



US00D477311S

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

(10) **Patent No.:** **US D477,311 S**

(45) **Date of Patent:** **** Jul. 15, 2003**

(54) **FOUR-PHASE POWER SUPPLY HELICAL ANTENNA**

6,005,521 A * 12/1999 Suguro et al. 343/700 MS
6,075,501 A * 6/2000 Kuramoto et al. 343/895
6,150,981 A * 11/2000 Suguro et al. 343/700 MS
6,421,029 B1 * 7/2002 Tanabe 343/895

(75) Inventor: **Junichi Noro, Akita (JP)**

* cited by examiner

(73) Assignee: **Mitsumi Electric Co., Ltd., Tokyo (JP)**

Primary Examiner—Louis S. Zarfes

(**) Term: **14 Years**

Assistant Examiner—Deanne Levy

(21) Appl. No.: **29/152,397**

(74) *Attorney, Agent, or Firm*—Sughrue Mion, PLLC

(22) Filed: **Dec. 21, 2001**

(57) **CLAIM**

(30) **Foreign Application Priority Data**

The ornamental design for a four-phase power supply helical antenna, as shown.

Jun. 28, 2001 (JP) 2001-018819

DESCRIPTION

(51) **LOC (7) Cl.** **14-03**

FIG. 1 is a perspective view of the top, front and right side of a four-phase power supply helical antenna showing our new design;

(52) **U.S. Cl.** **D14/230**

FIG. 2 is a perspective view of the bottom, rear and left side thereof;

(58) **Field of Search** D14/230, 232, D14/233–238; 343/872, 895, 700 MS; 455/90, 562, 128, 347

FIG. 3 is a front elevational view thereof;

(56) **References Cited**

FIG. 4 is a rear elevational view thereof;

U.S. PATENT DOCUMENTS

FIG. 5 is a left side elevational view thereof;

3,019,438 A * 1/1962 Pan 343/843

FIG. 6 is a right side elevational view thereof;

3,083,364 A * 3/1963 Scheldorf 343/843

FIG. 7 is a top plan view thereof; and,

3,252,161 A * 5/1966 Gottwald et al. 343/797

FIG. 8 is a bottom plan view thereof.

5,721,558 A * 2/1998 Holemans 343/895

1 Claim, 7 Drawing Sheets

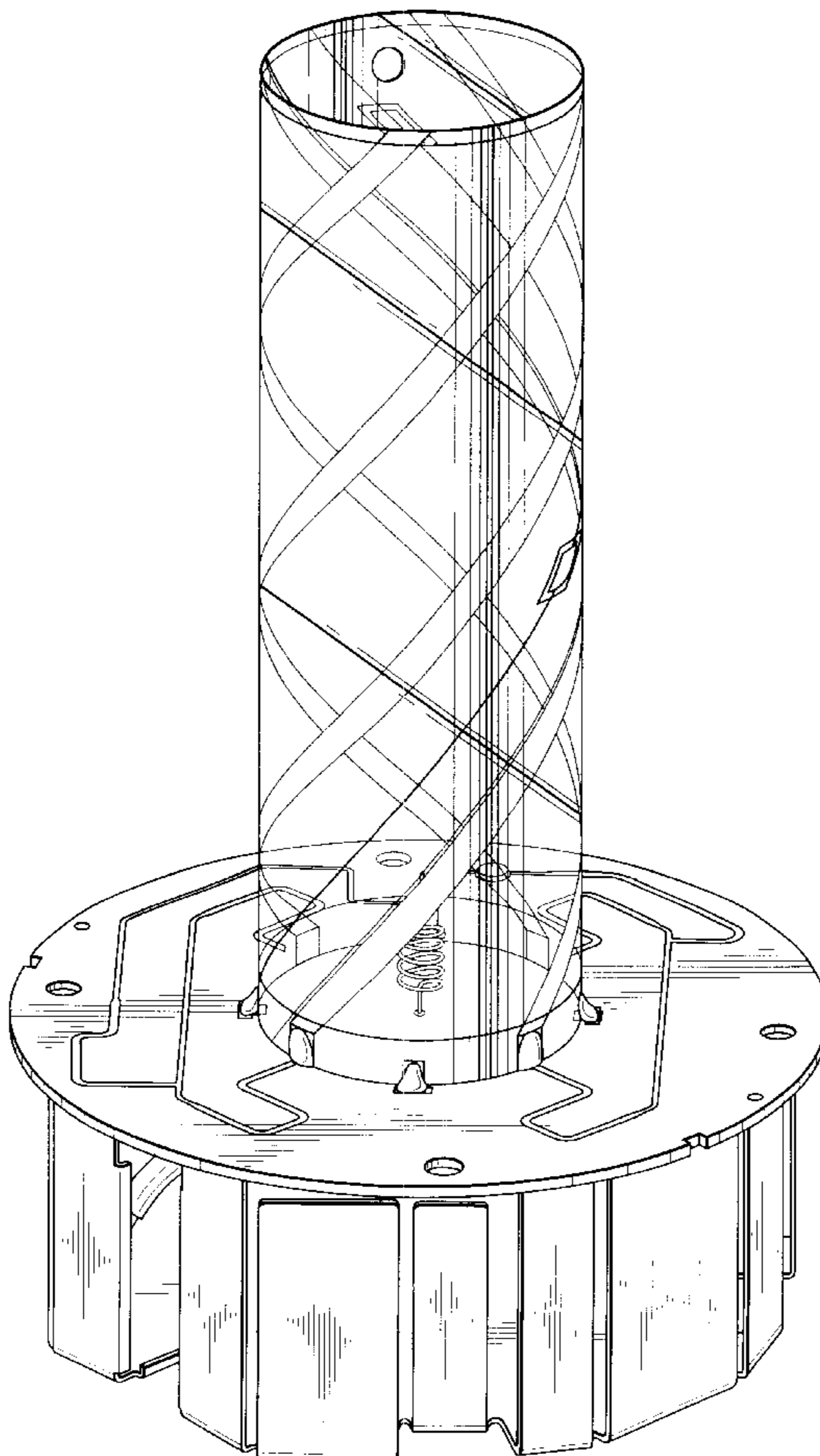


FIG. 1

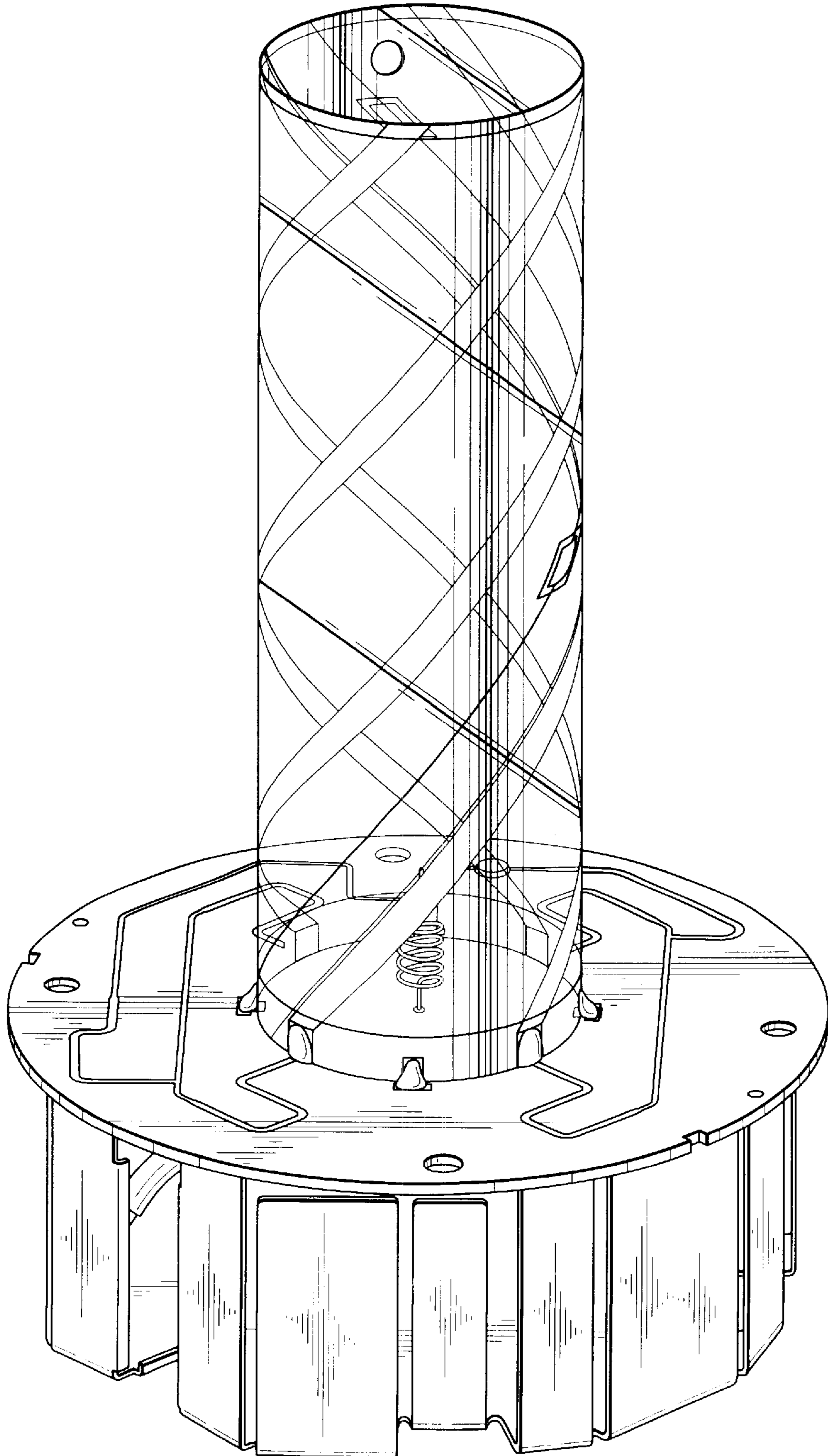


FIG. 2

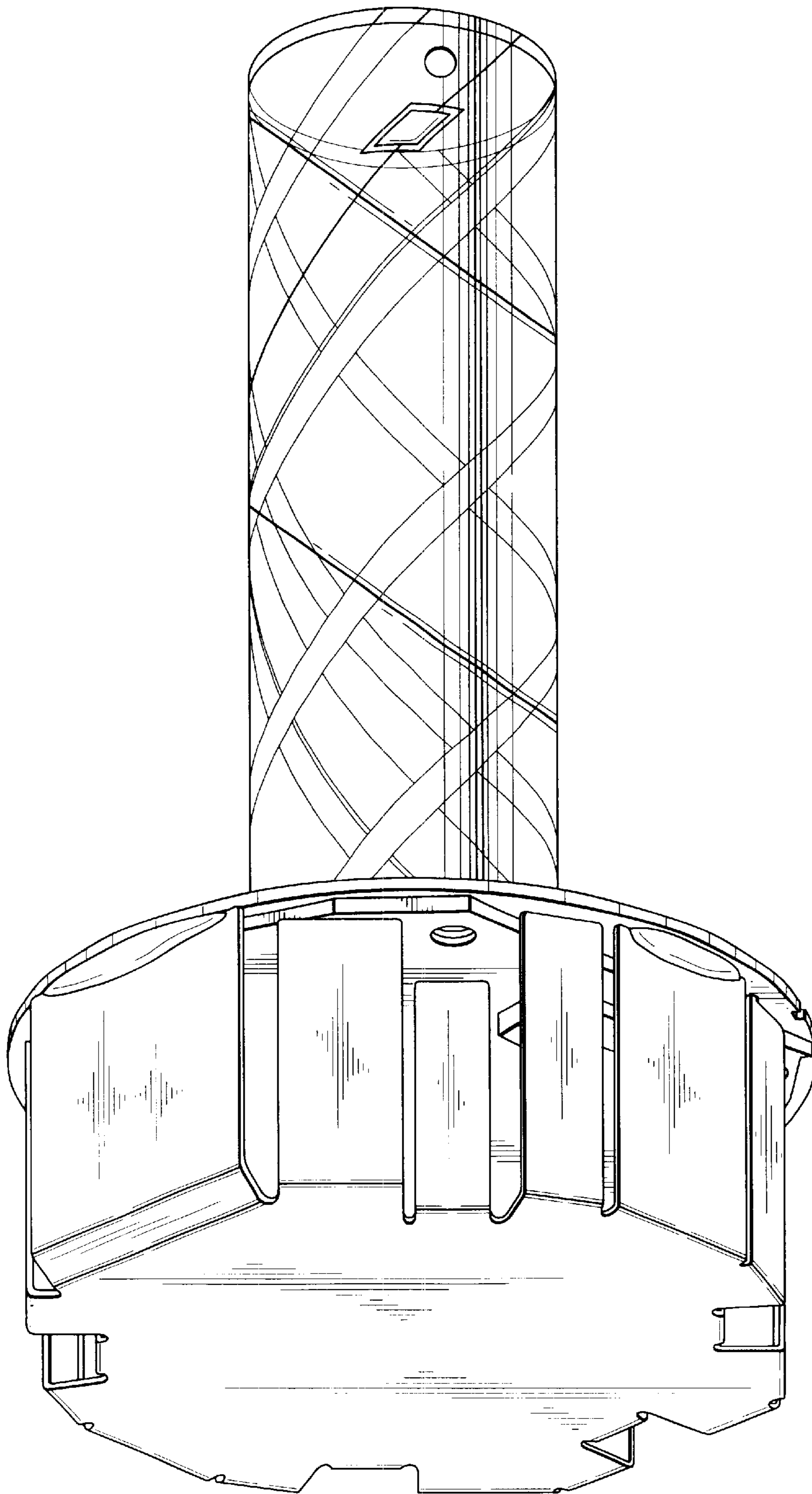


FIG. 3

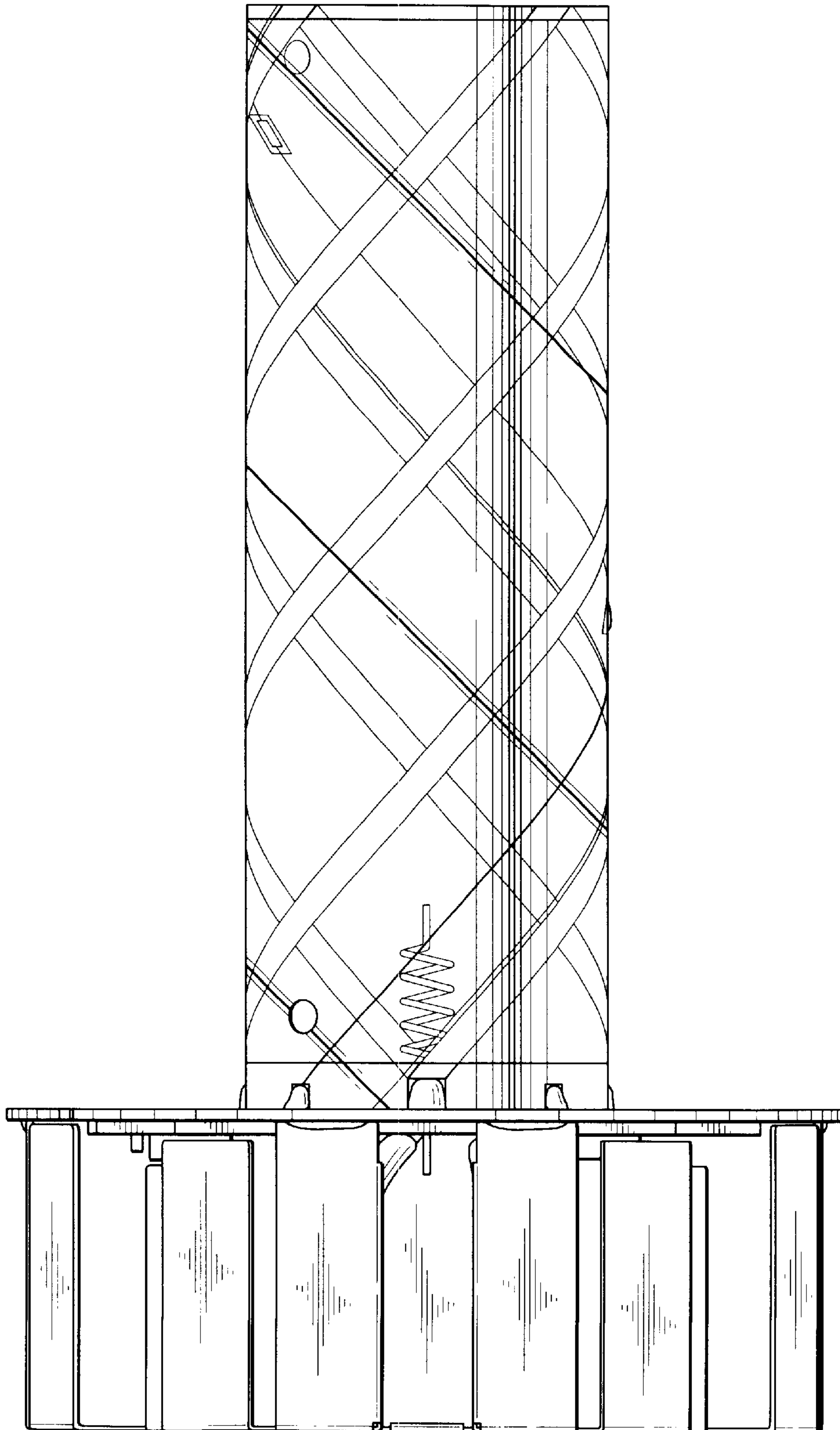


FIG. 4

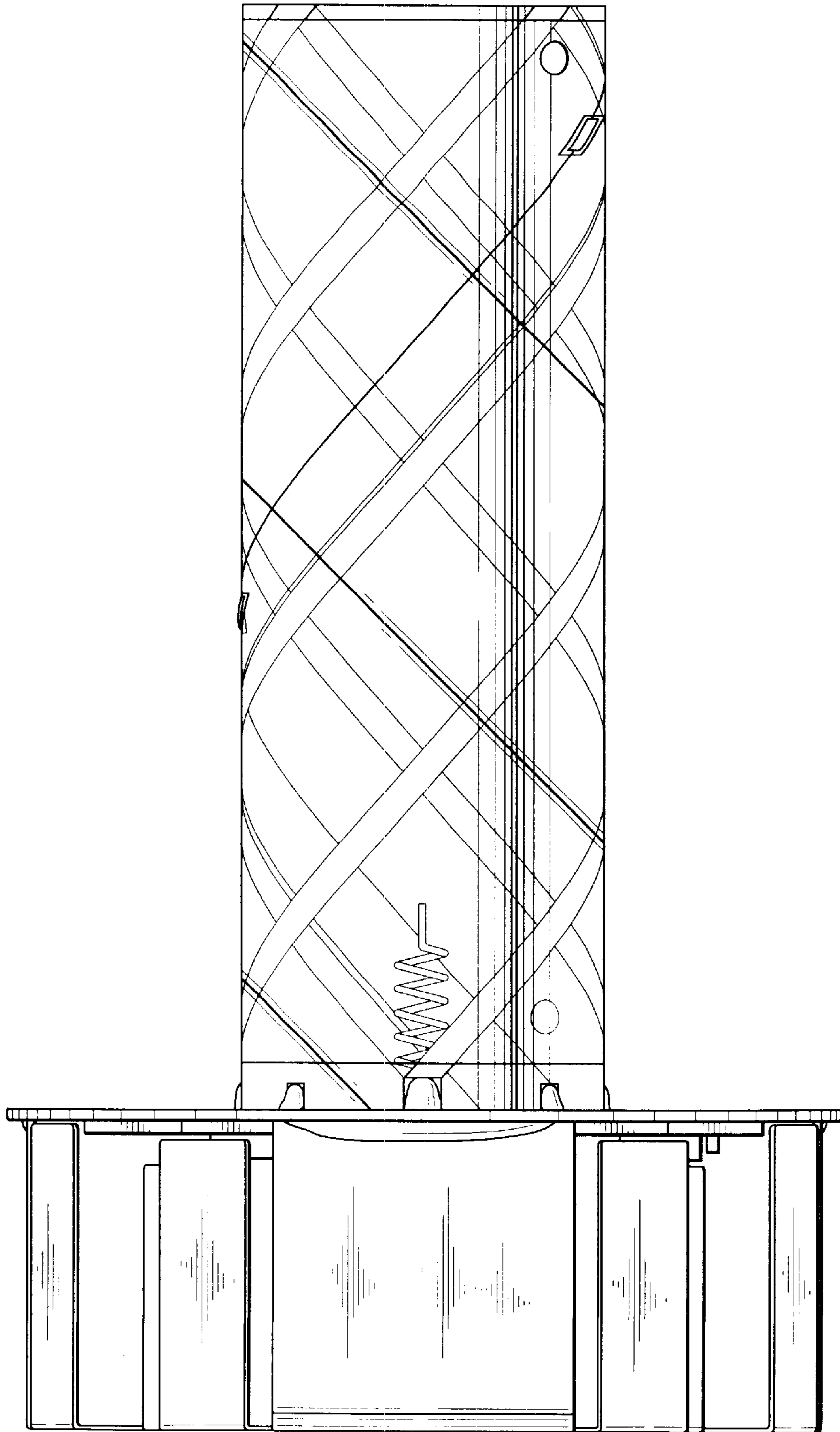


FIG. 5

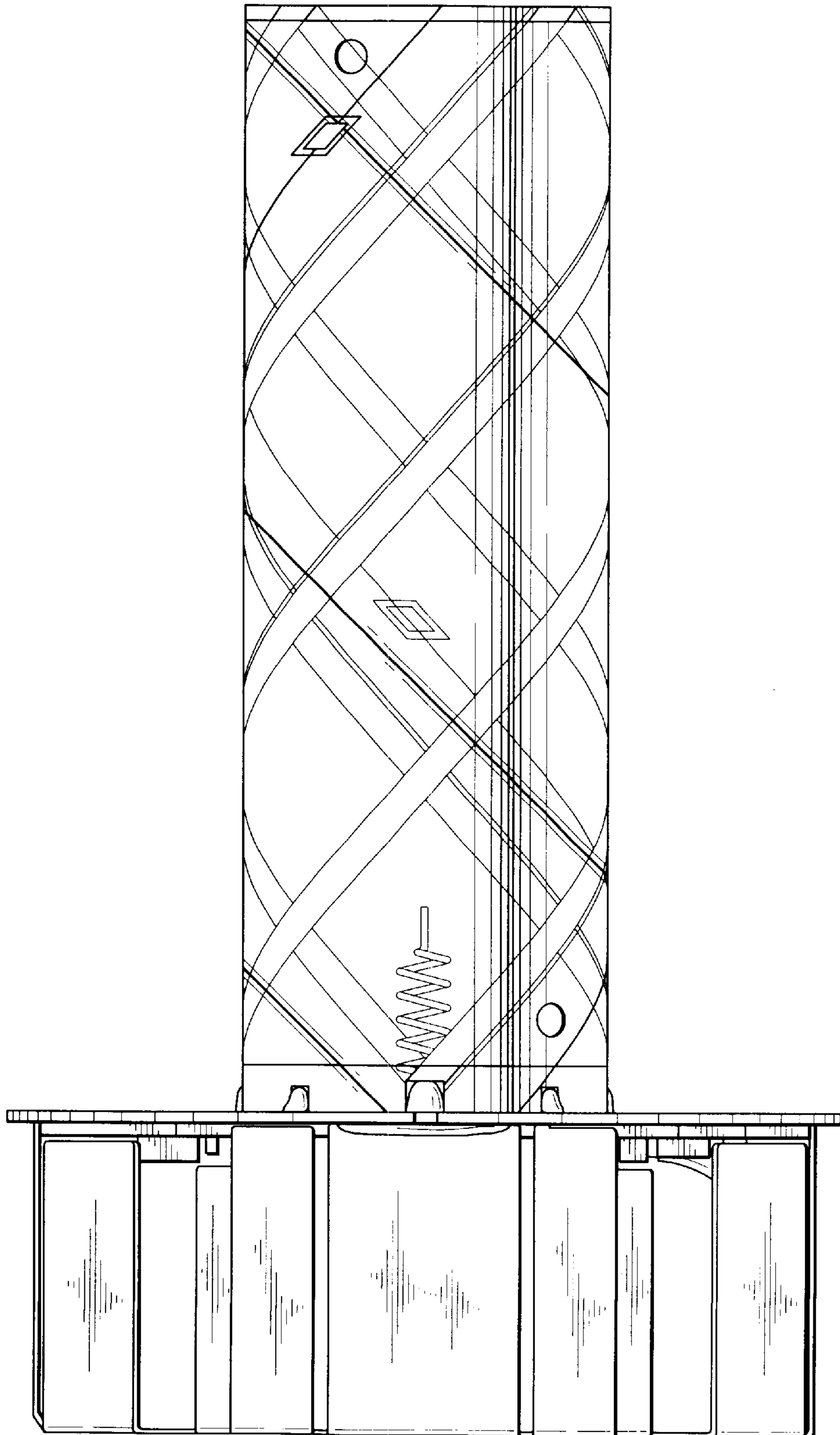


FIG. 6

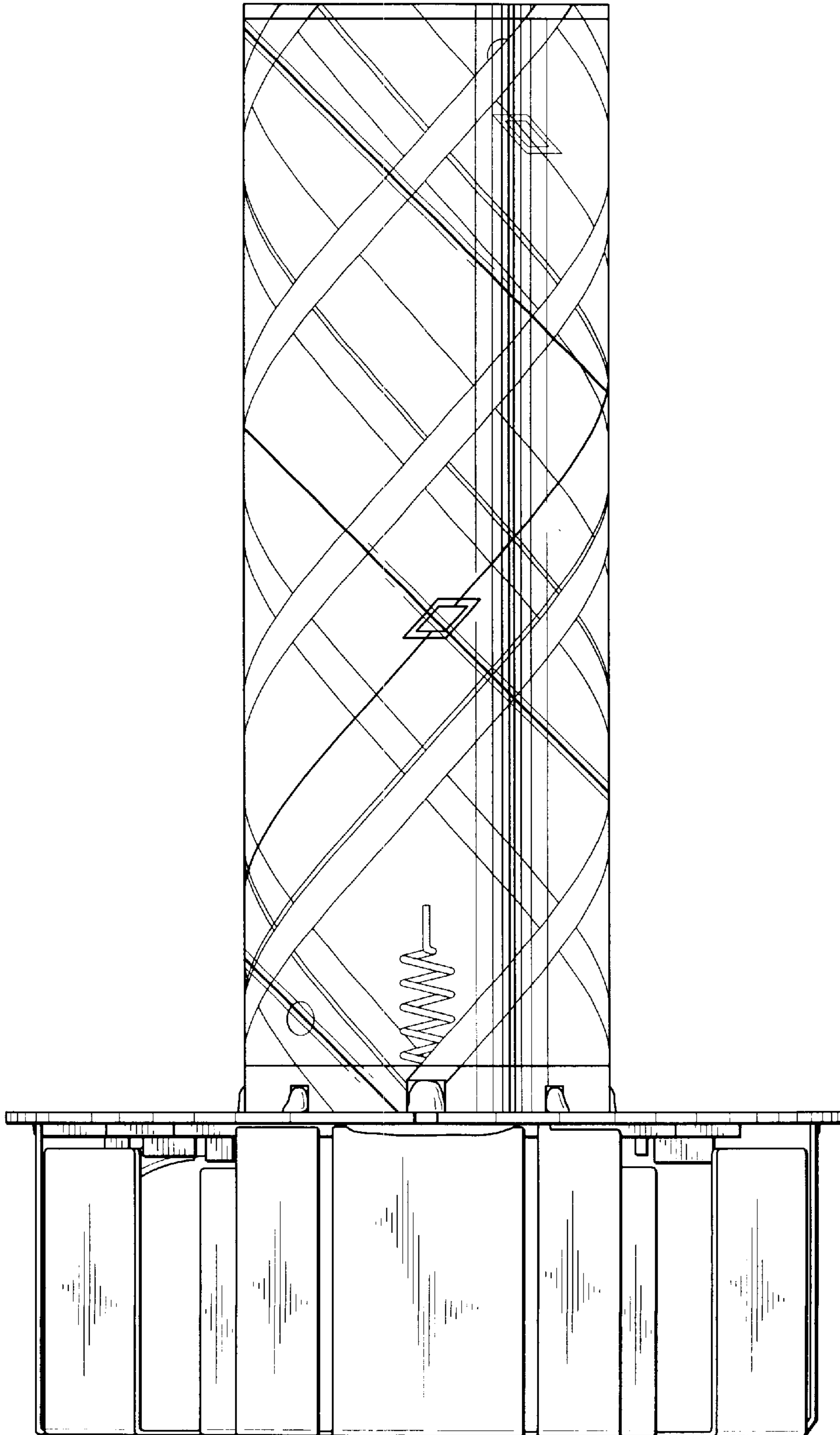


FIG. 7

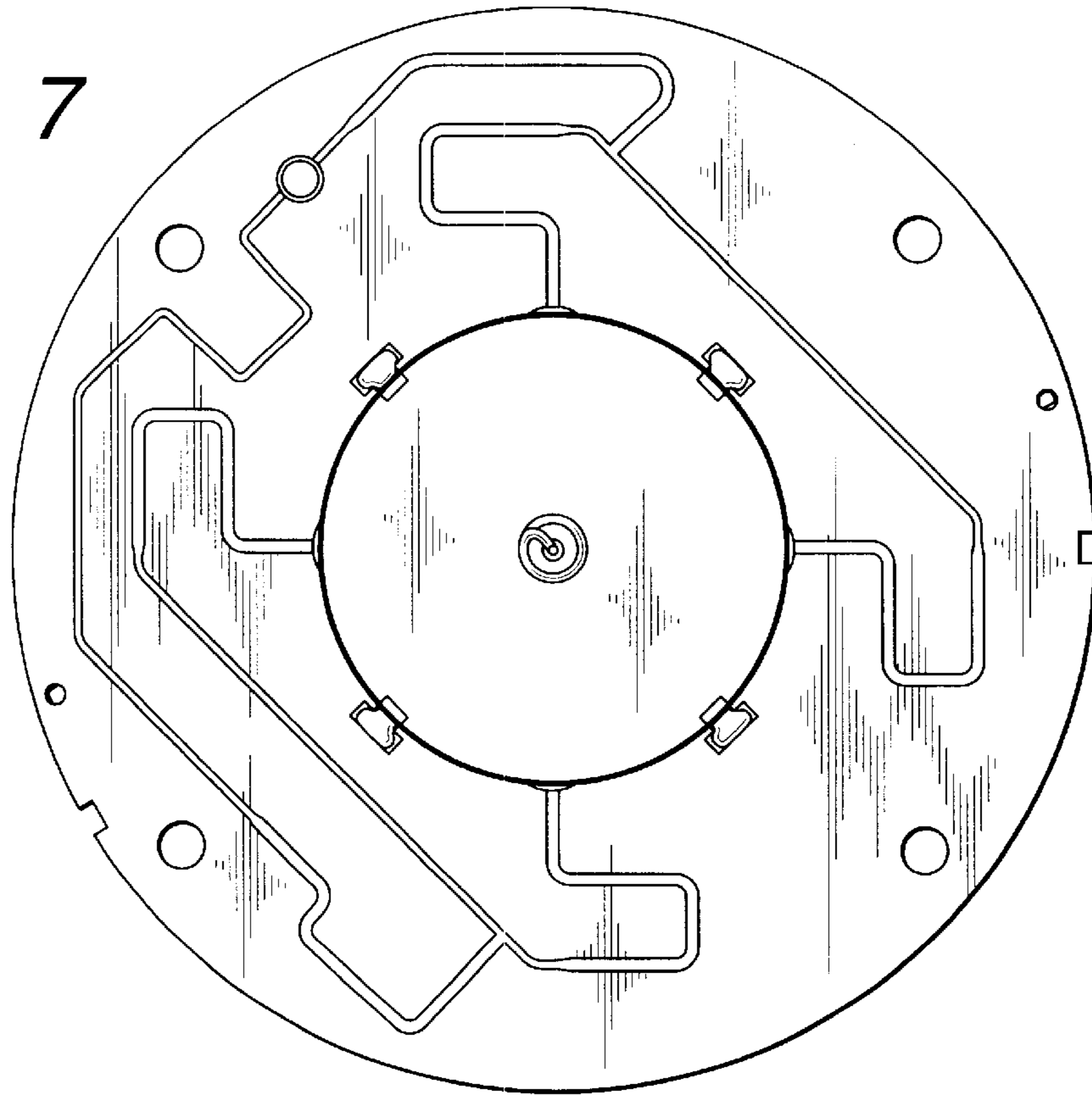
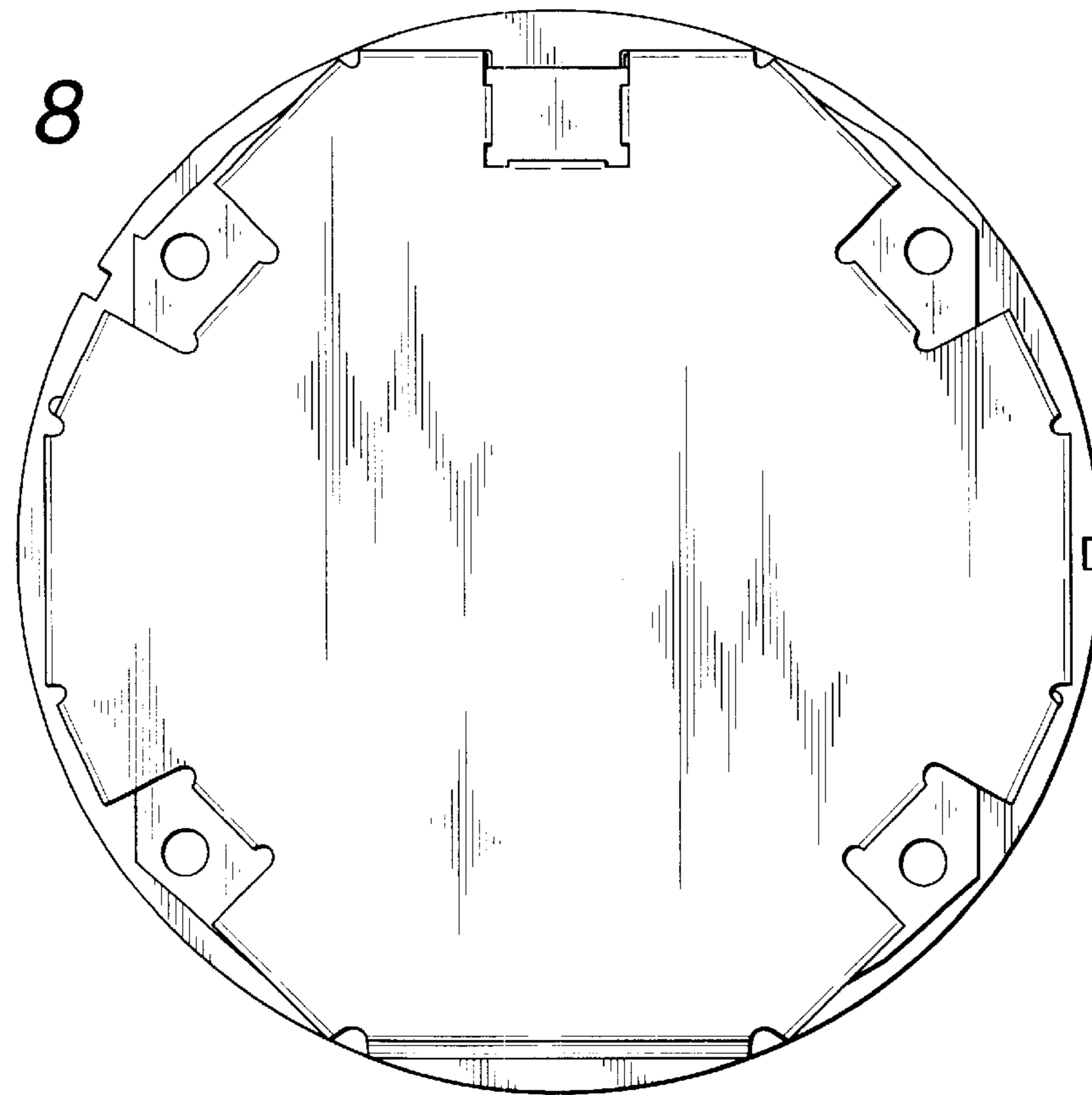


FIG. 8



UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : Des. 477,311 S
DATED : July 15, 2003
INVENTOR(S) : Junichi Noro

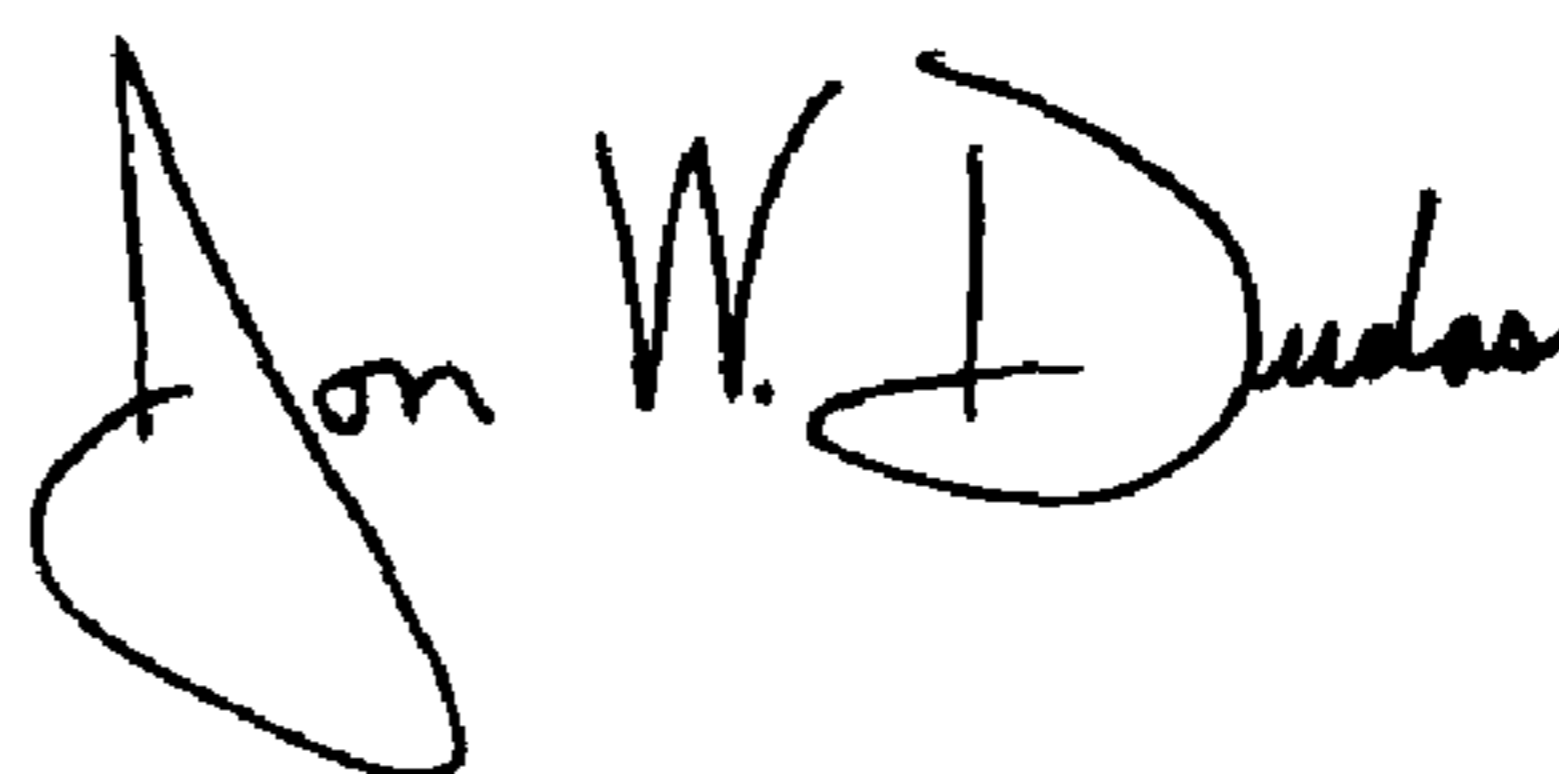
Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Drawings,
Delete Figures 1-6 insert Figures 1-6 hereto submitted.

Signed and Sealed this

Ninth Day of March, 2004

A handwritten signature in black ink that reads "Jon W. Dudas". The signature is written in a cursive style with a large, looped initial "J".

JON W. DUDAS
Acting Director of the United States Patent and Trademark Office