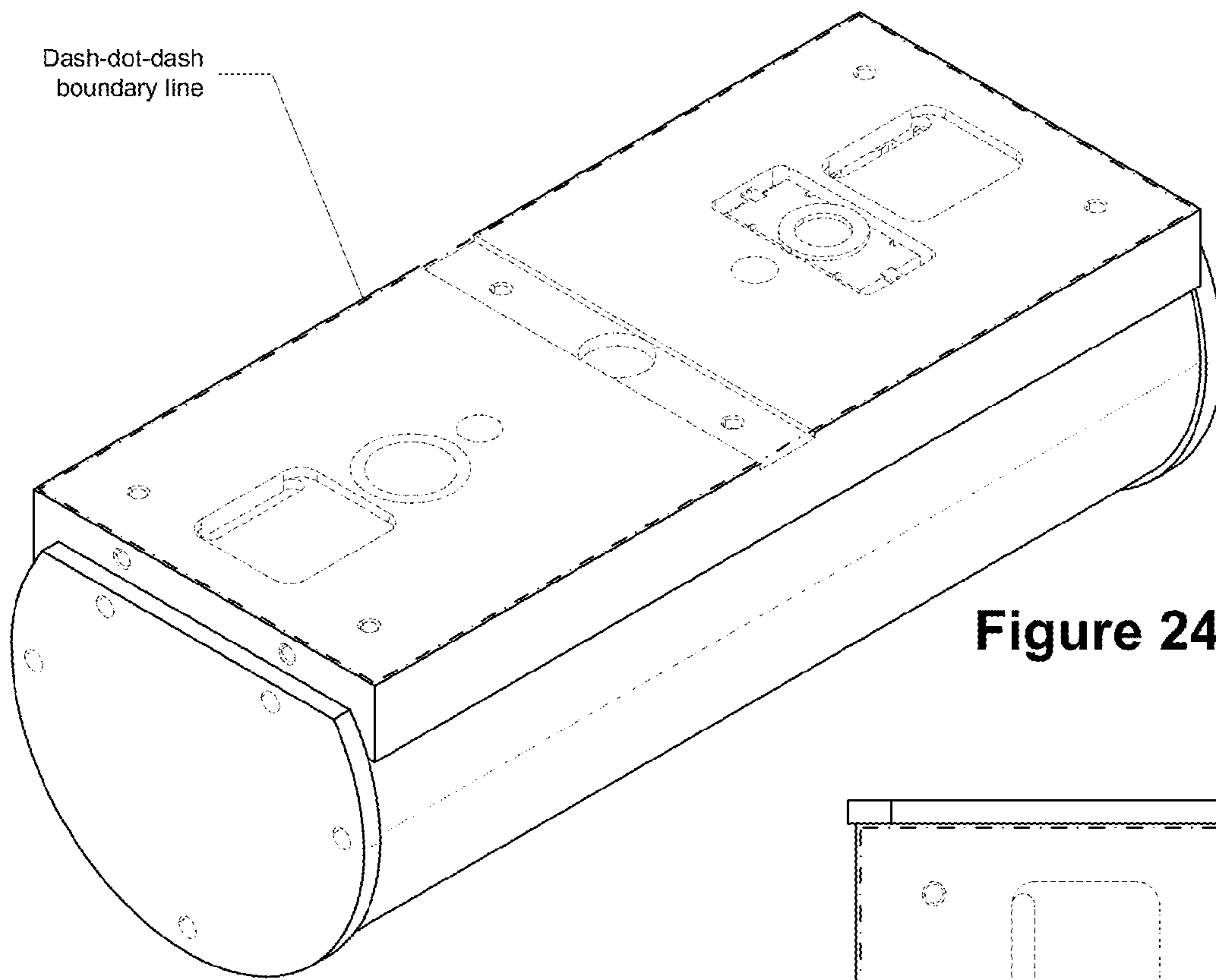


Figure 24

Dash-dot-dash boundary line

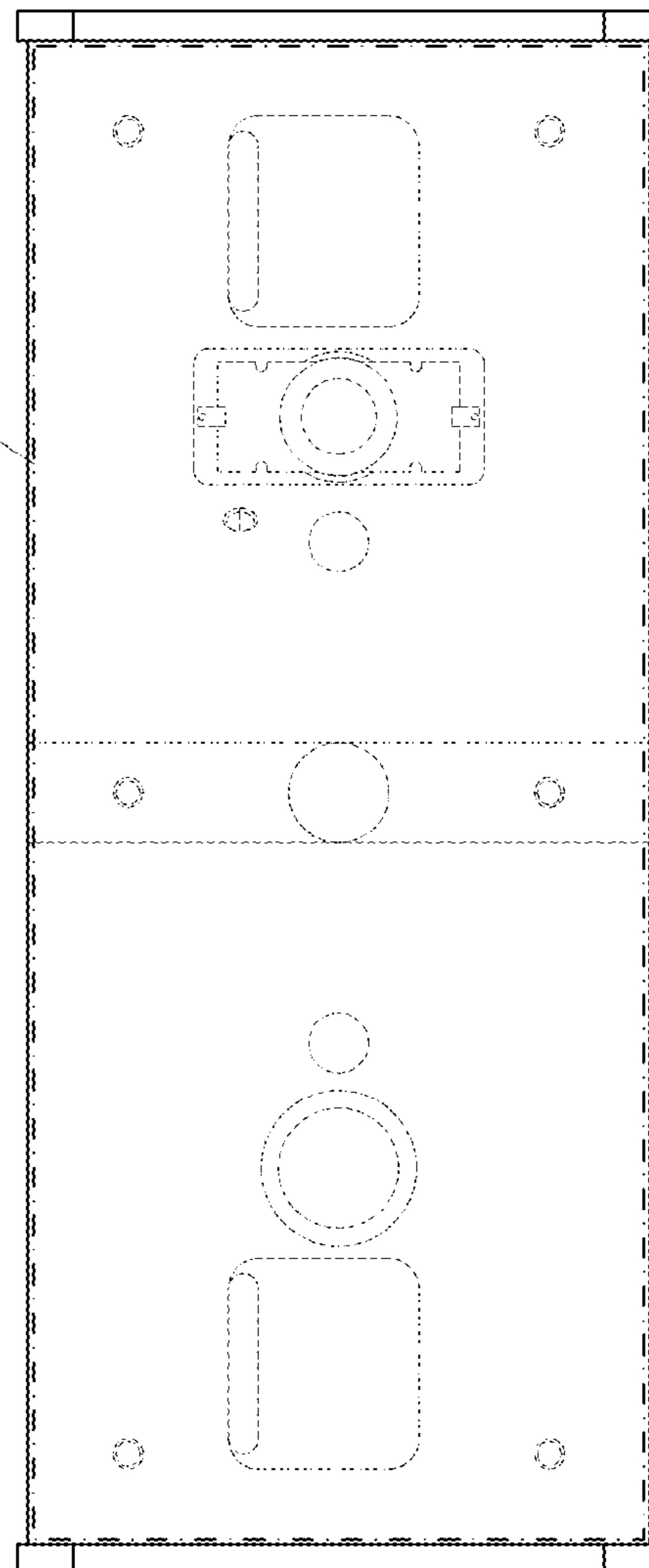


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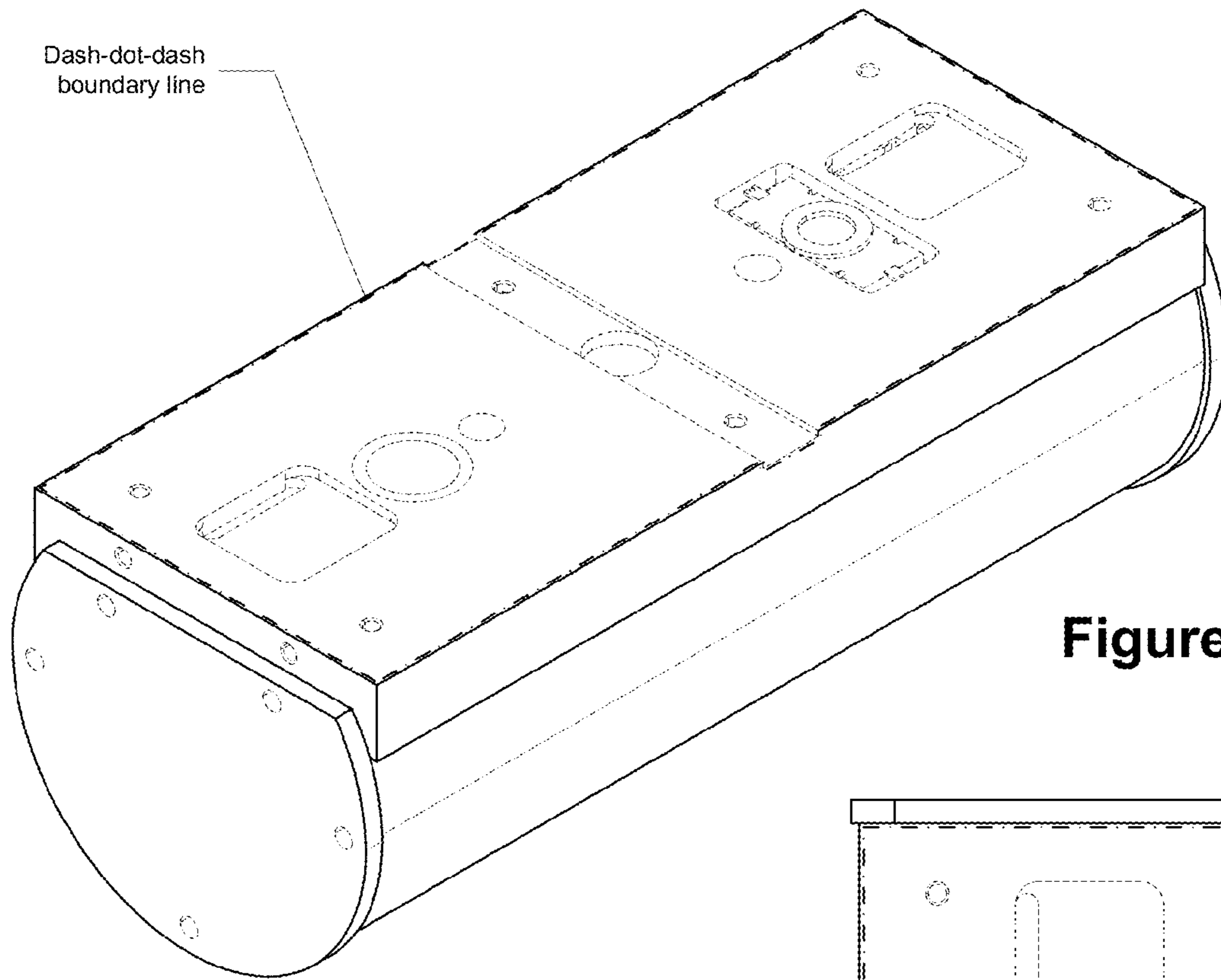


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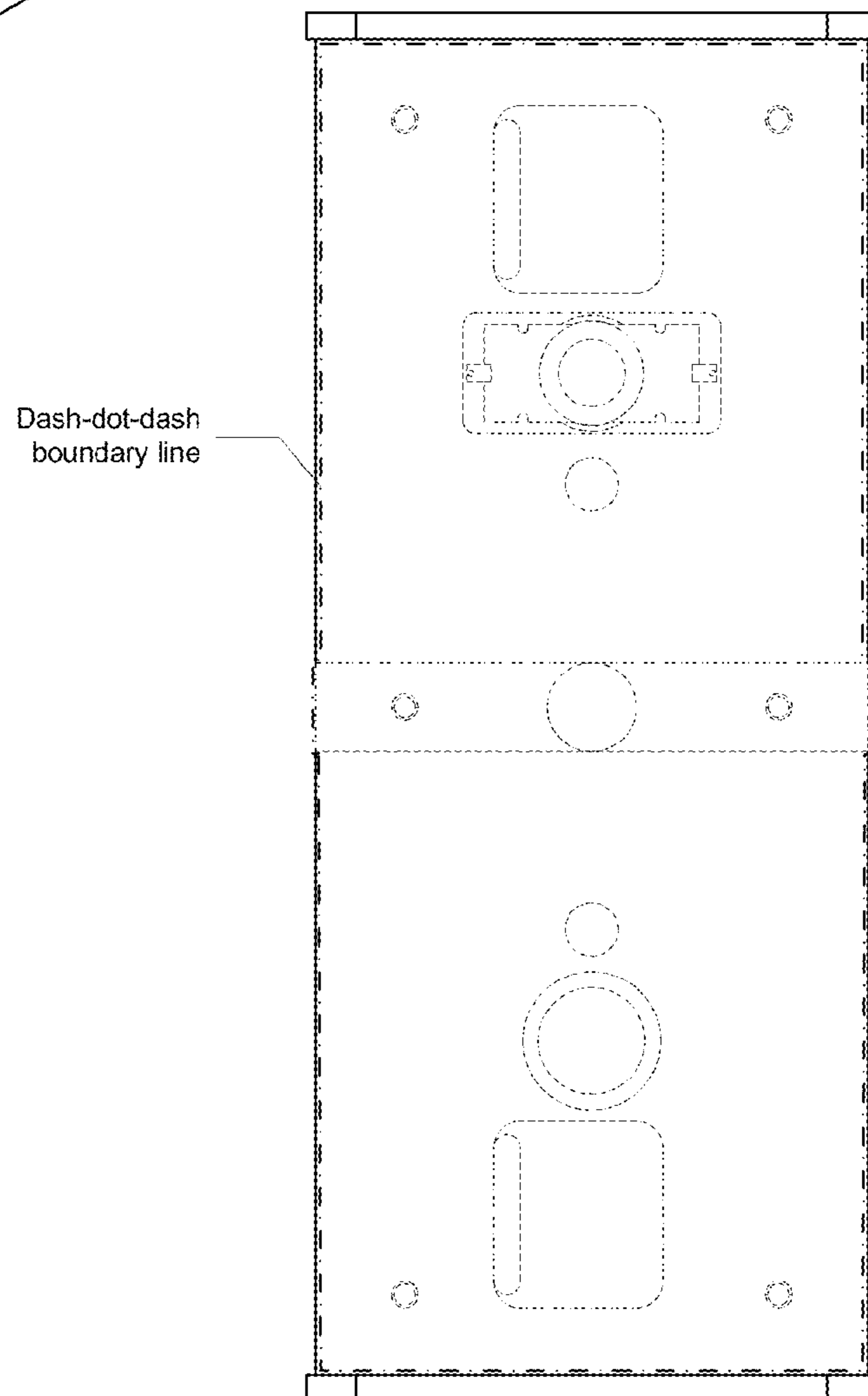


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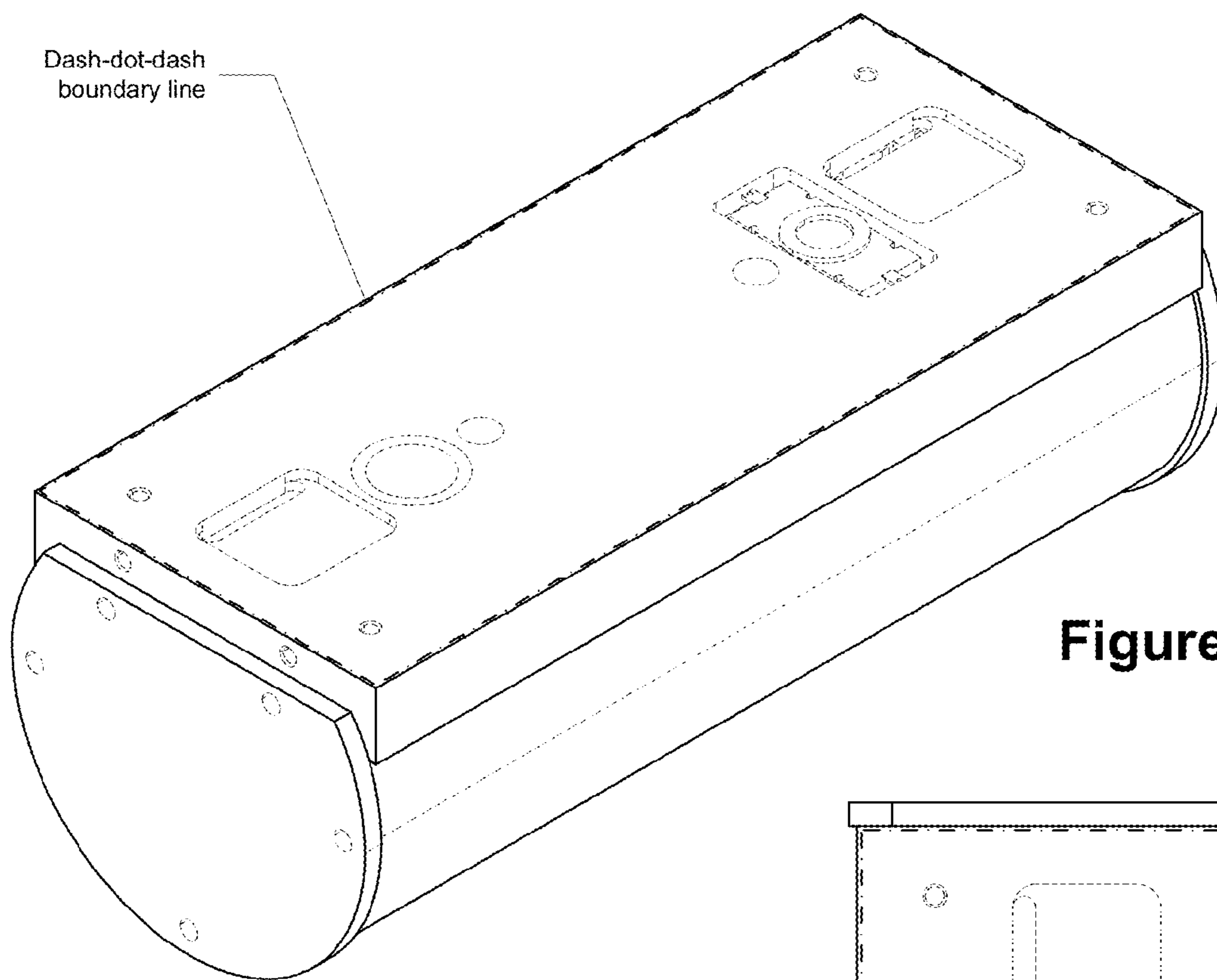


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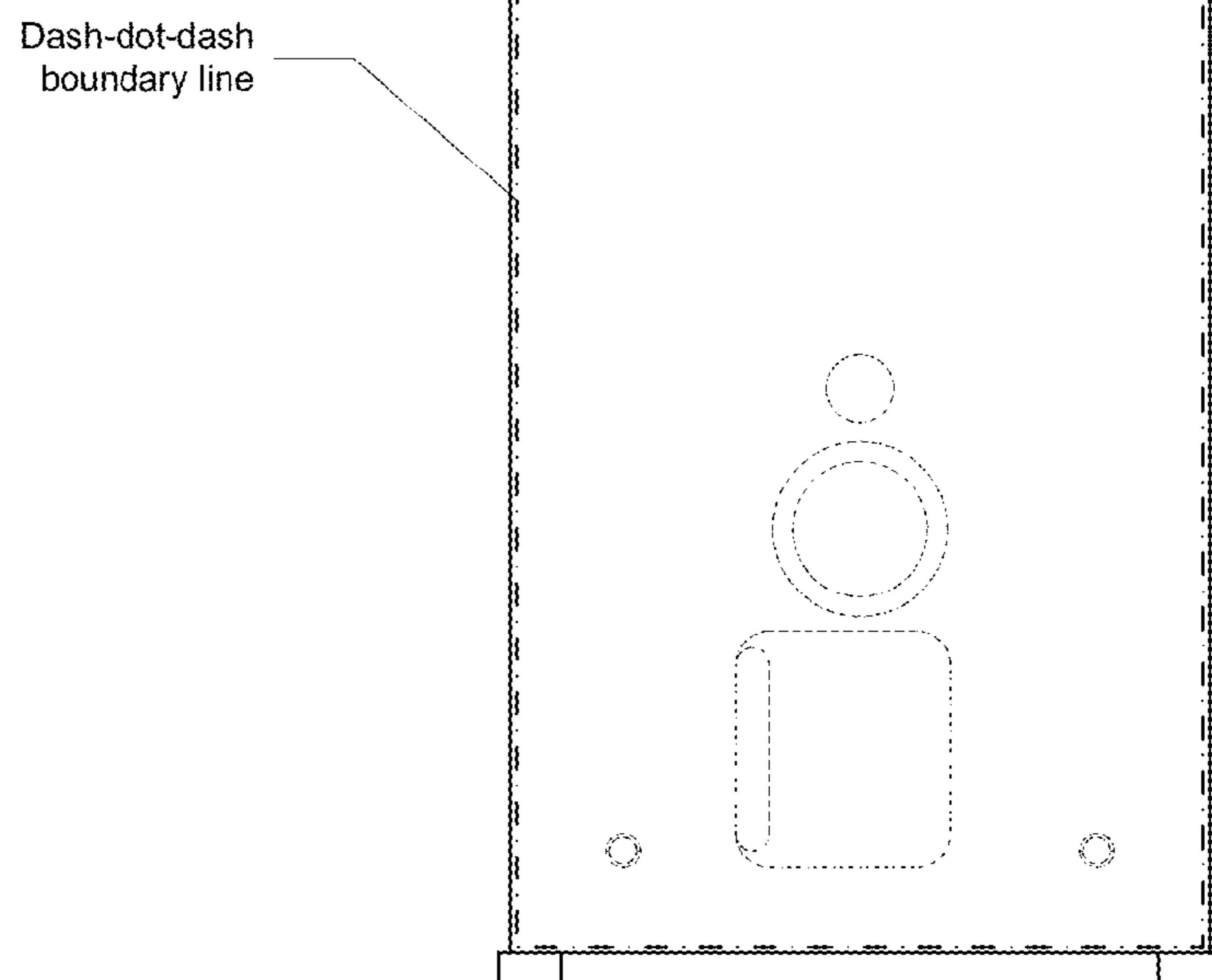


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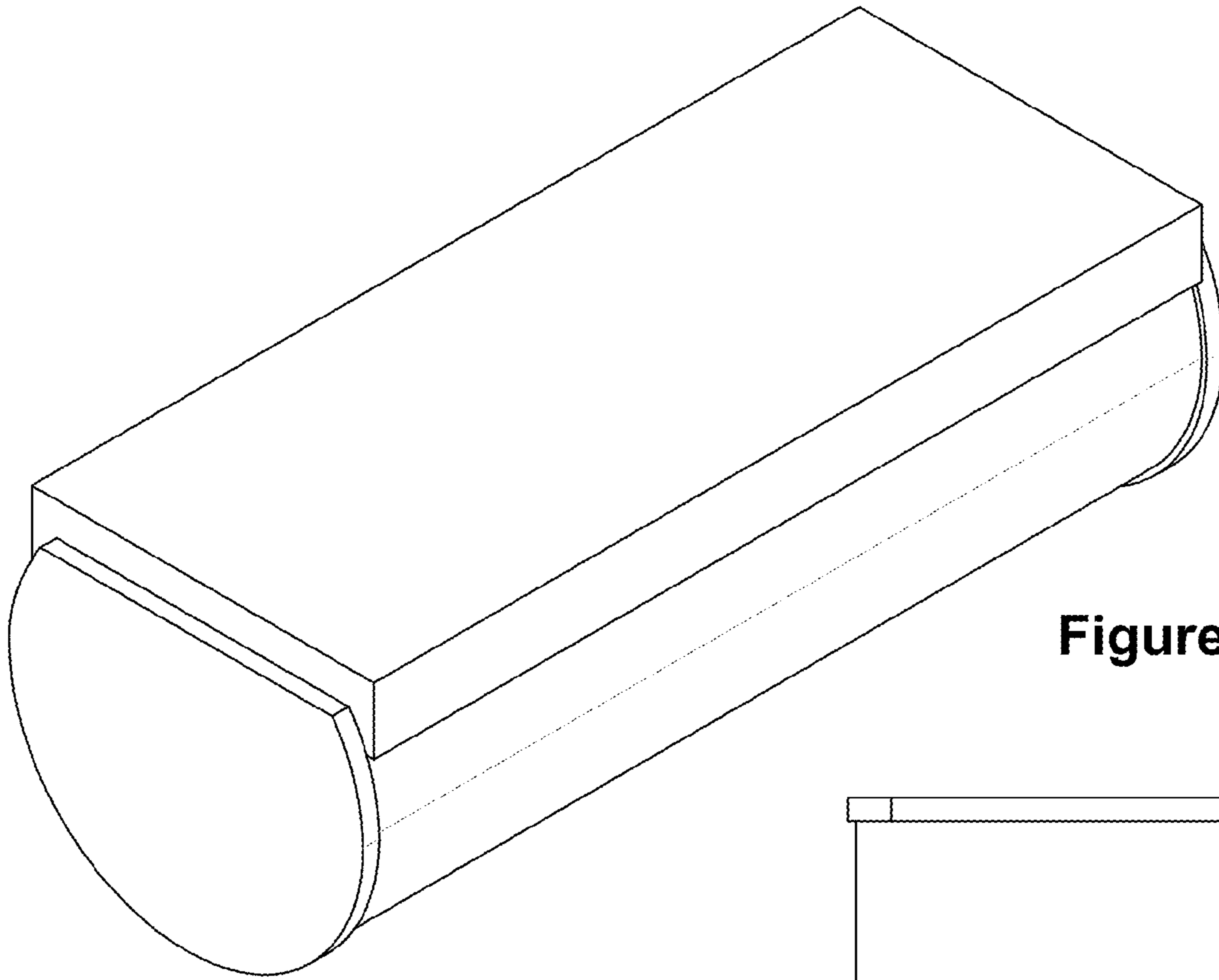


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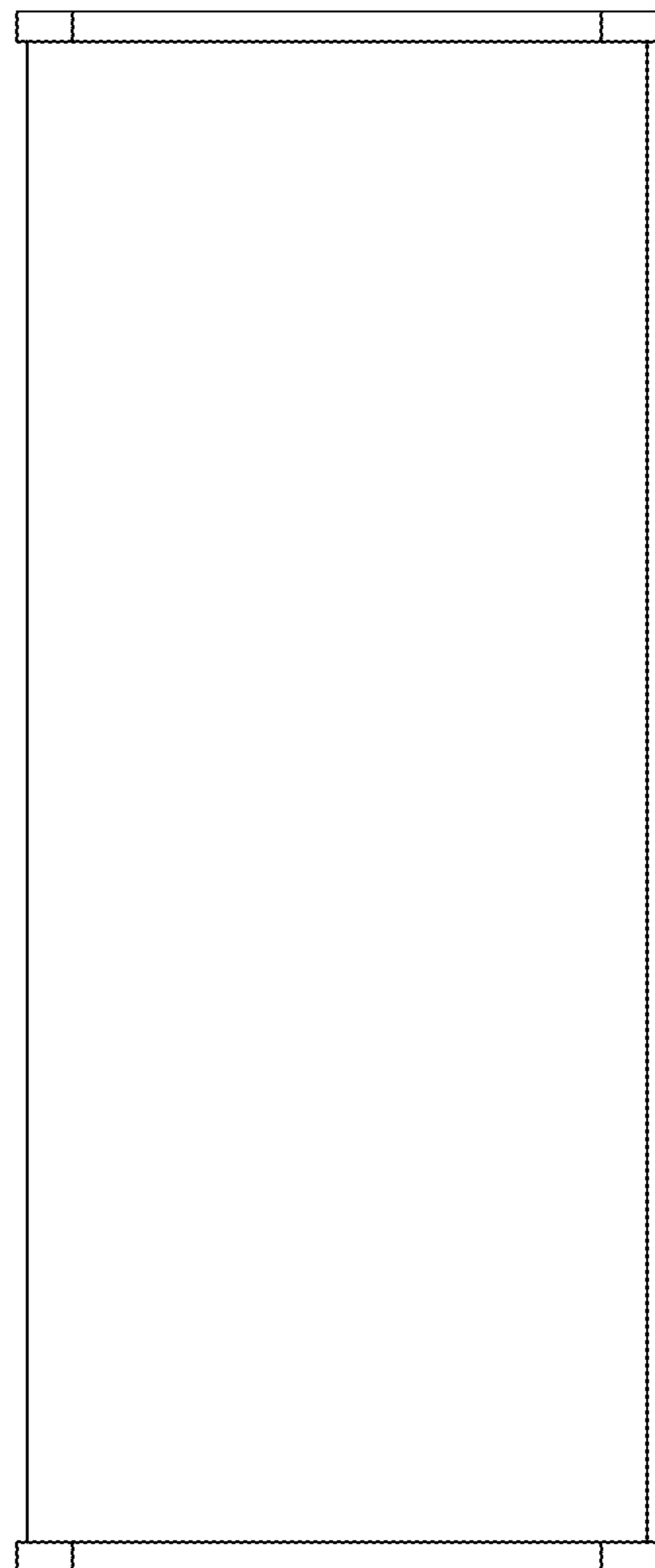


Figure 31

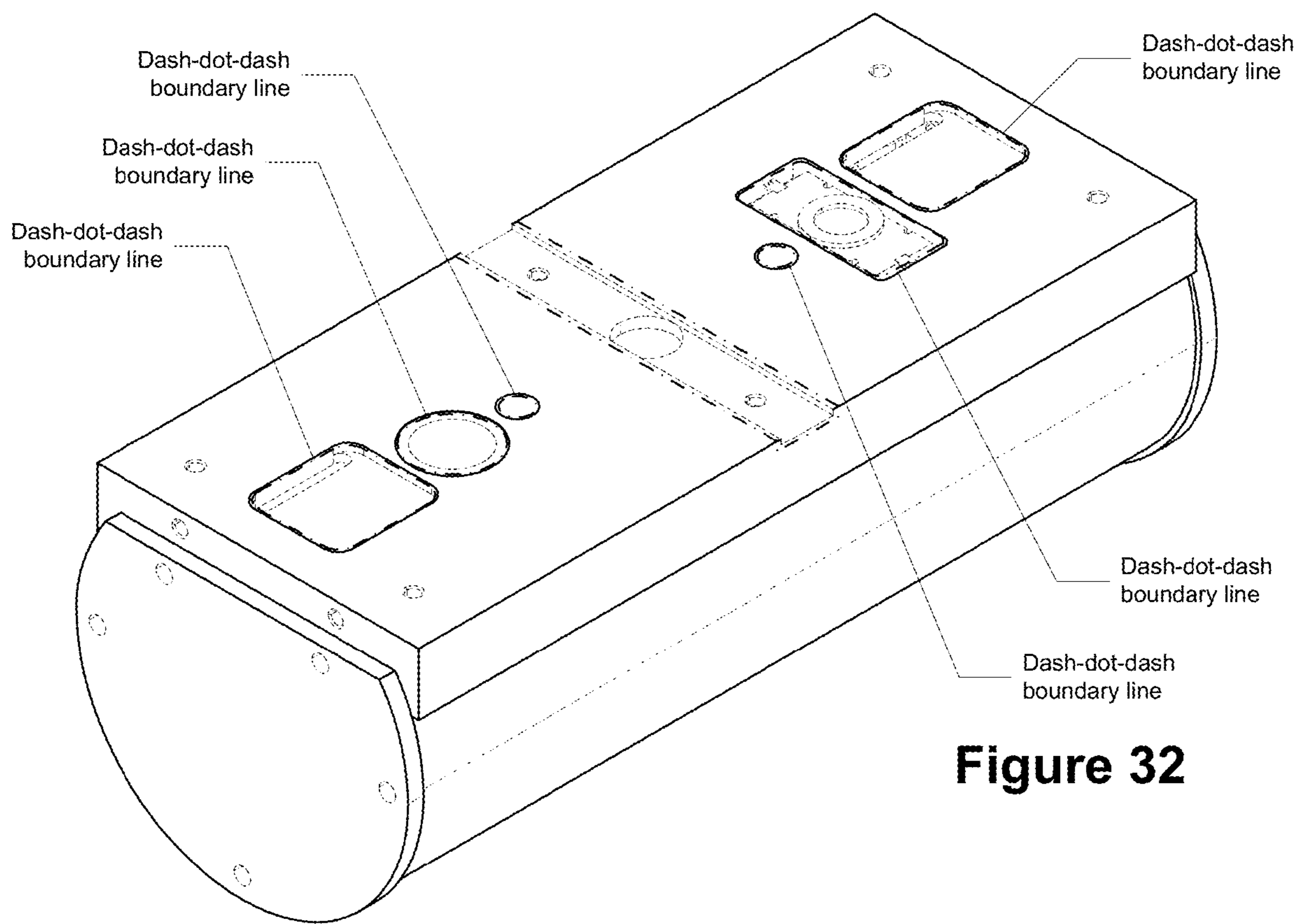


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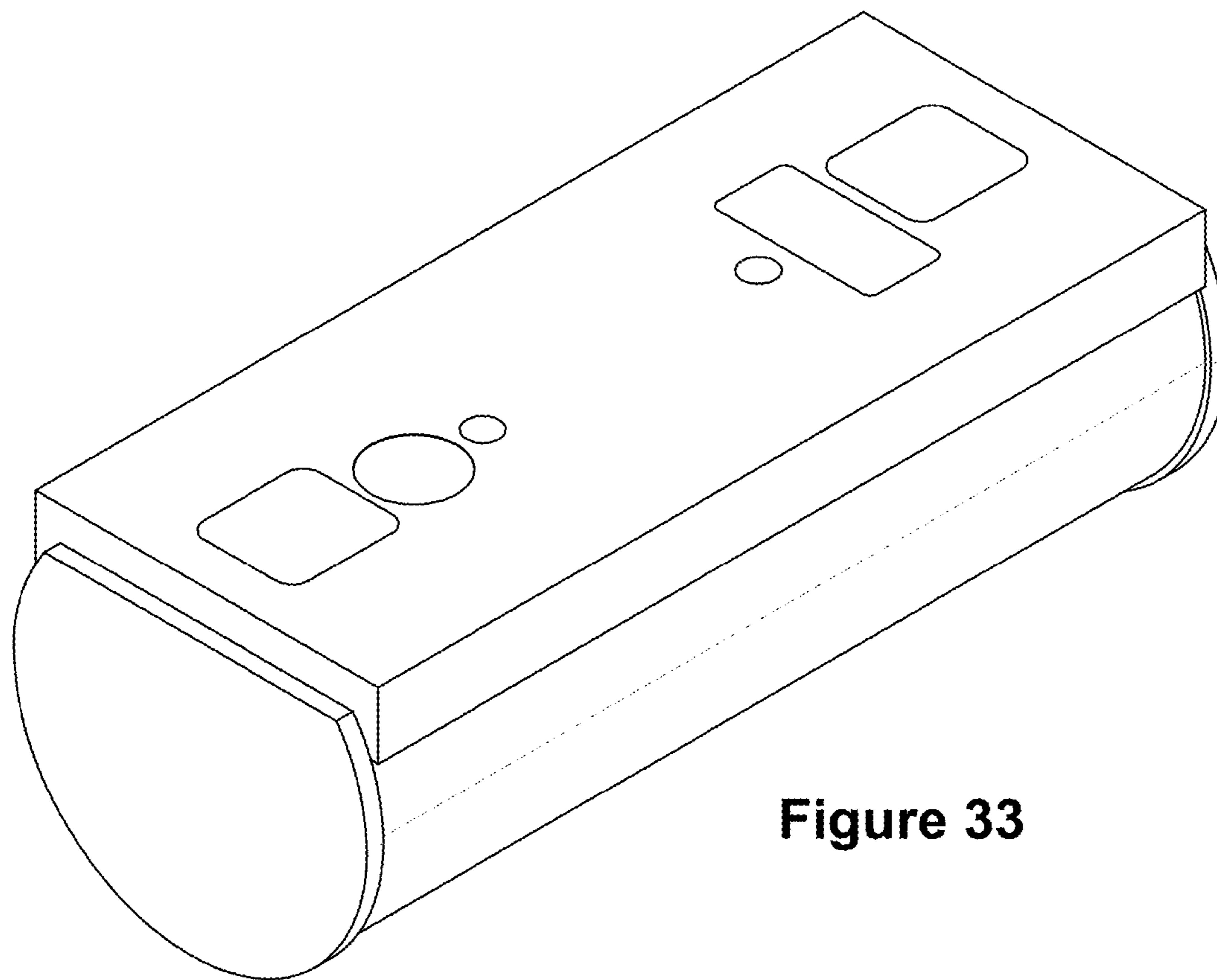


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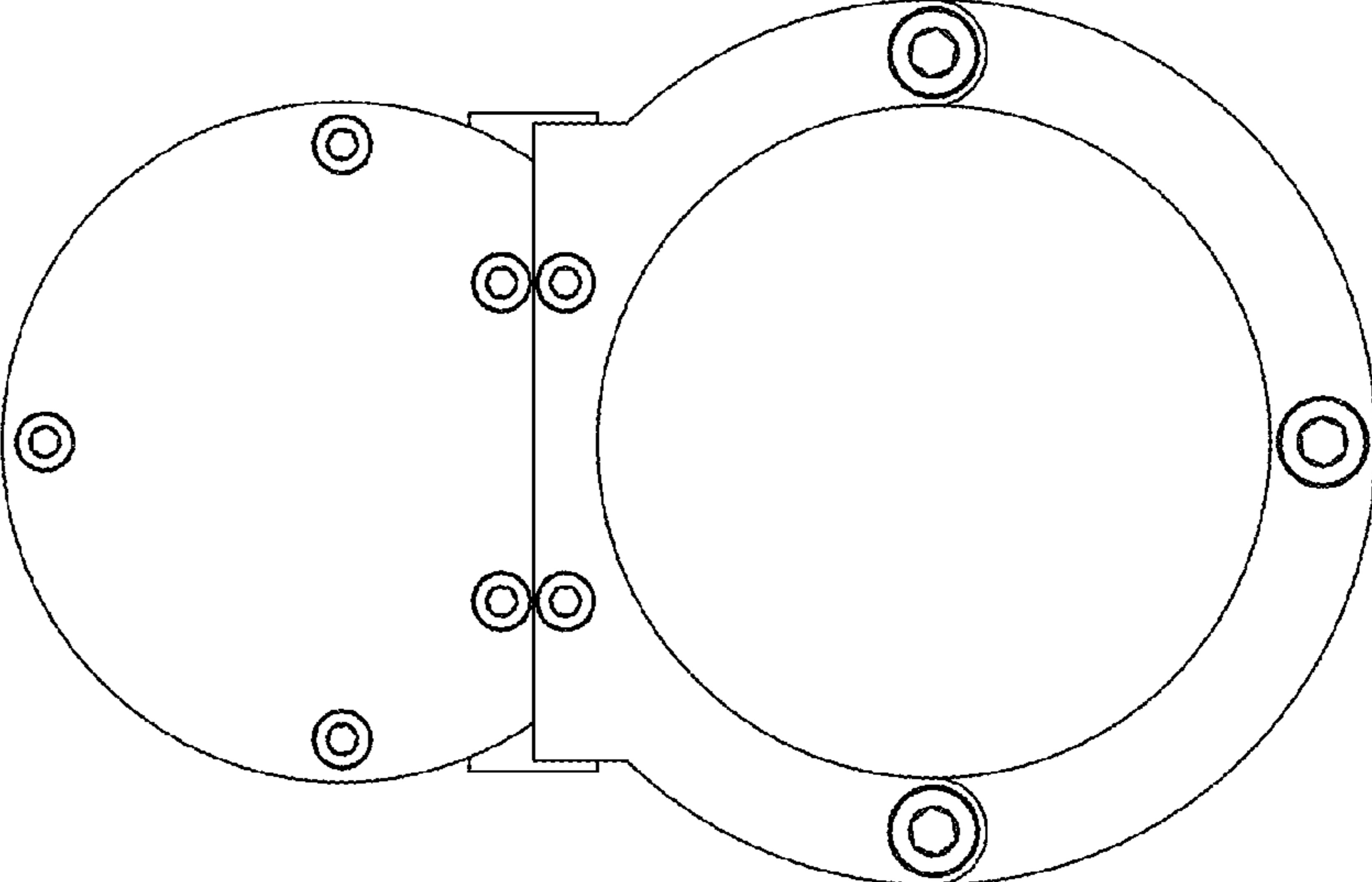


Figure 35

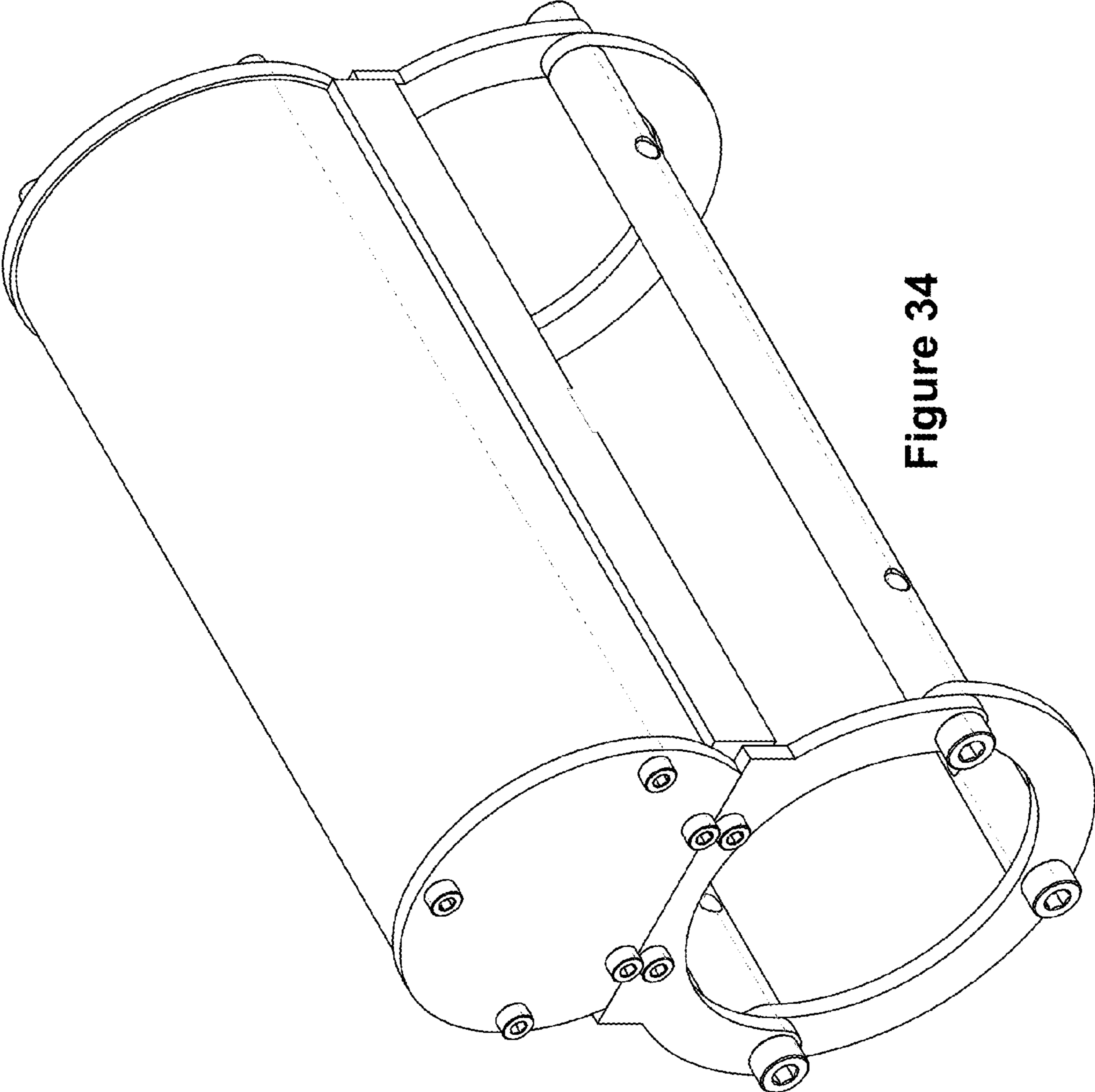


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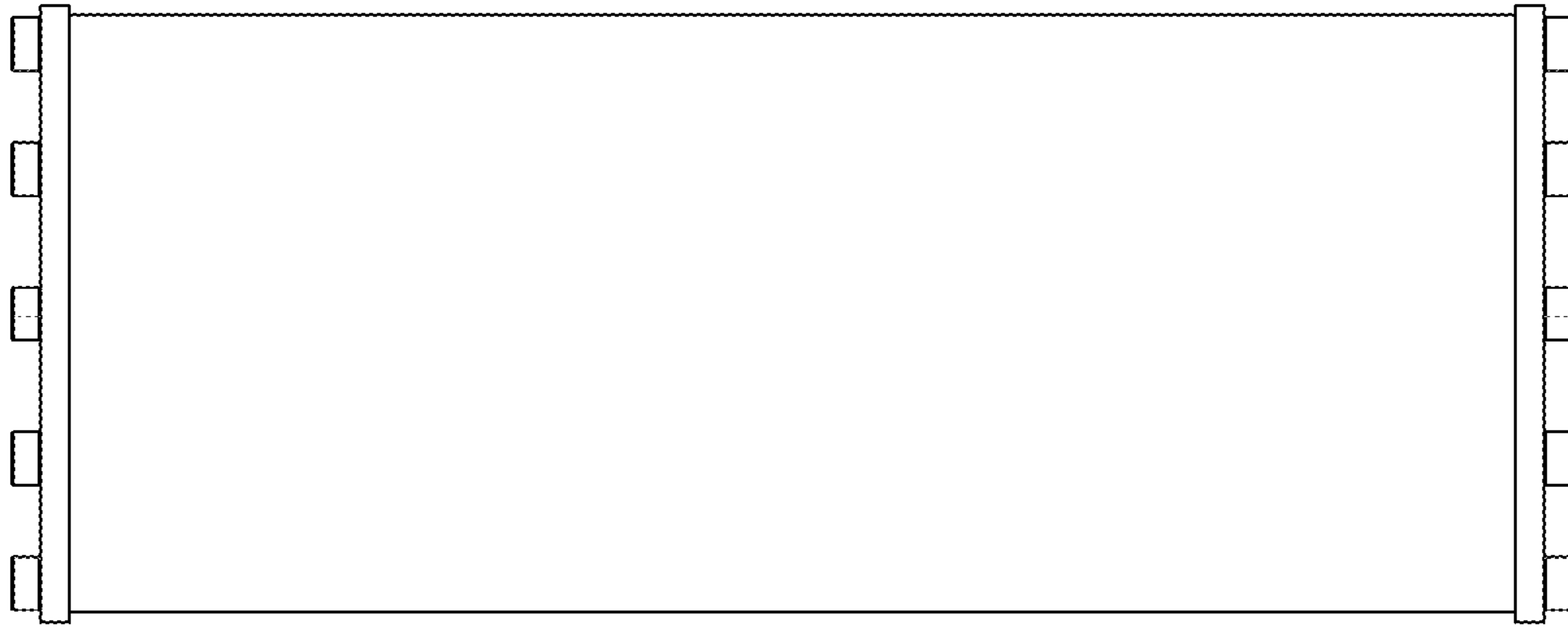


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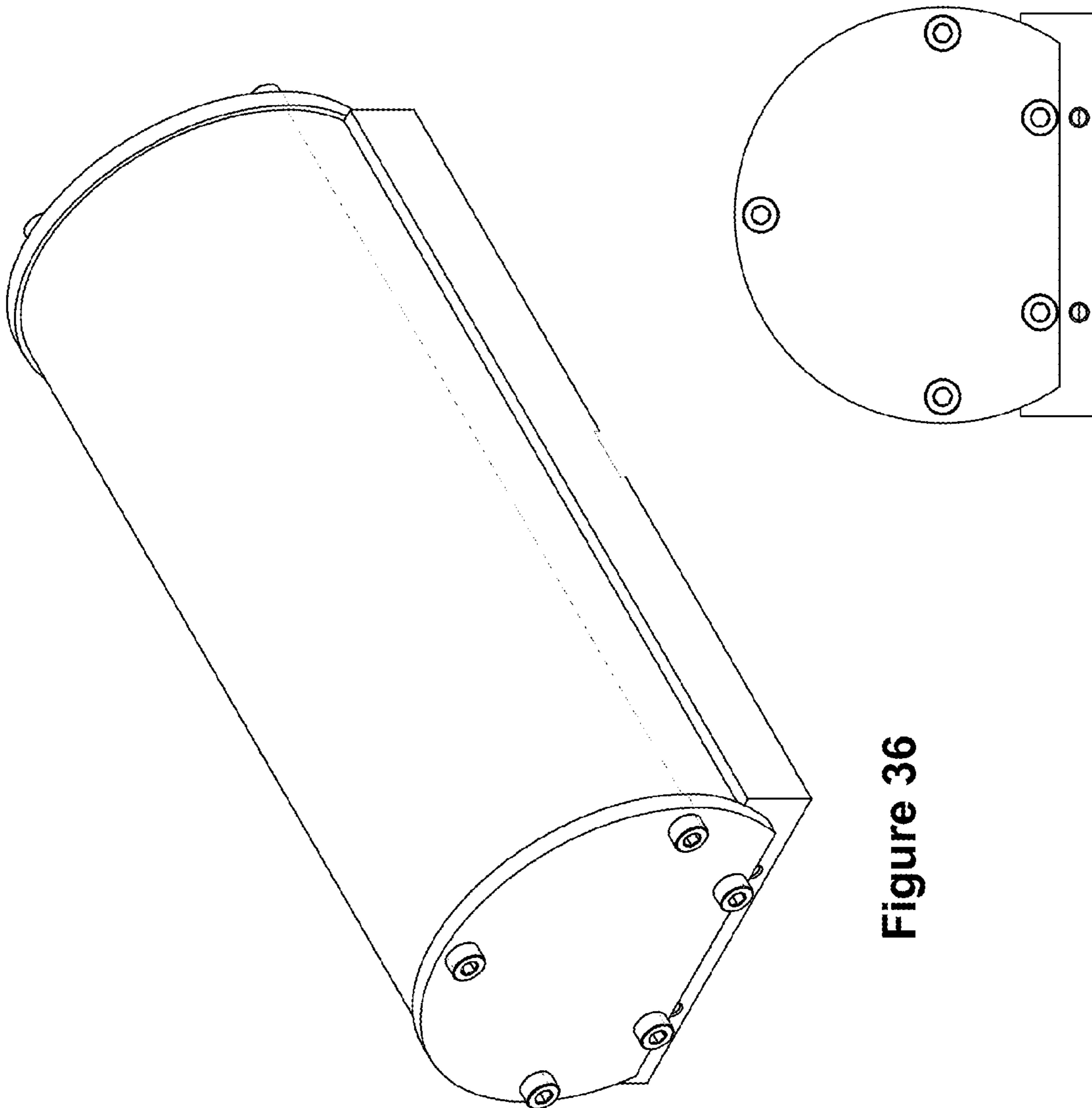


Figure 36

Figure 37

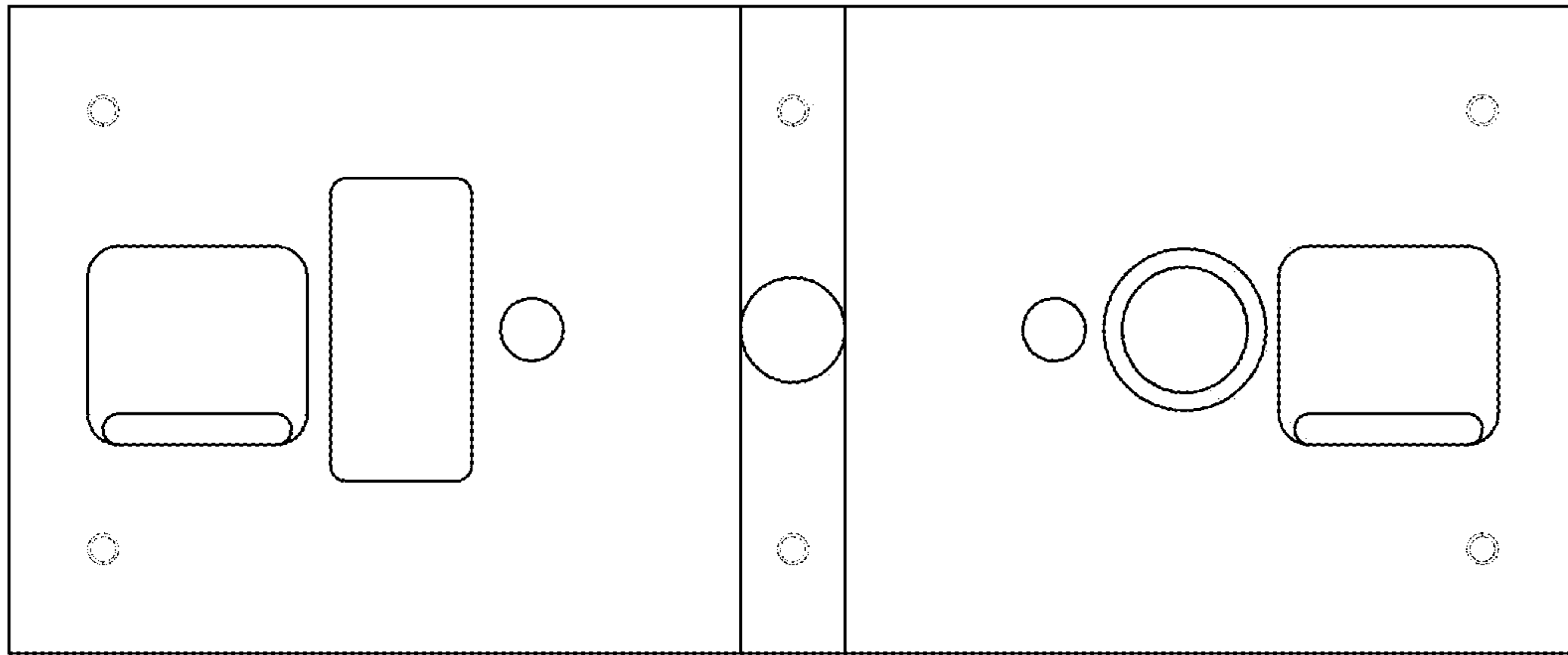


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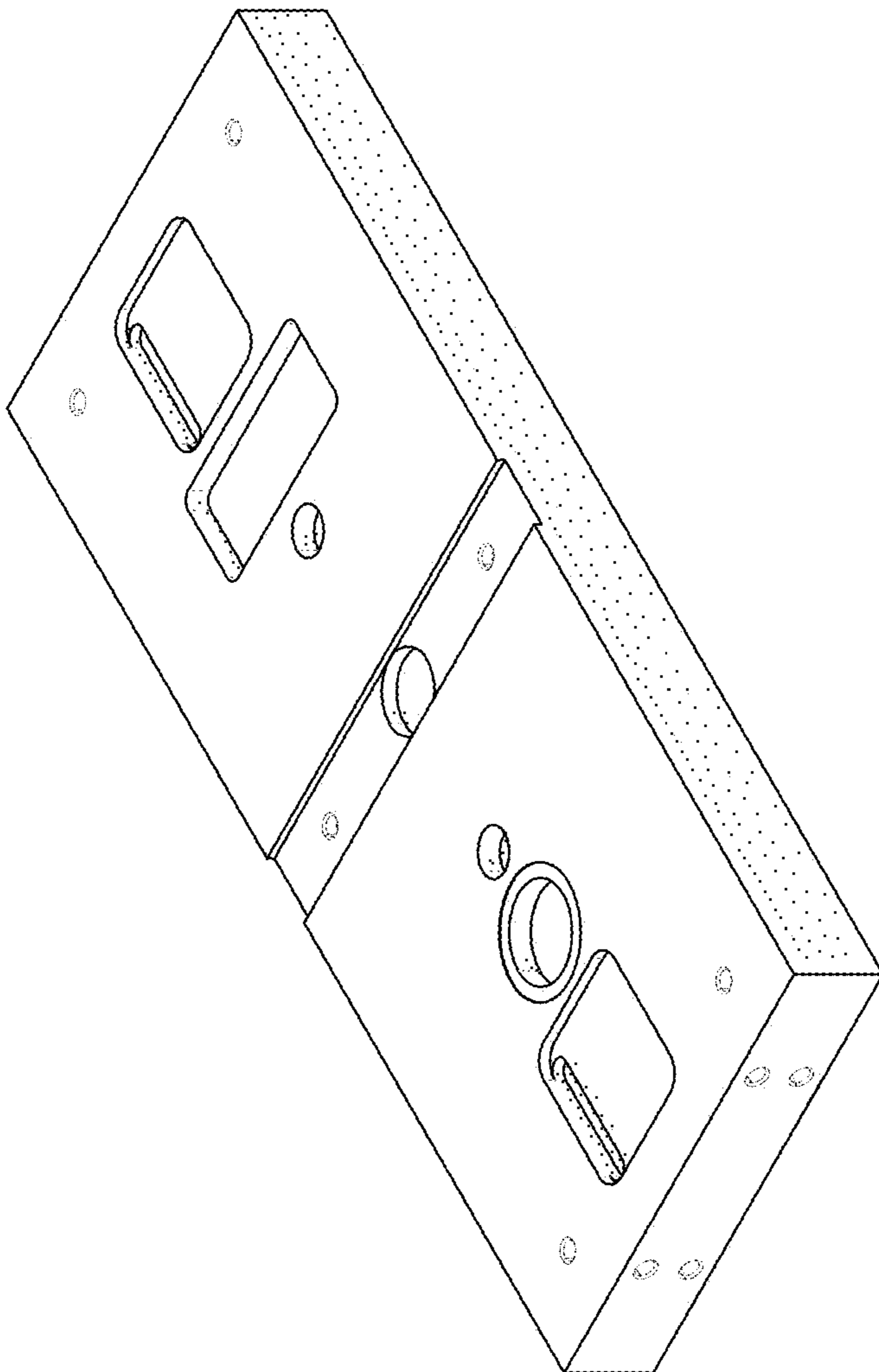


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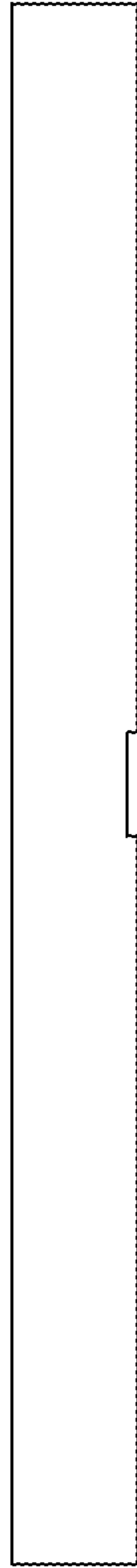


Figure 42



Figure 43

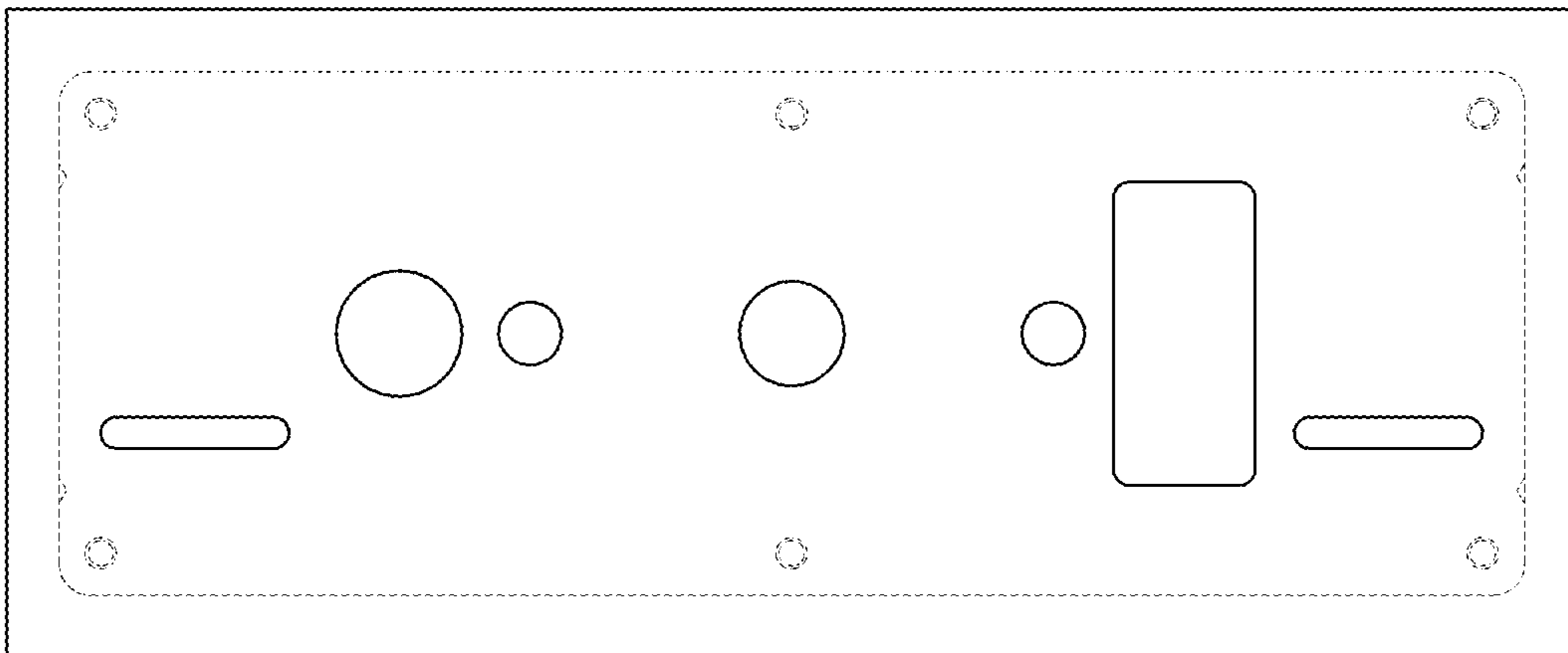


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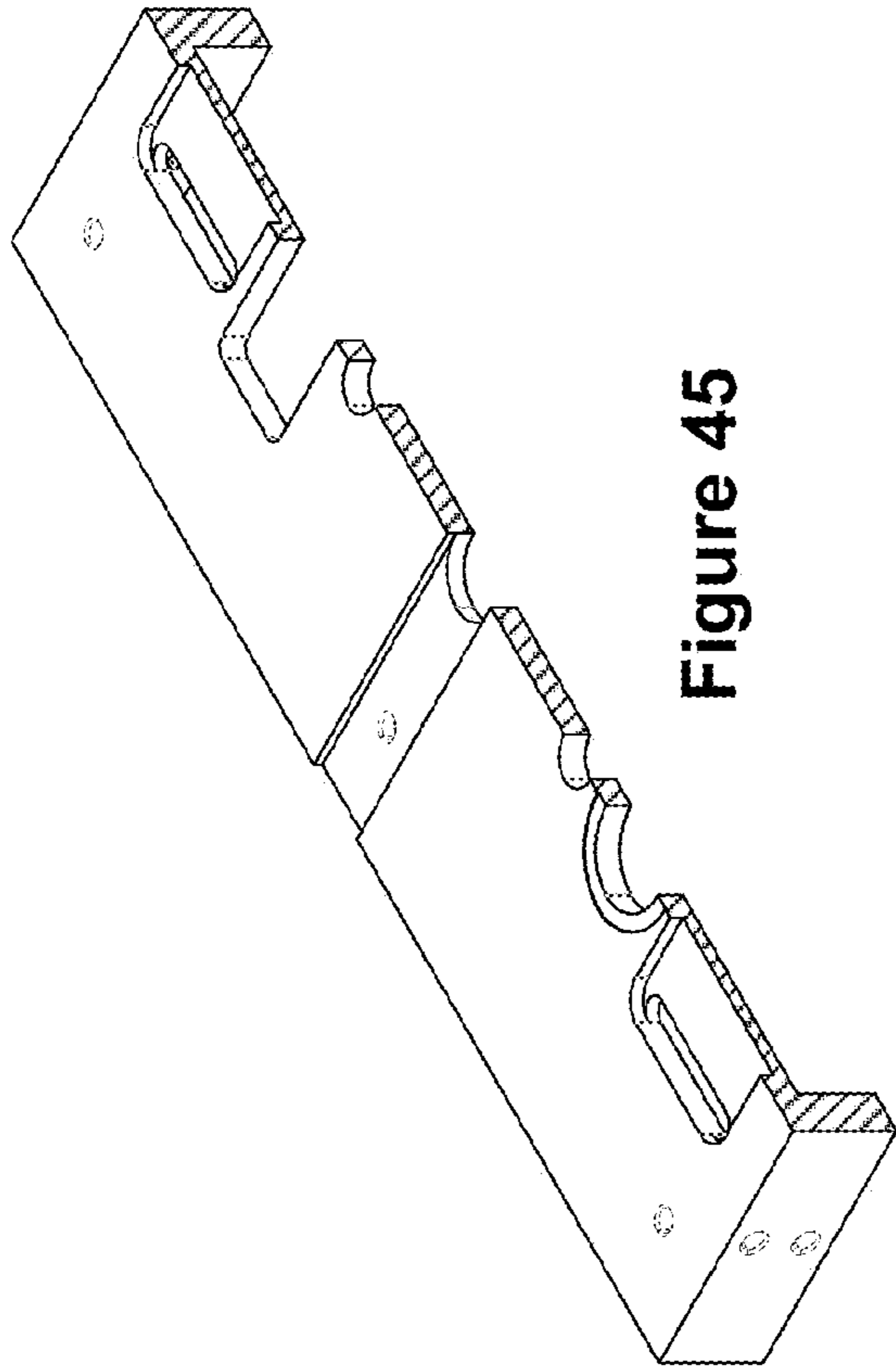


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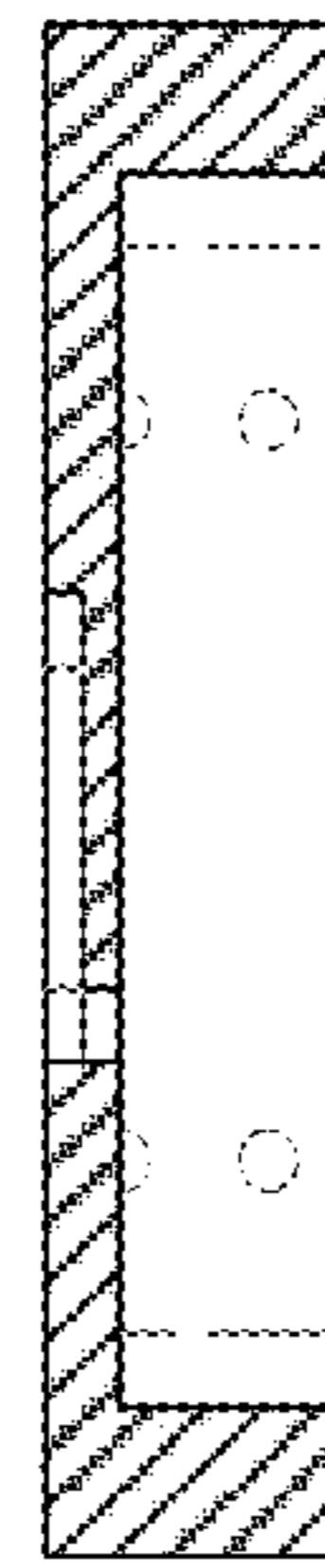


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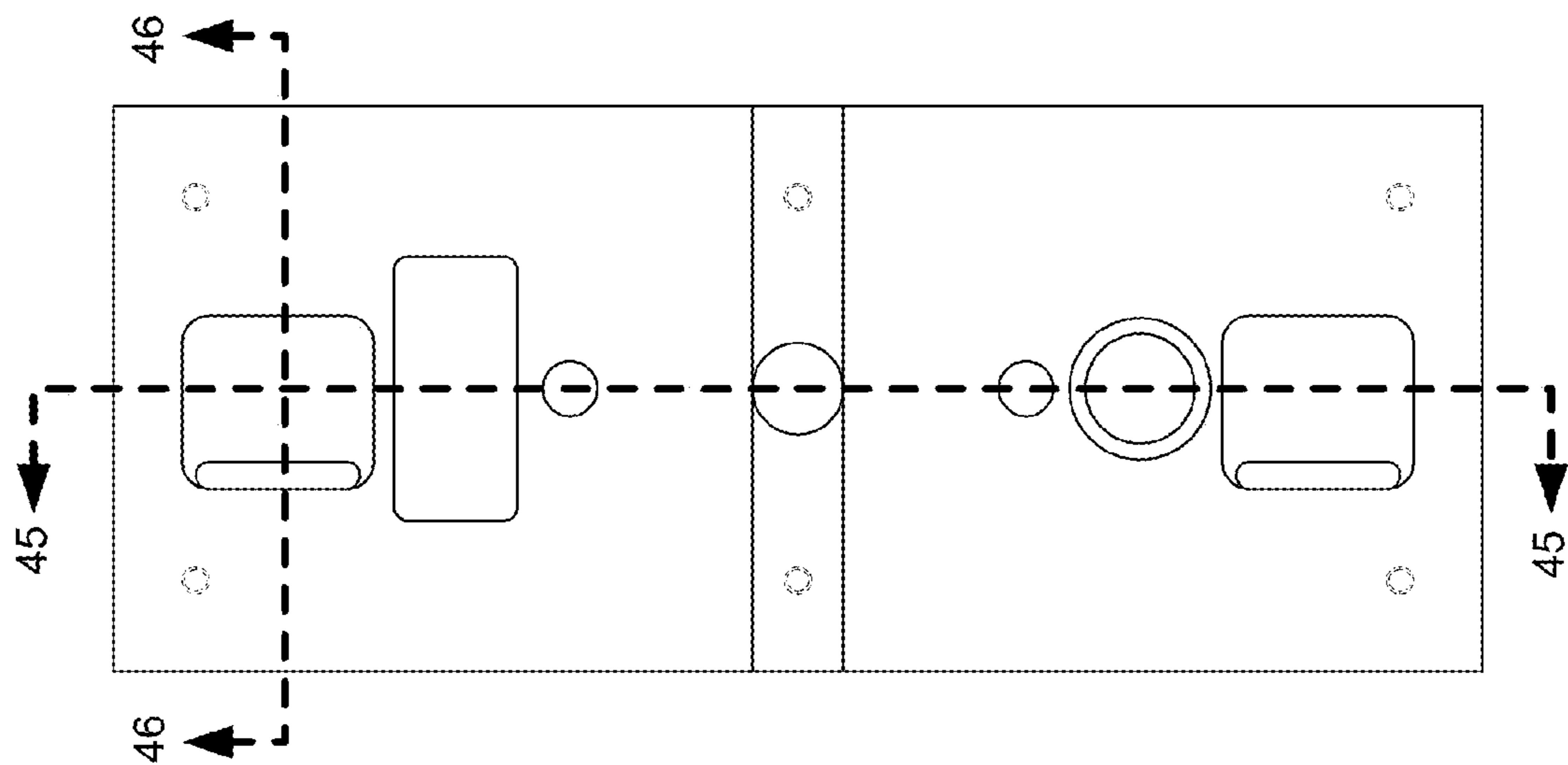


Figure 44