US00D887498S

(12) United States Design Patent

Vandiver et al.

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(45) Date of Patent: ** Jun. 16, 2020

(54) **EDUCATIONAL BUILDING BLOCK SYSTEM TO MODEL AMINO ACID AND PROTEIN ASSEMBLY STRUCTURES**

(71) Applicant: **Massachusetts Institute of Technology**, Cambridge, MA (US)

(72) Inventors: **John Kim Vandiver**, Lexington, MA (US); **Kathleen M. Vandiver**, Lexington, MA (US)

(73) Assignee: **Massachusetts Institute of Technology**, Cambridge, MA (US)

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

(21) Appl. No.: **29/597,190**

(22) Filed: **Mar. 15, 2017**

(51) **LOC (12) Cl.** **21-01**

(52) **U.S. Cl.**
USPC **D21/484**; D19/62

(58) **Field of Classification Search**
USPC D21/483, 484–505; D19/59–62
(Continued)

(56) **References Cited**

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Primary Examiner — Cynthia M. Chin

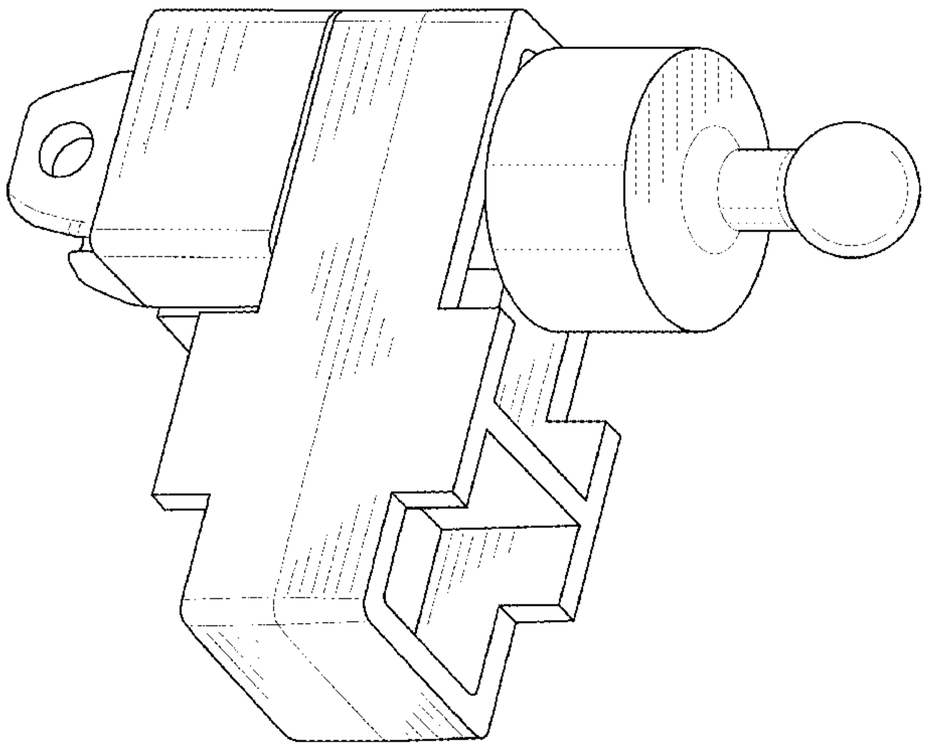
(74) *Attorney, Agent, or Firm* — Sunstein LLP

(57) **CLAIM**

The ornamental design for an educational building block system to model amino acid and protein assembly structures, as shown and described.

DESCRIPTION

FIG. **1** is a top view of a building block assembly modeling an amino acid.
FIG. **2** is a bottom view of the building block assembly of FIG. **1**.
FIG. **3** is a right side view of the building block assembly of FIG. **1**.
FIG. **4** is a left side view of the building block assembly of FIG. **1**.
FIG. **5** is a front view of the building block assembly of FIG. **1**.
FIG. **6** is a back view of the building block assembly of FIG. **1**.
FIG. **7** is a perspective view of the building block assembly of FIG. **1**.
FIG. **8** is a front view of a building block modeling an amino end of an amino acid.
FIG. **9** is a back view of the building block of FIG. **8**.
FIG. **10** is a top view of the building block of FIG. **8**.
FIG. **11** is a bottom view of the building block of FIG. **8**.
FIG. **12** is a left view of the building block of FIG. **8**.
FIG. **13** is a right view of the building block of FIG. **8**.
FIG. **14** is a perspective view of the building block of FIG. **8**.
FIG. **15** is a perspective view of the building block of FIG. **8**.
FIG. **16** is a front view of a building block modeling an acid end of an amino acid.
FIG. **17** is a back view of the building block of FIG. **16**.
FIG. **18** is a top view of the building block of FIG. **16**.
FIG. **19** is a bottom view of the building block of FIG. **16**.
FIG. **20** is a right view of the building block of FIG. **16**.
FIG. **21** is a left view of the building block of FIG. **16**.
(Continued)



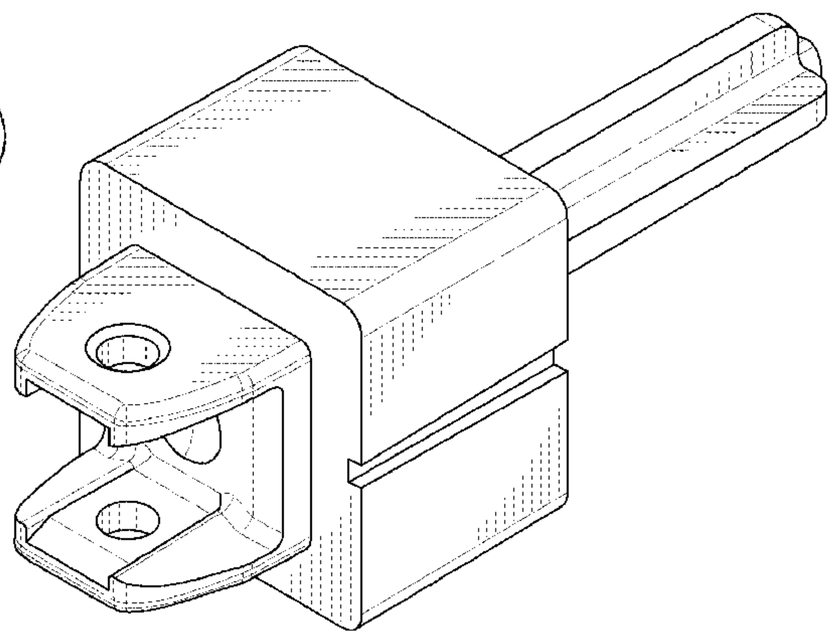


FIG. **22** is a perspective view of the building block of FIG. **16**.
FIG. **23** is a perspective view of the building block of FIG. **16**.
FIG. **24** is a front view of a first building block modeling a side chain of an amino acid.
FIG. **25** is a back view of the first building block of FIG. **24**.
FIG. **26** is a top view of the first building block of FIG. **24**.
FIG. **27** is a bottom view of the first building block of FIG. **24**.
FIG. **28** is a right view of the first building block of FIG. **24**.
FIG. **29** is a left view of the first building block of FIG. **24**.
FIG. **30** is a perspective view of the first building block of FIG. **24**.
FIG. **31** is a perspective view of the first building block of FIG. **24**.
FIG. **32** is a front view of a second building block modeling a side chain of an amino acid.
FIG. **33** is a back view of the second building block of FIG. **32**.
FIG. **34** is a top view of the second building block of FIG. **32**.
FIG. **35** is a bottom view of the second building block of FIG. **32**.
FIG. **36** is a right view of the second building block of FIG. **32**.
FIG. **37** is a left view of the second building block of FIG. **32**.
FIG. **38** is a perspective view of the second building block of FIG. **32**.
FIG. **39** is a perspective view of the second building block of FIG. **32**.
FIG. **40** is a front view of a third building block modeling a side chain of an amino acid.
FIG. **41** is a back view of the third building block of FIG. **40**.
FIG. **42** is a top view of the third building block of FIG. **40**.
FIG. **43** is a bottom view of the third building block of FIG. **40**.
FIG. **44** is a right view of the third building block of FIG. **40**.
FIG. **45** is a left view of the third building block of FIG. **40**.
FIG. **46** is a perspective view of the third building block of FIG. **40**.
FIG. **47** is a perspective view of the third building block of FIG. **40**.
FIG. **48** is a front view of a fourth building block modeling a side chain of an amino acid.
FIG. **49** is a back view of the fourth building block of FIG. **48**.
FIG. **50** is a top view of the fourth building block of FIG. **48**.
FIG. **51** is a bottom view of the fourth building block of FIG. **48**.
FIG. **52** is a right view of the fourth building block of FIG. **48**.
FIG. **53** is a left view of the fourth building block of FIG. **48**.
FIG. **54** is a perspective view of the fourth building block of FIG. **48**.
FIG. **55** is a perspective view of the fourth building block of FIG. **48**.
FIG. **56** is a front view of a fifth building block modeling a side chain of an amino acid.
FIG. **57** is a back view of the fifth building block of FIG. **56**.
FIG. **58** is a top view of the fifth building block of FIG. **56**.
FIG. **59** is a bottom view of the fifth building block of FIG. **56**.
FIG. **60** is a right view of the fifth building block of FIG. **56**.
FIG. **61** is a left view of the fifth building block of FIG. **56**.
FIG. **62** is a perspective view of the fifth building block of FIG. **56**.
FIG. **63** is a perspective view of the fifth building block of FIG. **56**.
FIG. **64** is a front view of a sixth building block modeling a side chain of an amino acid.
FIG. **65** is a back view of the sixth building block of FIG. **64**.
FIG. **66** is a top view of the sixth building block of FIG. **64**.
FIG. **67** is a bottom view of the sixth building block of FIG. **64**.
FIG. **68** is a right view of the sixth building block of FIG. **64**.
FIG. **69** is a left view of the sixth building block of FIG. **64**.
FIG. **70** is a perspective view of the sixth building block of FIG. **64**.
FIG. **71** is a perspective view of the sixth building block of FIG. **64**.
FIG. **72** is a front view of a seventh building block modeling a side chain of an amino acid.
FIG. **73** is a back view of the seventh building block of FIG. **72**.
FIG. **74** is a top view of the seventh building block of FIG. **72**.
FIG. **75** is a bottom view of the seventh building block of FIG. **72**.
FIG. **76** is a right view of the seventh building block of FIG. **72**.
FIG. **77** is a left view of the seventh building block of FIG. **72**.
FIG. **78** is a perspective view of the seventh building block of FIG. **72**.
FIG. **79** is a perspective view of the seventh building block of FIG. **72**.
FIG. **80** is a front view of a building block modeling a tRNA molecule used in protein assembly.
FIG. **81** is a back view of the building block of FIG. **80**.
FIG. **82** is a right side view of the building block of FIG. **80**.
FIG. **83** is a left side view of the building block of FIG. **80**.
FIG. **84** is a bottom view of the building block of FIG. **80**.
FIG. **85** is a top view of the building block of FIG. **80**.
FIG. **86** is a perspective view of the building block of FIG. **80**.
FIG. **87** is a perspective view of the building block of FIG. **80**.
FIG. **88** is a front view of a mat used in modeling protein assembly in a ribosome.
FIG. **89** is a left side view of the mat of FIG. **88**.
FIG. **90** is a right side view of the mat of FIG. **88**.
FIG. **91** is a top view of the mat of FIG. **88**.
FIG. **92** is a bottom view of the mat of FIG. **88**.
FIG. **93** is a back view of the mat of FIG. **88**.
FIG. **94** is a front view of a mat used in modeling a pore in a cell membrane.
FIG. **95** is a top side view of the mat of FIG. **94**.
FIG. **96** is a bottom side view of the mat of FIG. **94**.
FIG. **97** is a back view of the mat of FIG. **94**.
FIG. **98** is a right side view of the mat of FIG. **94**; and,
FIG. **99** is a left side view of the mat of FIG. **94**.

The broken lines are for the purpose of illustrating portions of the article. The portions of the article shown in broken lines form no part of the claimed design.

1 Claim, 36 Drawing Sheets

(58) **Field of Classification Search**
CPC G09B 23/00; G09B 23/20; G09B 23/24; G09B 23/26; G09B 23/28; A63H 33/04; A63H 33/10; A63H 33/101; A63H 33/108
See application file for complete search history.

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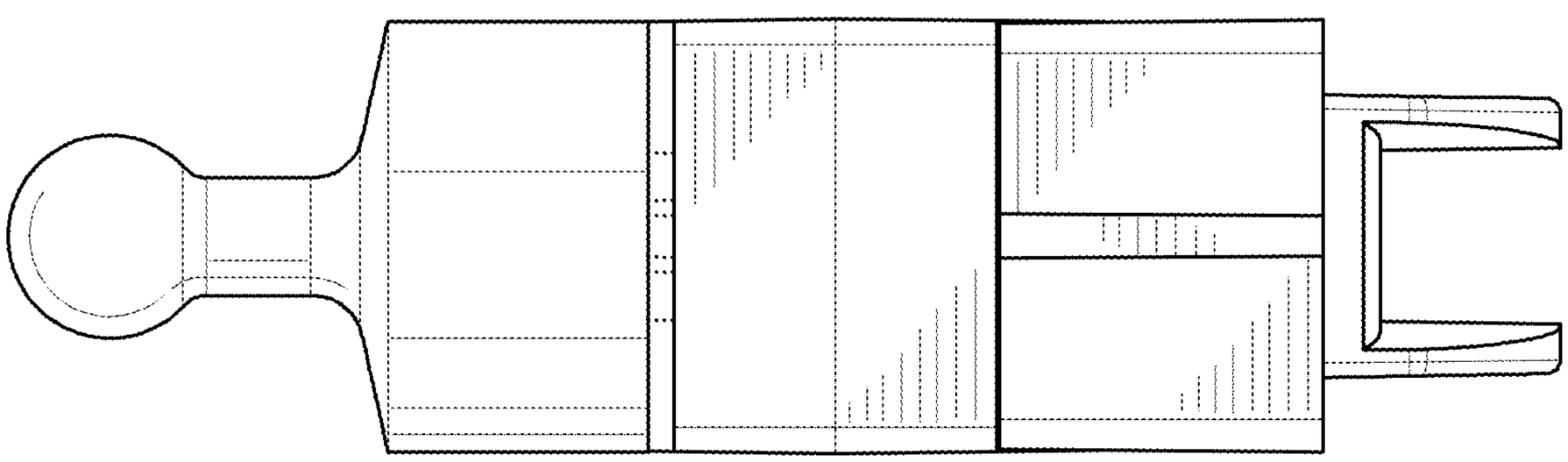

FIG. 1

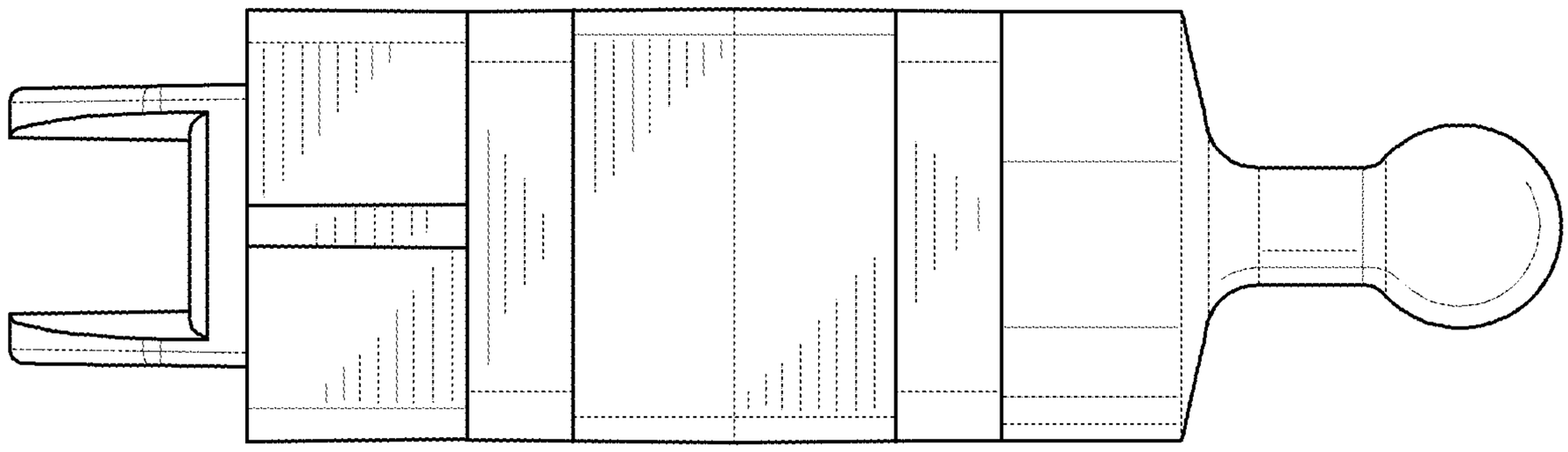

FIG. 2

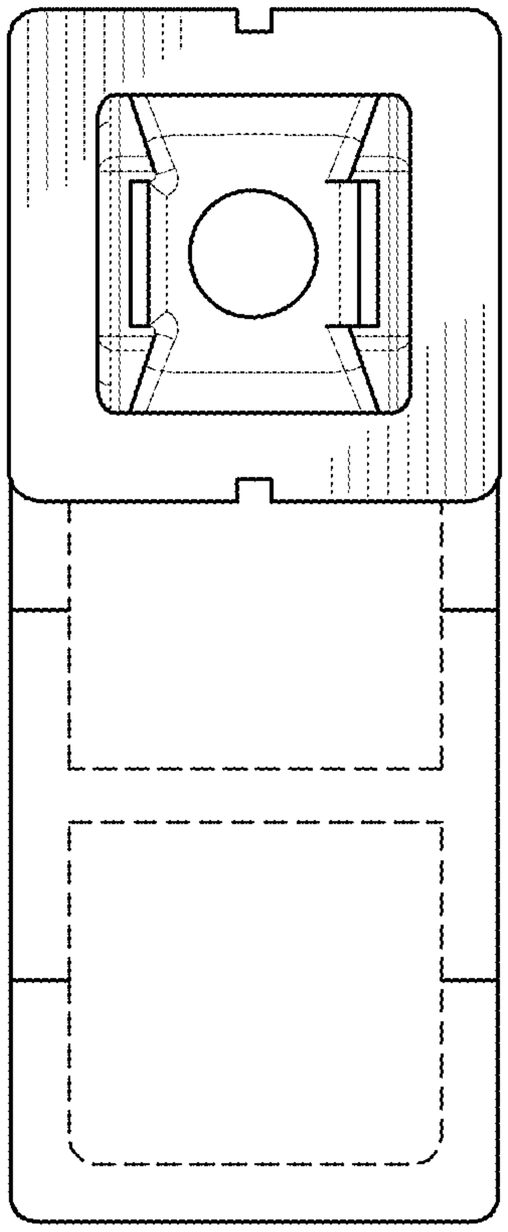

FIG. 3

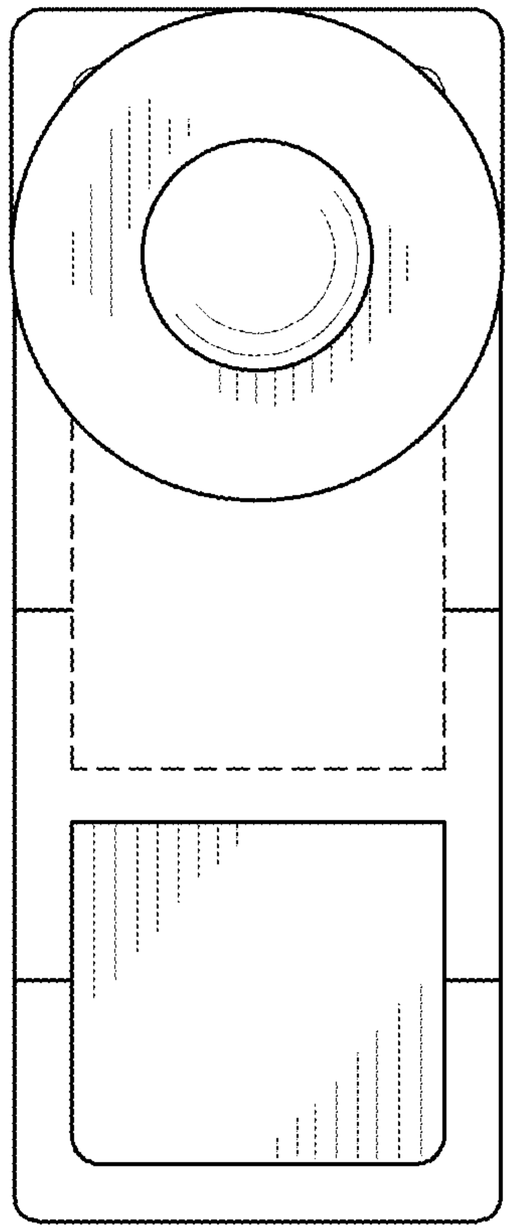

FIG. 4

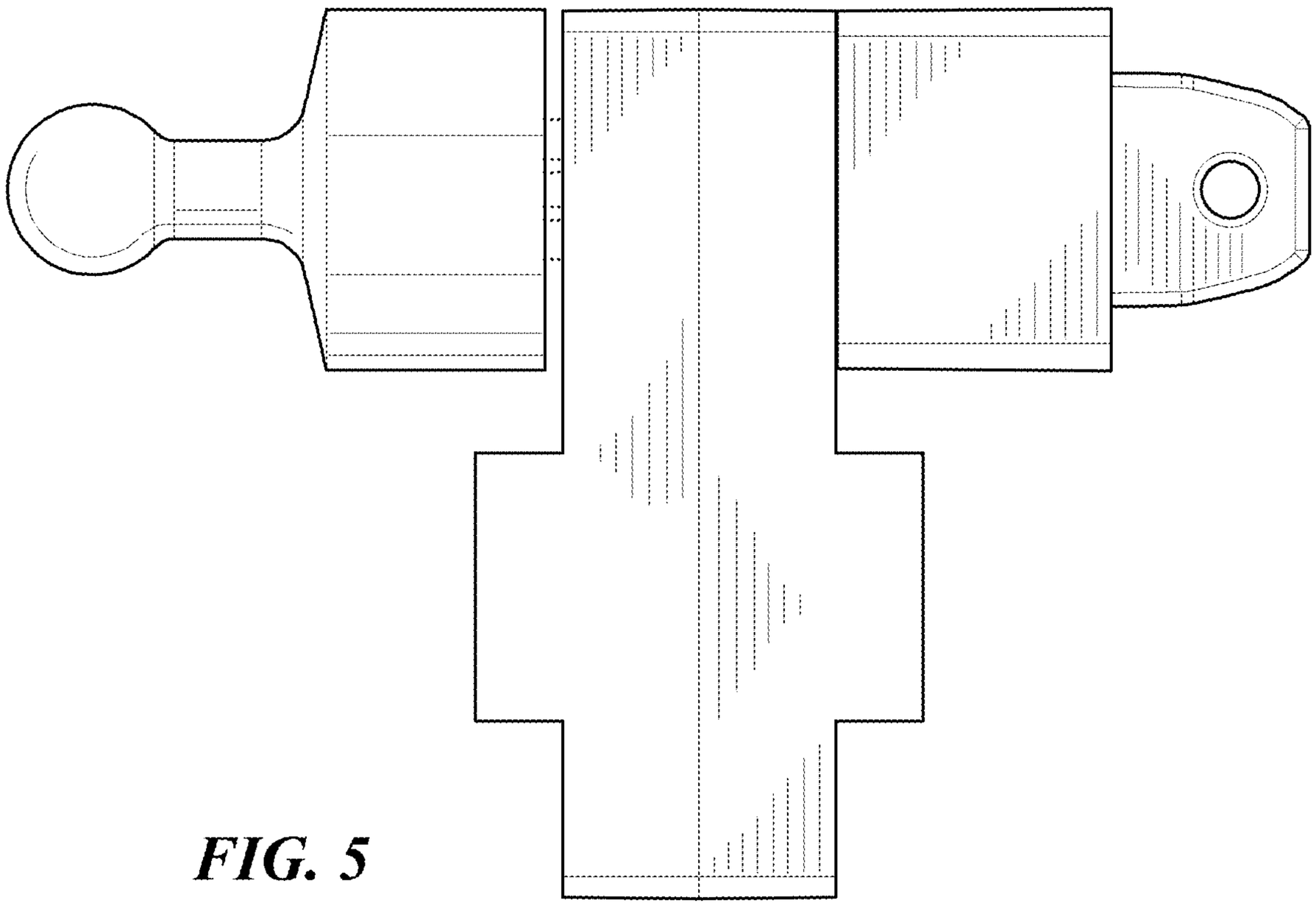

FIG. 5

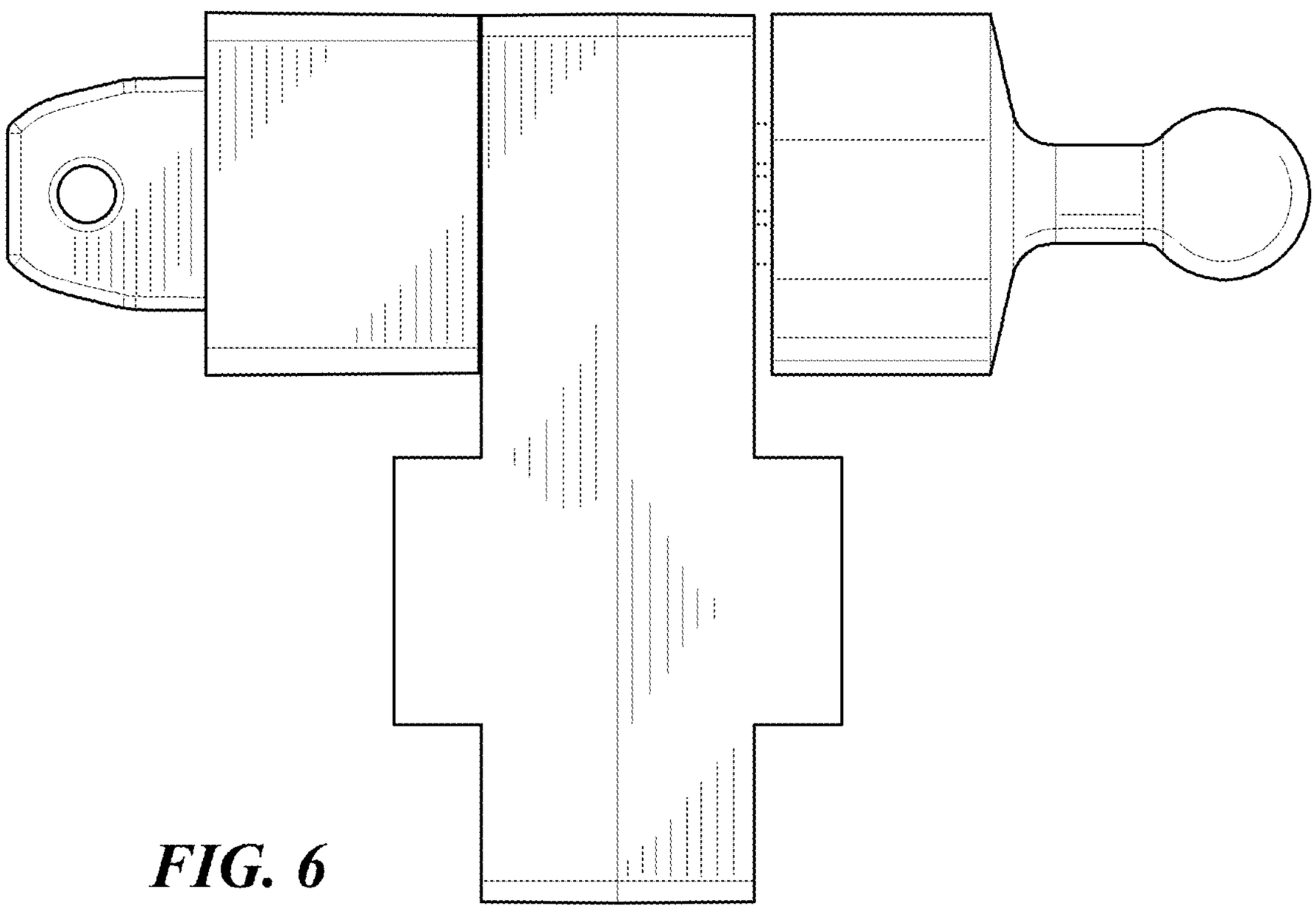

FIG. 6

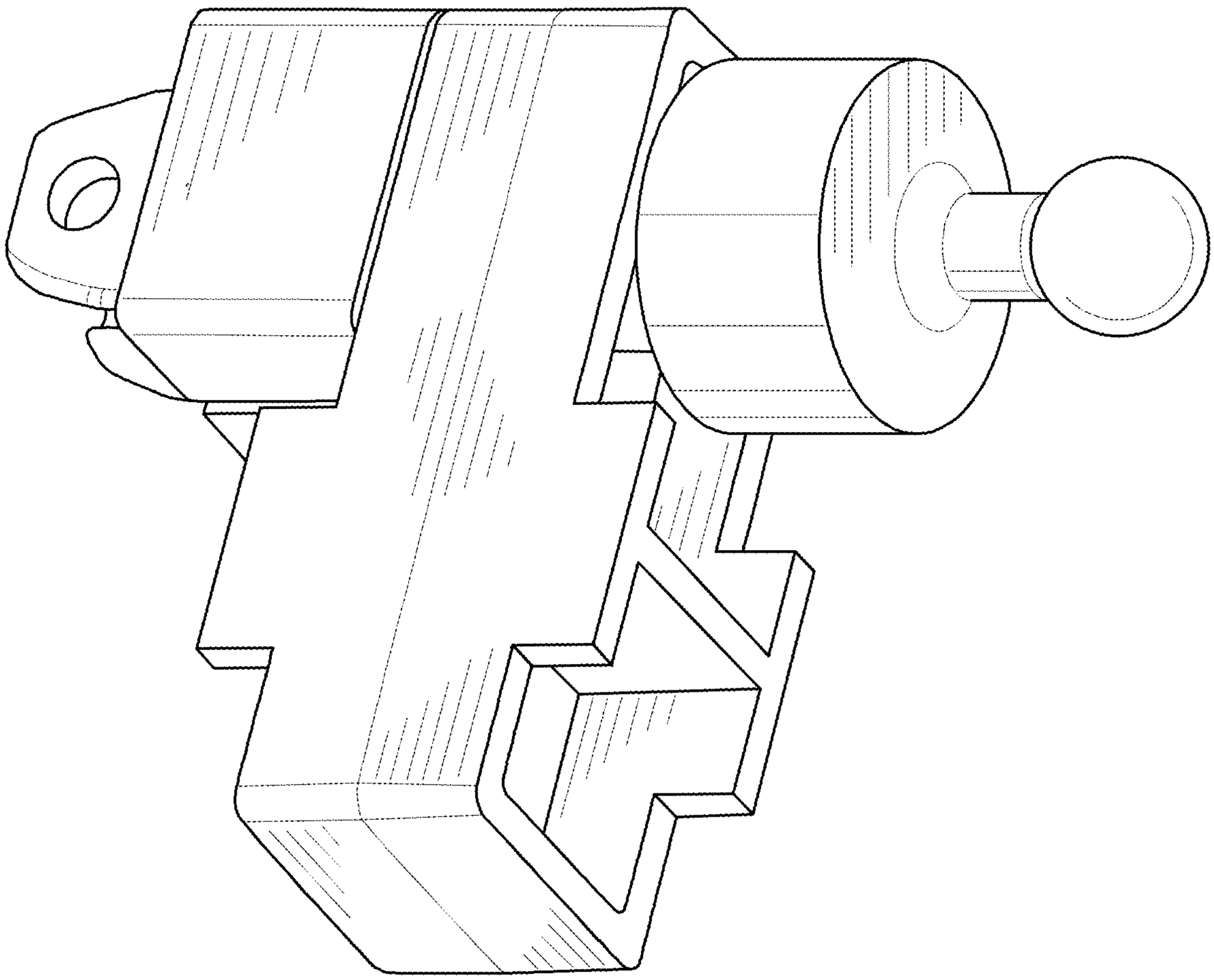

FIG. 7

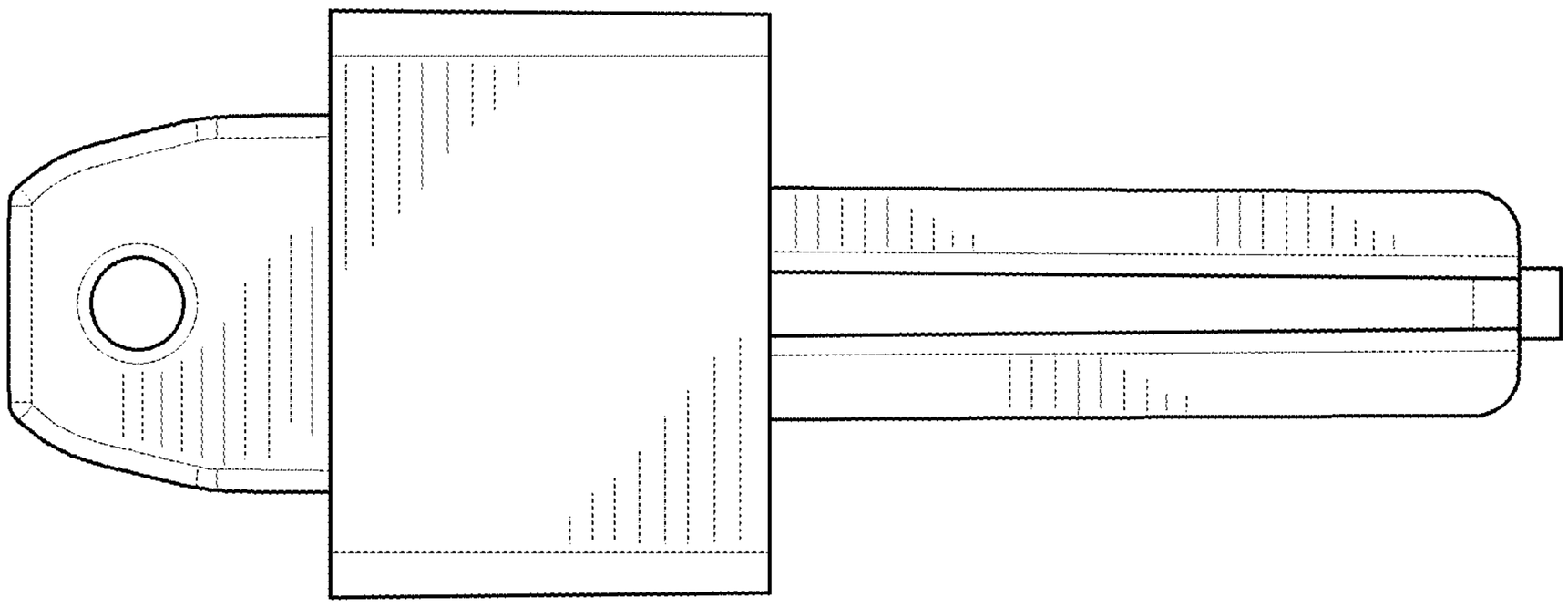

FIG. 8

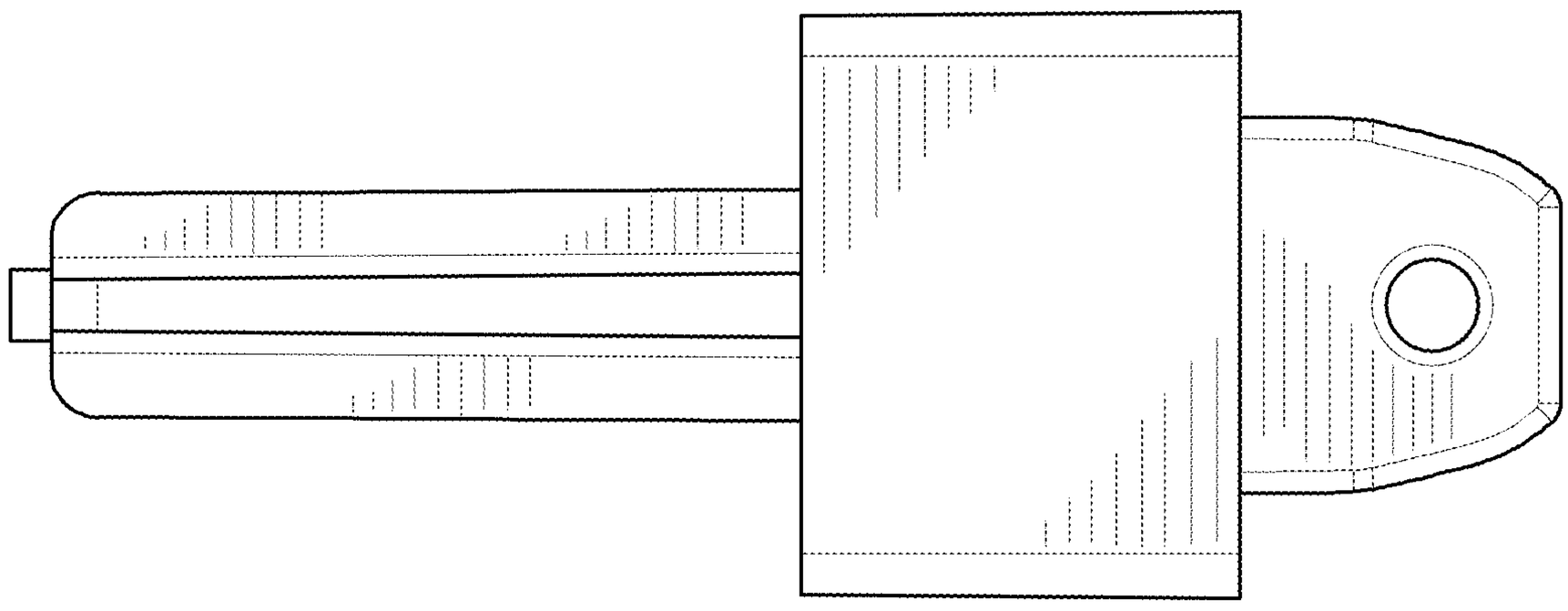

FIG. 9

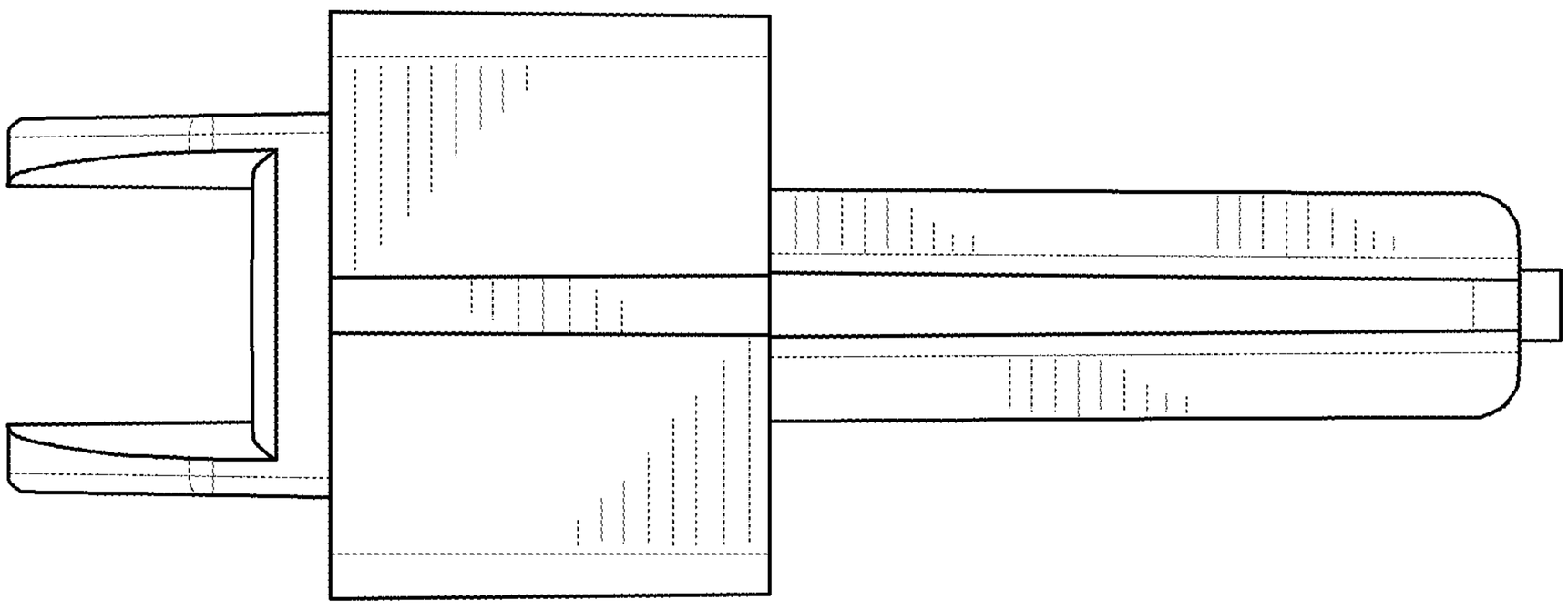

FIG. 10

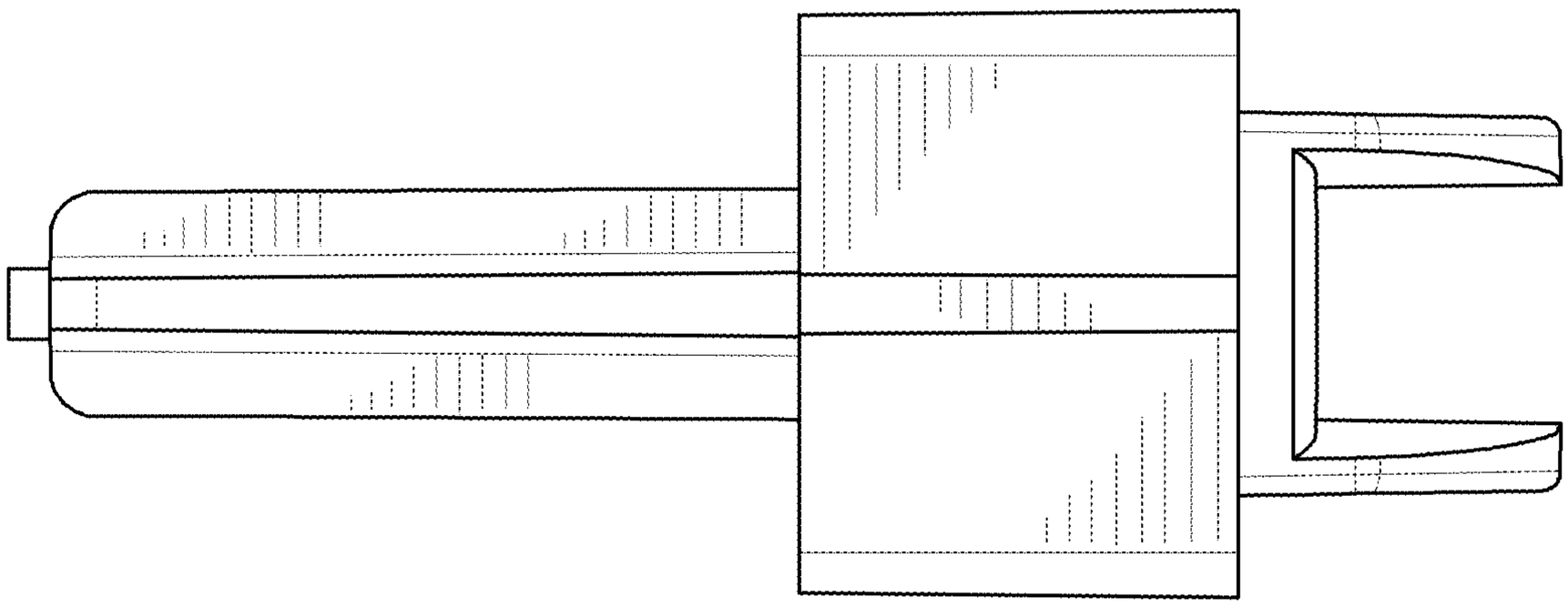

FIG. 11

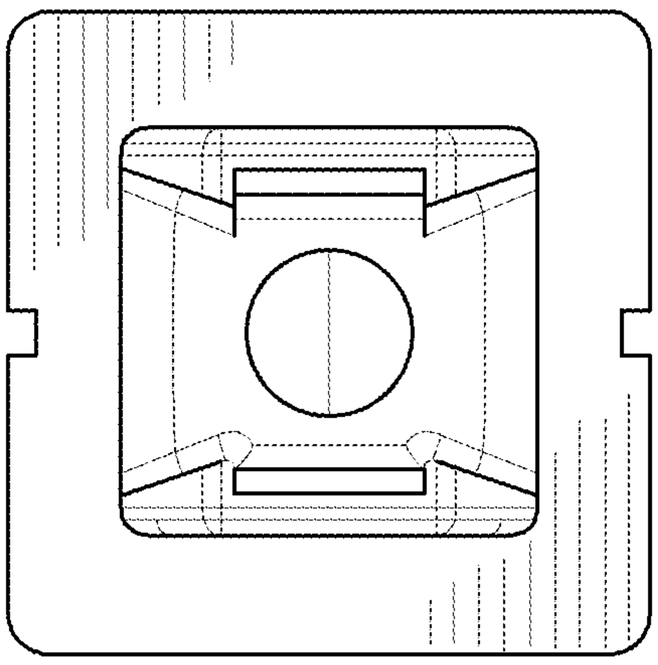

FIG. 12

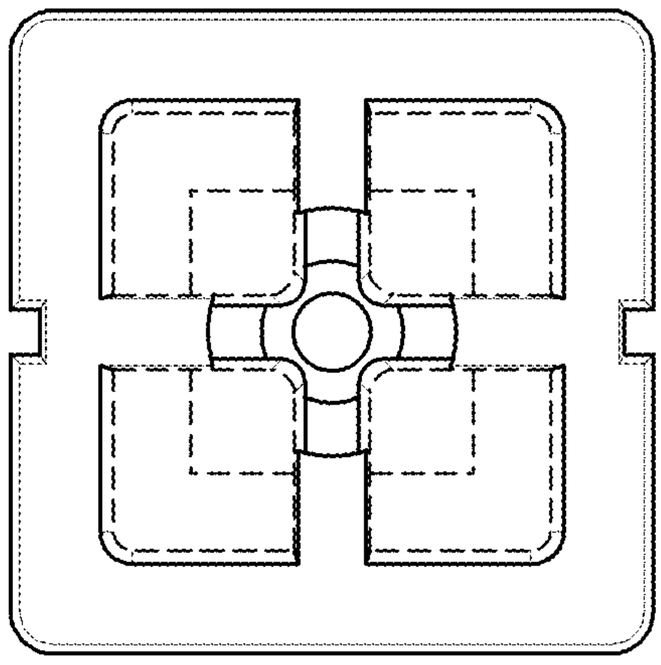

FIG. 13

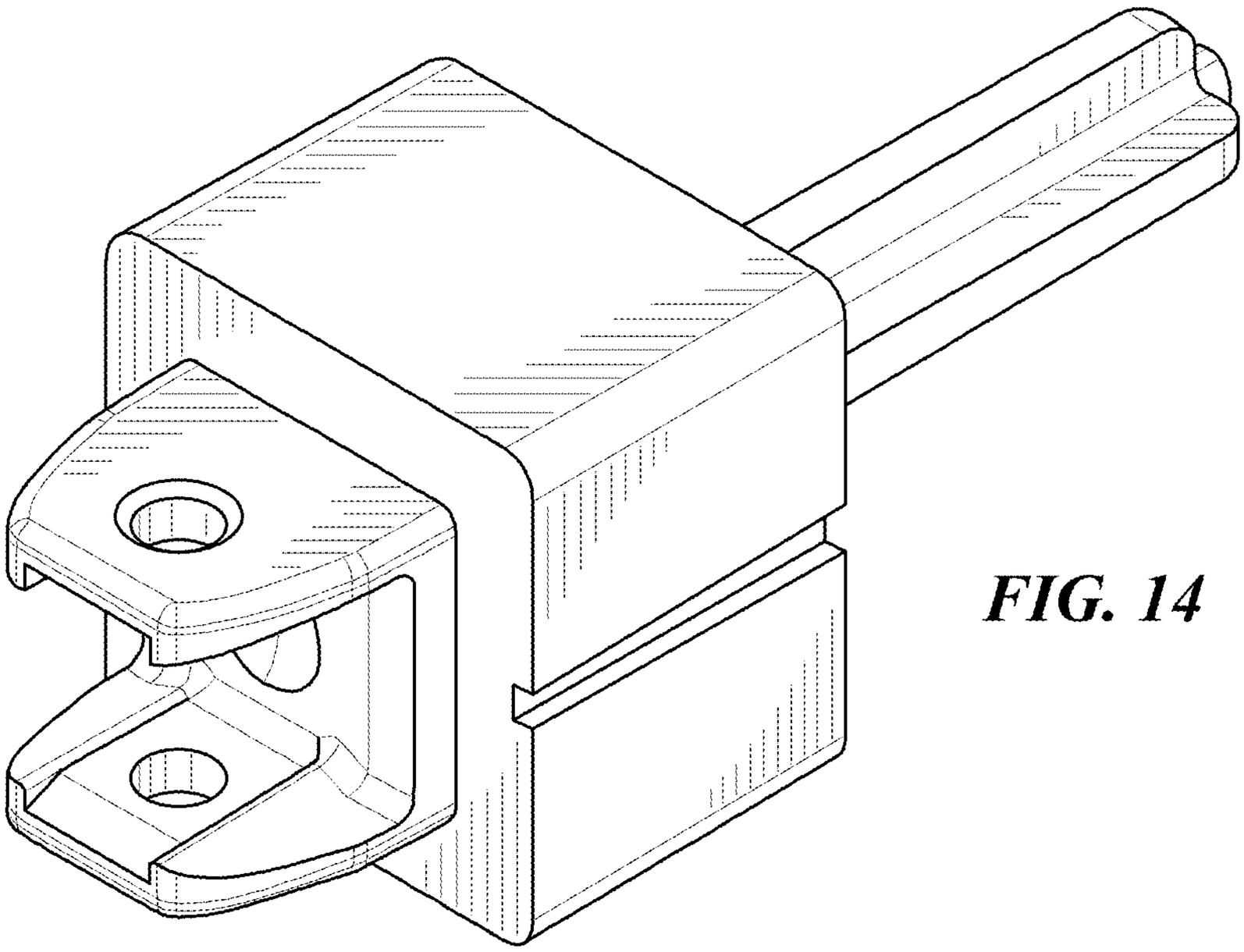

FIG. 14

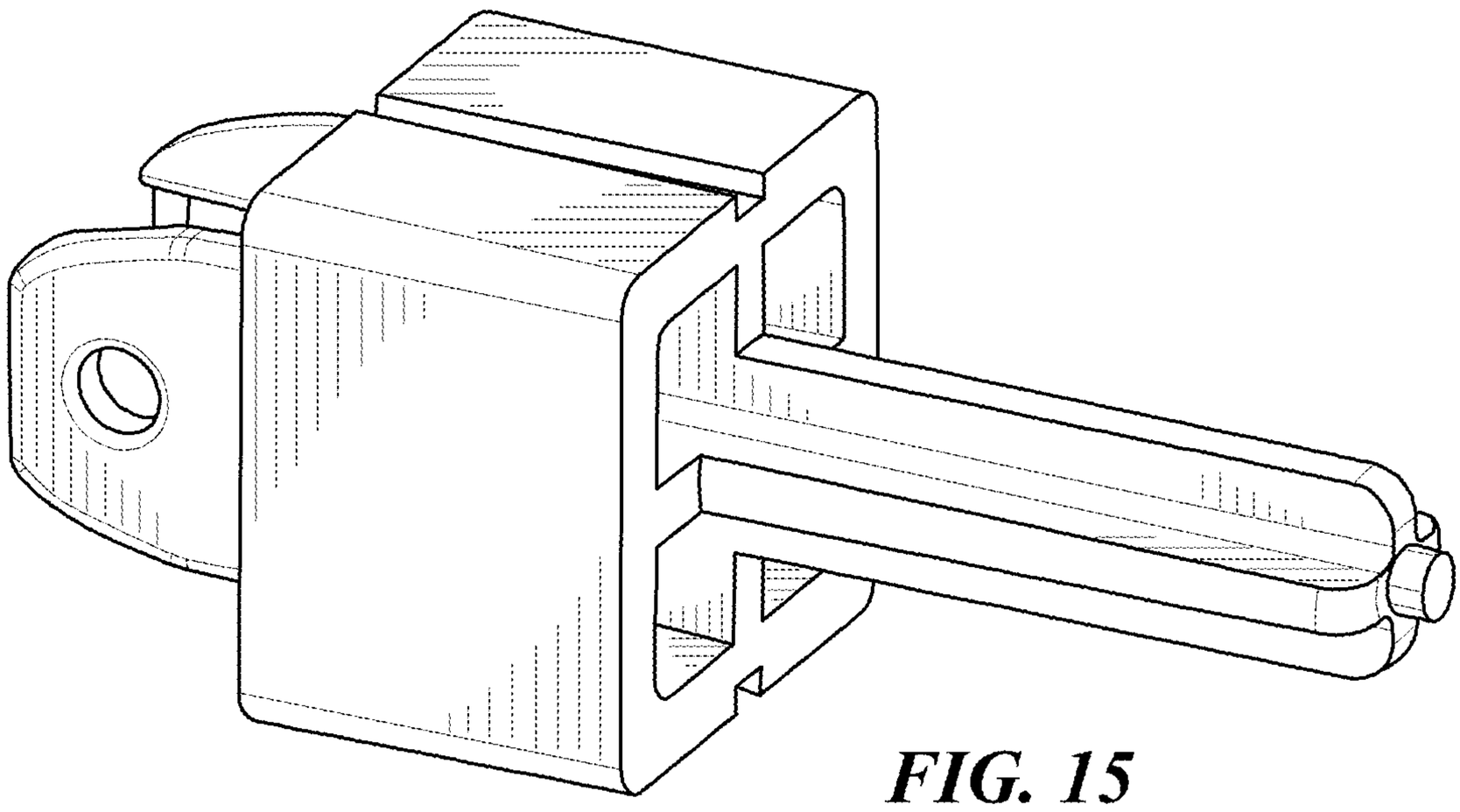

FIG. 15

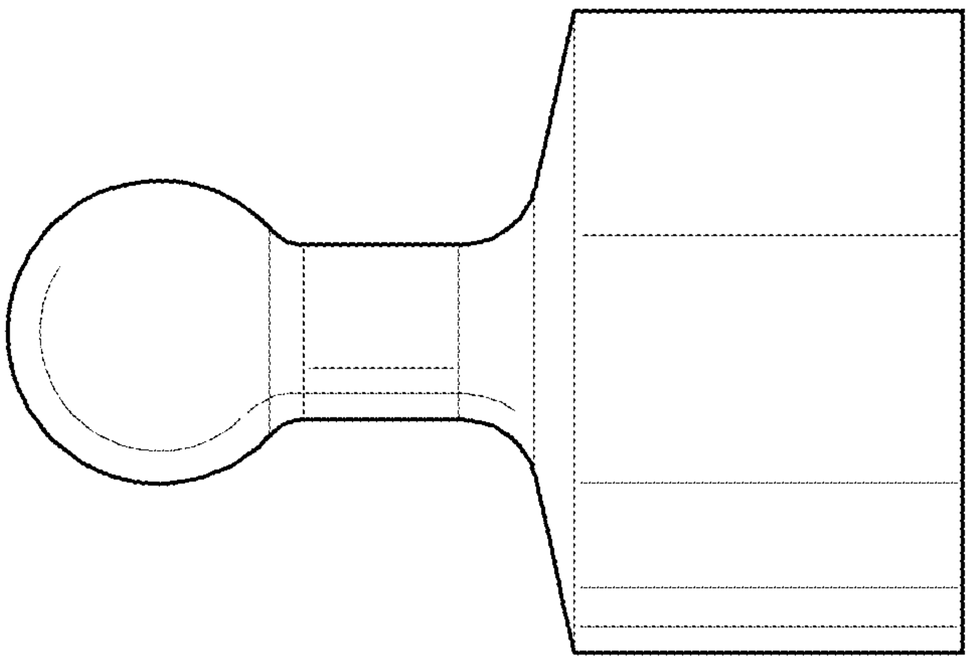

FIG. 16

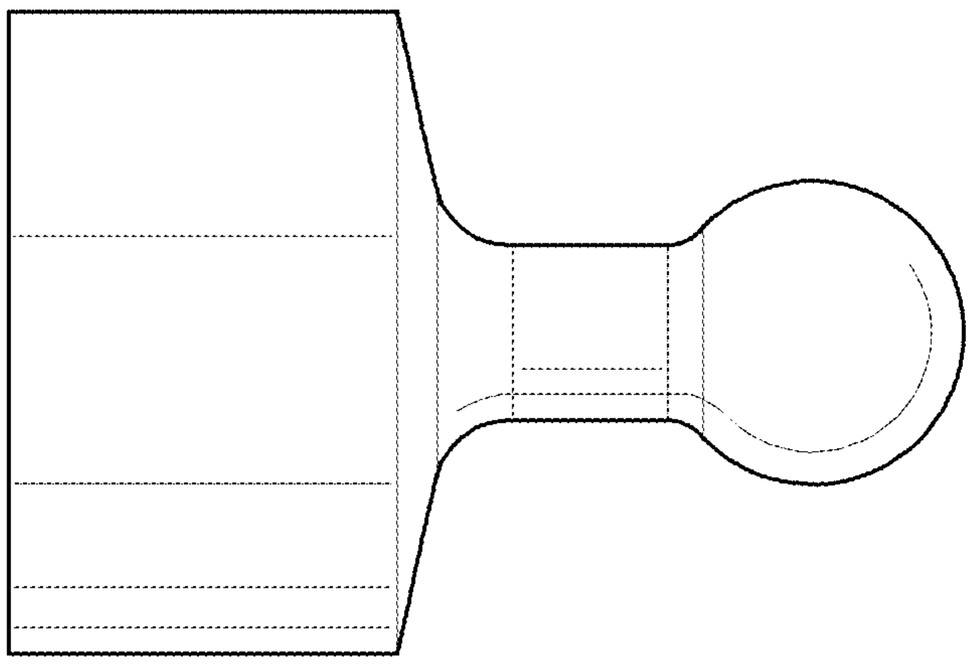

FIG. 17

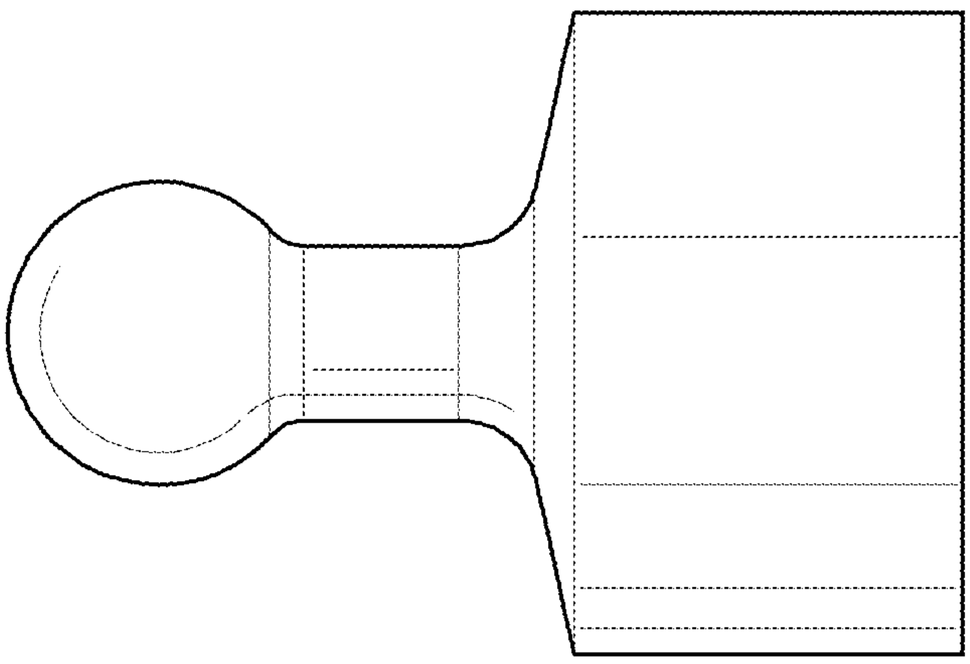

FIG. 18

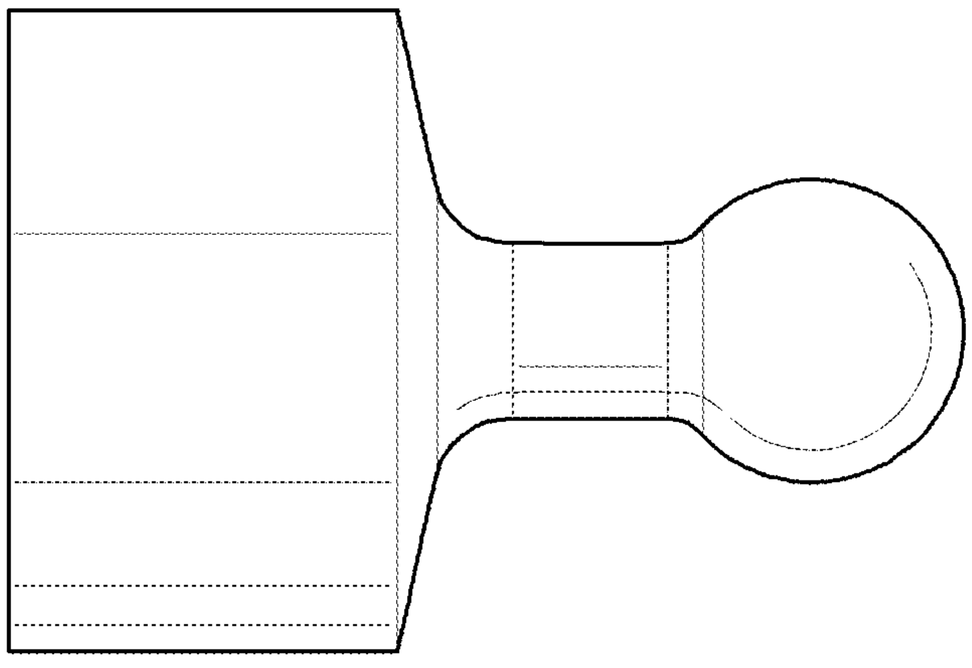

FIG. 19

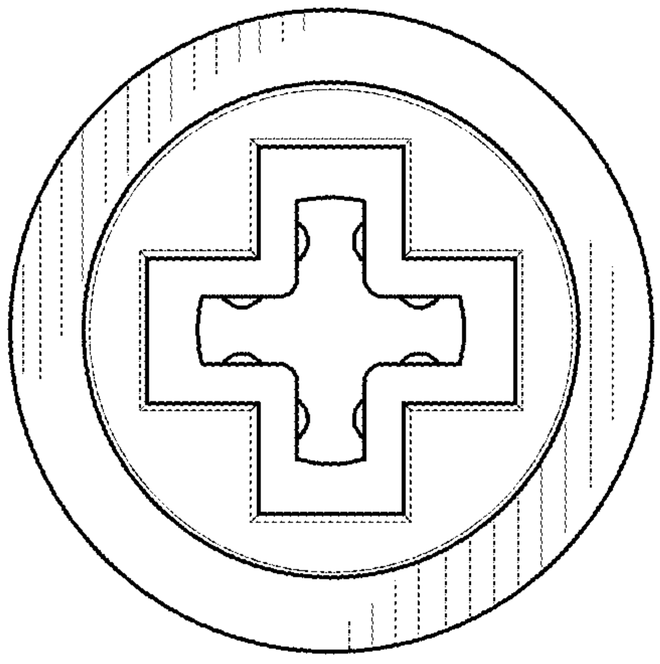

FIG. 20

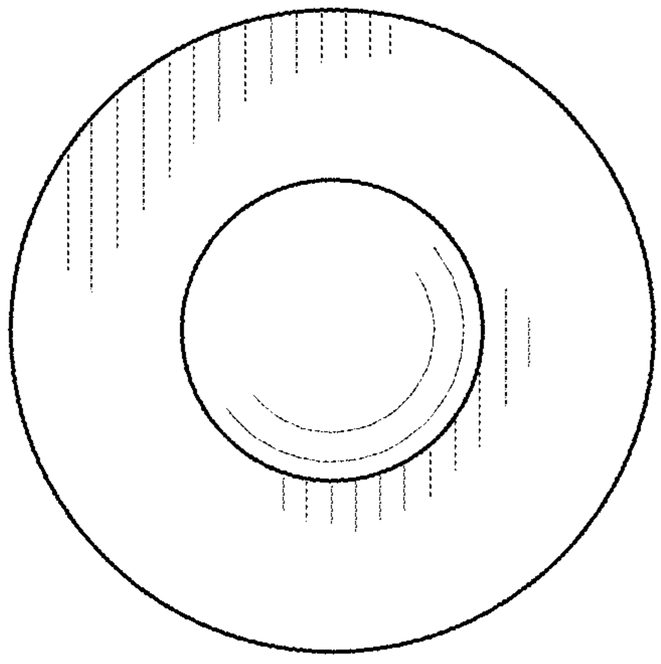

FIG. 21

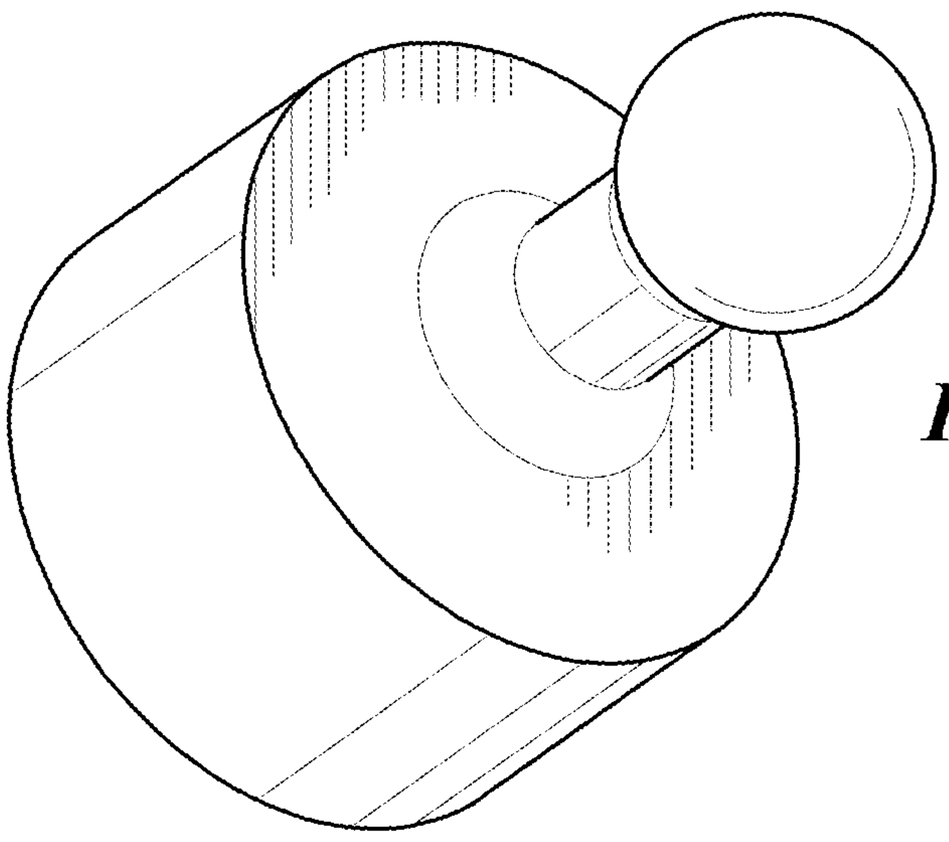

FIG. 22

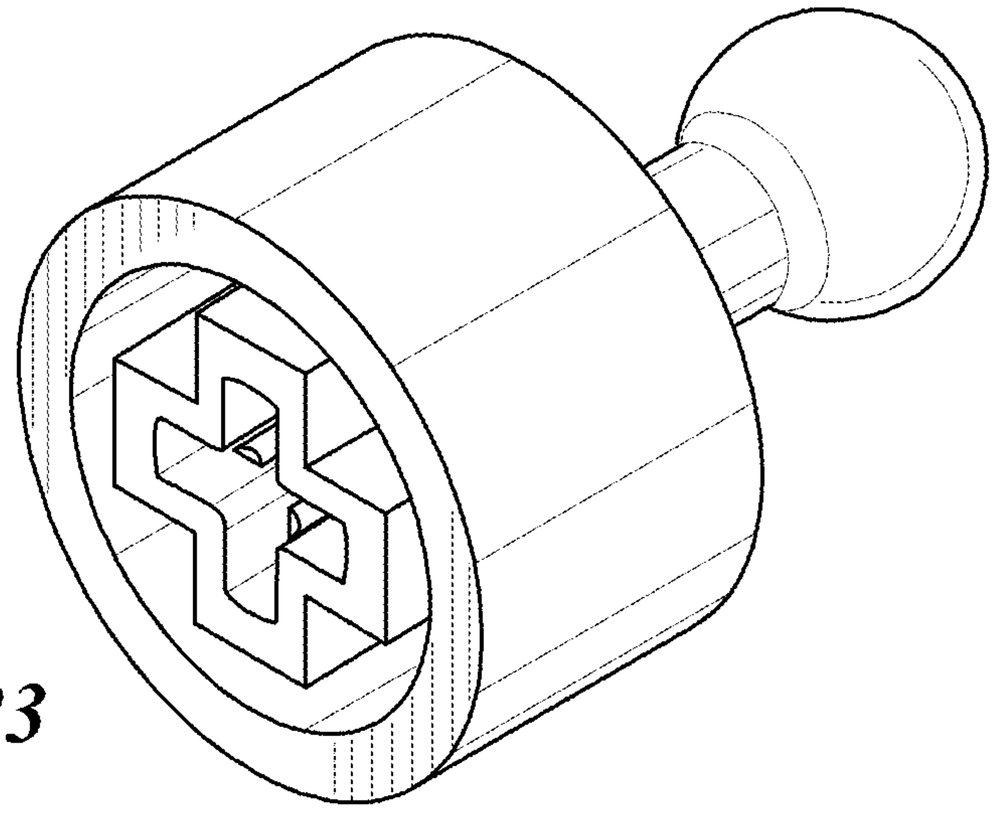

FIG. 23

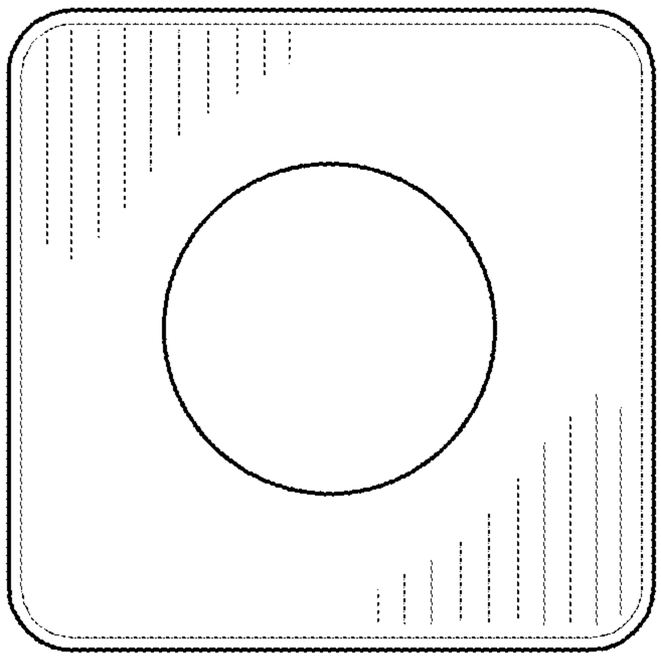

FIG. 24

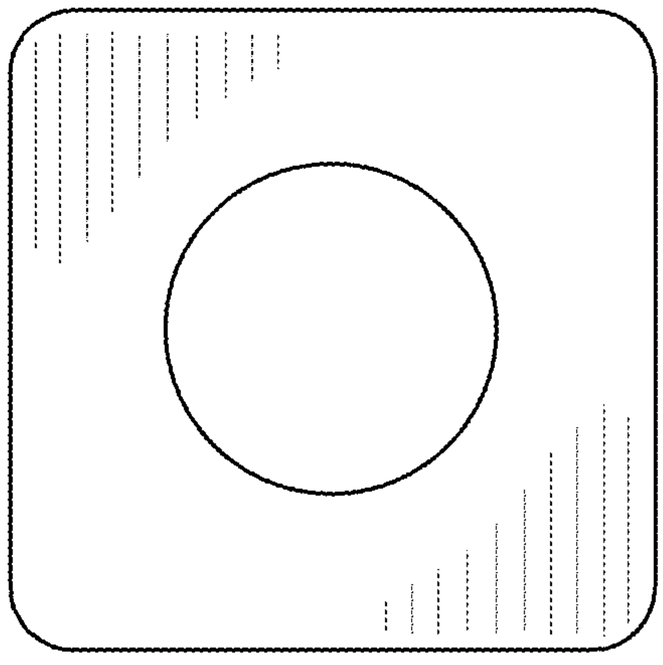

FIG. 25

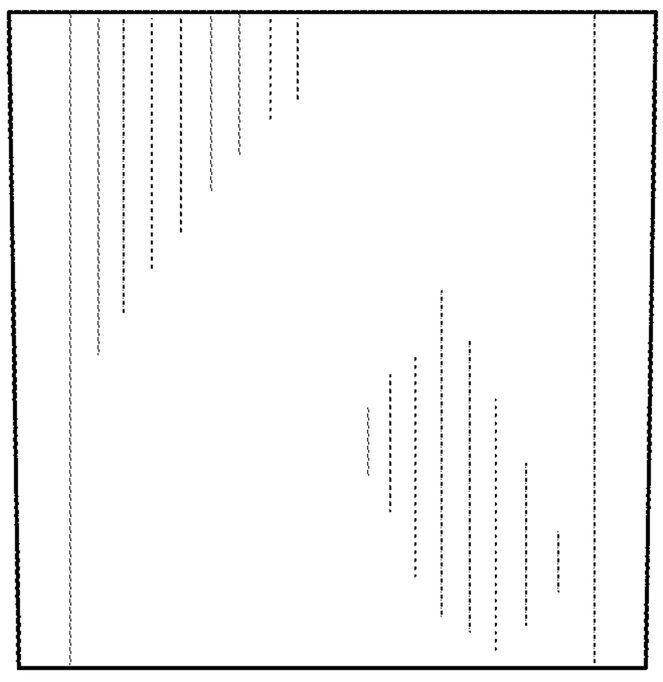

FIG. 26

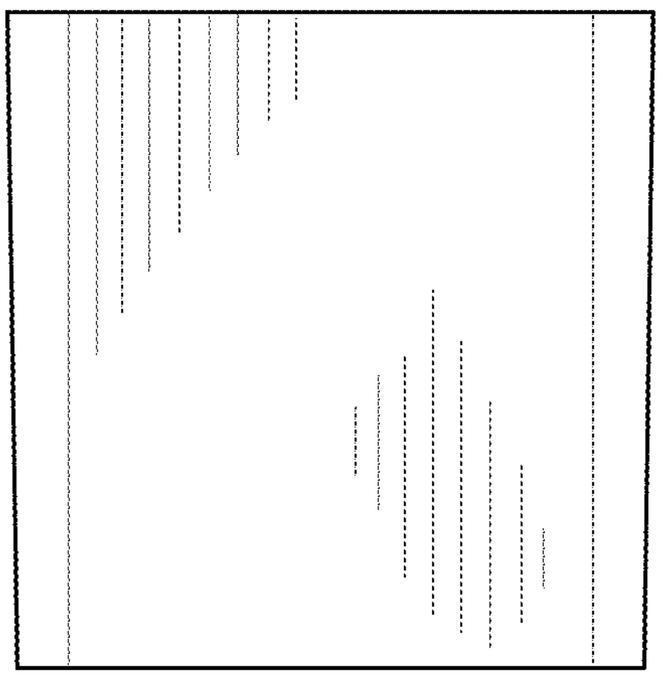

FIG. 27

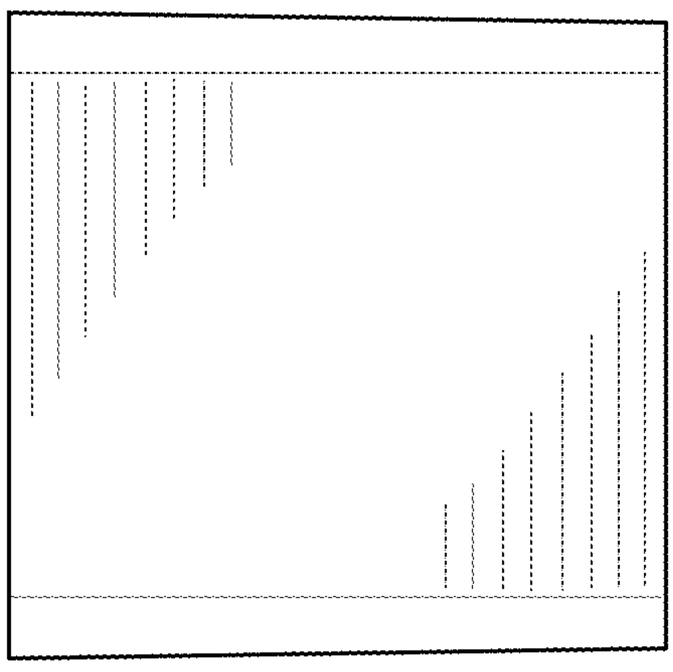

FIG. 28

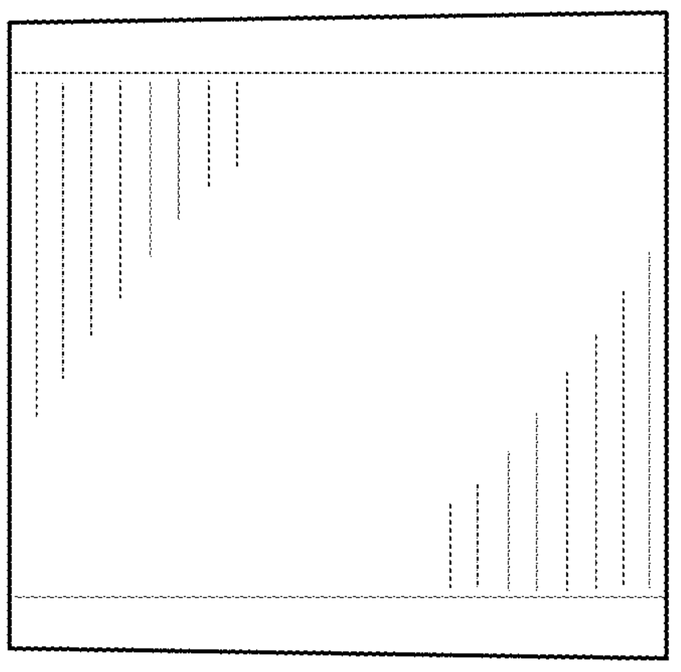

FIG. 29

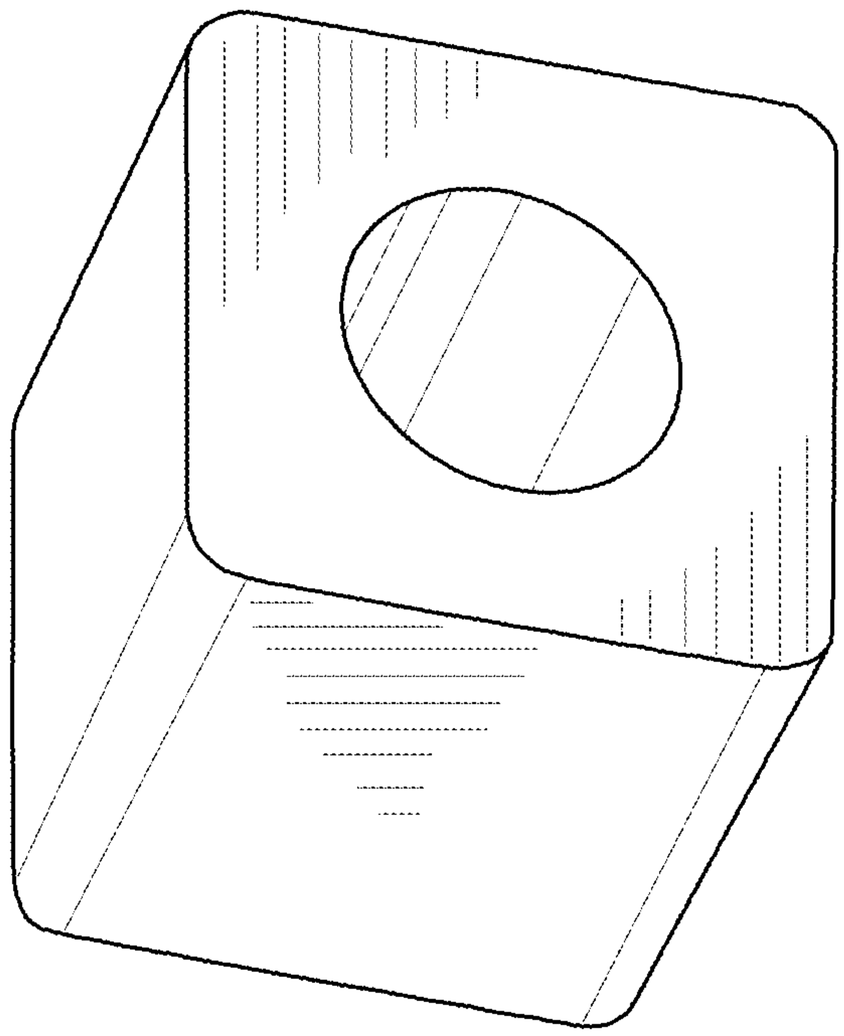

FIG. 30

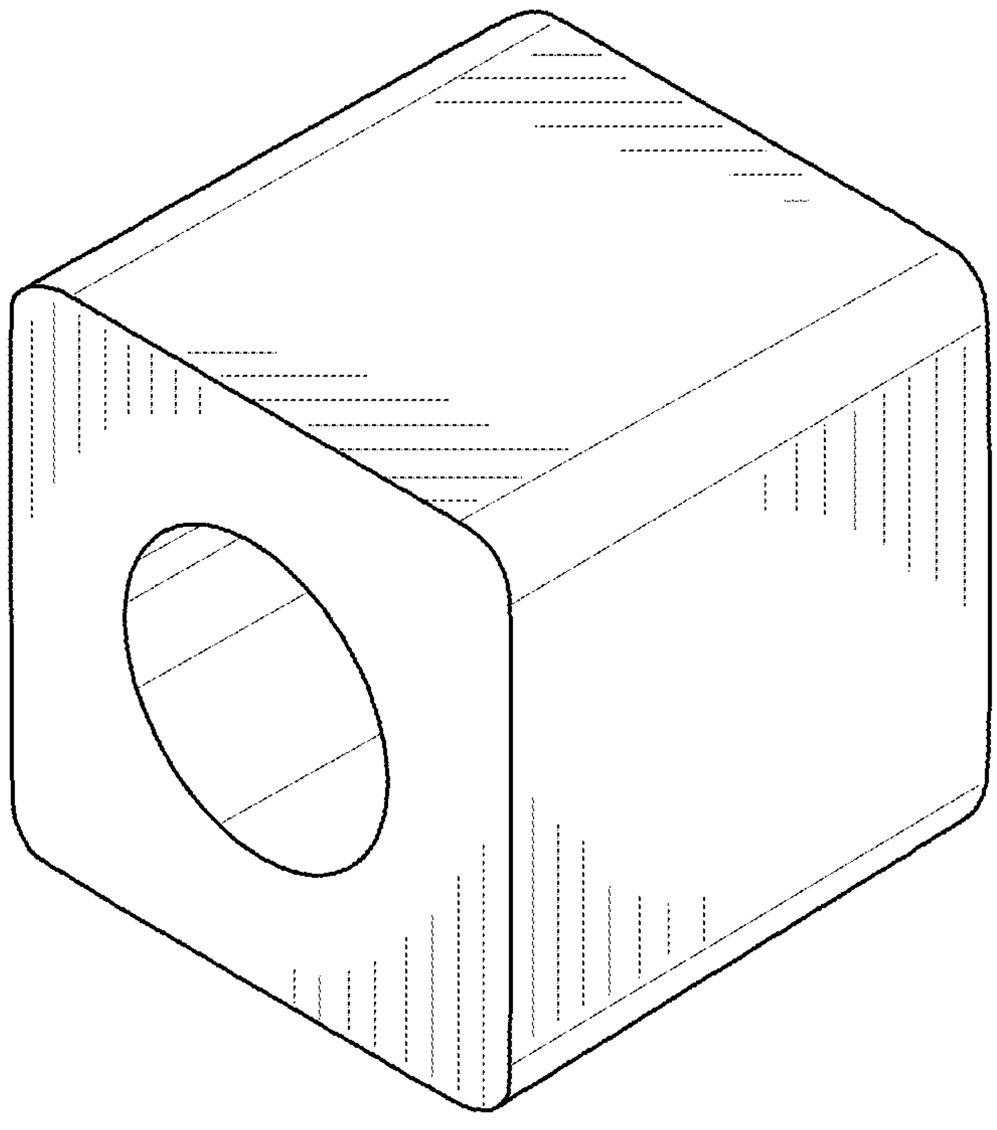

FIG. 31

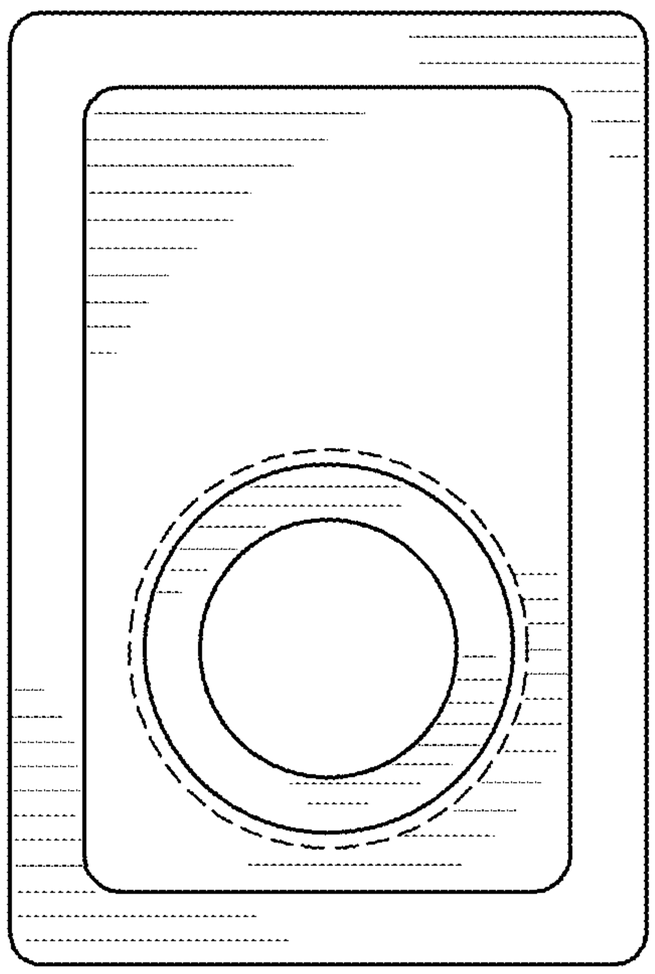

FIG. 33

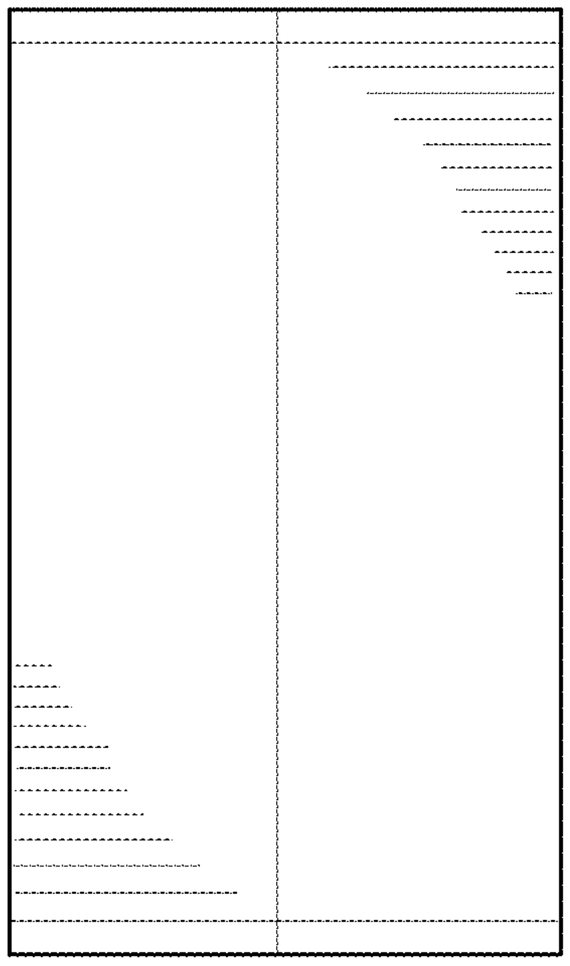

FIG. 35

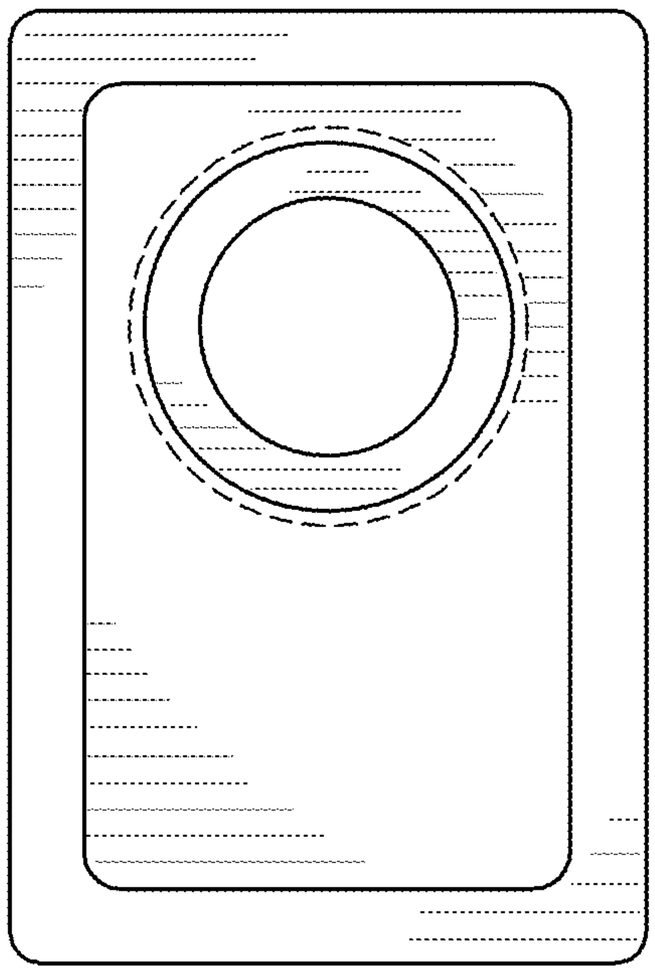

FIG. 32

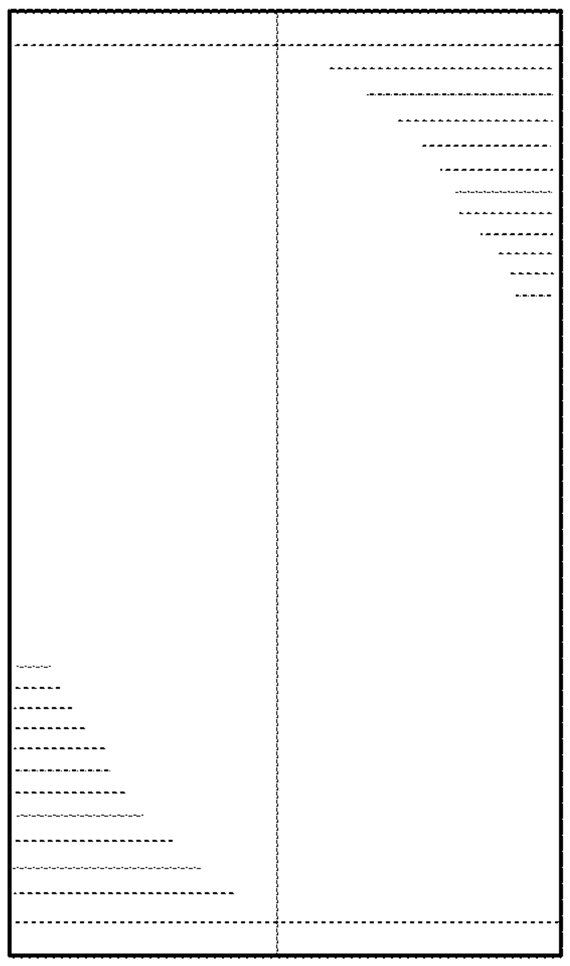

FIG. 34

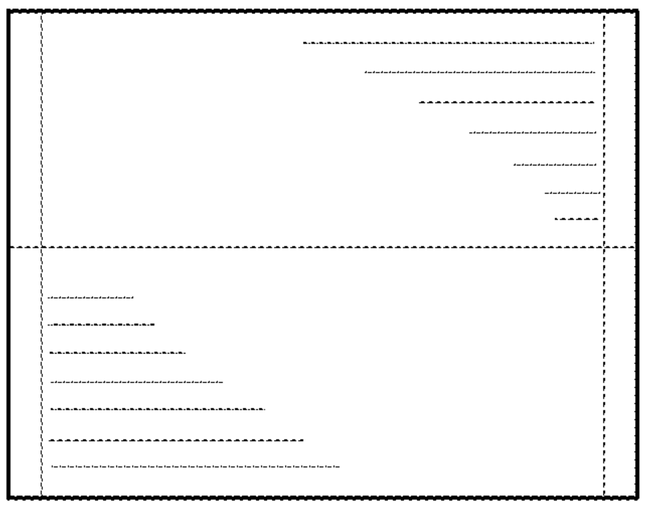

FIG. 37

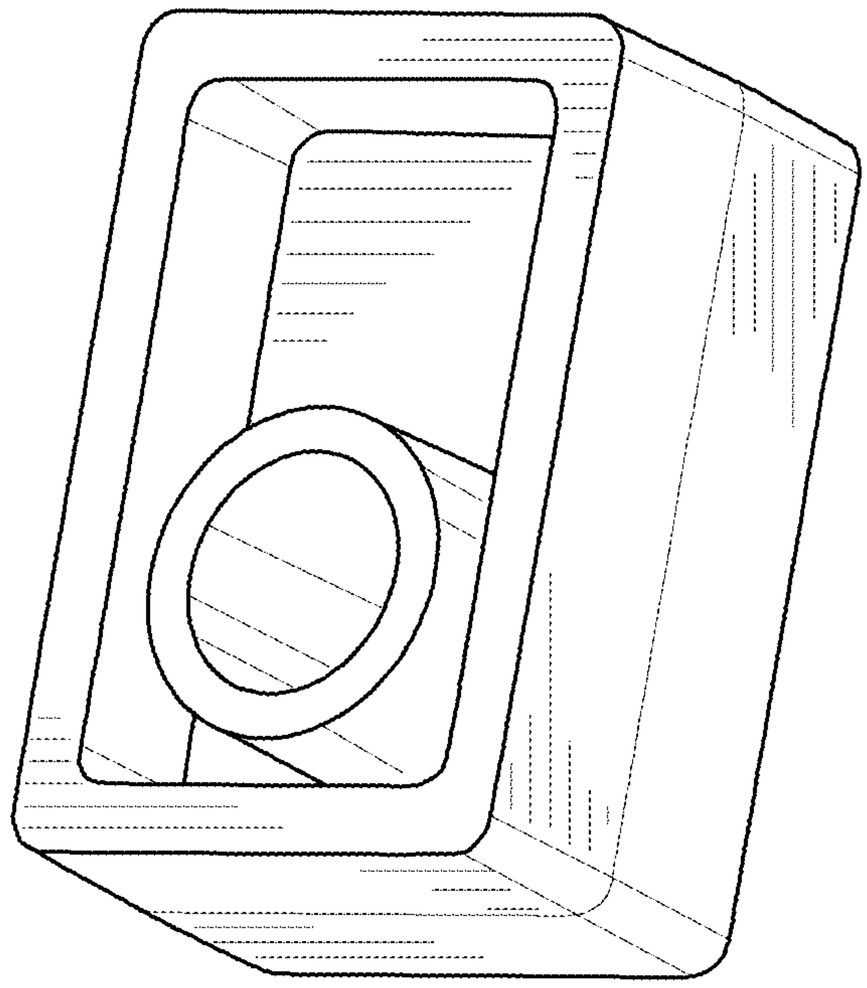

FIG. 39

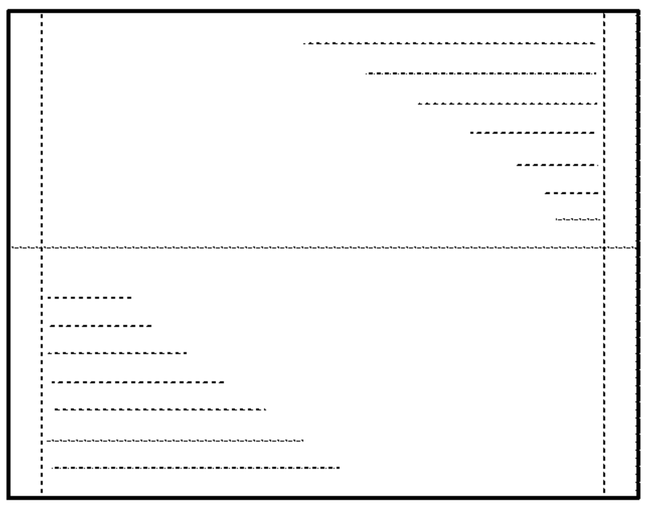

FIG. 36

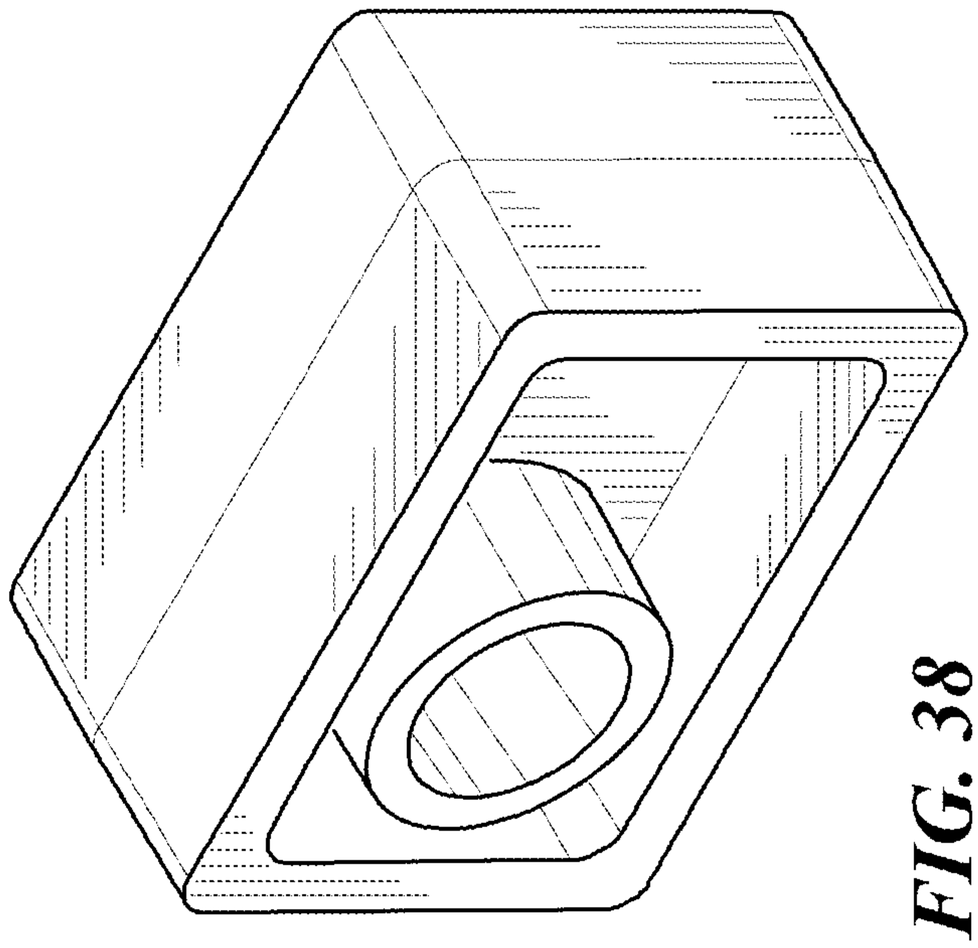

FIG. 38

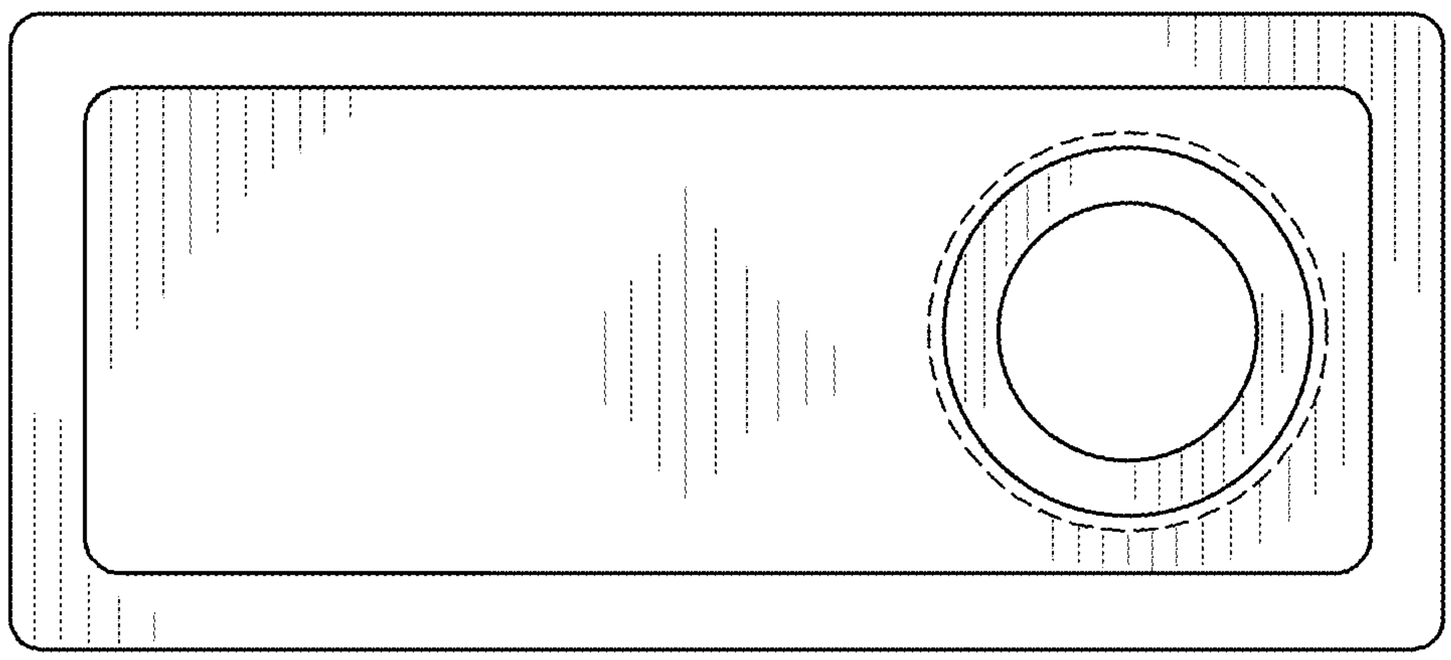

FIG. 40

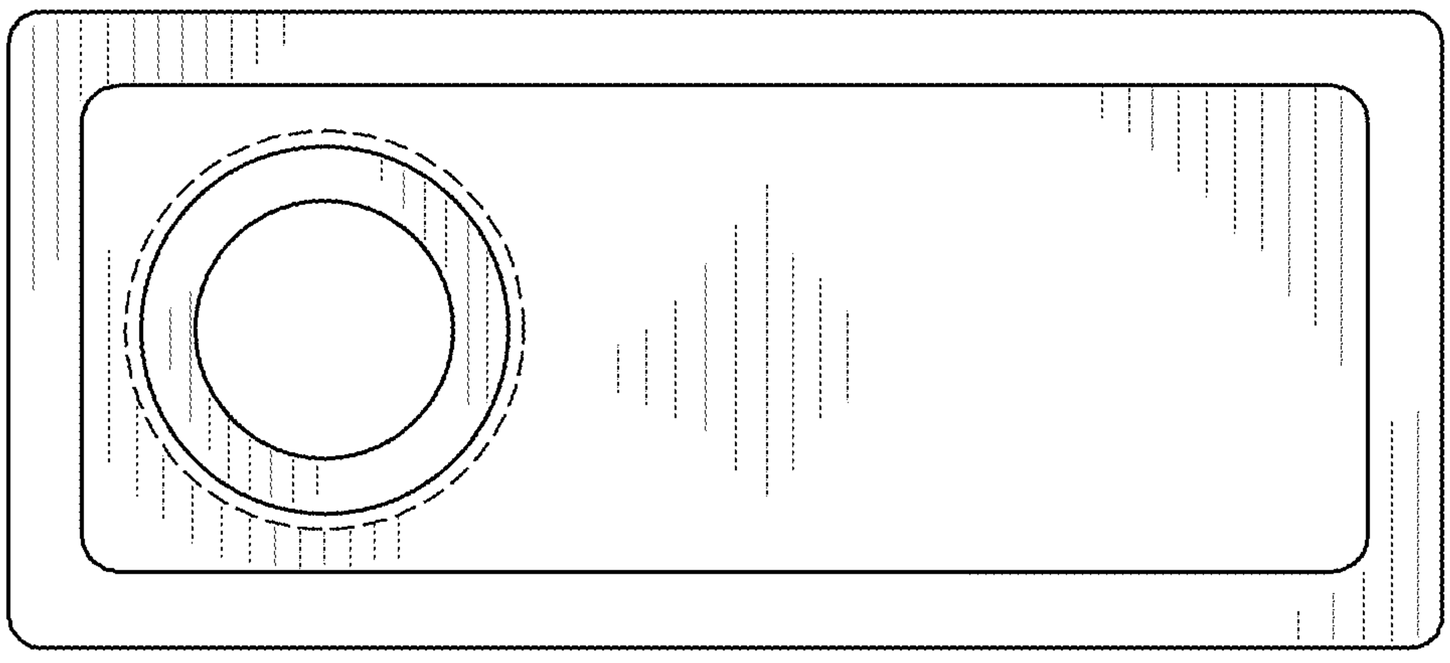

FIG. 41

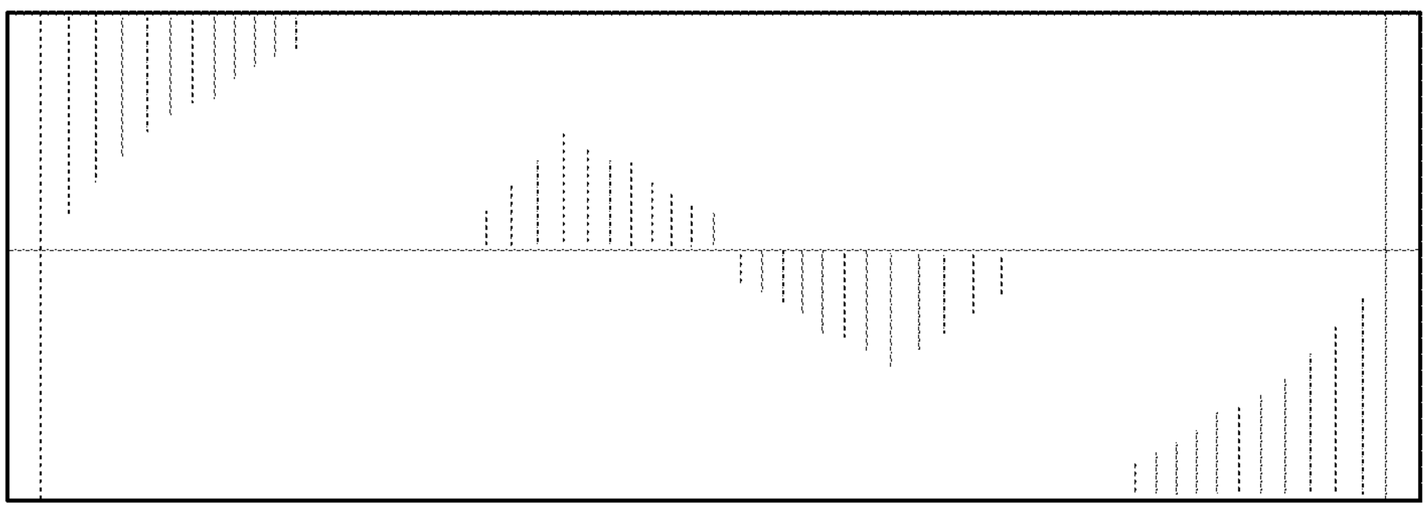

FIG. 42

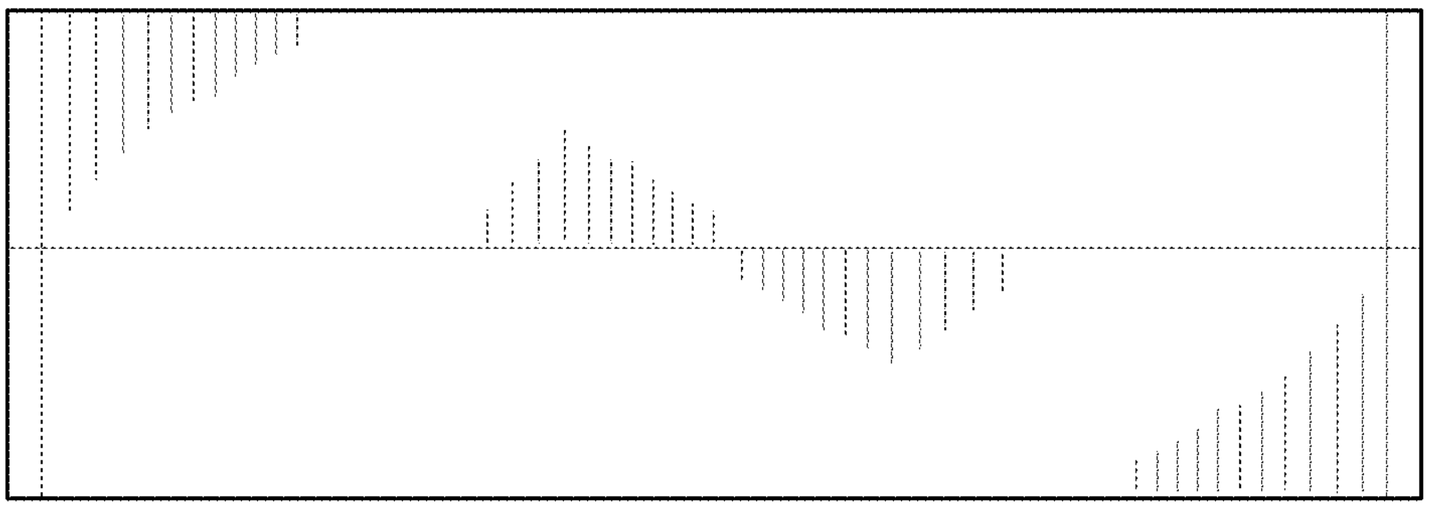

FIG. 43

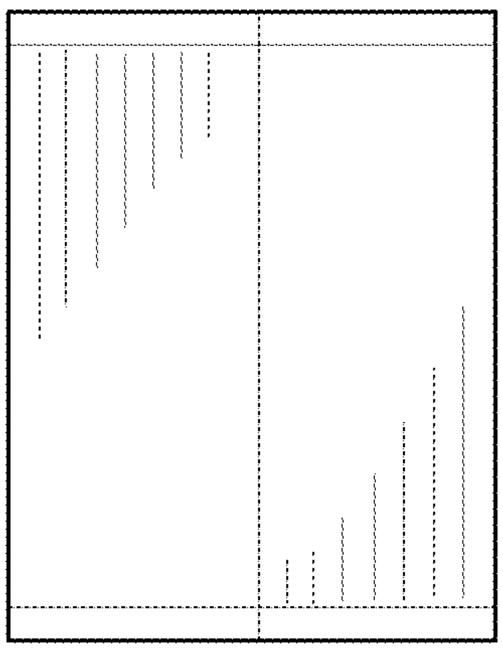

FIG. 44

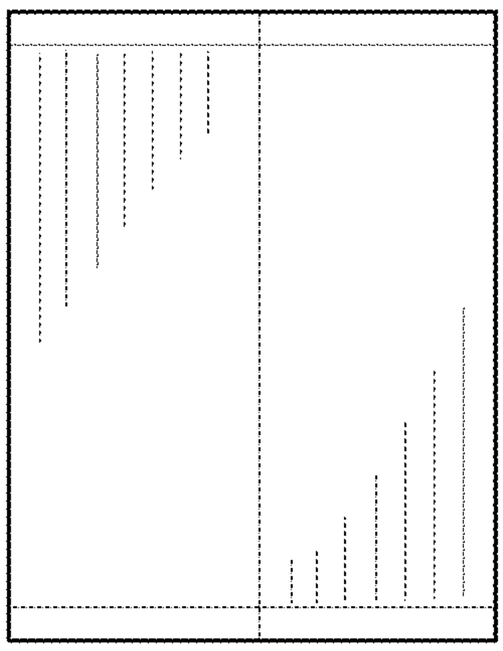

FIG. 45

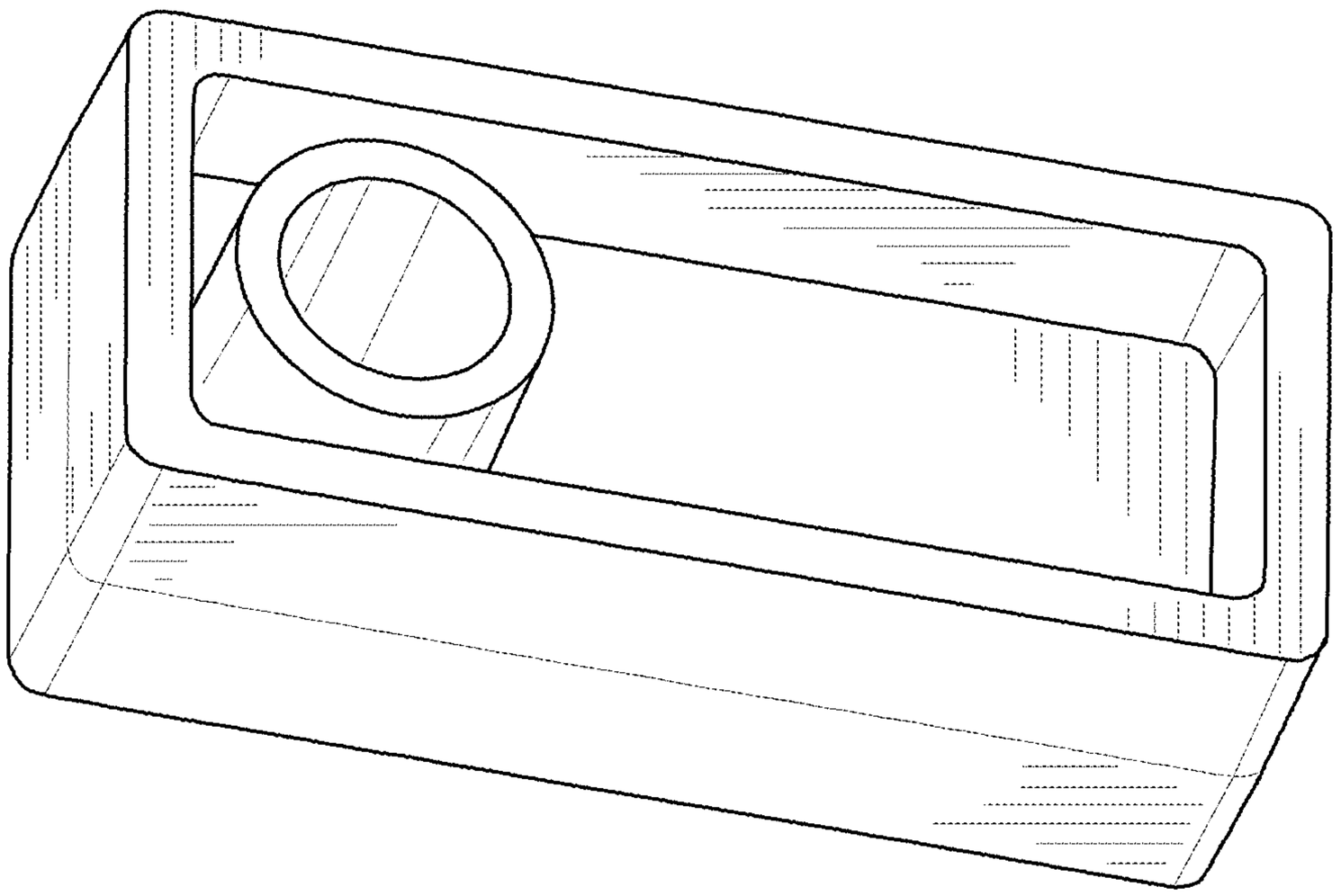

FIG. 46

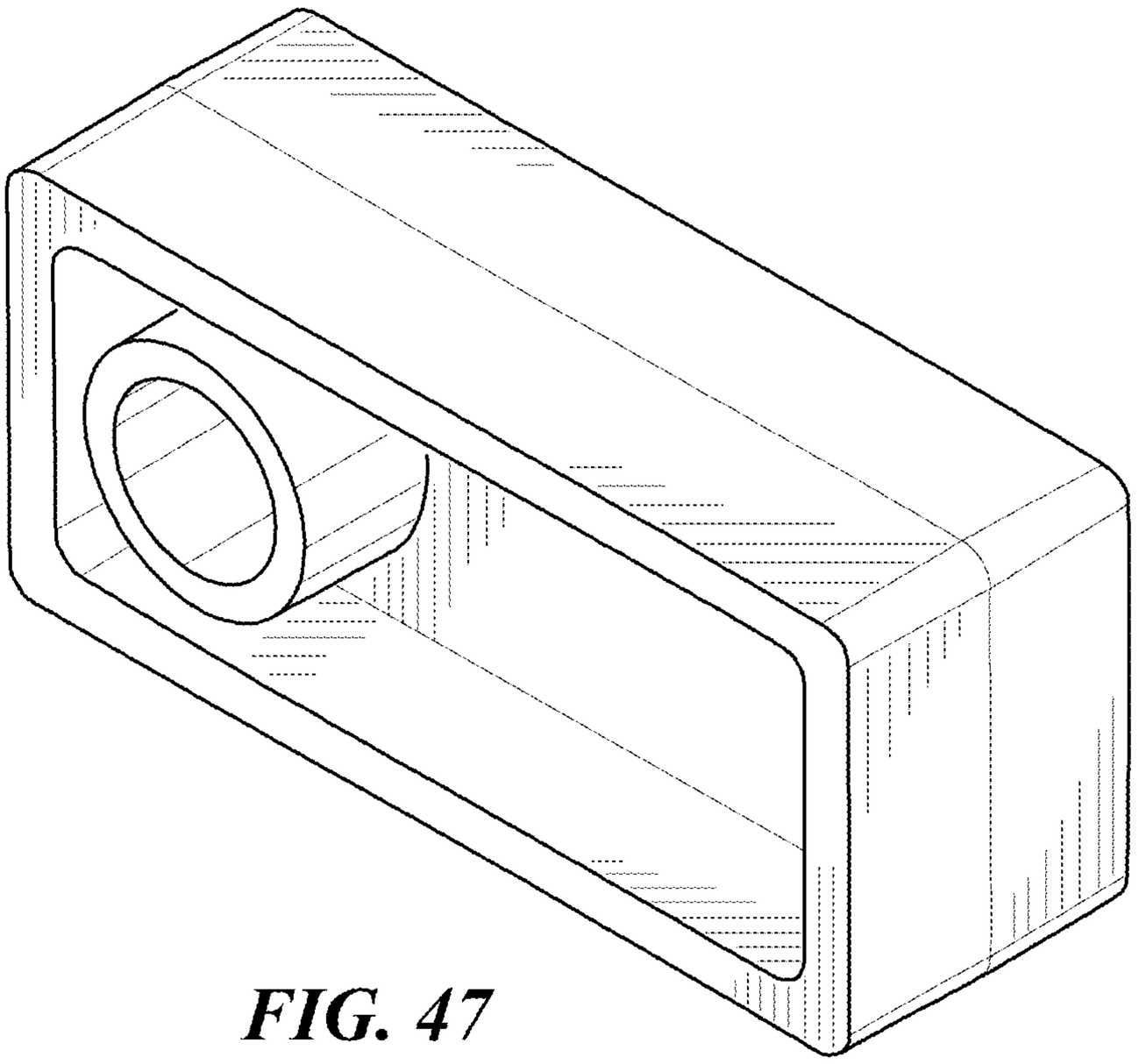

FIG. 47

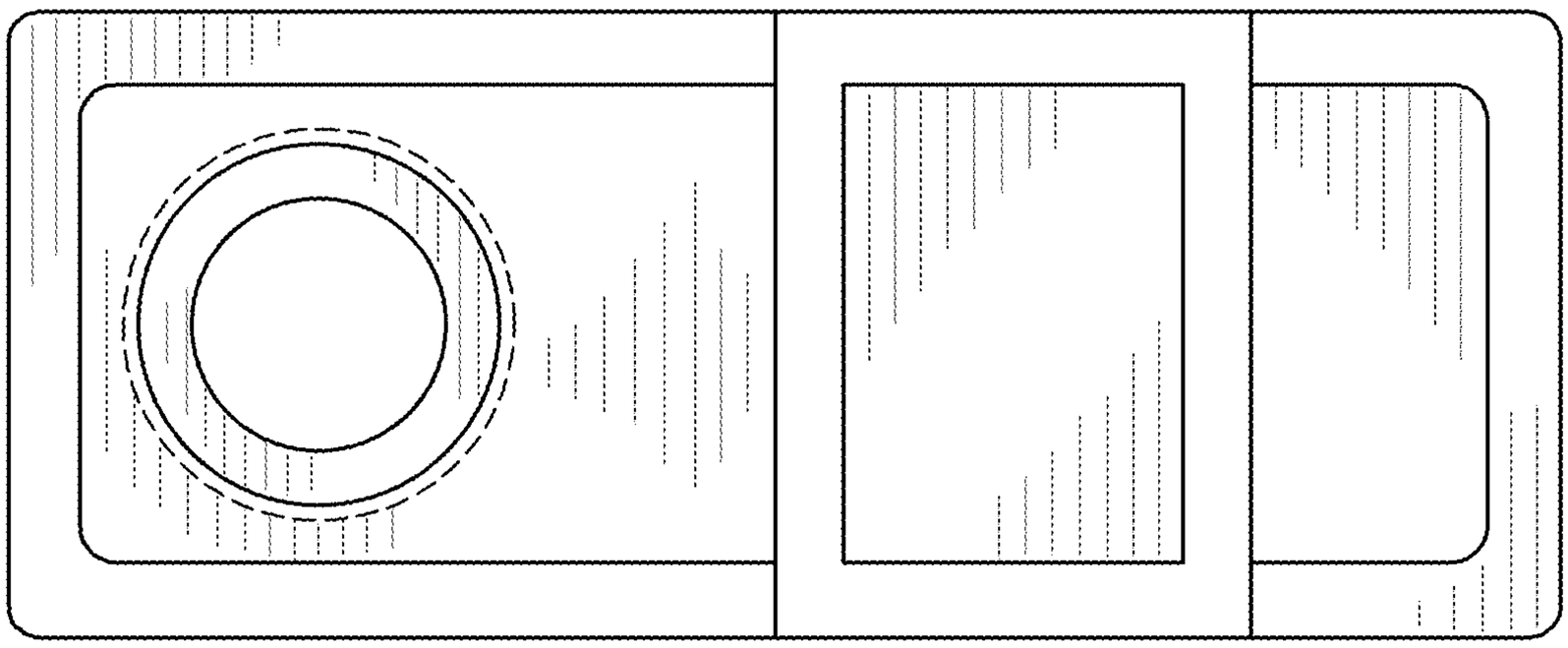

FIG. 48

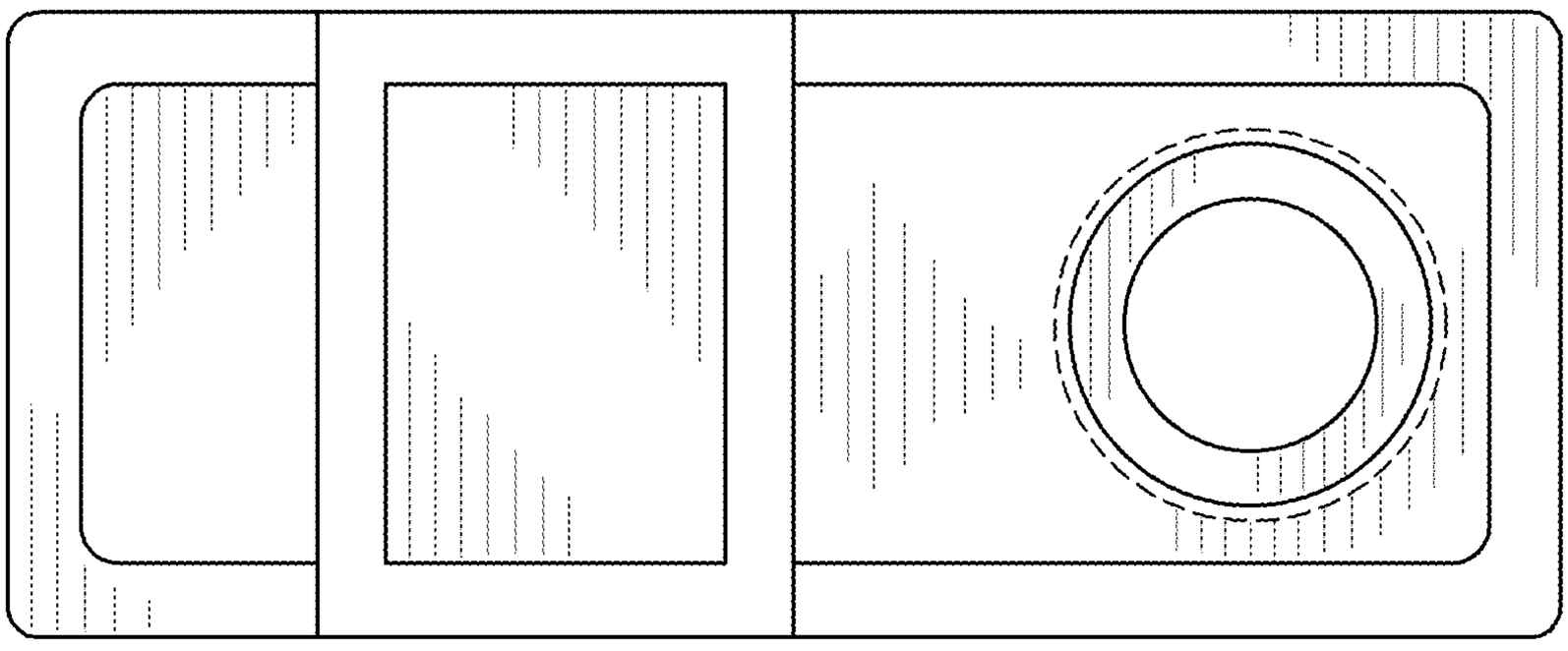

FIG. 49

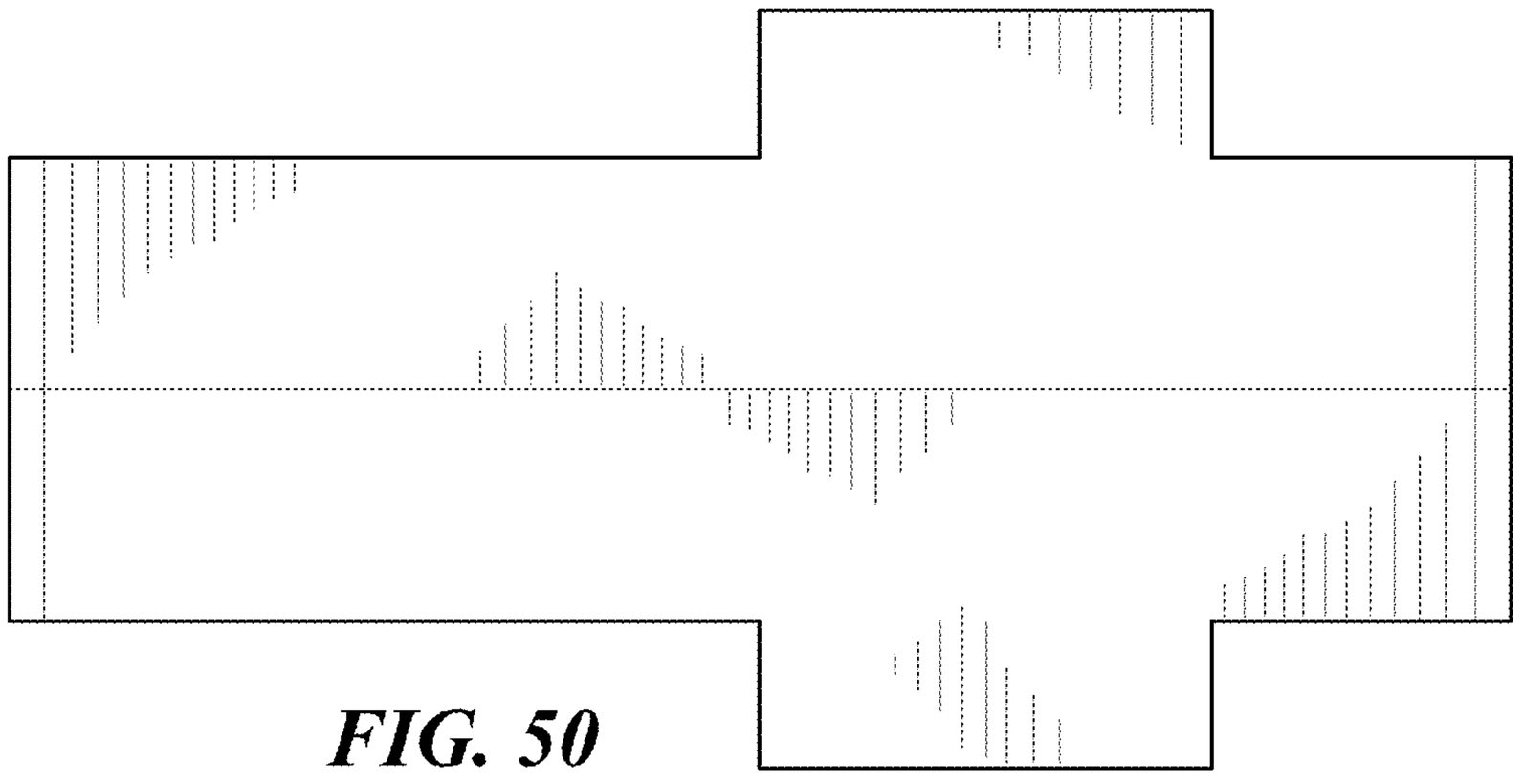

FIG. 50

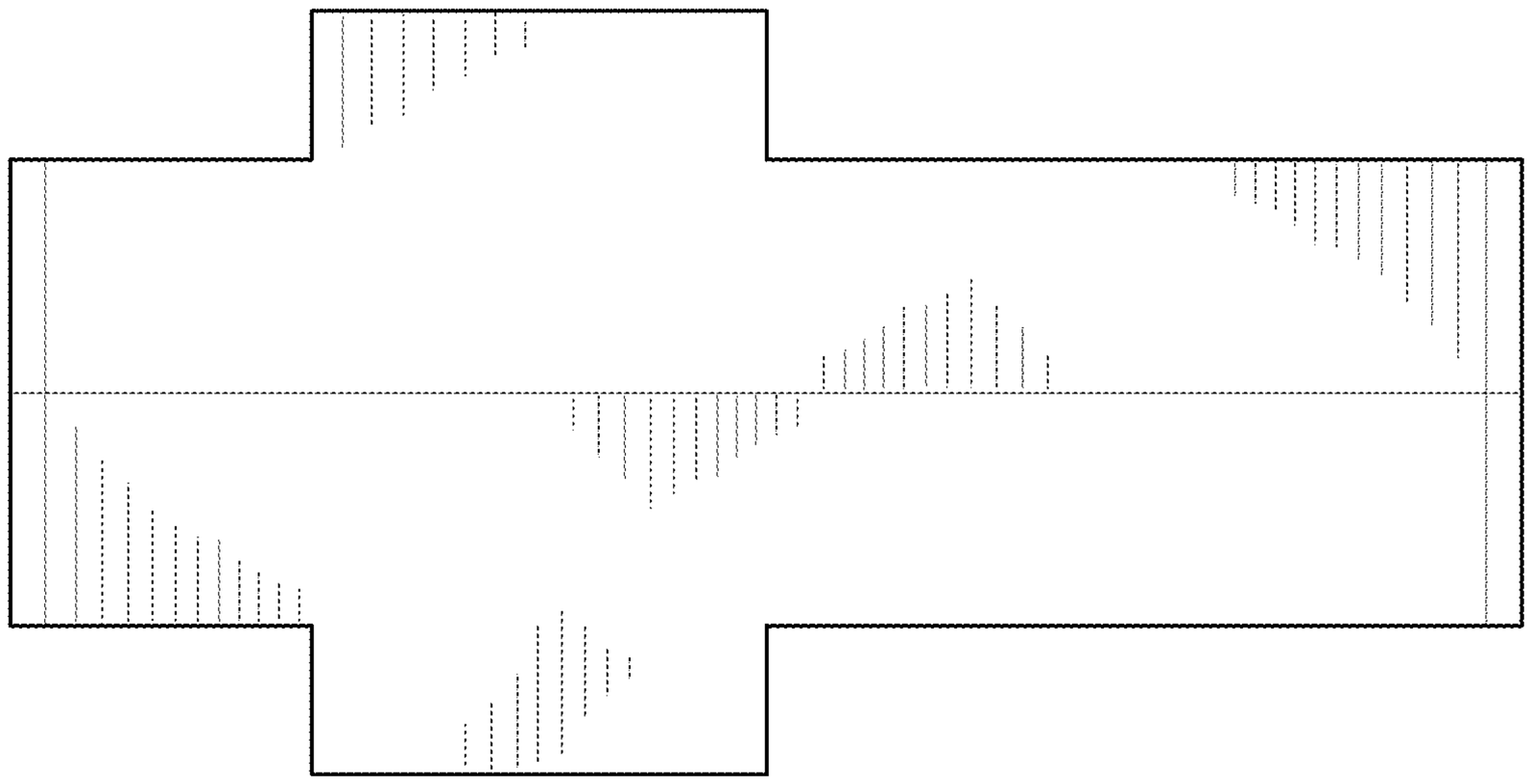

FIG. 51

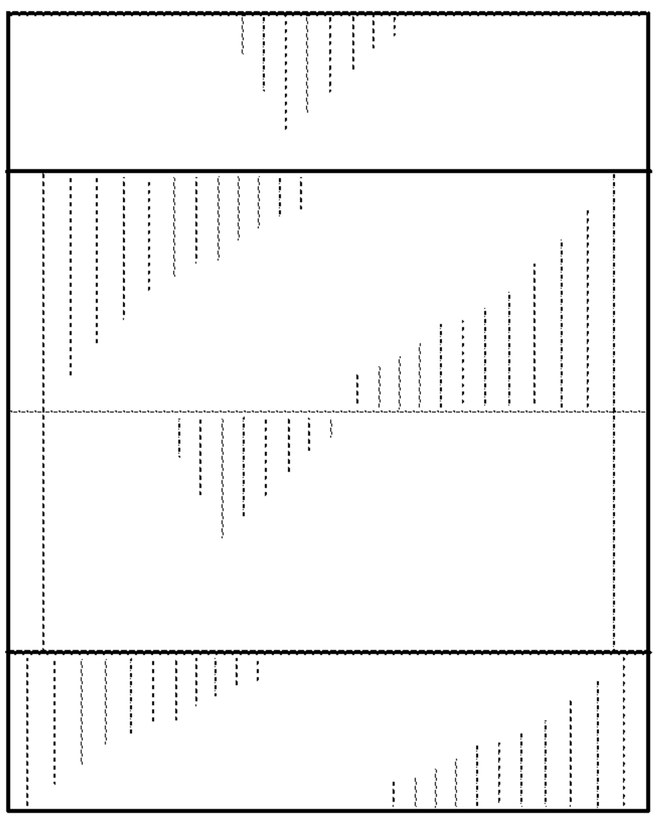

FIG. 52

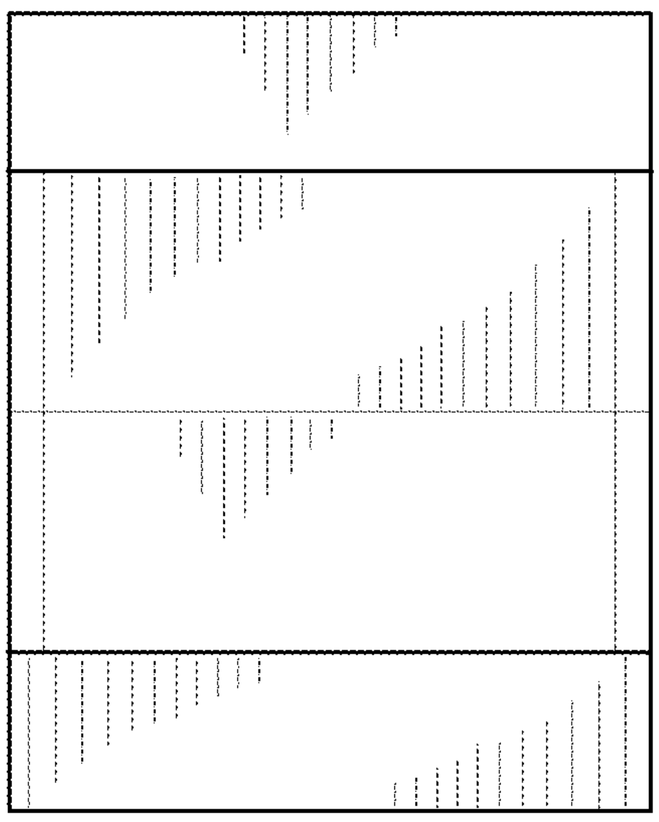

FIG. 53

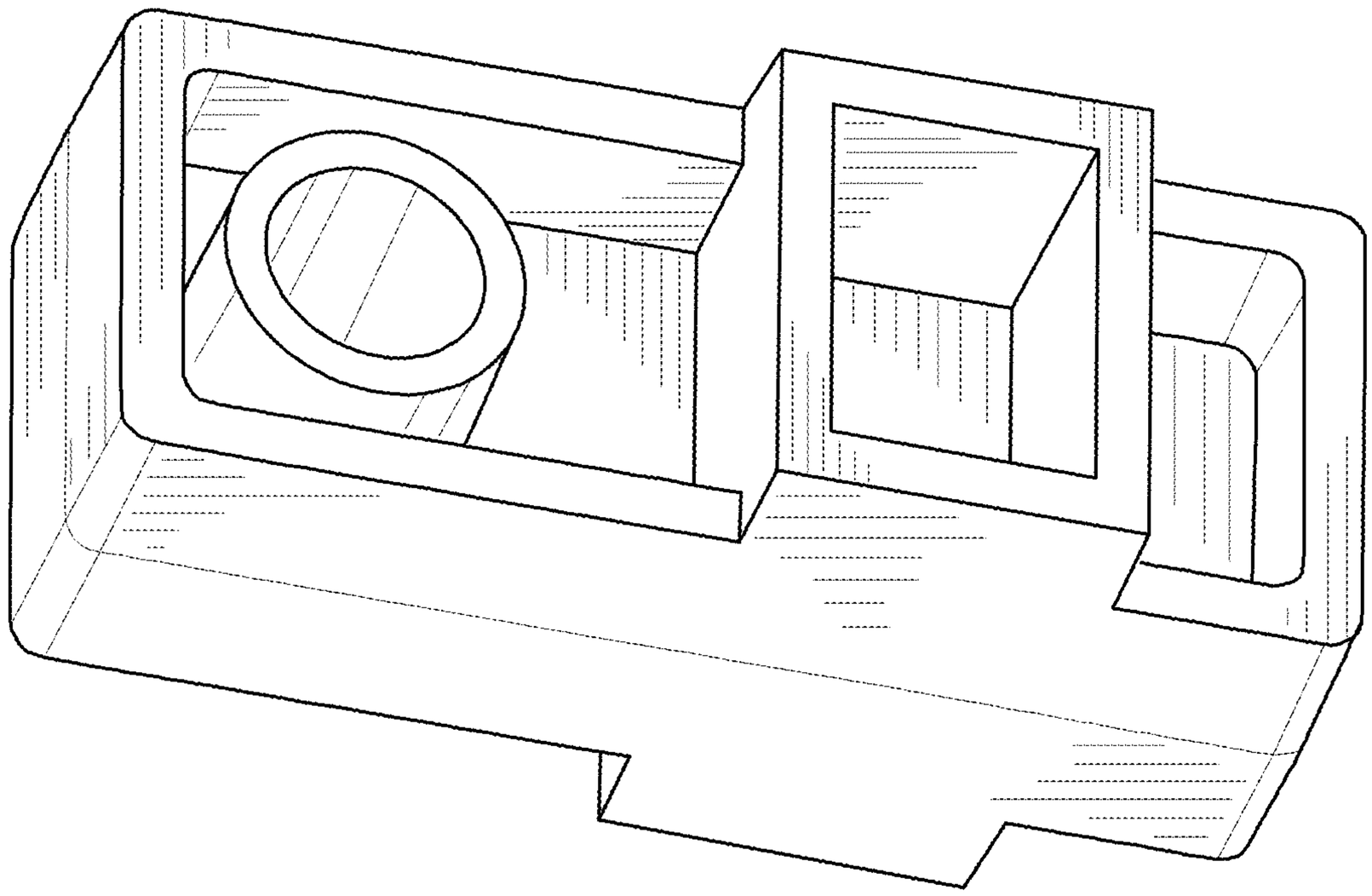

FIG. 54

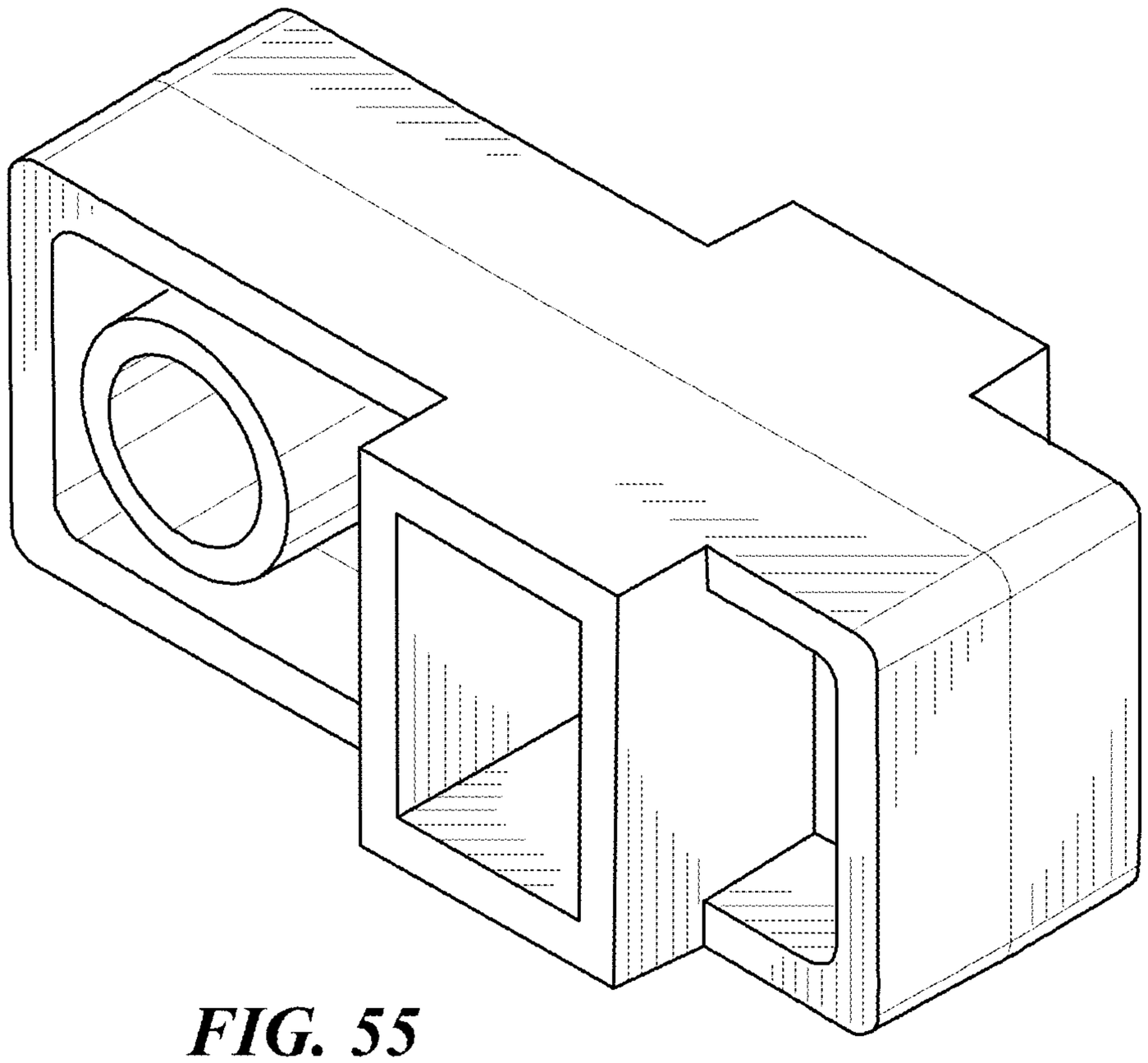

FIG. 55

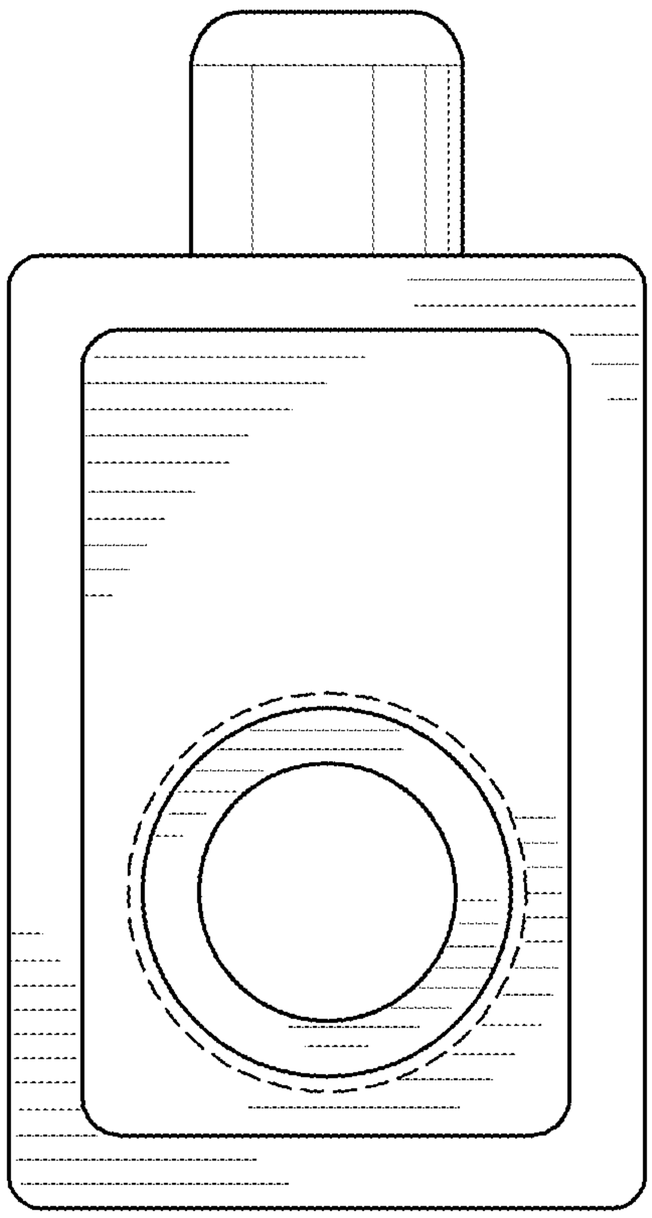

FIG. 57

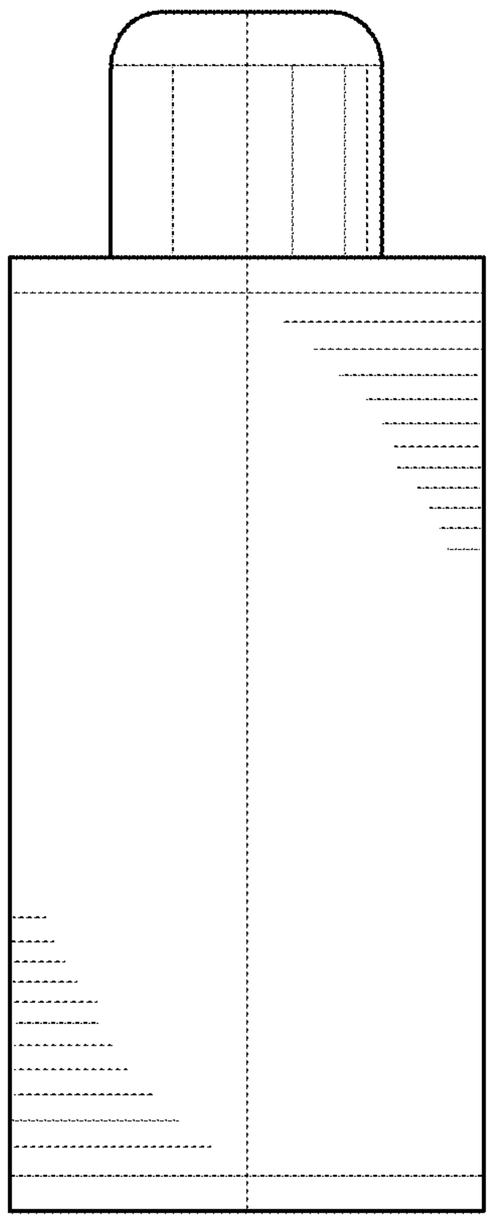

FIG. 59

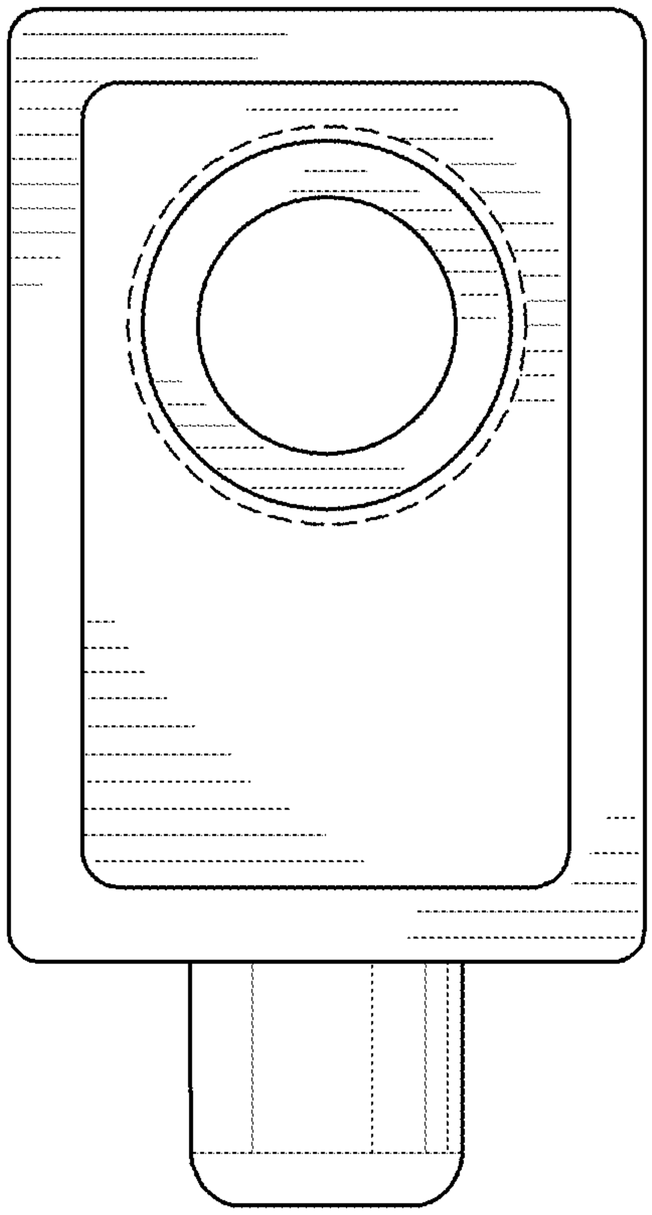

FIG. 56

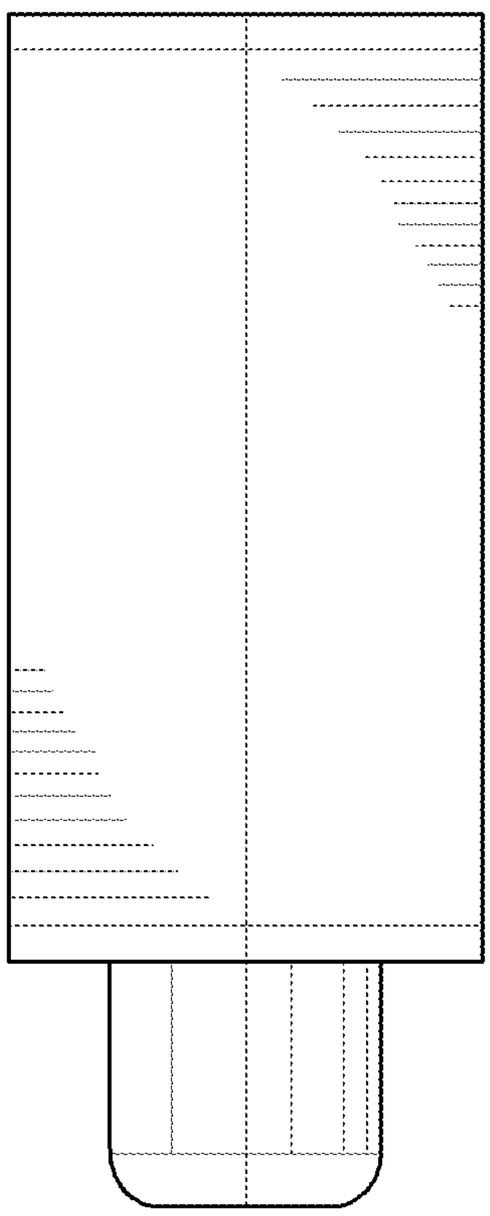

FIG. 58

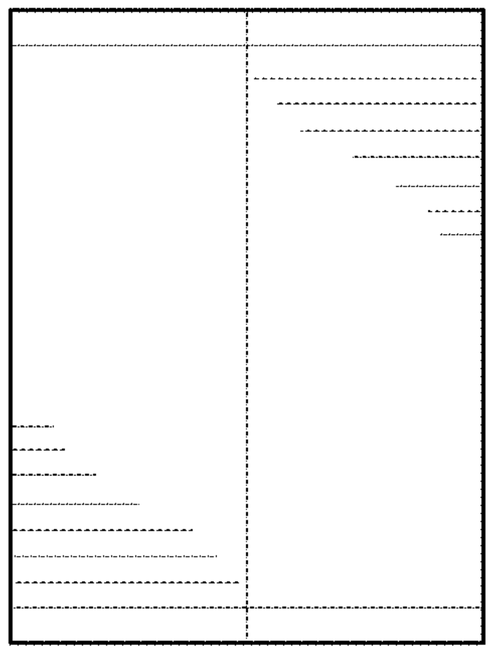

FIG. 61

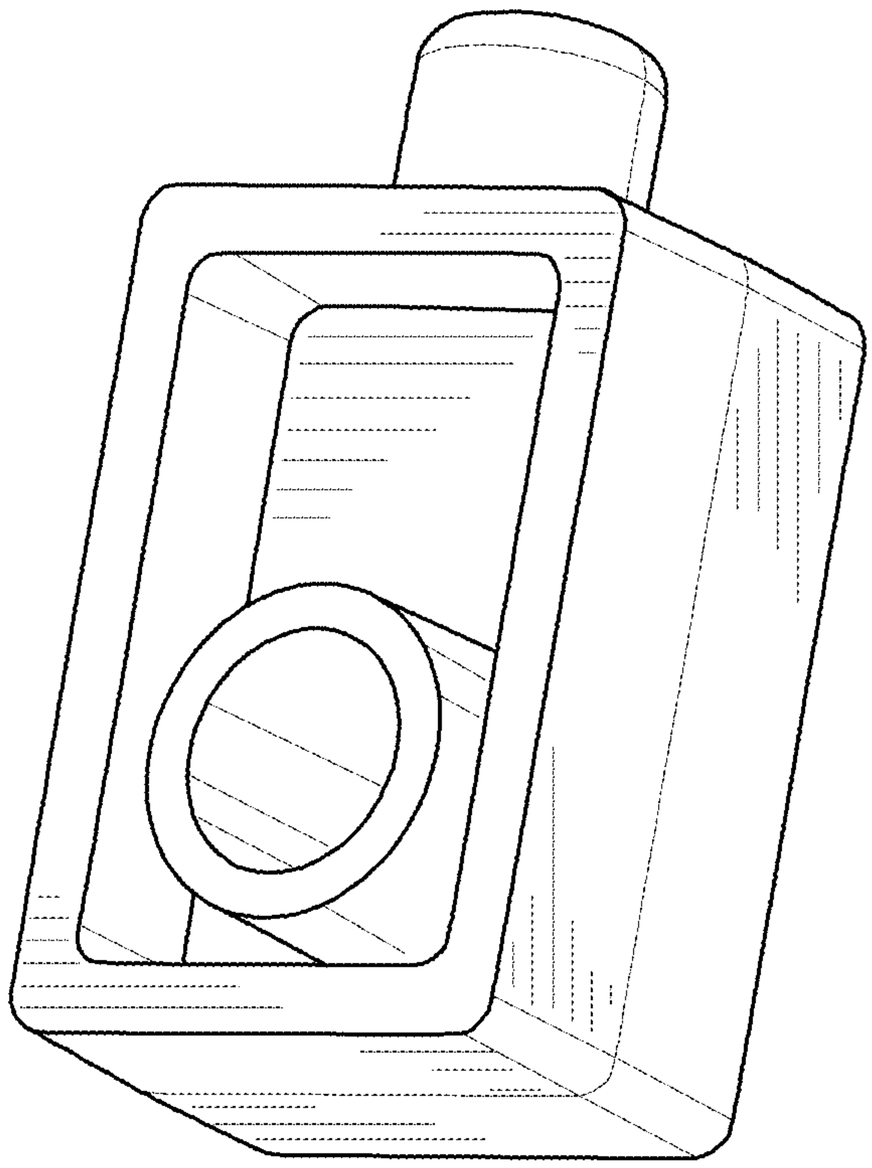

FIG. 63

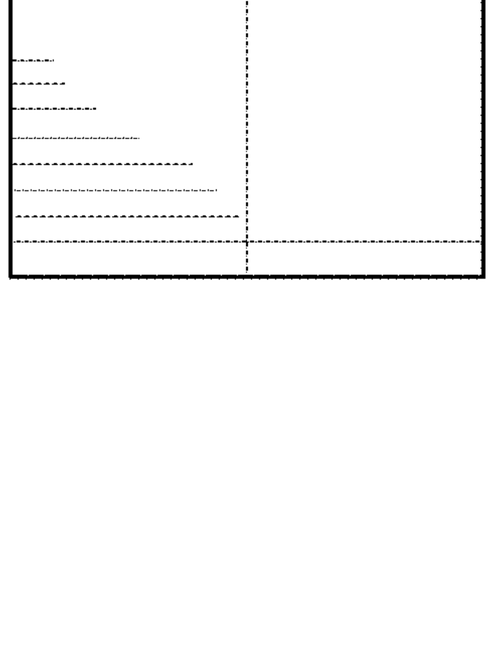

FIG. 60

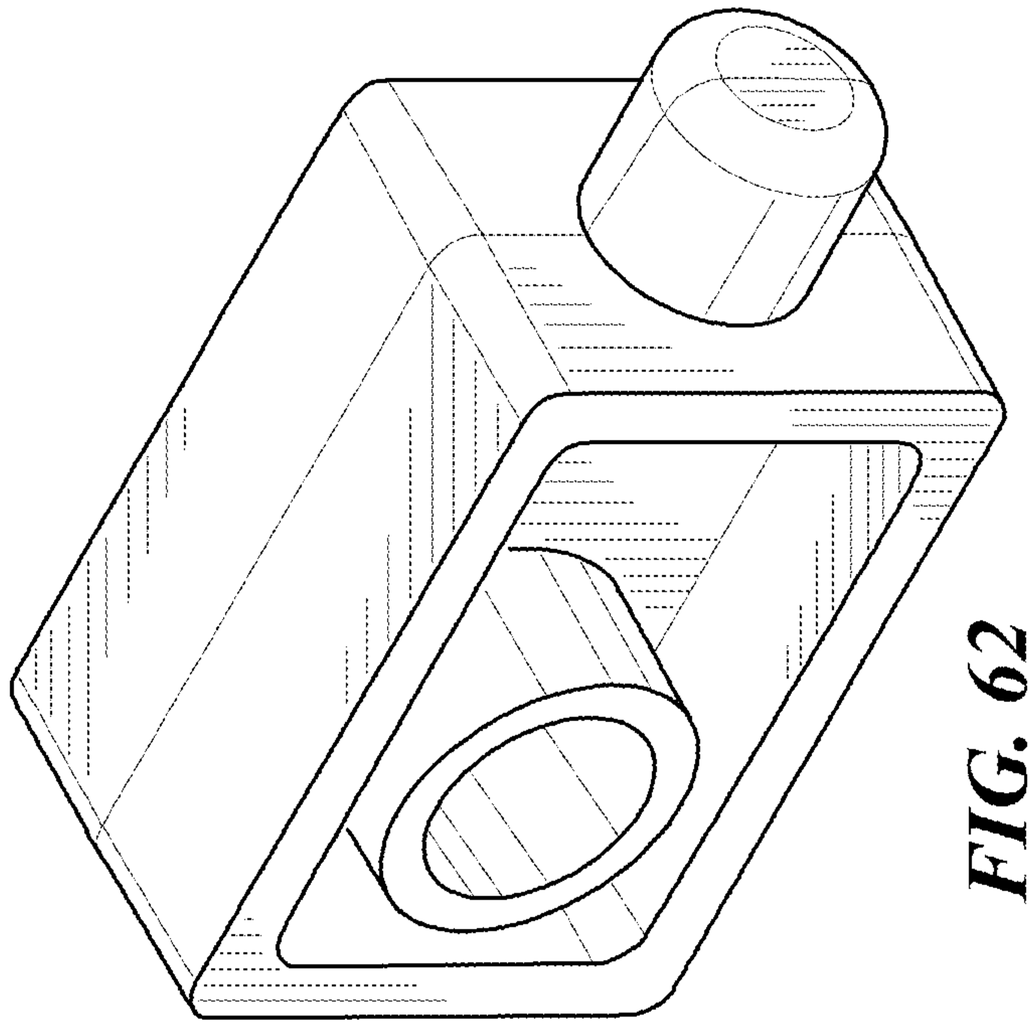

FIG. 62

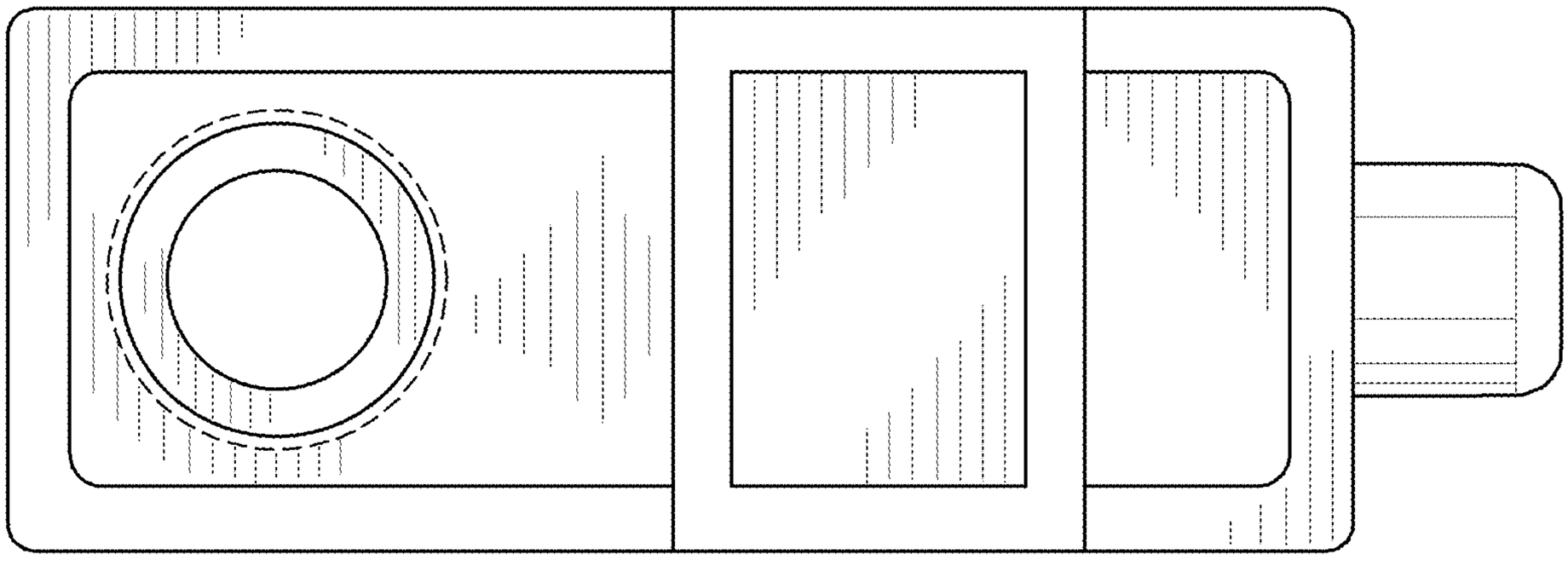

FIG. 64

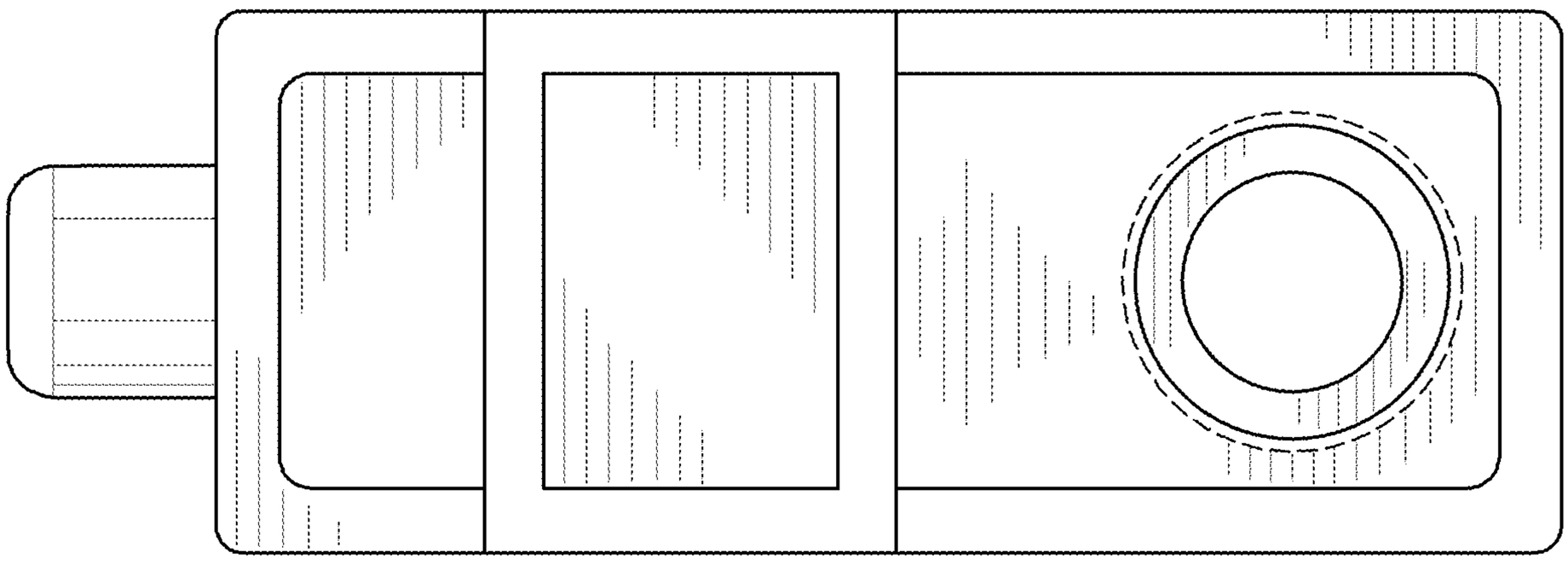

FIG. 65

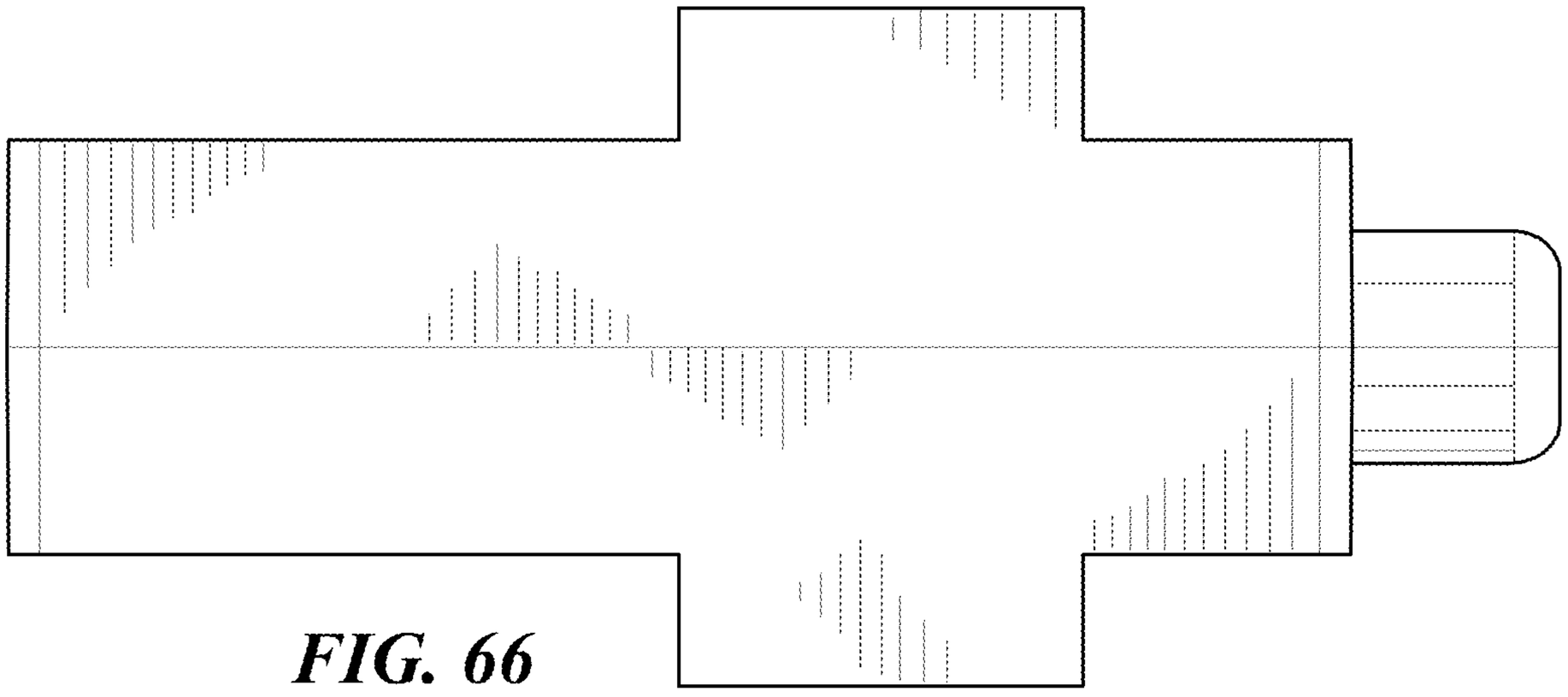

FIG. 66

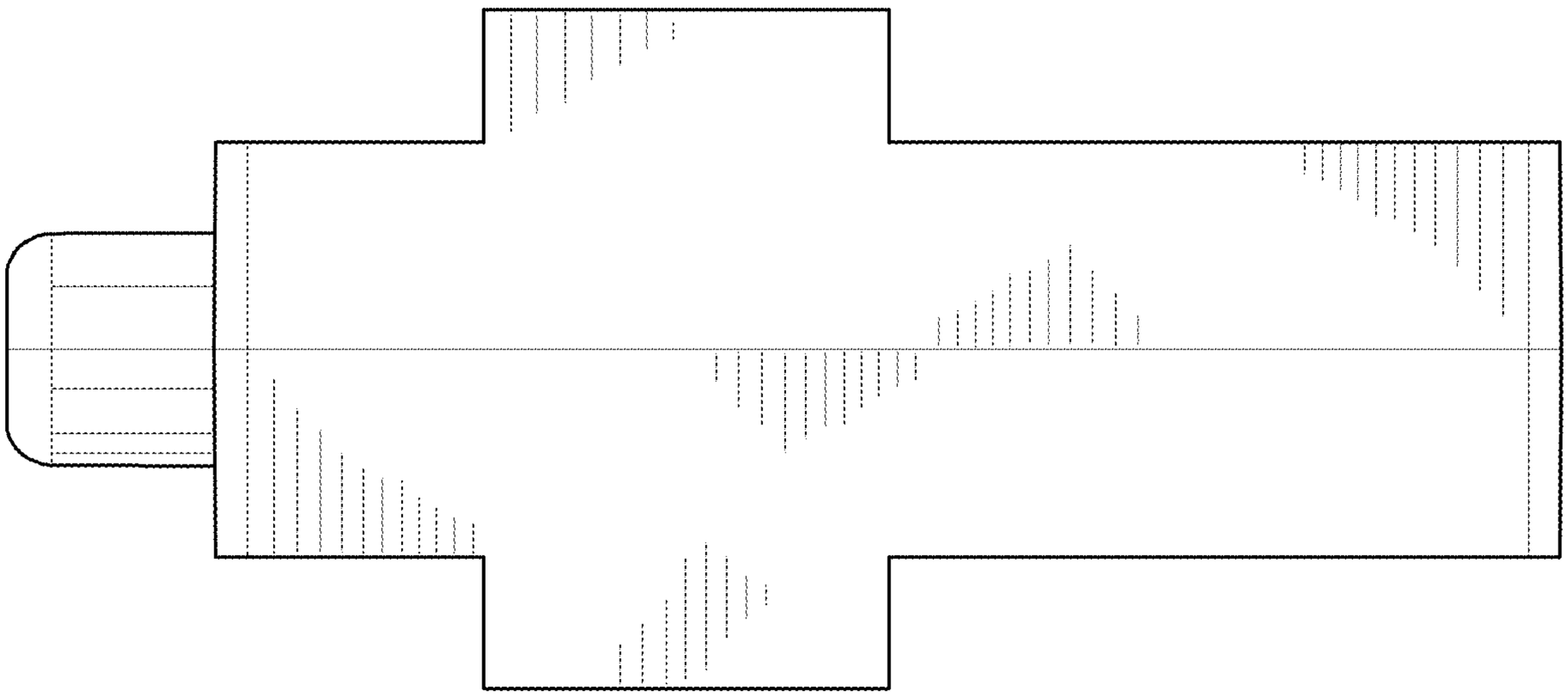

FIG. 67

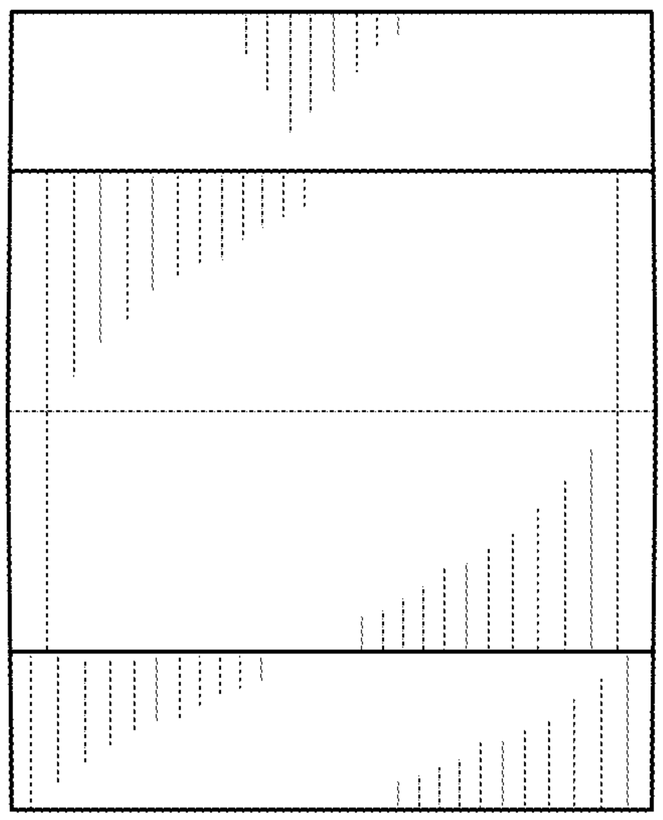

FIG. 68

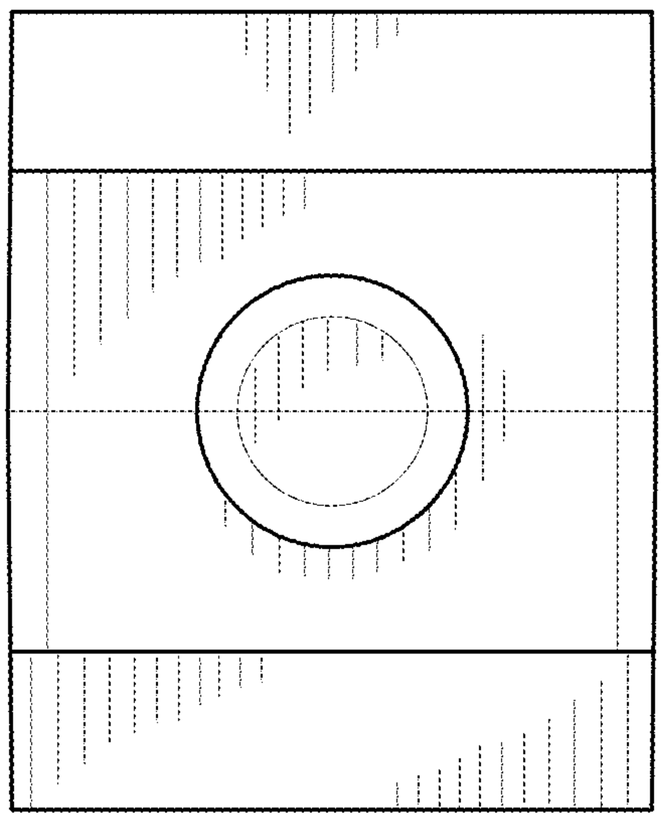

FIG. 69

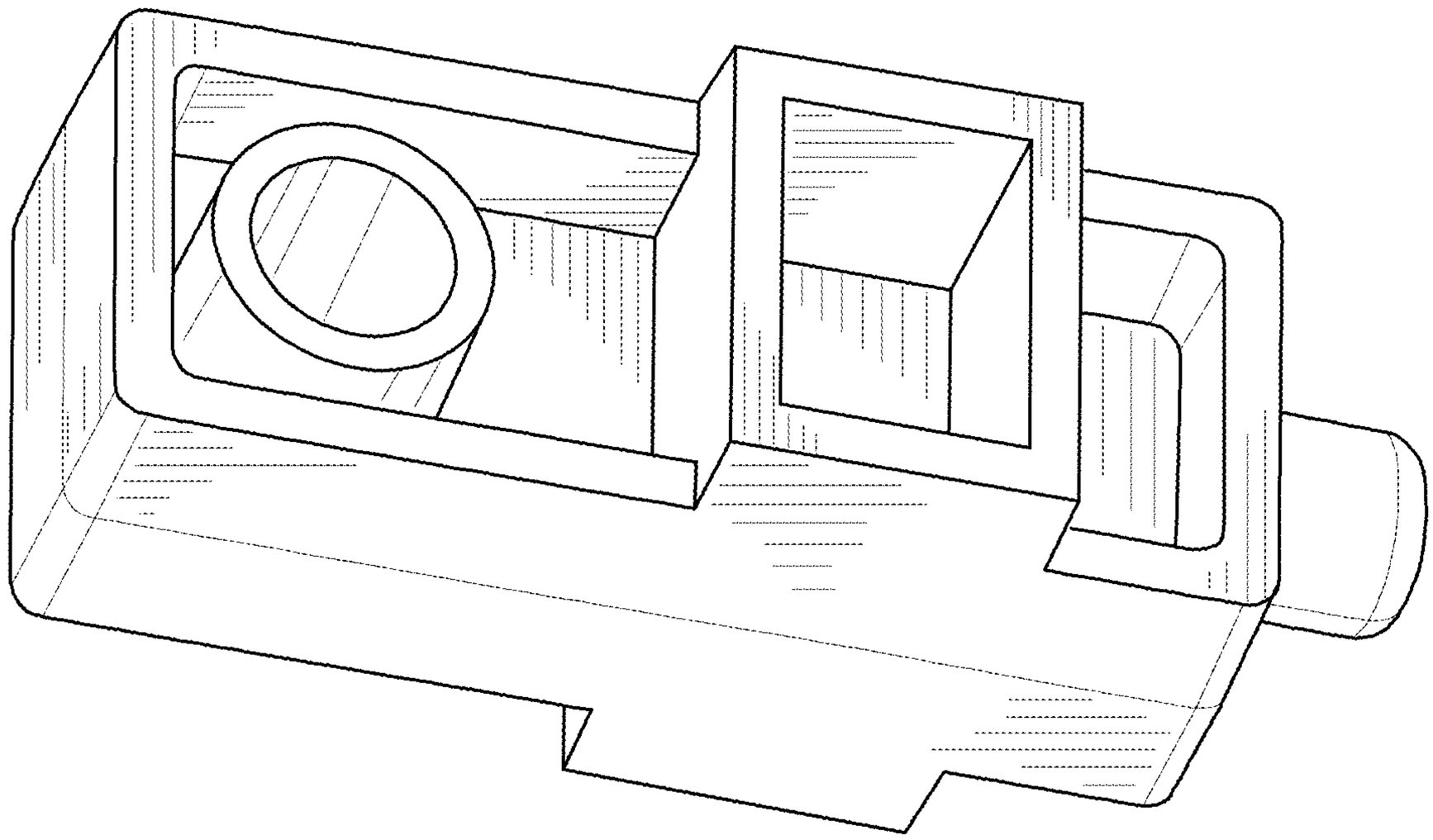

FIG. 70

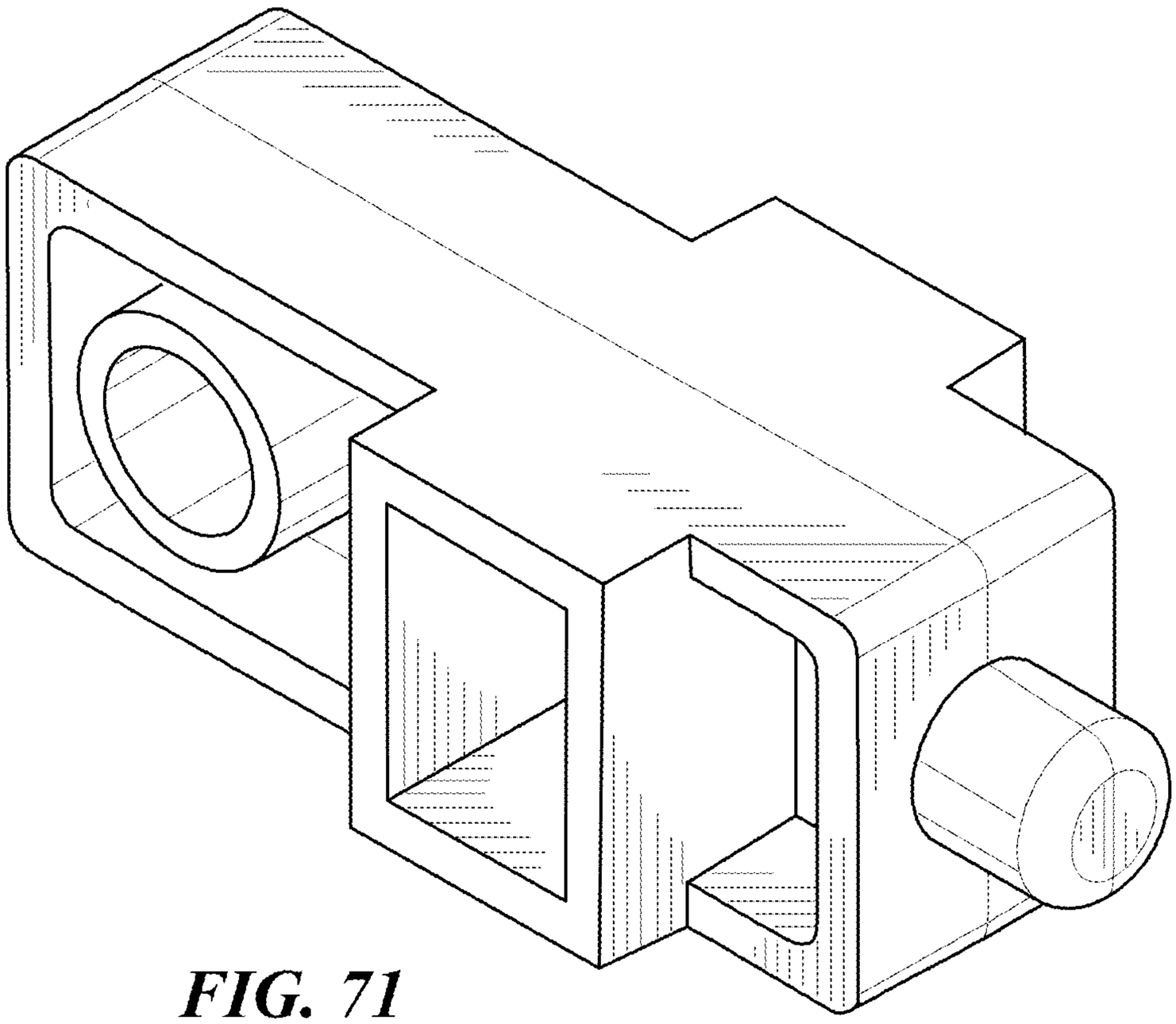

FIG. 71

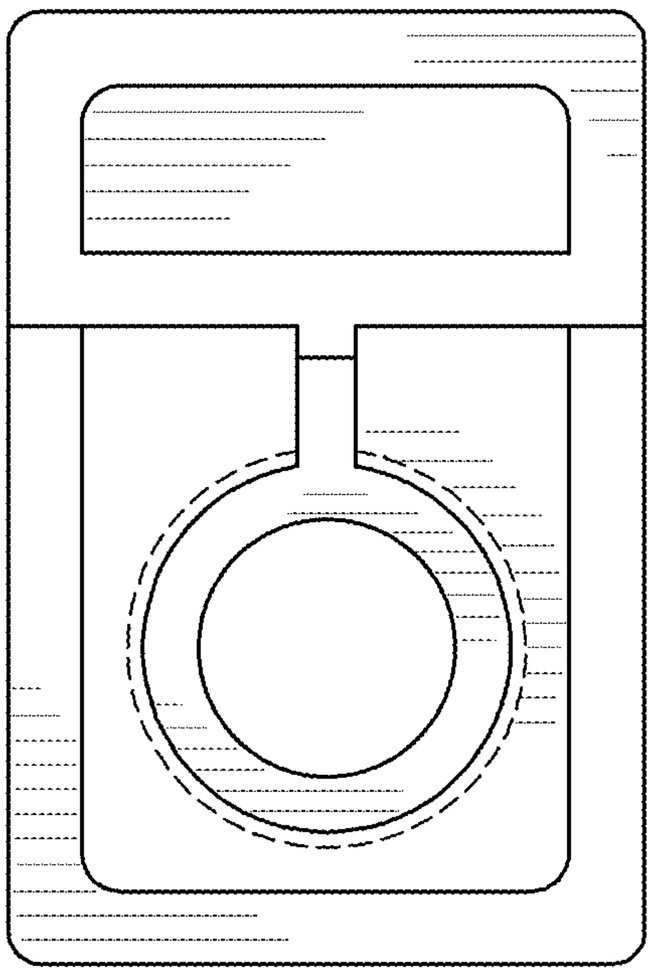

FIG. 73

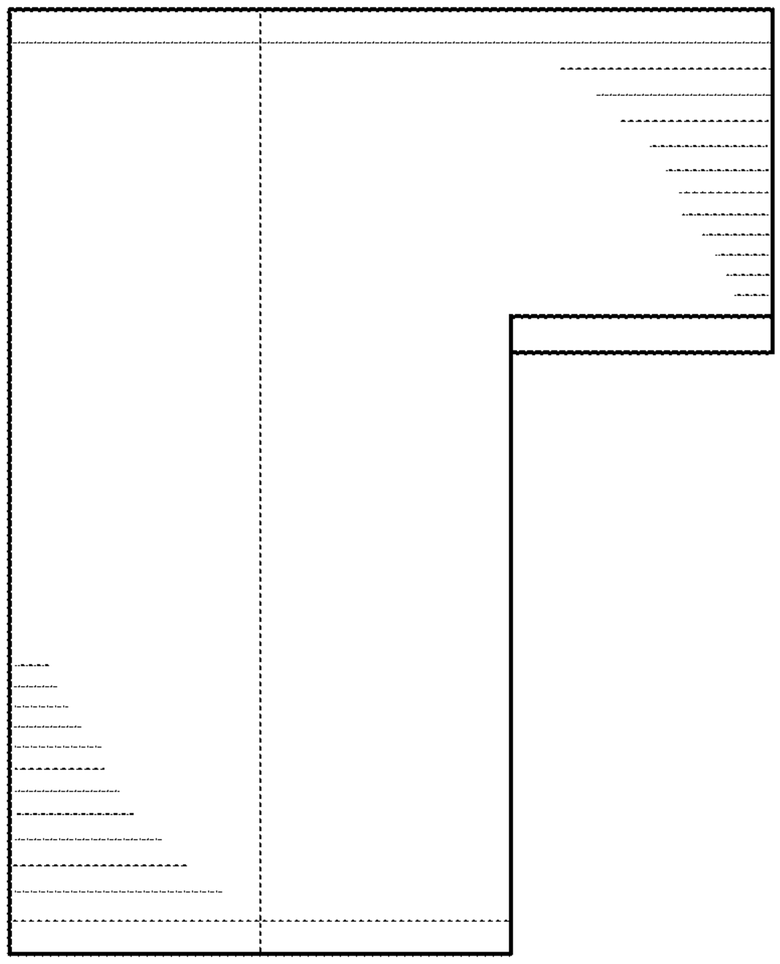

FIG. 75

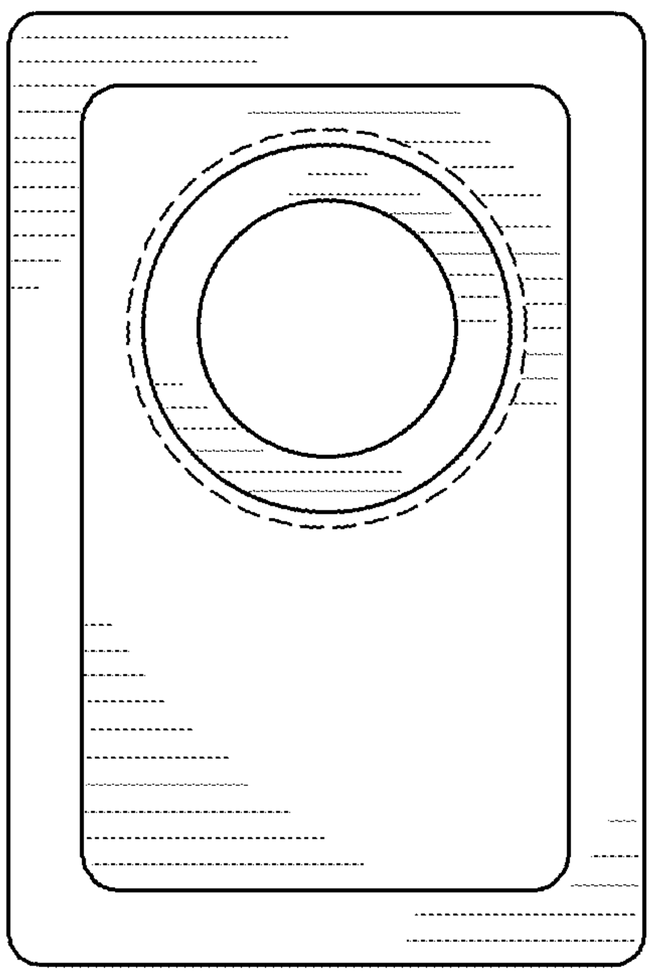

FIG. 72

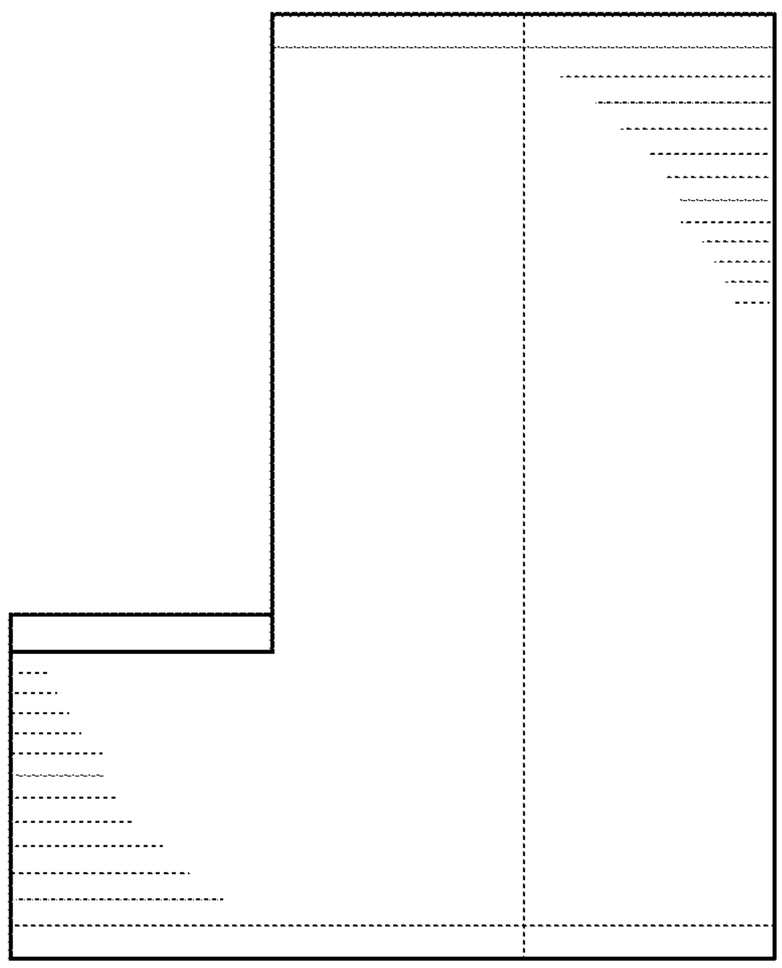

FIG. 74

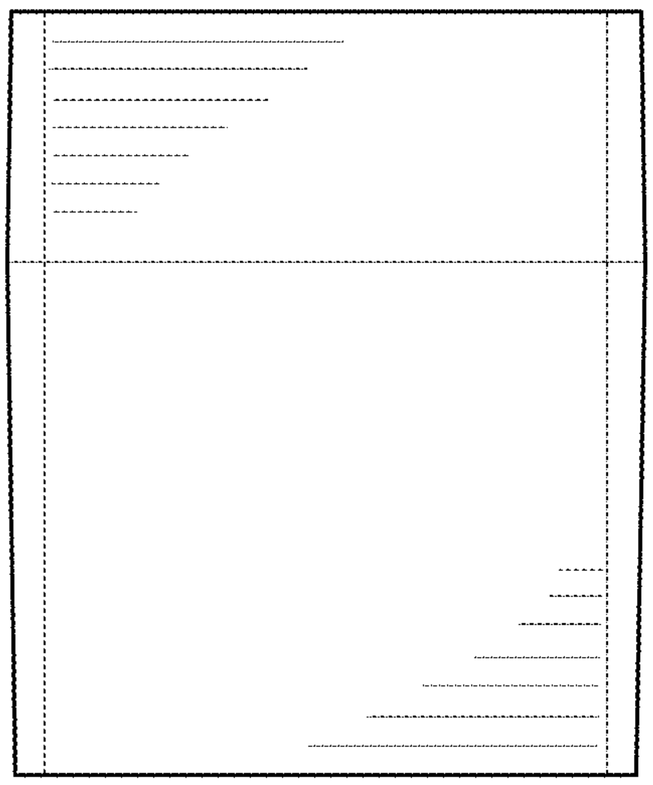

FIG. 77

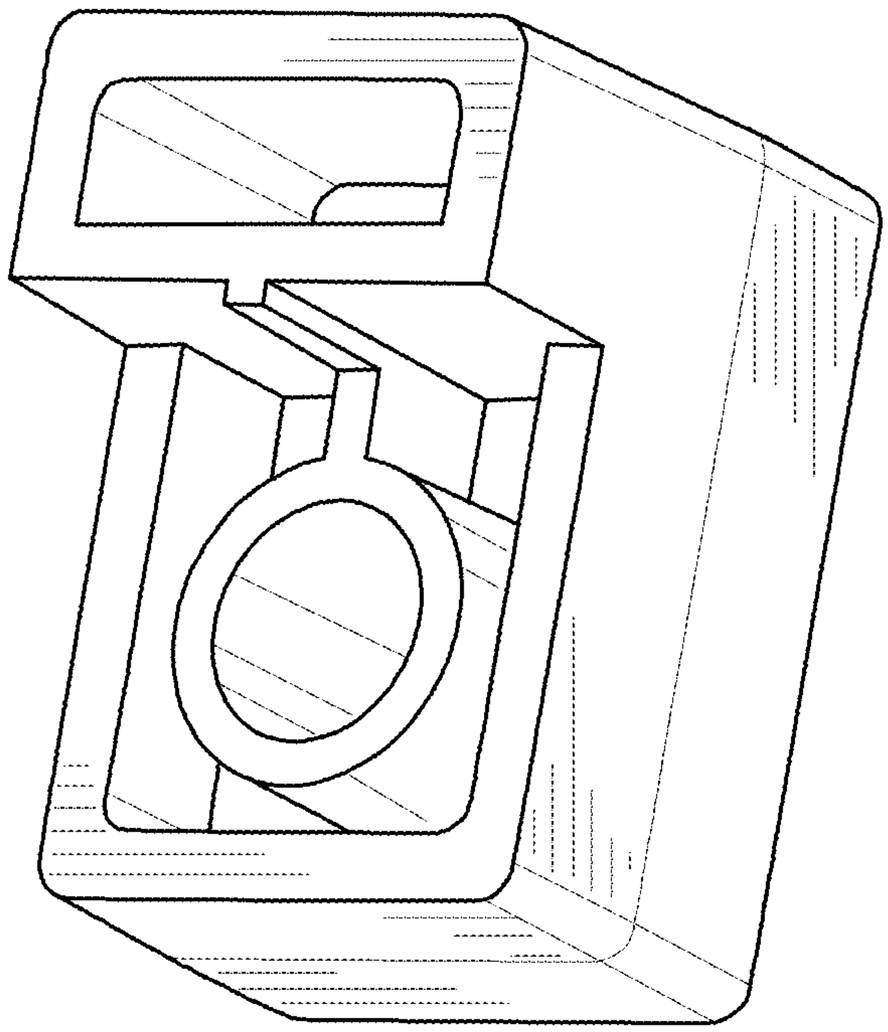

FIG. 79

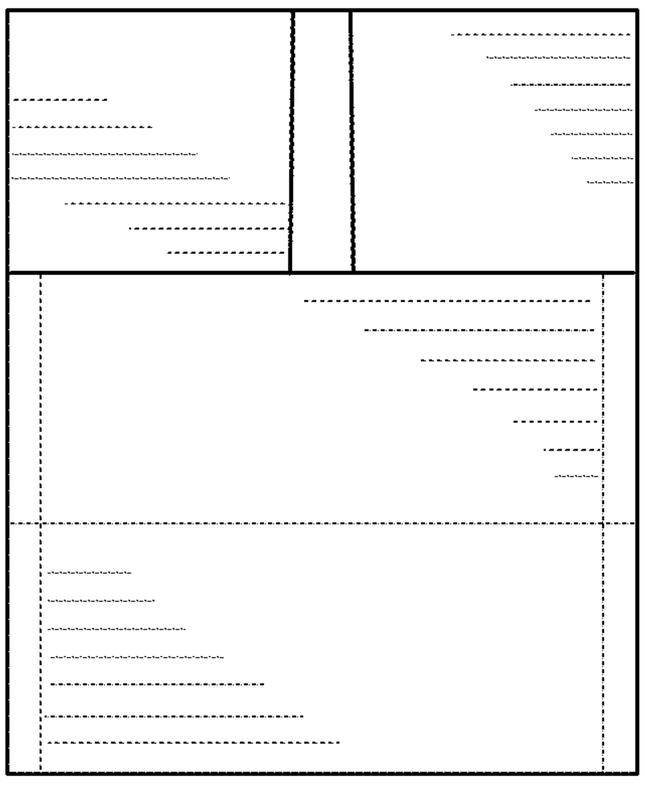

FIG. 76

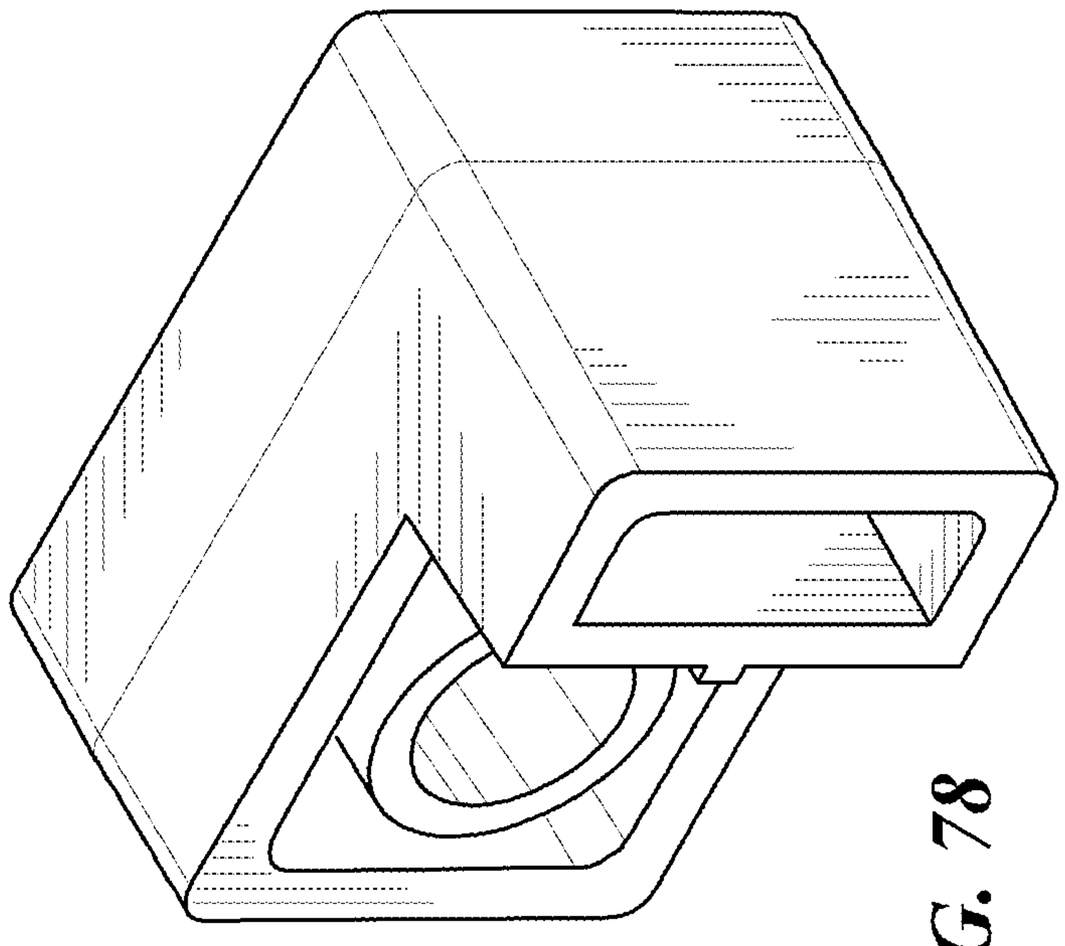

FIG. 78

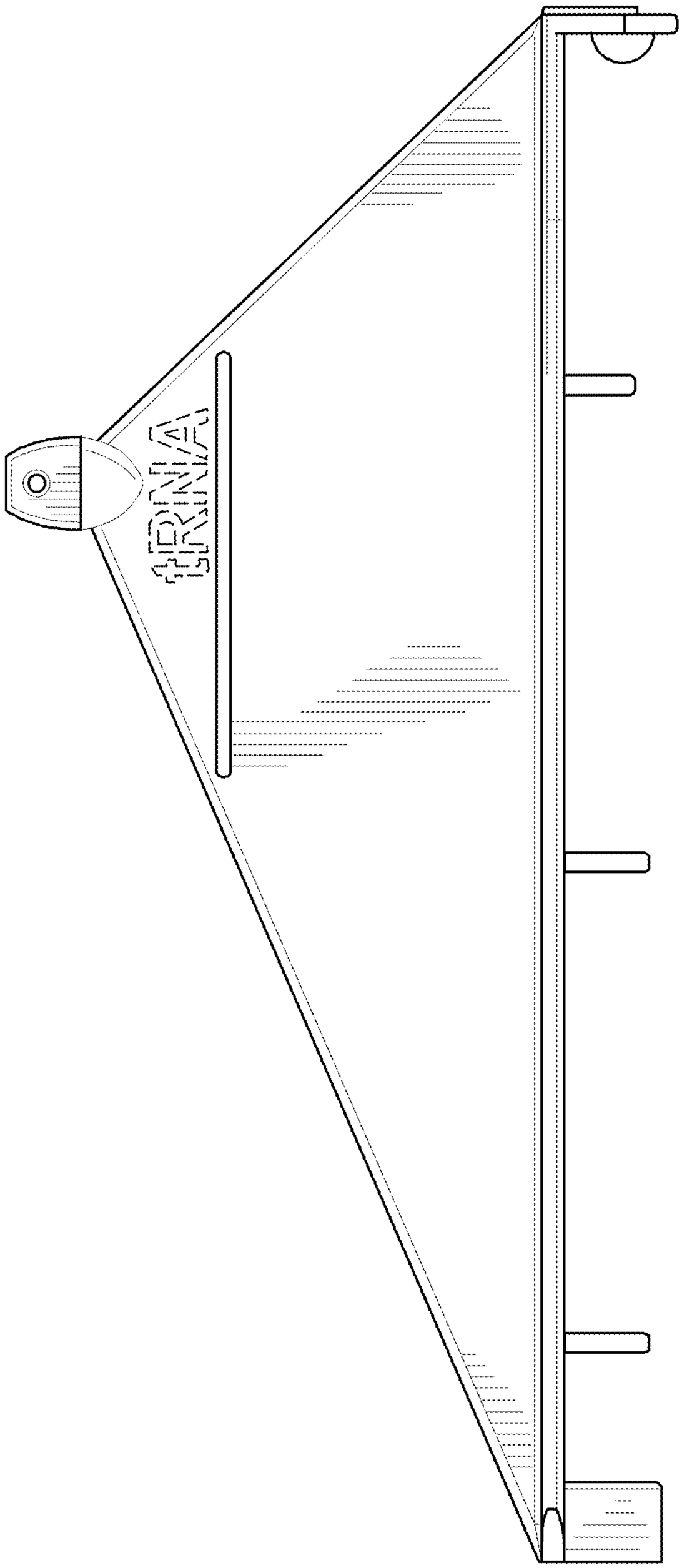

FIG. 80

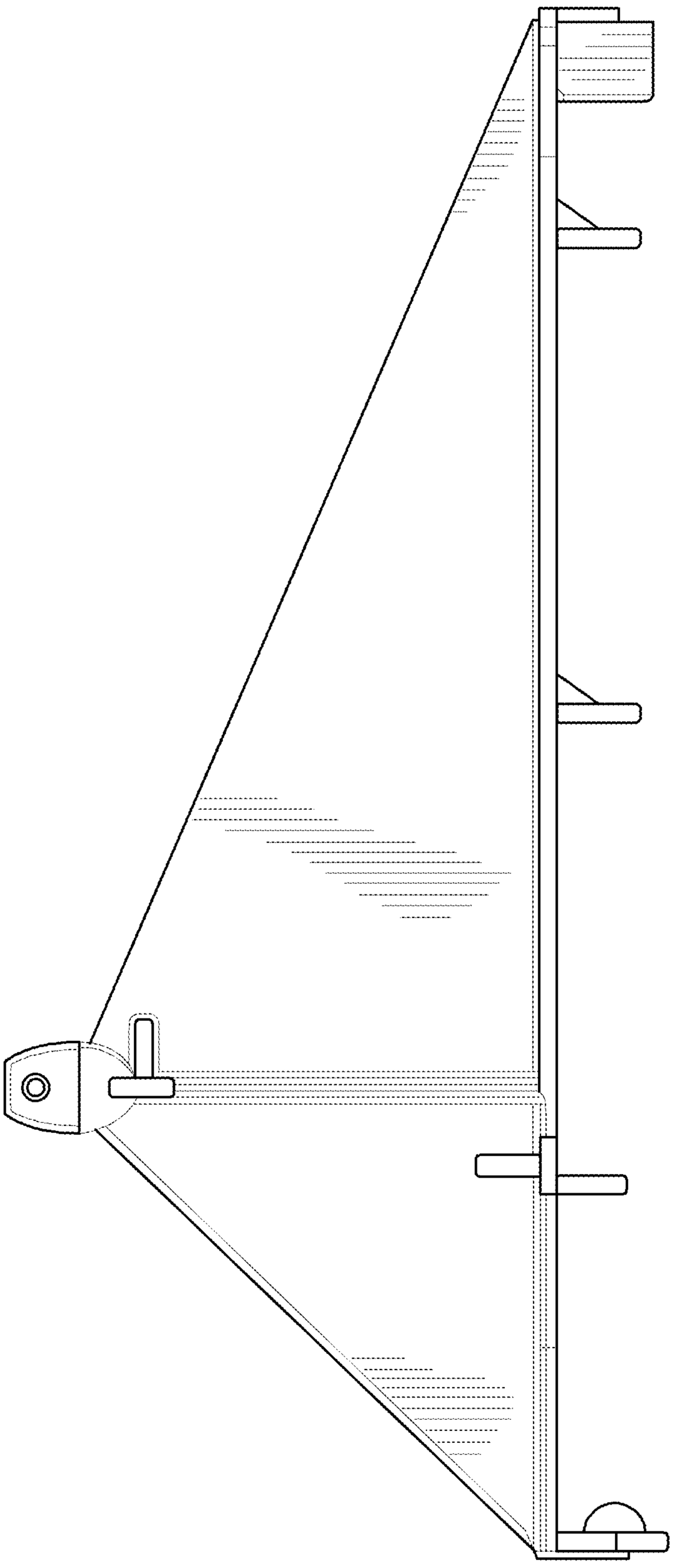

FIG. 81

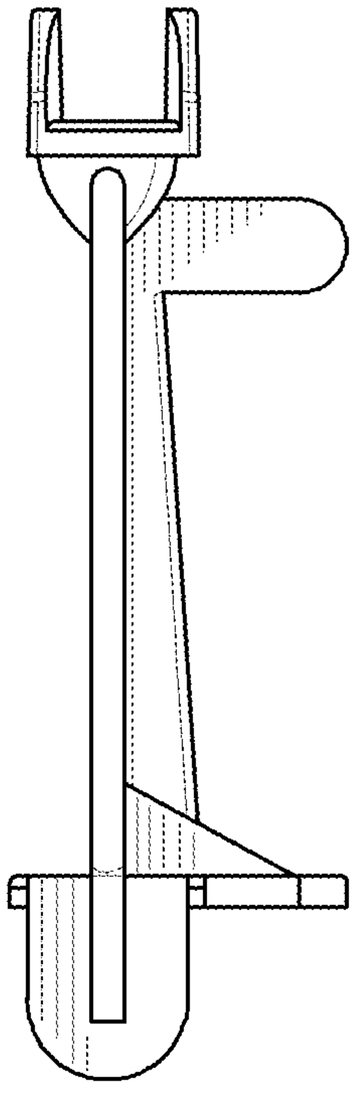

FIG. 82

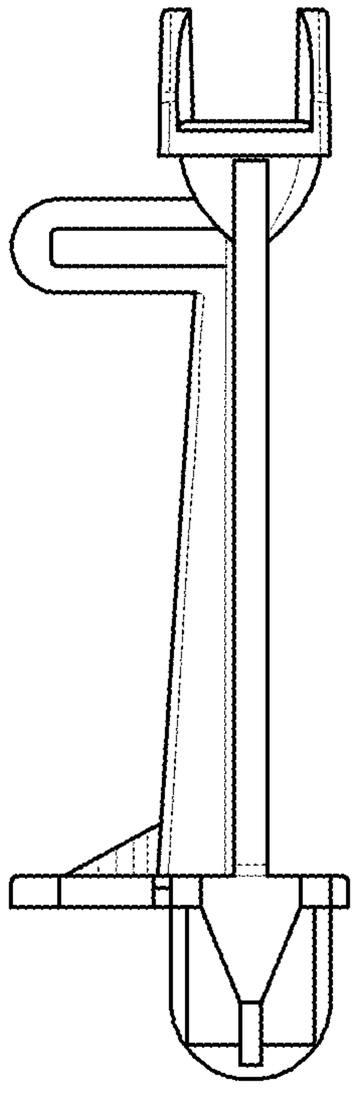

FIG. 83

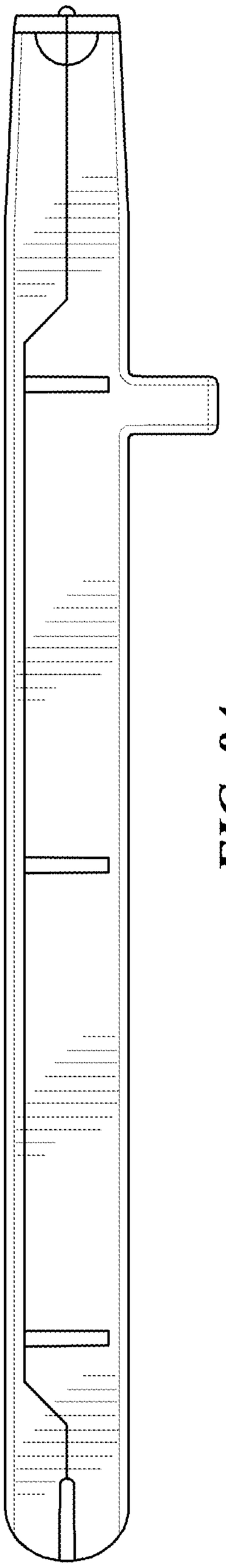

FIG. 84

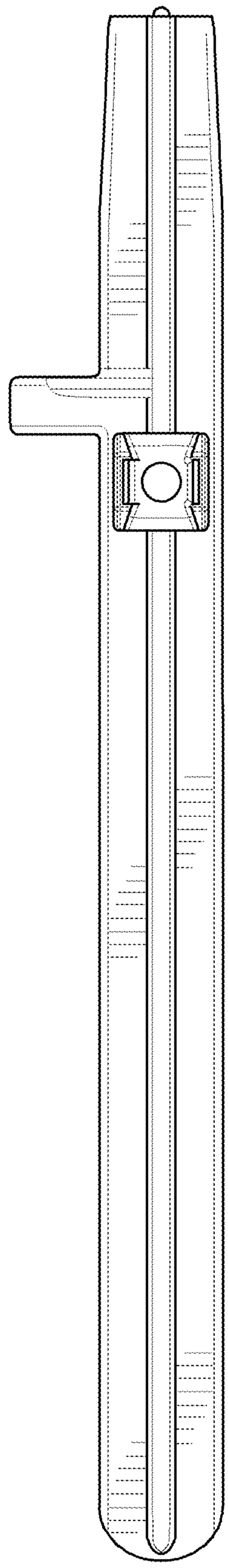

FIG. 85

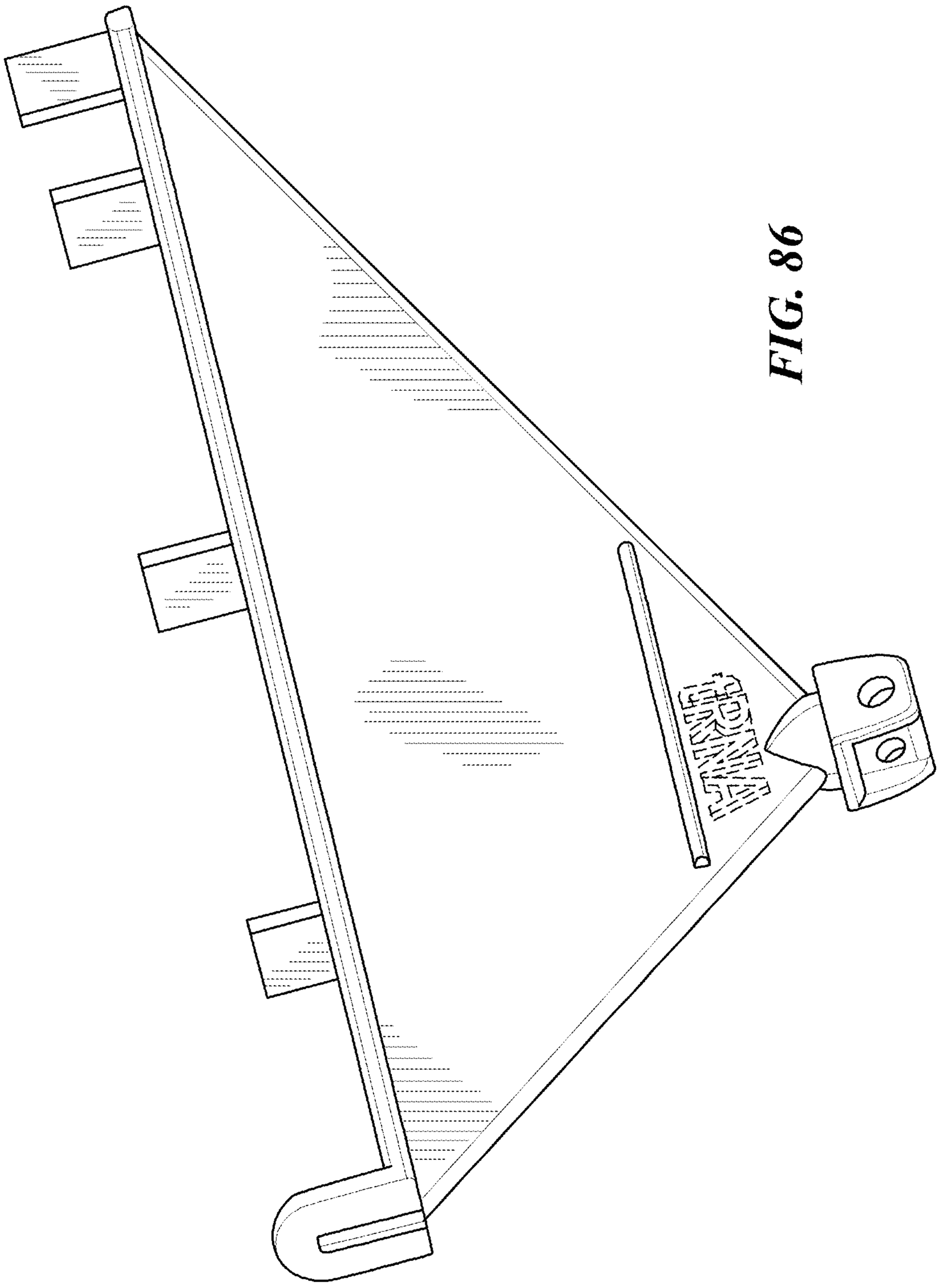

FIG. 86

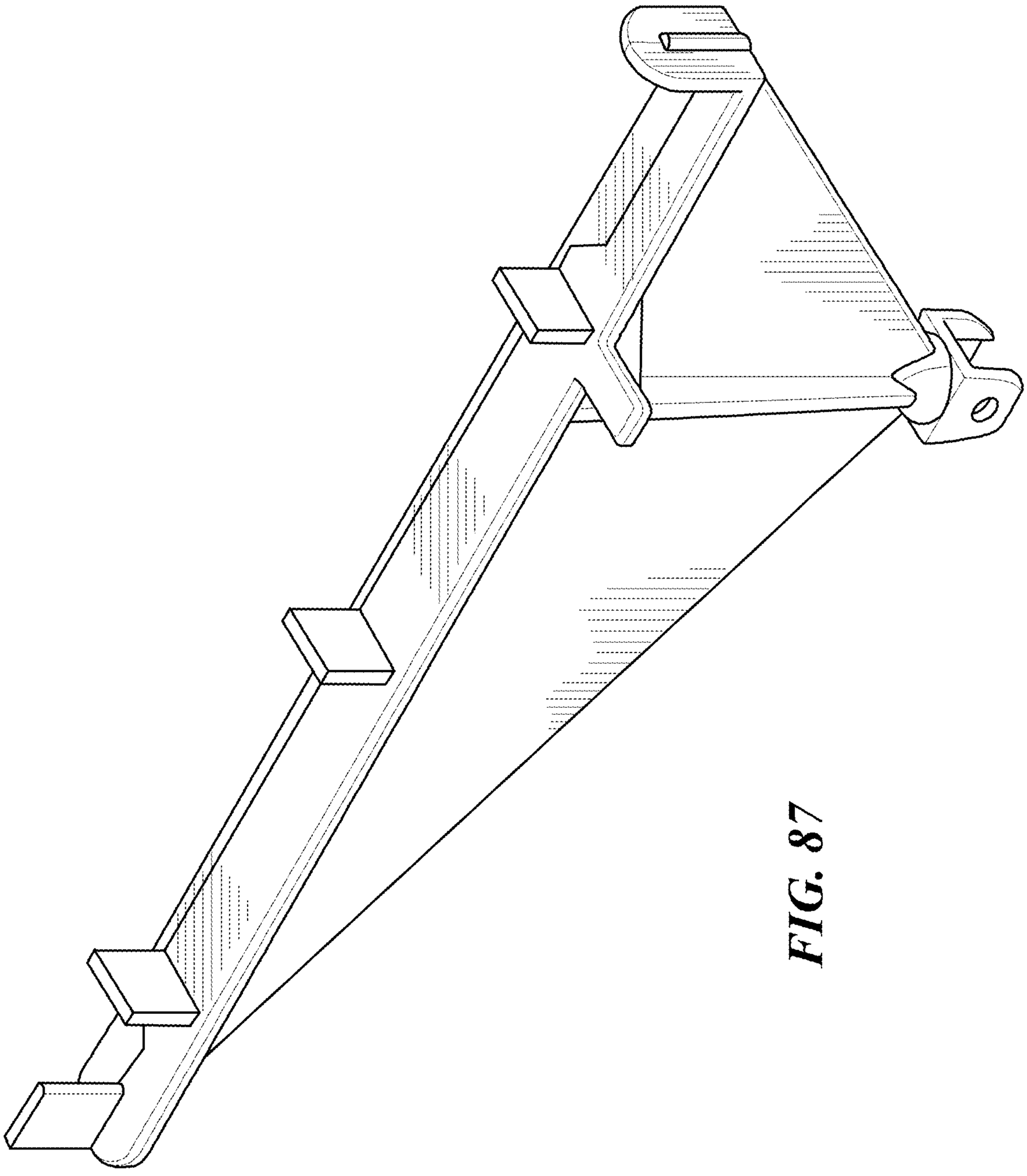

FIG. 87

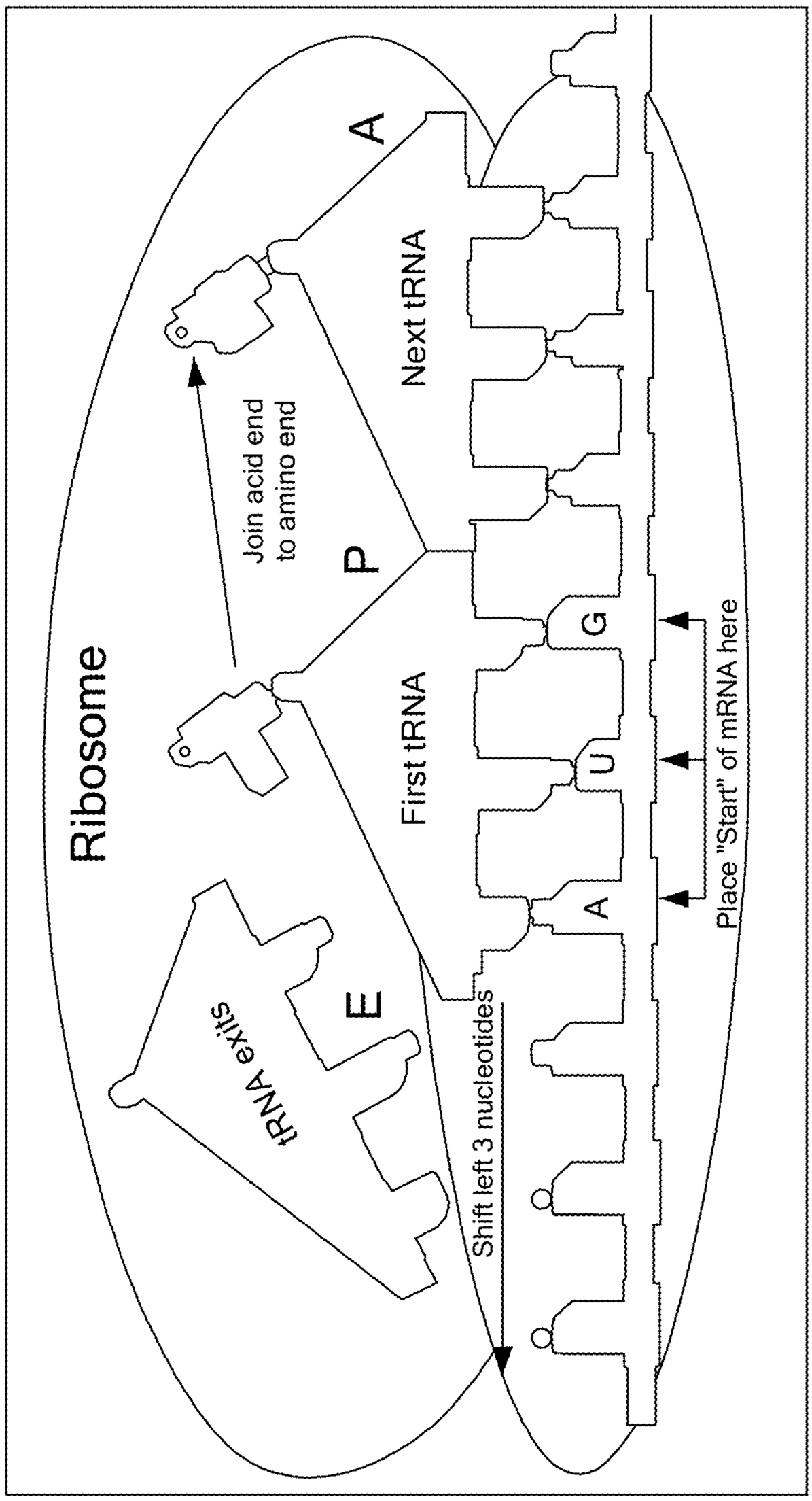

FIG. 88

FIG. 89

FIG. 90

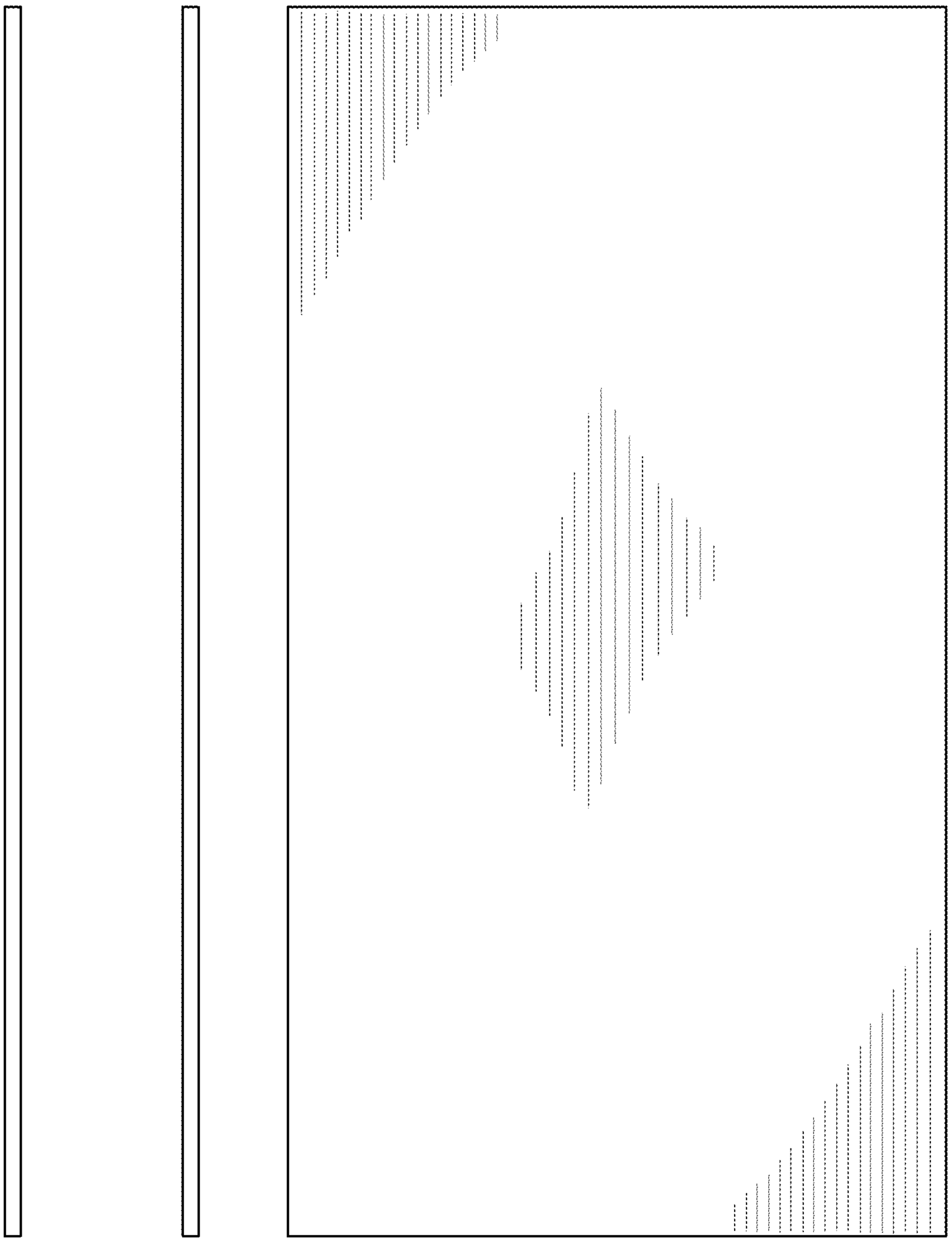

FIG. 91

FIG. 92

FIG. 93

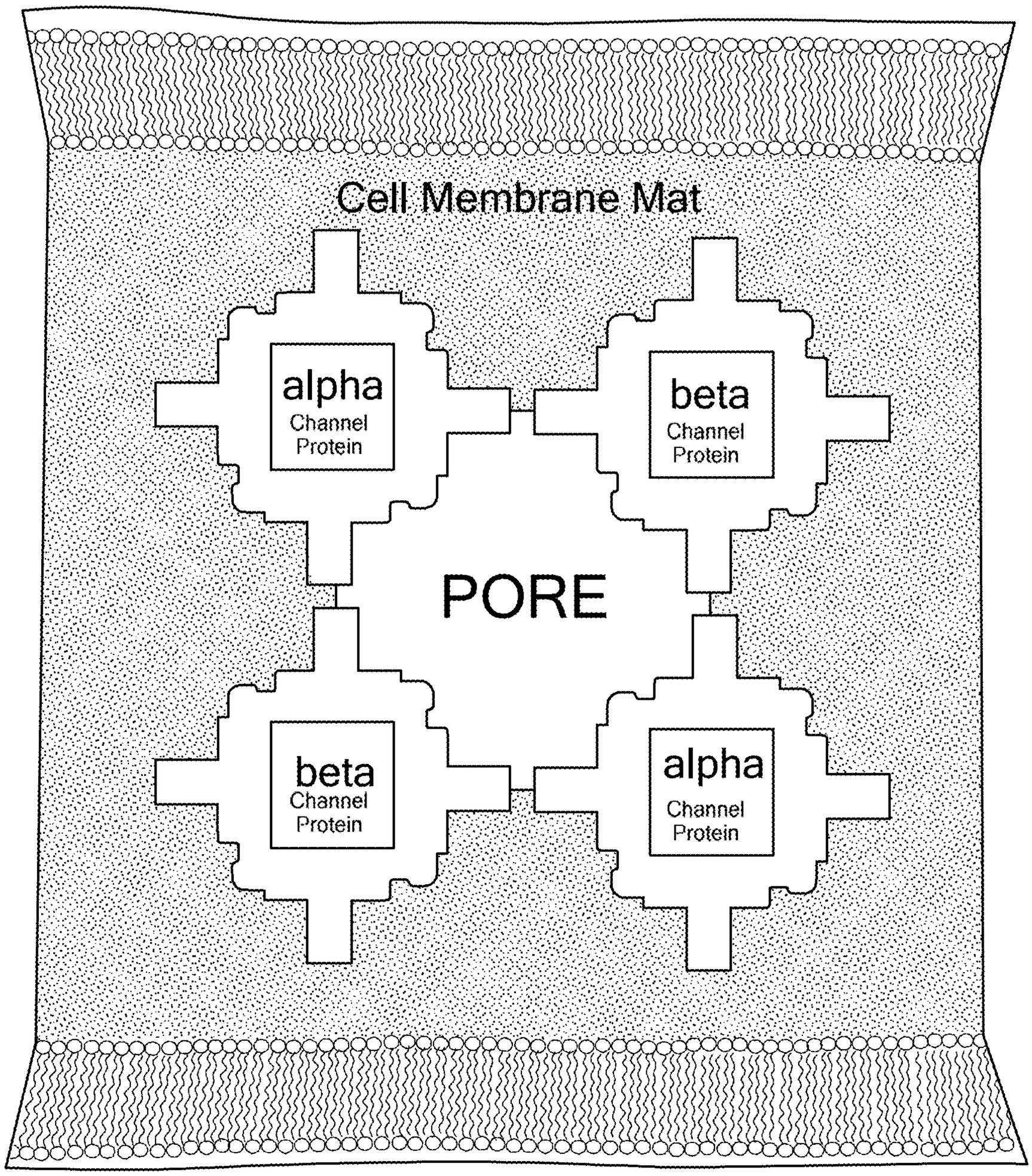

FIG. 94

FIG. 95

FIG. 96

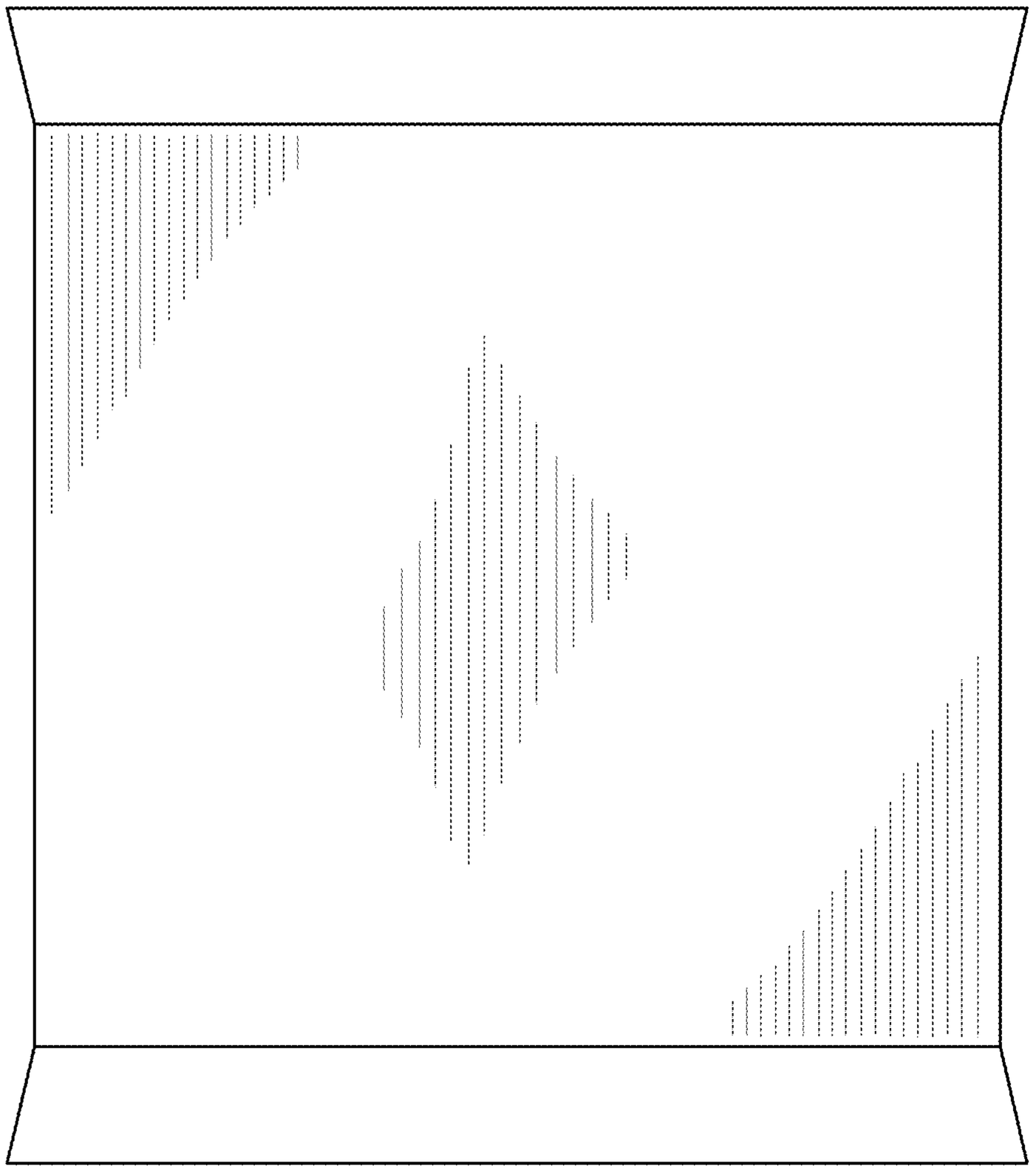

FIG. 97

FIG. 98

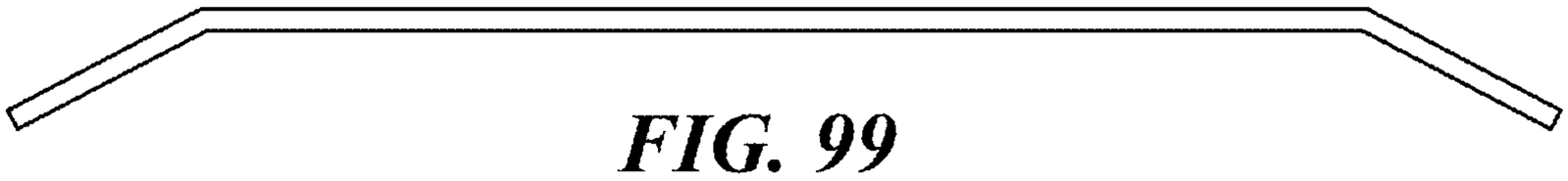

FIG. 99