



US0D1102490S

(12)

United States Design Patent

Liu et al.

(10)

Patent No.:

US D1,102,490 S

(45)

Date of Patent:

** Nov. 18, 2025

(54) REFRIGERANT RECOVERY AND FILLING
CLEANING MACHINE

(71) Applicant: SHENZHEN SMARTSAFE TECH
CO., LTD., Shenzhen (CN)

(72) Inventors: Jun Liu, Shenzhen (CN); Junwei Qian,
Shenzhen (CN); Meng Liu, Shenzhen
(CN); Cheng Li, Shenzhen (CN)

(73) Assignee: SHENZHEN SMARTSAFE TECH
CO., LTD., Shenzhen (CN)

(**) Term: 15 Years

(21) Appl. No.: 29/943,940

(22) Filed: May 24, 2024

(30) Foreign Application Priority Data

Nov. 28, 2023 (CN) 202330781431.6

(51) LOC (15) Cl. 15-07

(52) U.S. Cl.
USPC D15/79

(58) Field of Classification Search

USPC D15/79-91

CPC F25D 2400/12; F25D 11/00; F25D 3/08;
F25D 11/003; F25D 2400/36; F25D
2331/804; F25D 2700/16; F25D
2331/808; F25D 2400/38; F25D
2303/0831; F25D 2201/14; F25D 11/006;
F25D 23/062; F25D 2700/12; F25D
2331/805; F25D 23/06; F25D 23/063;
F25D 19/003; F25D 23/003; F25D
29/003; F25D 31/007; F25D 31/005;
F25D 2201/126; F25D 23/02; F25D
2331/803; F25D 2500/02; F25D 23/12;
F25D 2400/16; F25D 29/00; F25D 11/02;
F25D 16/00; F25D 17/06; F25D 23/10;
F25D 2303/081; F25D 2400/04; F25D
2400/40; F25D 19/006; F25D 23/065;
F25D 2317/0665; F25D 2323/061; F25D

15/00; F25D 2400/06; F25D 2400/20;
F25D 3/107; F25D 17/065; F25D 17/08;
F25D 23/066; F25D 2317/0661; F25D
2317/067; F25D 2400/02; F25D 2400/10;
F25D 2400/18; F25D 2400/361; F25D
3/105; F25D 2201/122; F25D 2201/124;
F25D 2201/1262; F25D 2331/801; F25D
2331/812; F25D 31/002; F25D 5/02;
F25D 11/025; F25D 17/042; F25D
17/062; F25D

(Continued)

(56) References Cited

U.S. PATENT DOCUMENTS

D344,527 S * 2/1994 Drago D23/335
D377,179 S * 1/1997 Sundheim D15/79
(Continued)

Primary Examiner — Khawaja Anwar

(74) Attorney, Agent, or Firm — Zhigang Ma

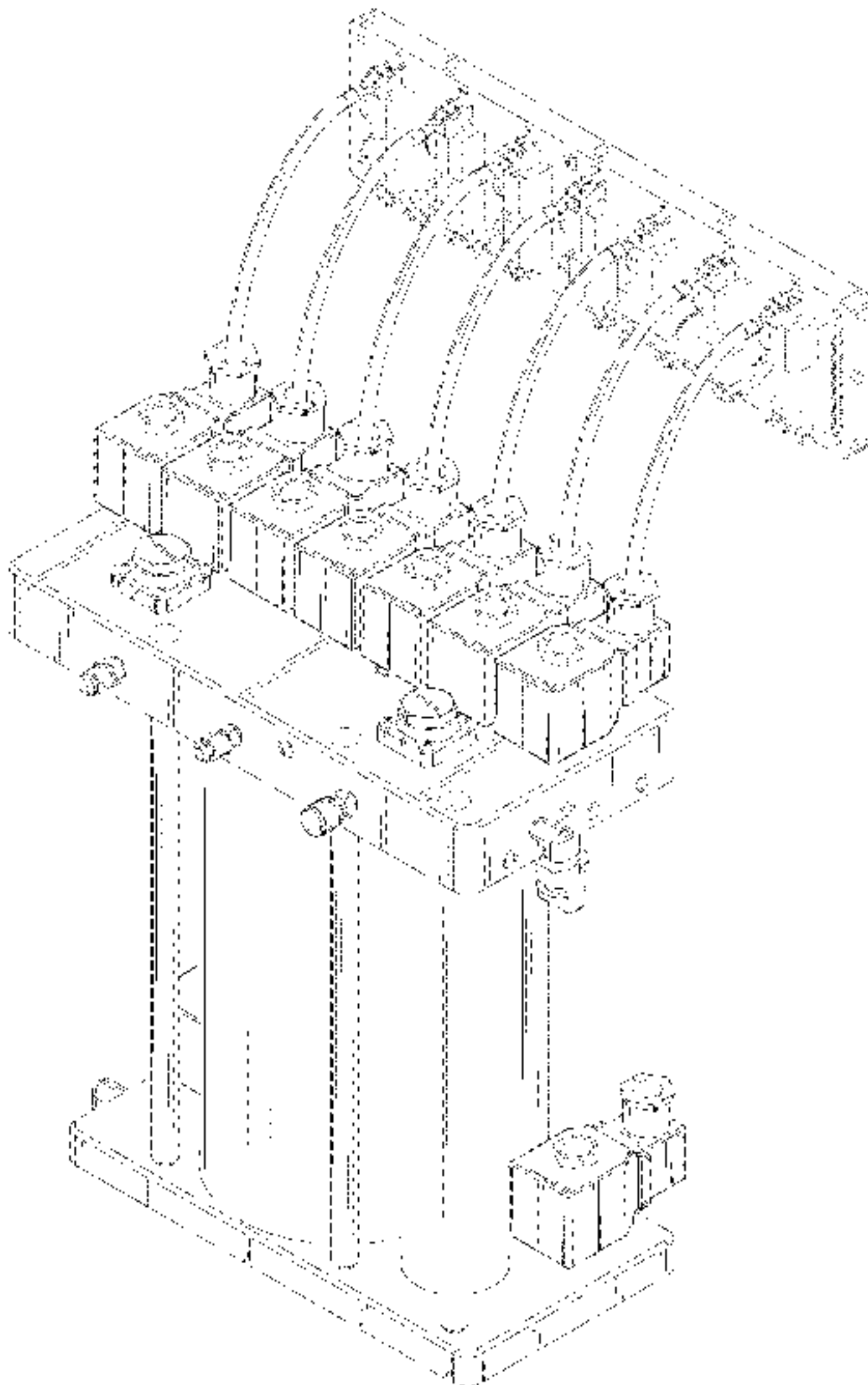
(57) CLAIM

The ornamental design for a refrigerant recovery and filling
cleaning machine, as shown and described.

DESCRIPTION

FIG. 1 is a front, right and top perspective view of a
refrigerant recovery and filling cleaning machine, showing
our new design;
FIG. 2 is a rear, left and bottom perspective view thereof;
FIG. 3 is a front view thereof;
FIG. 4 is a rear view thereof;
FIG. 5 is a left side view thereof;
FIG. 6 is a right side view thereof;
FIG. 7 is a top plan view thereof; and,
FIG. 8 is a bottom plan view thereof.
The broken lines shown in the drawings illustrate portions of
the refrigerant recovery and filling cleaning machine that
form no part of the claimed design.

1 Claim, 8 Drawing Sheets



(58) Field of Classification Search

CPC 19/00; F25D 2317/063; F25D 2317/0654;
F25D 2317/0672; F25D 2317/0681; F25D
2400/28; F25D 29/001; F25D 3/06; F25D
17/02; F25D 17/04; F25D 17/045; F25D
19/02; F25D 2201/128; F25D 23/061;
F25D 2303/0822; F25D 2303/08222;
F25D 2303/0843; F25D 2331/809; F25D
2700/14; F25D 3/14; F25D 31/003; F25D
31/008; F25D 13/00; F25D 23/067; F25D
23/069; F25D 23/085; F25D 23/126;
F25D 2303/00; F25D 2303/0842; F25D
2303/0844; F25D 2303/0845; F25D
2317/0655; F25D 2323/0021; F25D
2323/00261; F25D 2323/00262; F25D
2323/00282; F25D 2331/802; F25D
2400/08; F25D 2400/14; F25D 2400/30;
F25D 25/025; F25D 2500/04; F25D
2600/04; F25D 2700/04; F25D 2700/08;
F25D 29/005; F25D 31/006; F25D 1/00;
F25D 11/027; F25D 2201/12; F25D
23/00; F25D 23/026; F25D 2303/083;
F25D 2303/0832; F25D 2303/0841; F25D

2317/043; F25D 2317/0651; F25D
2317/0682; F25D 2323/0011; F25D
2323/00265; F25D 2323/00272; F25D
2323/121; F25D 2331/8011; F25D
2331/806; F25D 2400/26; F25D 25/00;
F25D 25/005; F25D 25/02; F25D 25/04;
F25D 2500/06; F25D 2600/02; F25D
2700/06; F25D 3/00; F25D 3/005; F25D
3/045; F25D 3/12; F25D 3/125; F25D
31/00; F25D 7/00; F25D 9/00

See application file for complete search history.

(56)

References Cited

U.S. PATENT DOCUMENTS

D449,842	S	*	10/2001	Borre	D15/79
D474,209	S	*	5/2003	Seymour	D15/79
D482,373	S	*	11/2003	Seymour	D15/79
D500,508	S	*	1/2005	Chiu	D15/79
D536,711	S	*	2/2007	Sundheim	D15/79
D549,744	S	*	8/2007	Sundheim	D15/79
D649,600	S	*	11/2011	Opsahl	D15/79
D666,224	S	*	8/2012	Pruszynski	D15/79

* cited by examiner

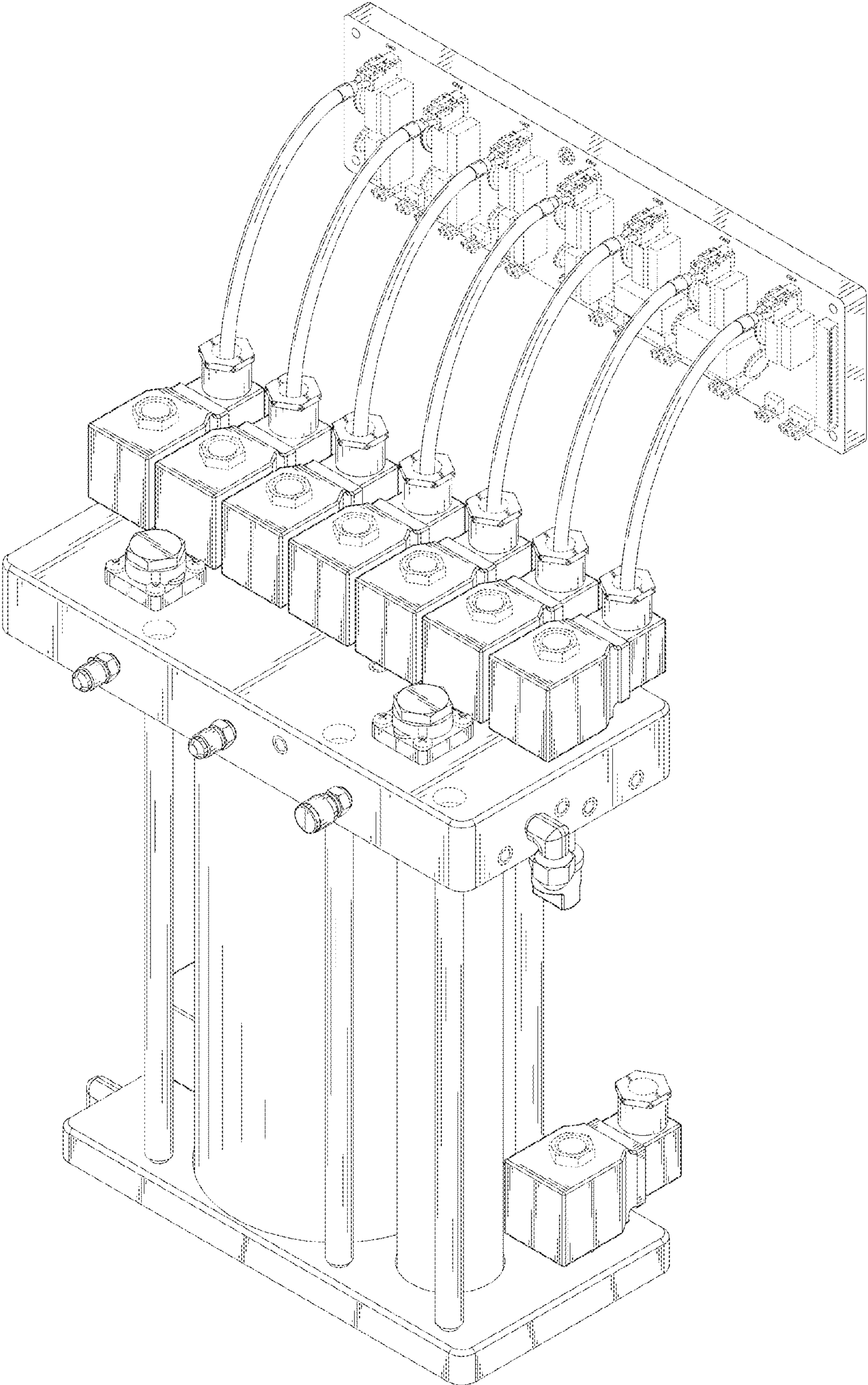


FIG. 1

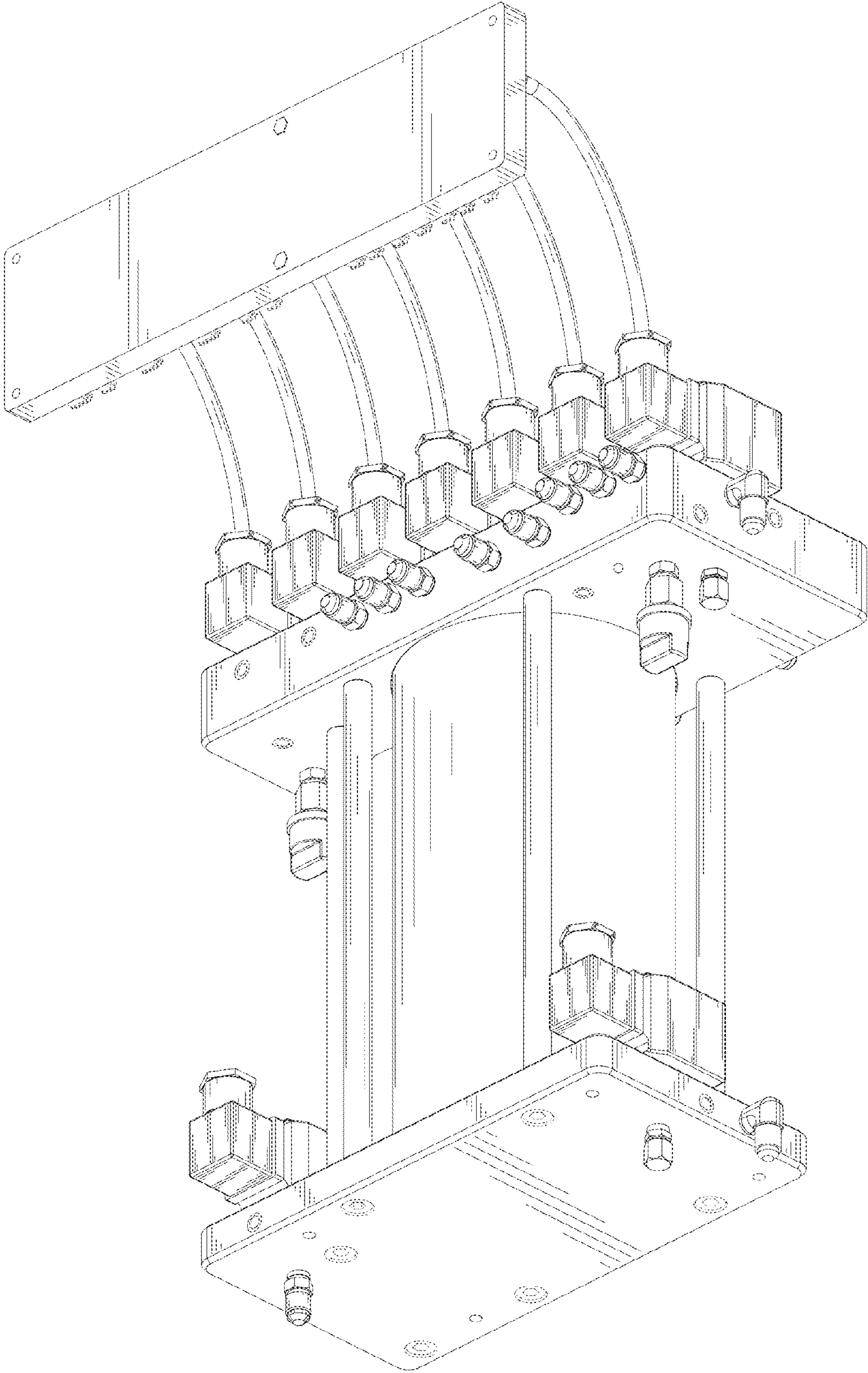


FIG. 2

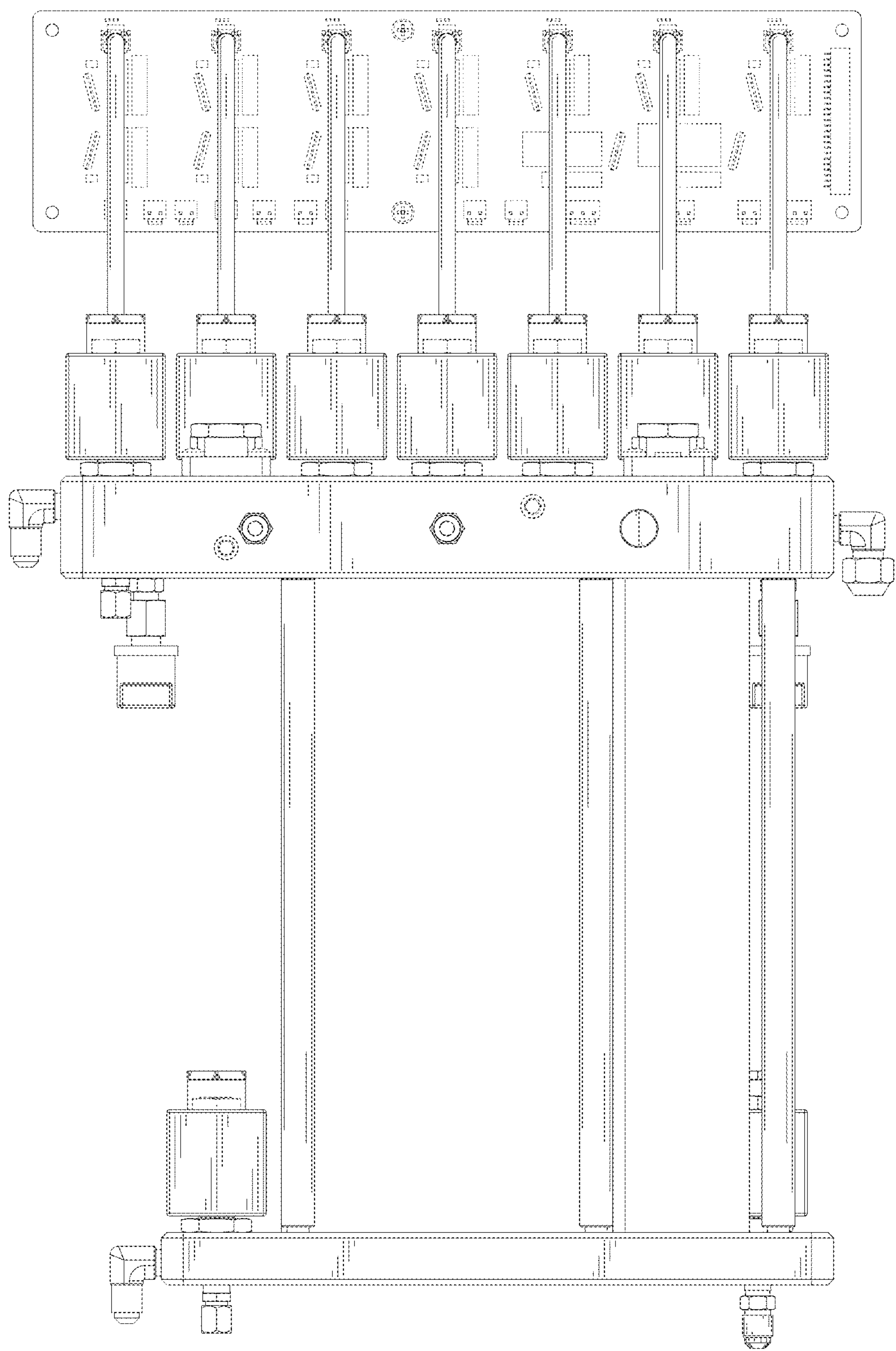


FIG. 3

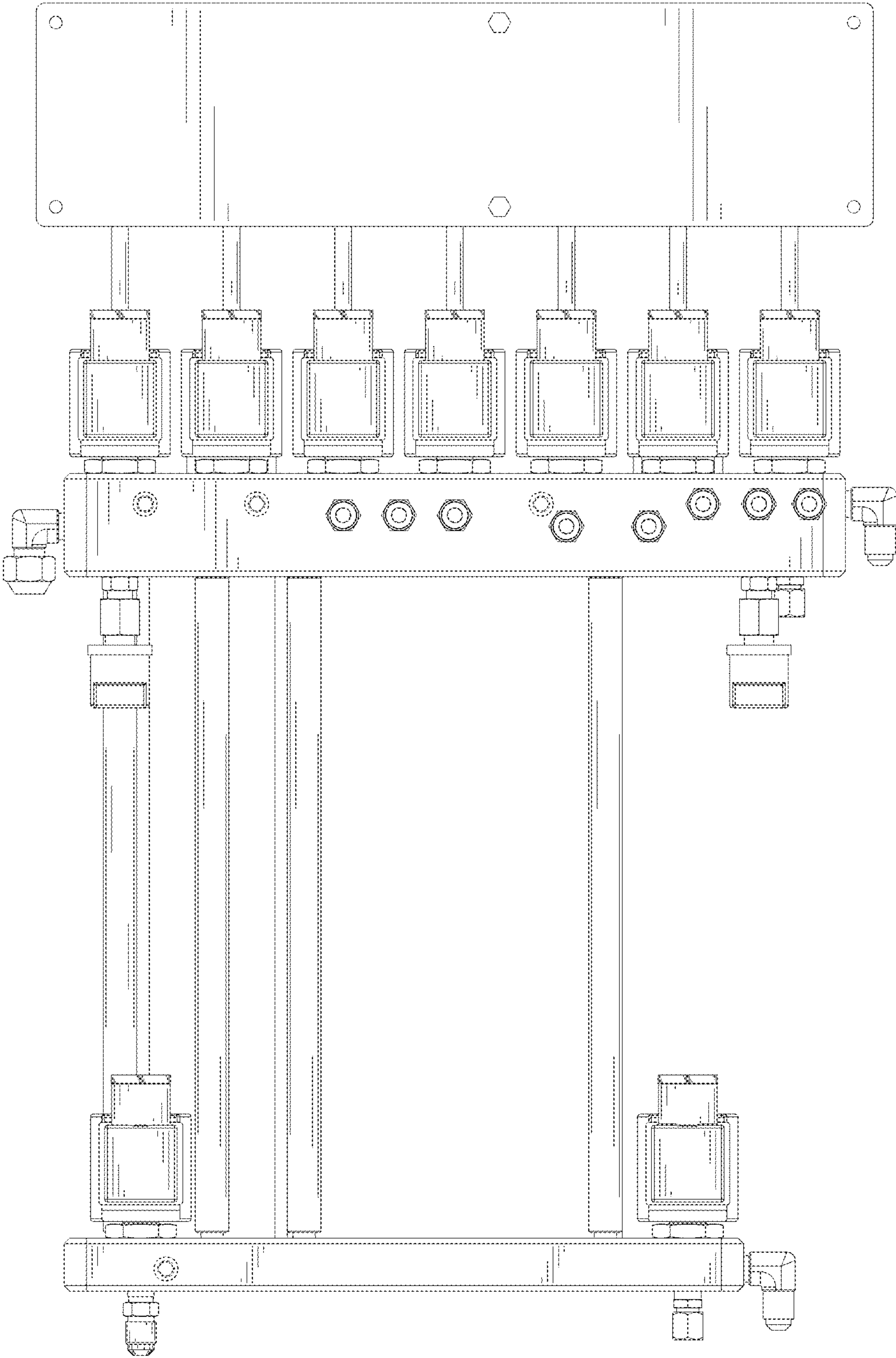


FIG. 4

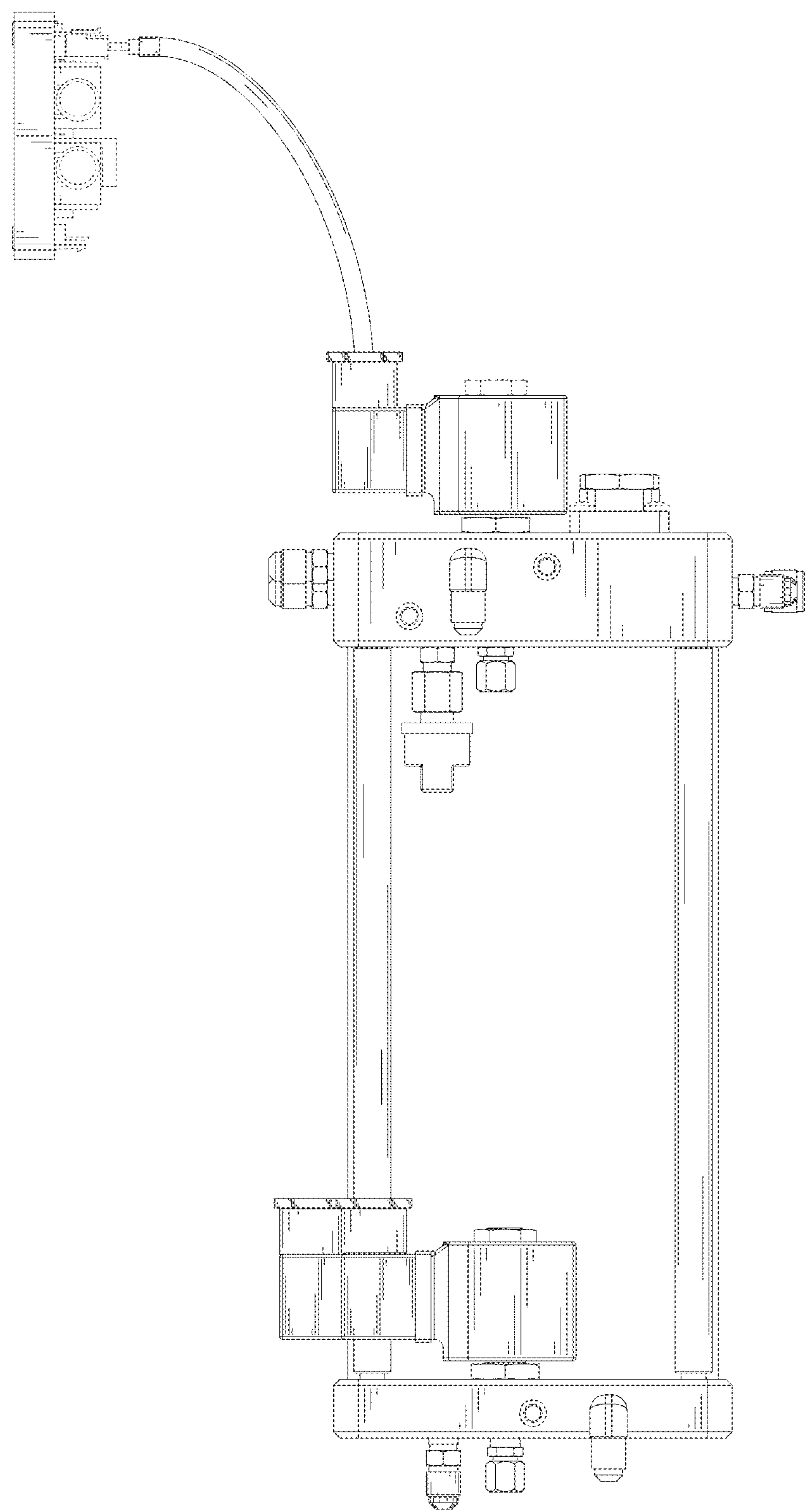


FIG. 5

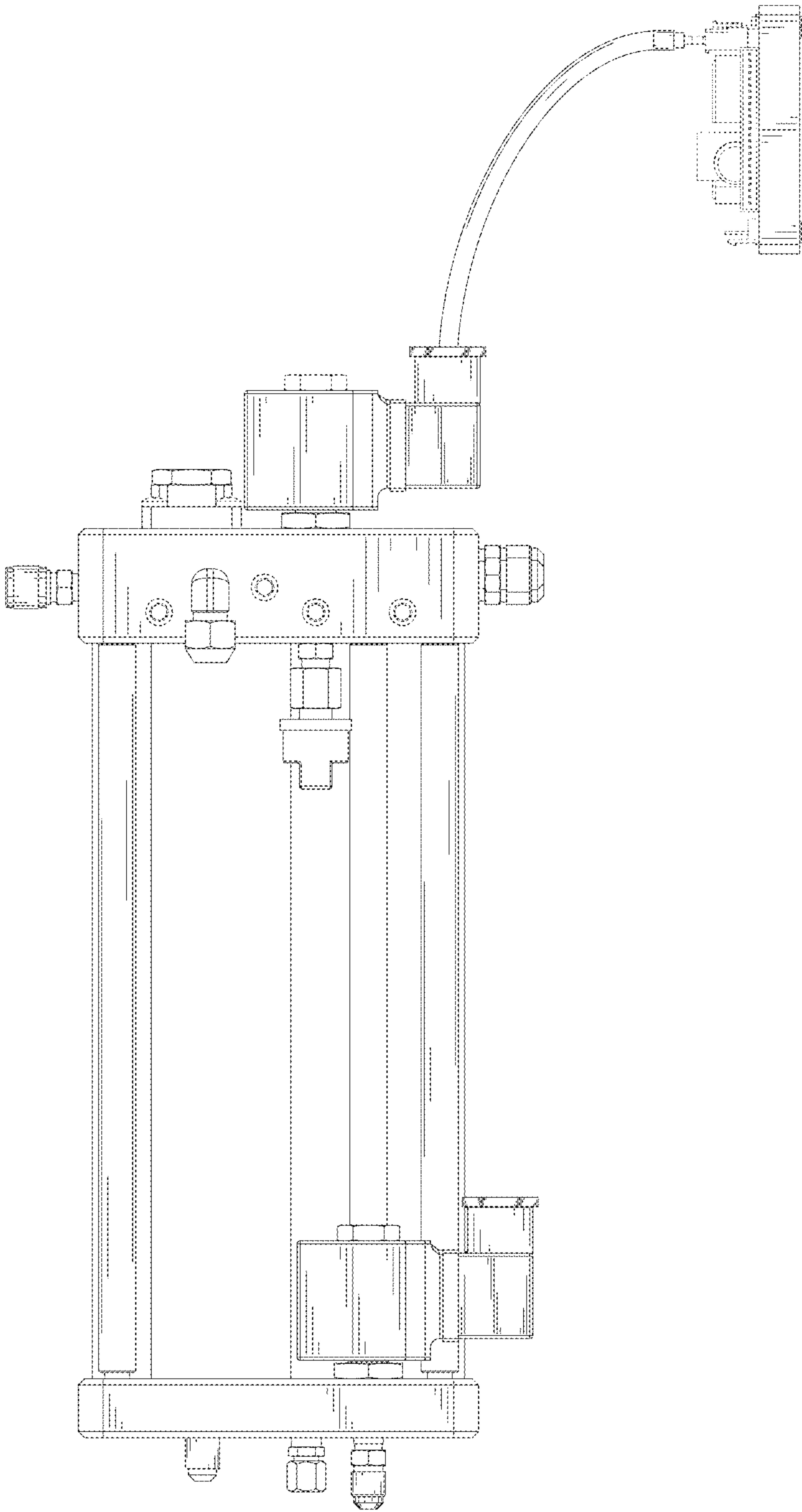


FIG. 6

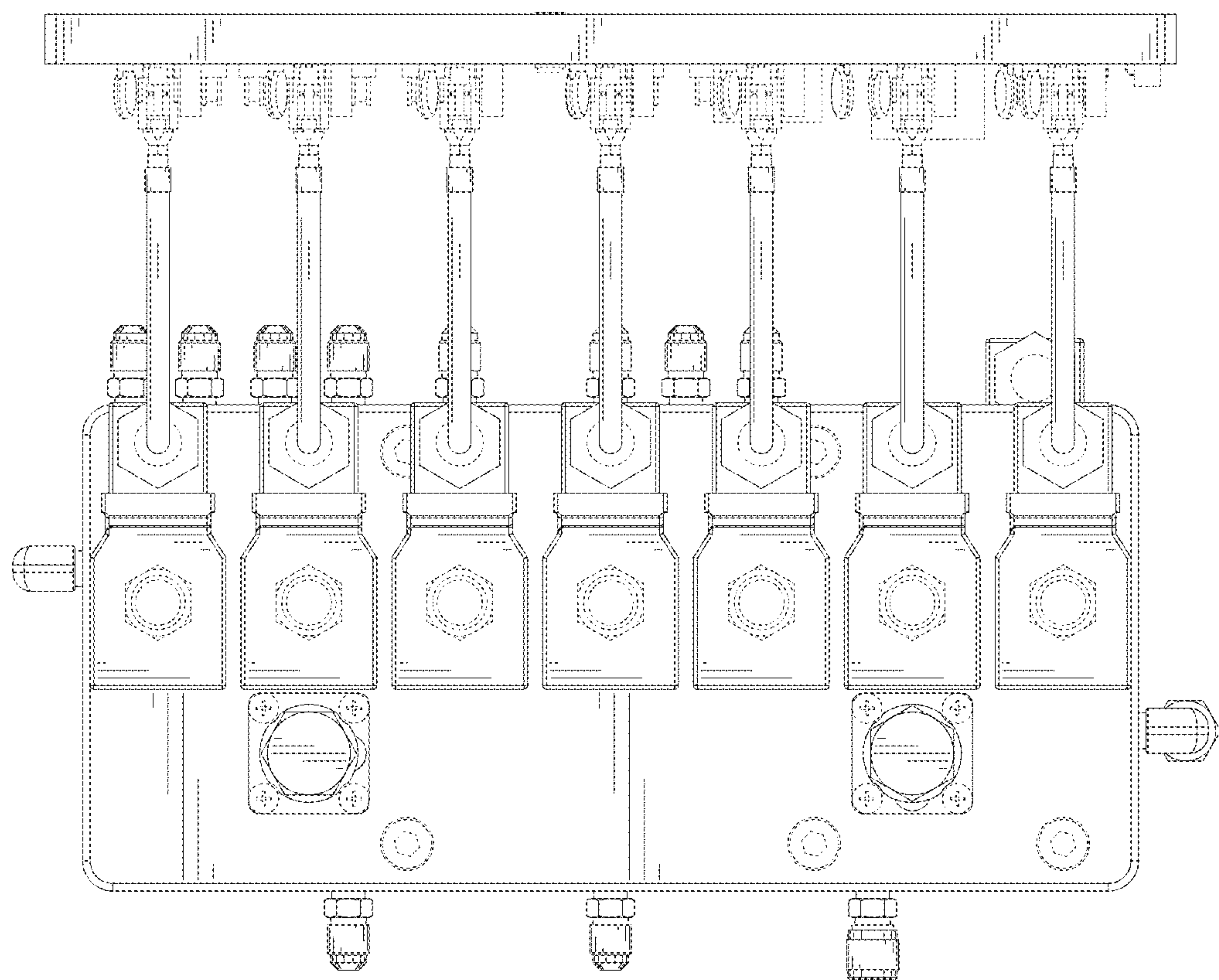


FIG. 7

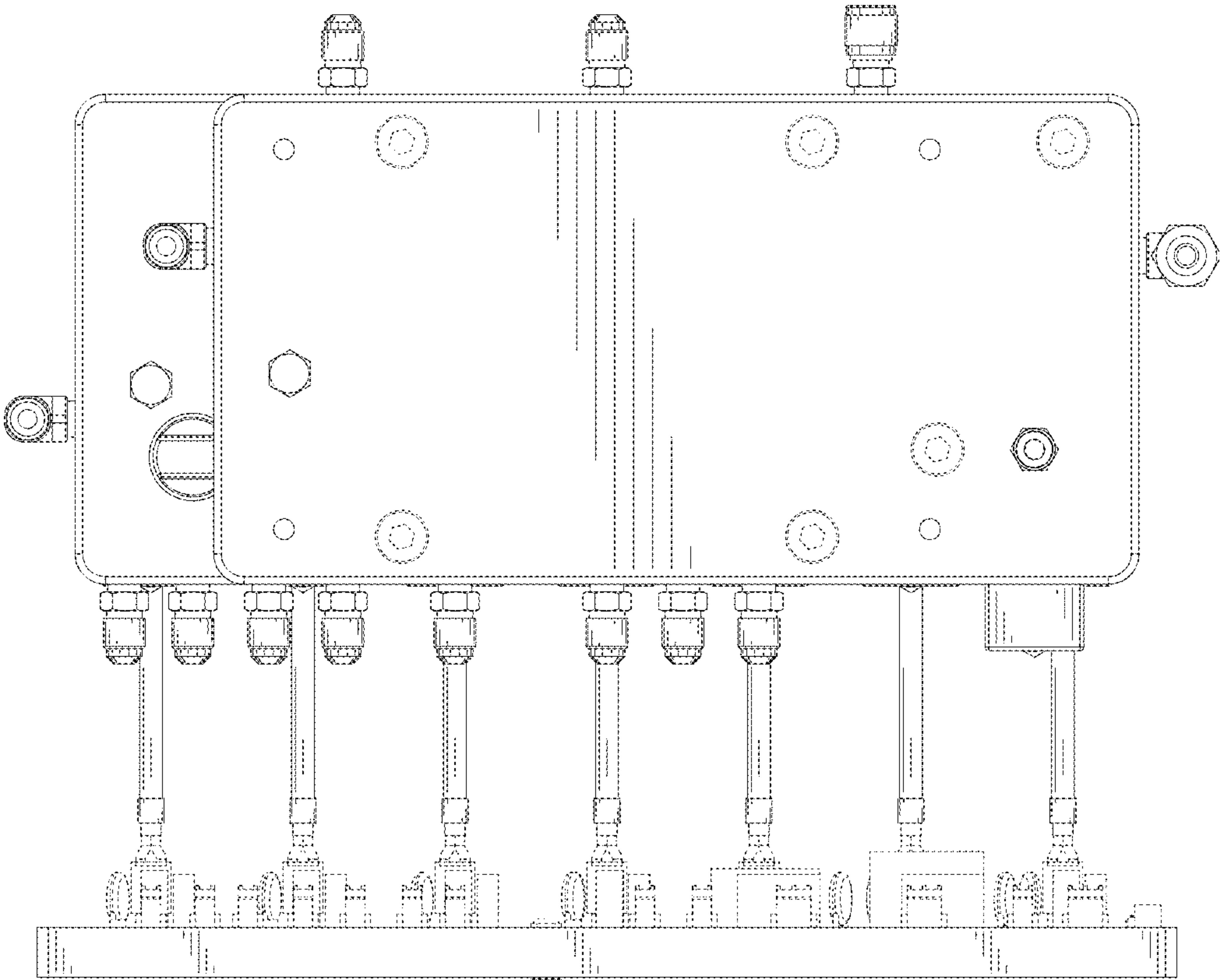


FIG. 8