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United States Patent [19]
Inoi et al.

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[45] Date of Patent: ** Apr. 26, 1994

[54] PIEZOELECTRIC ACTUATOR

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Kiyotak Hamada, all of Tokyo, Japan

[73] Assignee: NEC Corporation, Tokyo, Japan

[*] Notice: The portion of the term of this patent
subsequent to Oct. 20, 2006 has been
disclaimed.

[**] Term: 14 Years

[21] Appl. No.: 930,304

[22] Filed: Aug. 17, 1992

[30] Foreign Application Priority Data

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Feb. 17, 1992 [JP]	Japan	4-3974
Feb. 17, 1992 [JP]	Japan	4-3975
Feb. 17, 1992 [JP]	Japan	4-3976
Feb. 17, 1992 [JP]	Japan	4-3977
[52] U.S. Cl.	D13/174	
[58] Field of Search	310/328, 367, 369;	
	338/4; D13/101, 173	

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Movement + Positioning, May 1987, Issue 3.

Primary Examiner—Wallace R. Burke
Assistant Examiner—J. Sincavage

Attorney, Agent, or Firm—Sughrue, Mion, Zinn,
Macpeak & Seas

[57] CLAIM

The ornamental design for a piezoelectric actuator, as
shown and described.

DESCRIPTION

FIG. 1 is a front elevational view of a piezoelectric
actuator showing our new design, the rear being a mir-
ror image thereof;
FIG. 2 is a left side elevational view thereof;
FIG. 3 is a right side elevational view thereof;
FIG. 4 is a top plan view thereof;
FIG. 5 is a bottom plan view thereof;
FIG. 6 is a front elevational view of a second embodi-
ment of a piezoelectric actuator showing our new de-
sign, the rear being a mirror image thereof;
FIG. 7 is a left side elevational view thereof;
FIG. 8 is a right side elevational view thereof;
FIG. 9 is a top plan view thereof;
FIG. 10 is a bottom plan view thereof;
FIG. 11 is a front elevational view of a third embodi-
ment of a piezoelectric actuator showing our new de-
sign, the rear being a mirror image thereof;
FIG. 12 is a left side elevational view thereof;
FIG. 13 is a right side elevational view thereof;
FIG. 14 is a top plan view thereof;
FIG. 15 is a bottom plan view thereof;
FIG. 16 is a front elevational view of a fourth embodi-
ment of a piezoelectric actuator showing our new de-
sign, the rear being a mirror image thereof;
FIG. 17 is a left side elevational view thereof;
FIG. 18 is a right side elevational view thereof;
FIG. 19 is a top plan view thereof;
FIG. 20 is a bottom plan view thereof;
FIG. 21 is a front elevational view of a fifth embodi-
ment of a piezoelectric actuator showing our new de-
sign, the rear being a mirror image thereof;
FIG. 22 is a left side elevational view thereof;
FIG. 23 is a right side elevational view thereof;
FIG. 24 is a top plan view thereof; and,
FIG. 25 is a bottom plan view thereof.

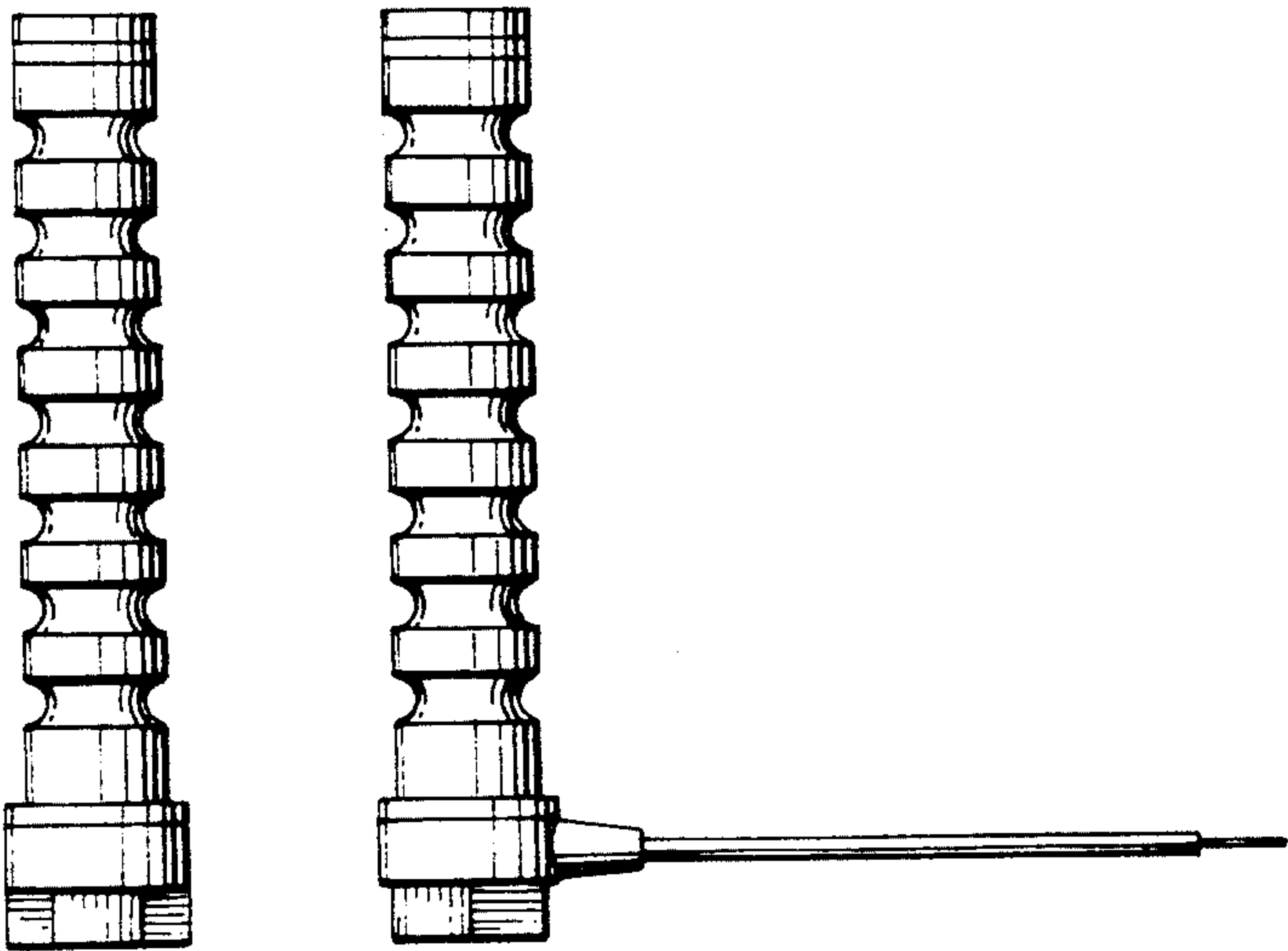


FIG. 2

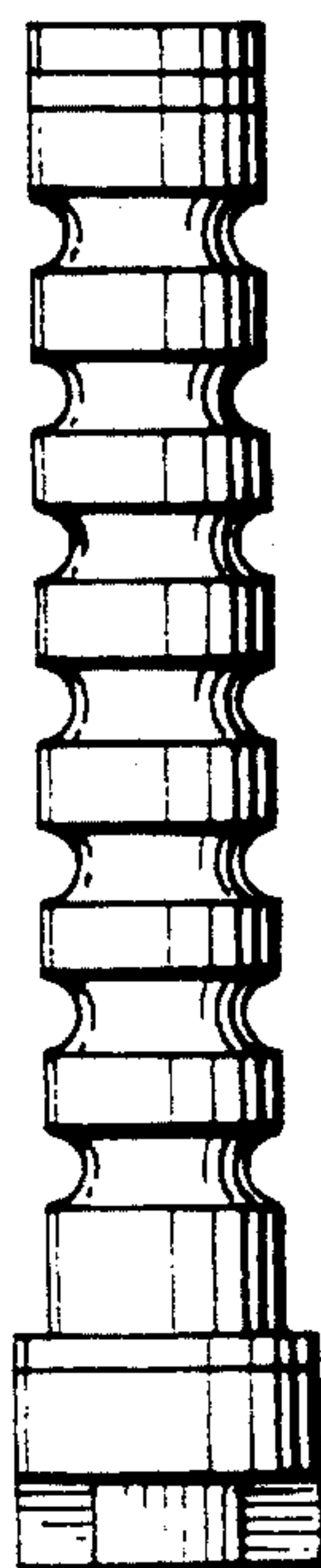


FIG. 1

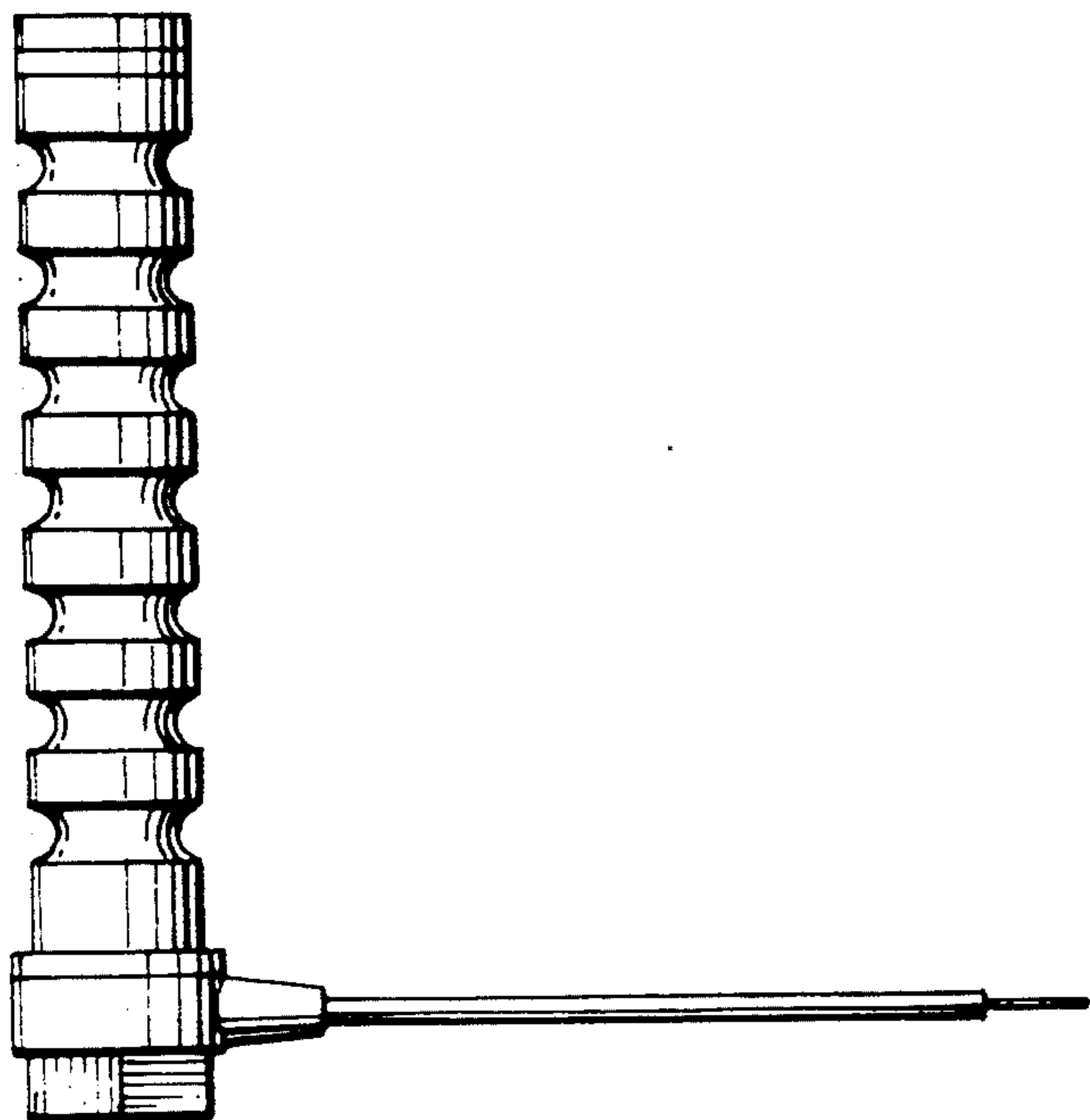


FIG. 3

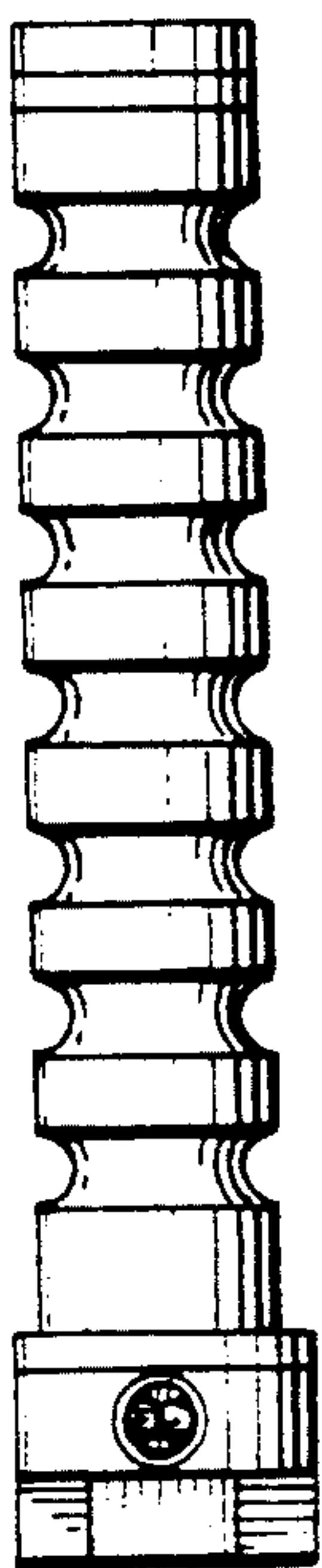


FIG. 4



FIG. 5



FIG.7

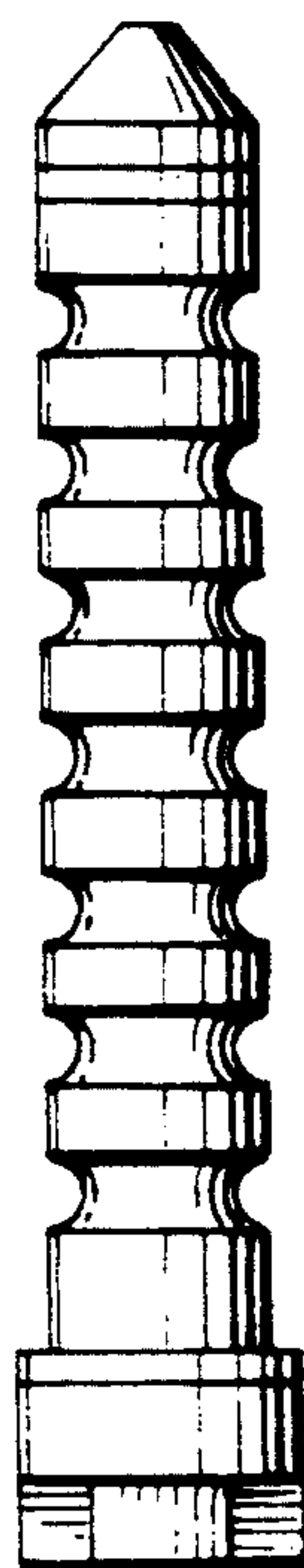


FIG.6

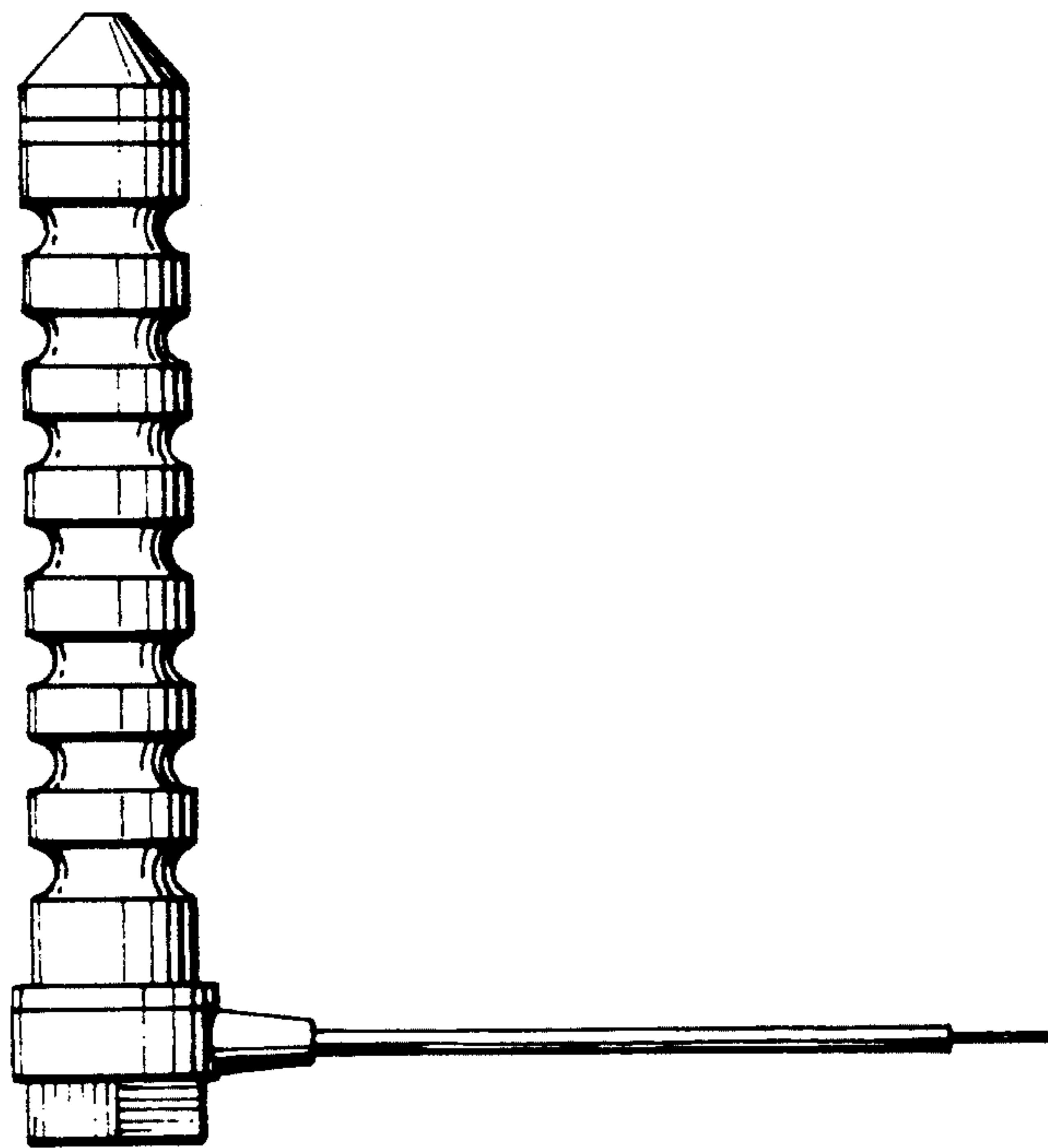


FIG.8

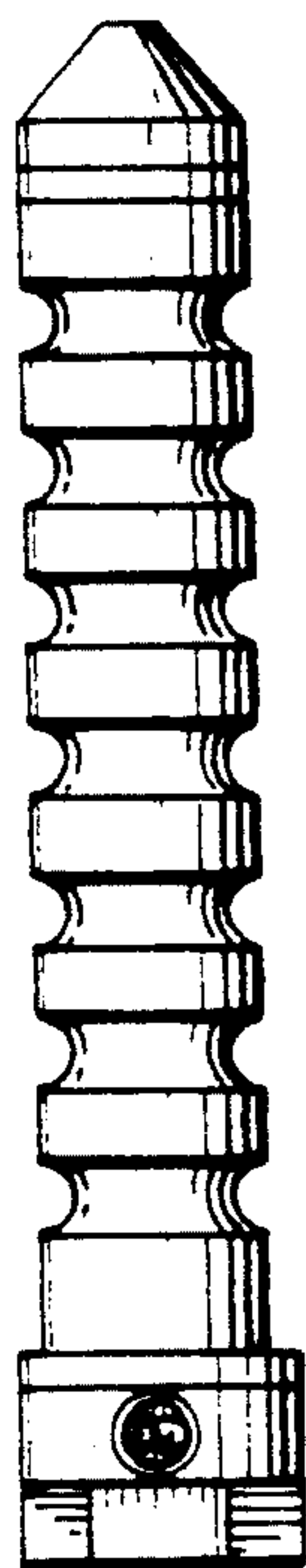


FIG.9

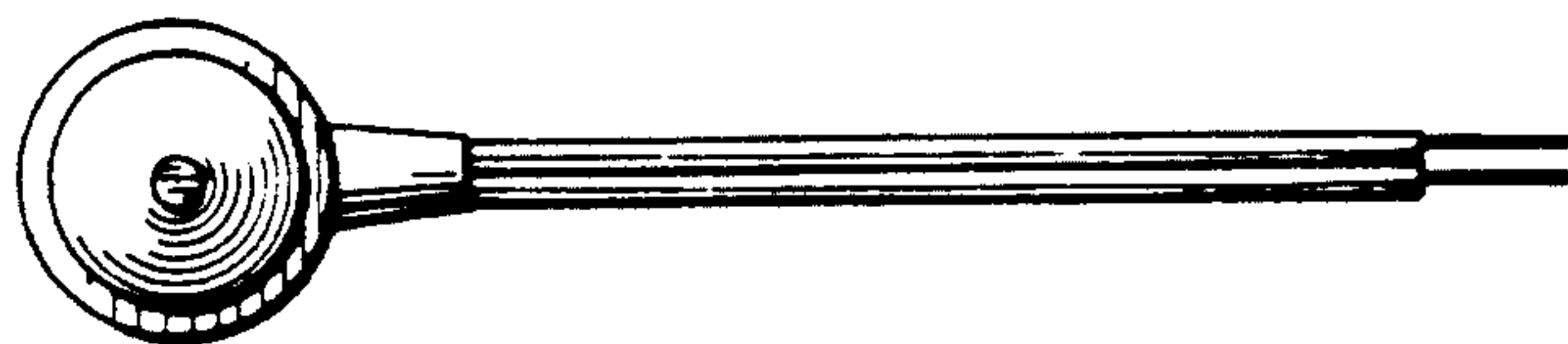


FIG.10



FIG.12

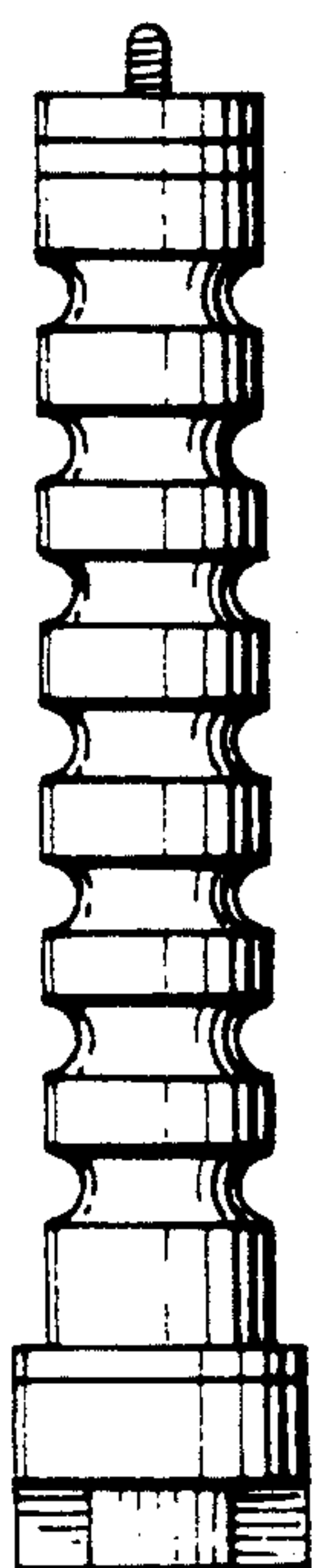


FIG.11

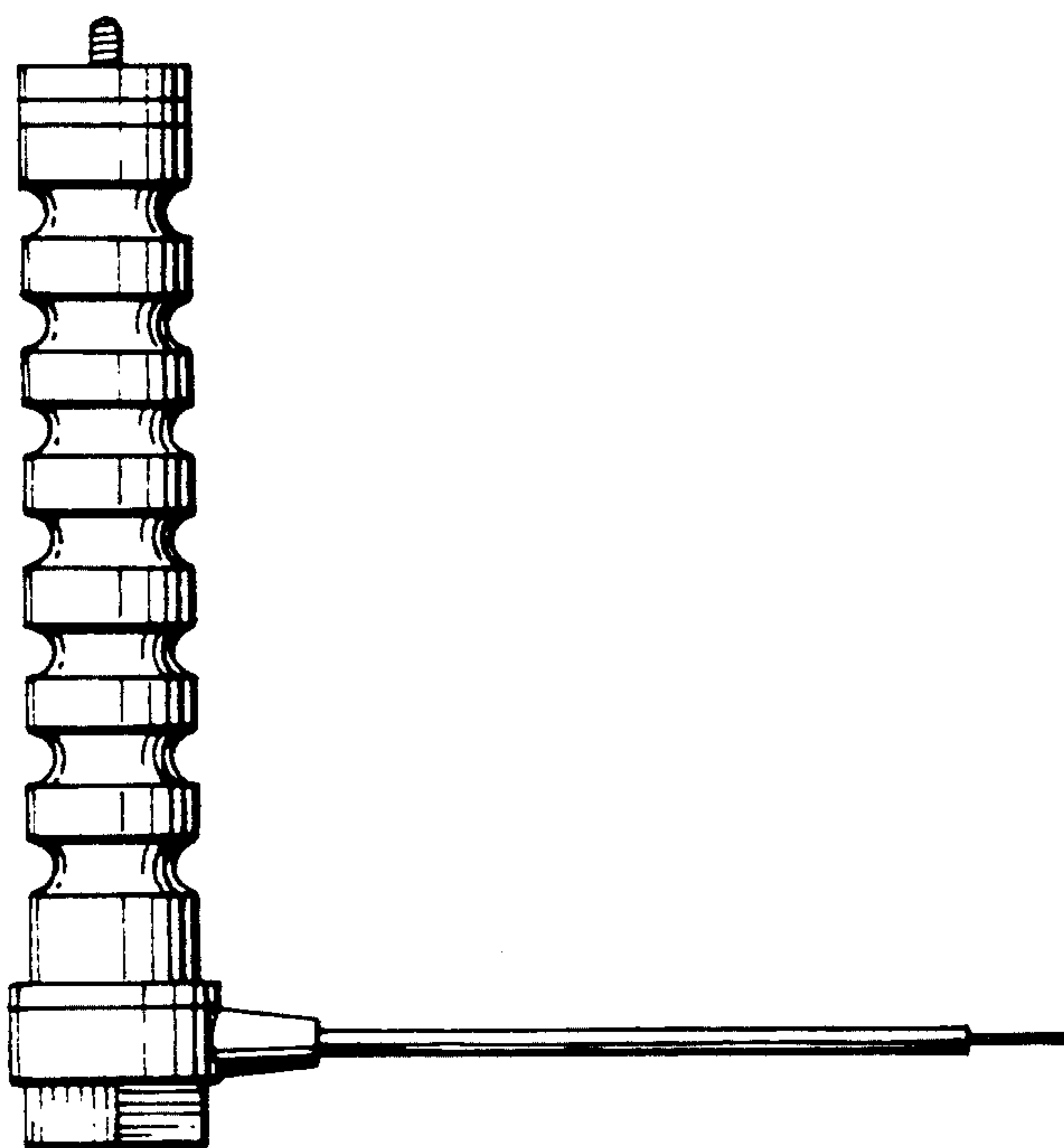


FIG.13

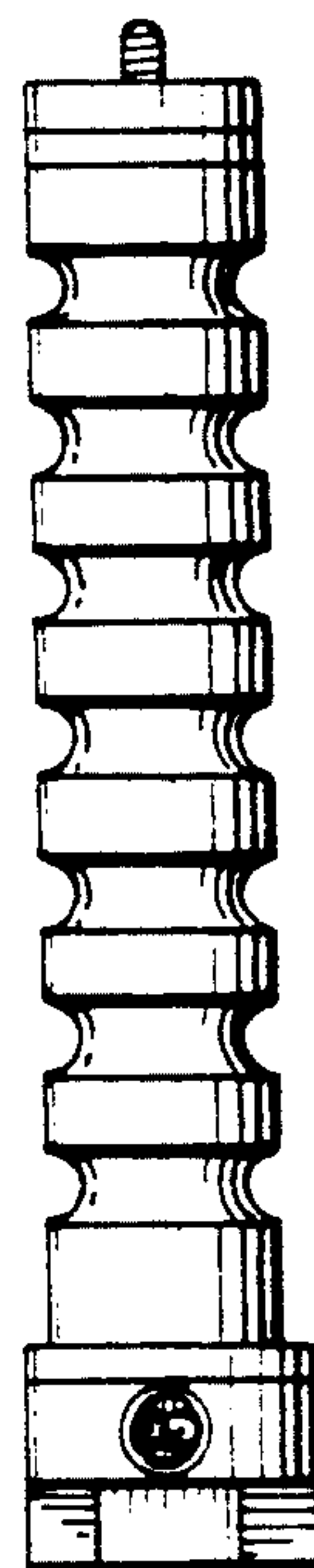


FIG.14

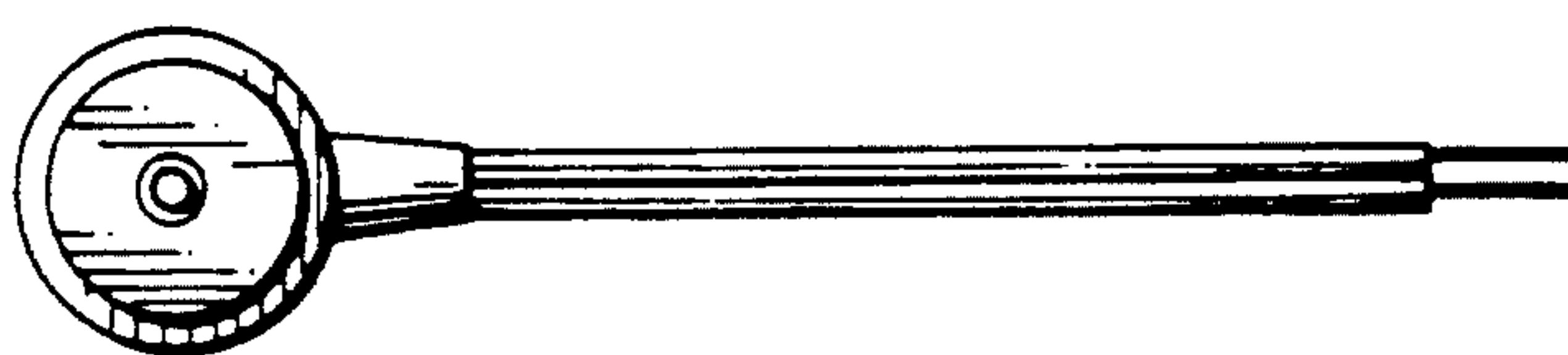


FIG.15



FIG.17

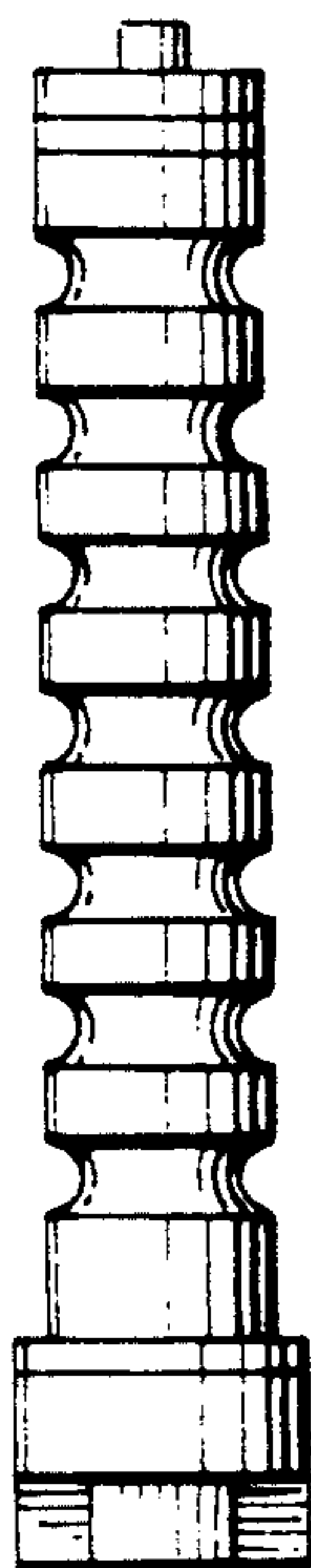


FIG.16

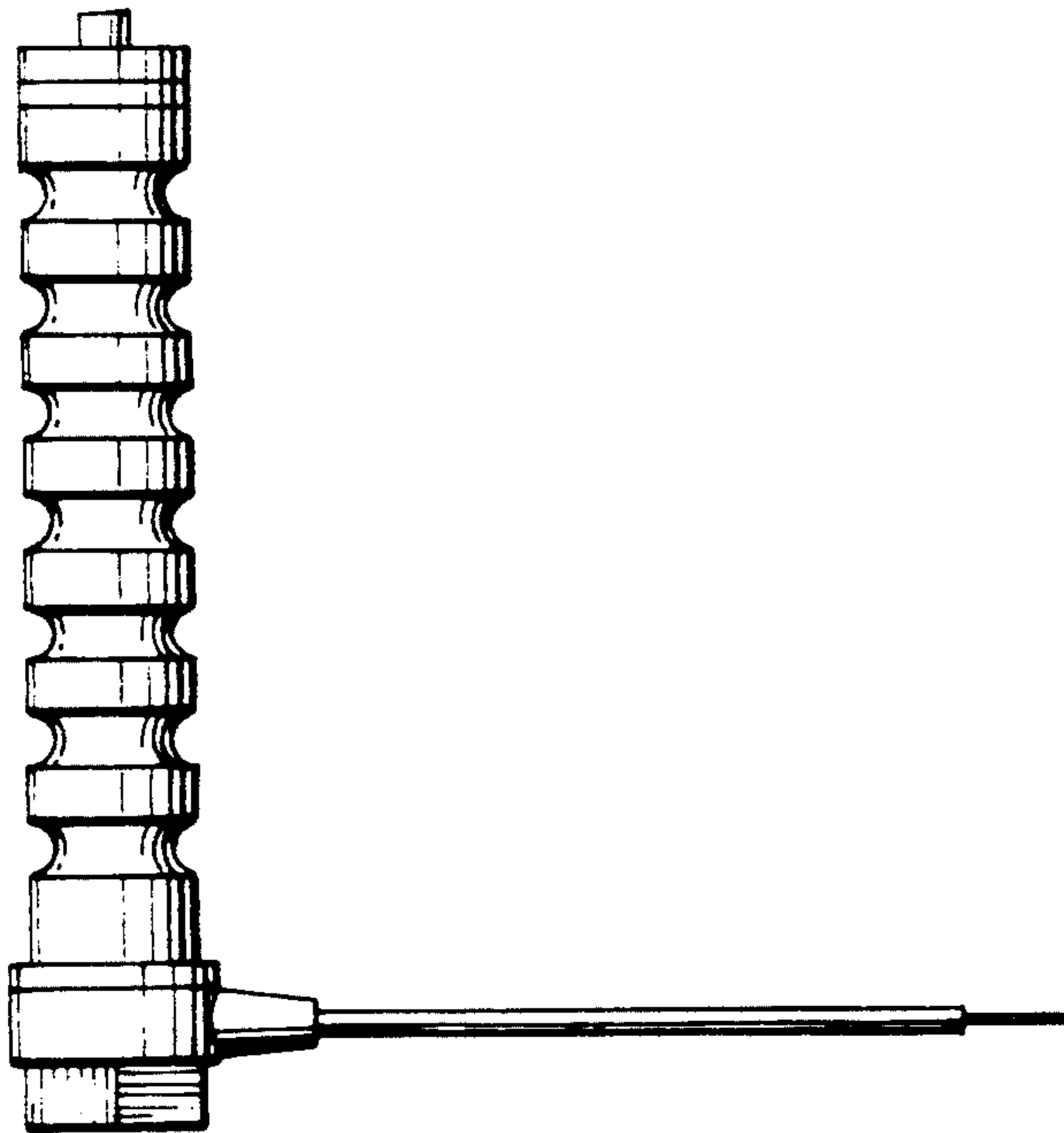


FIG.18

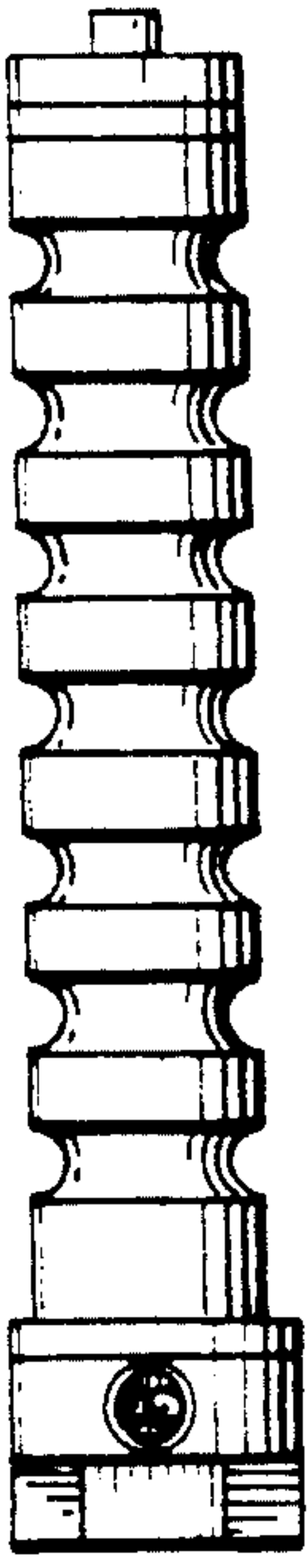


FIG.19

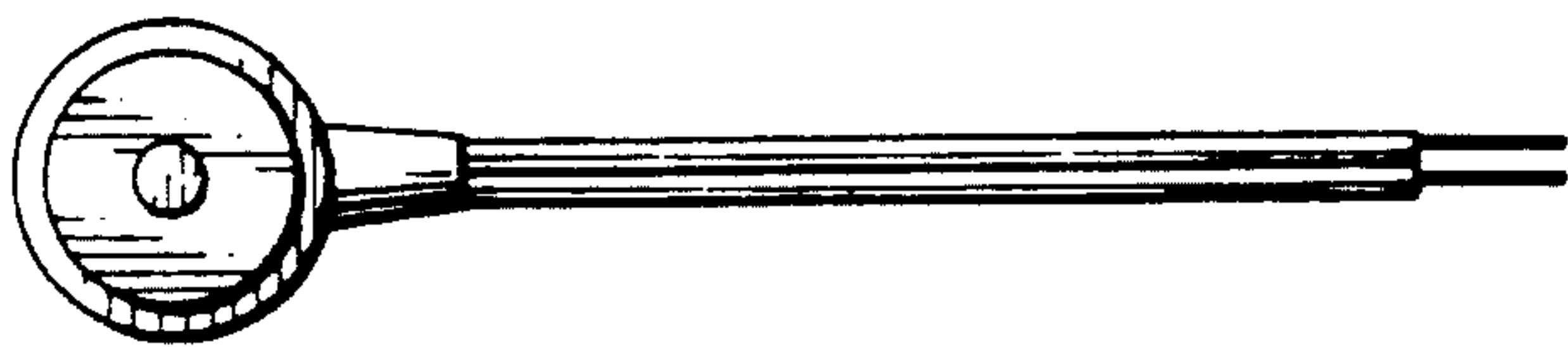


FIG.20



FIG.22

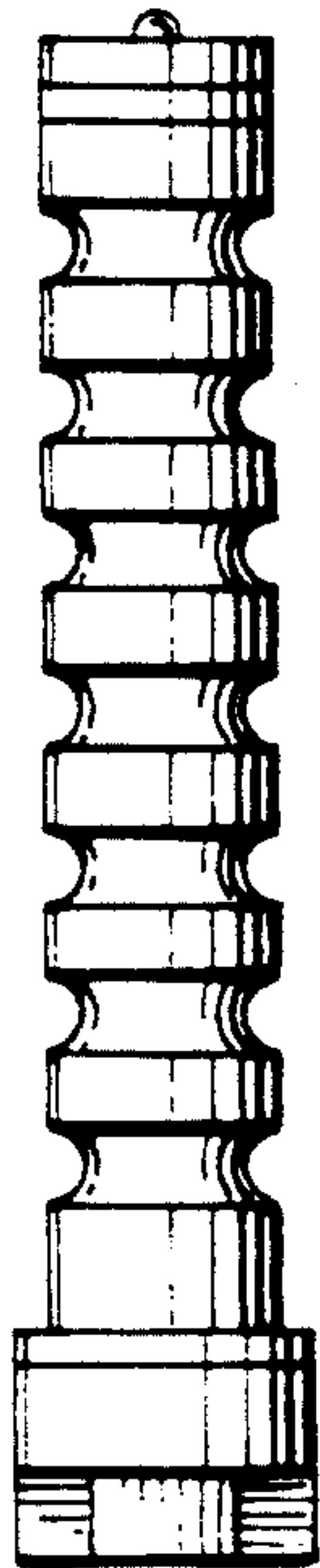


FIG.21

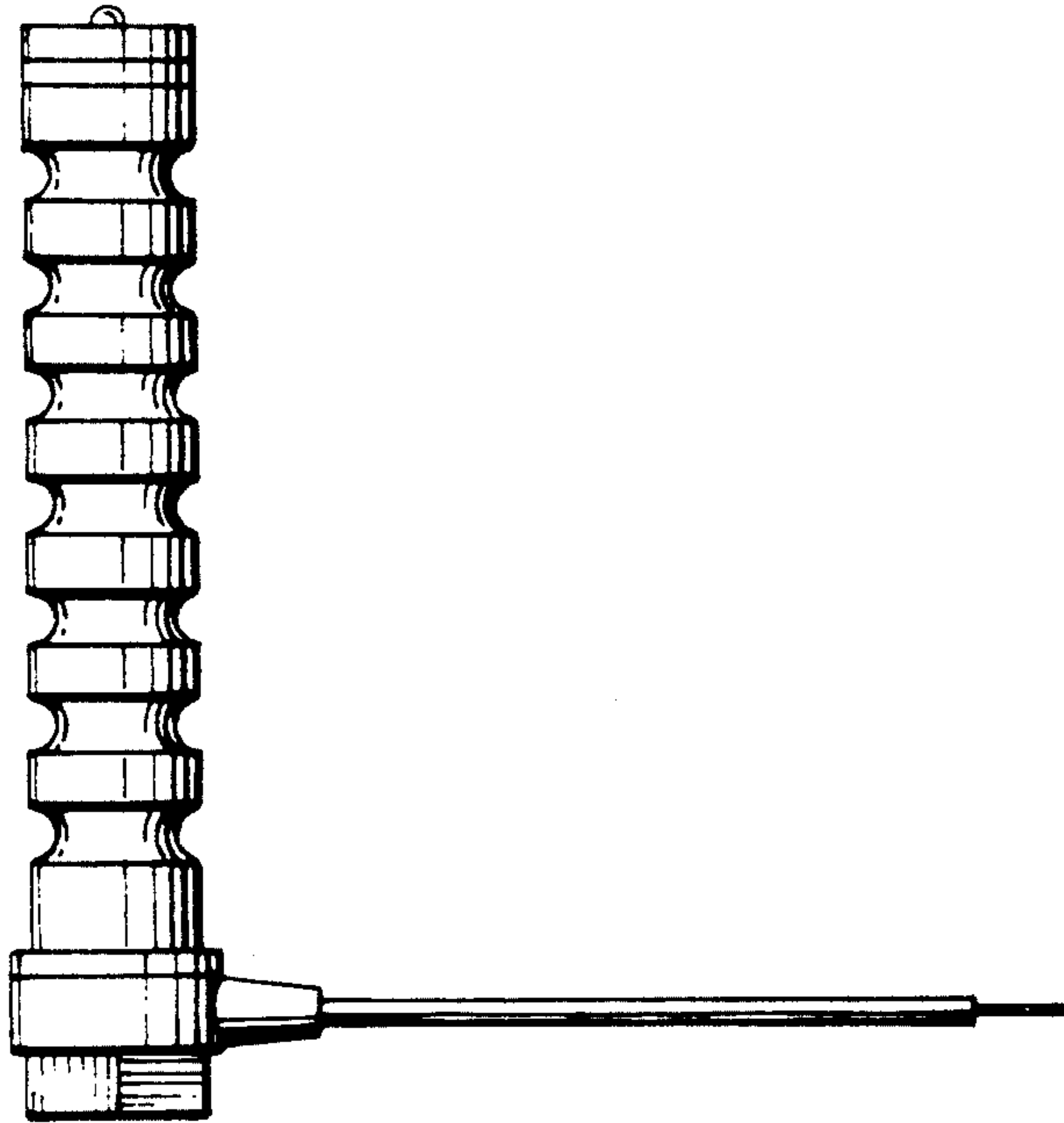


FIG.23

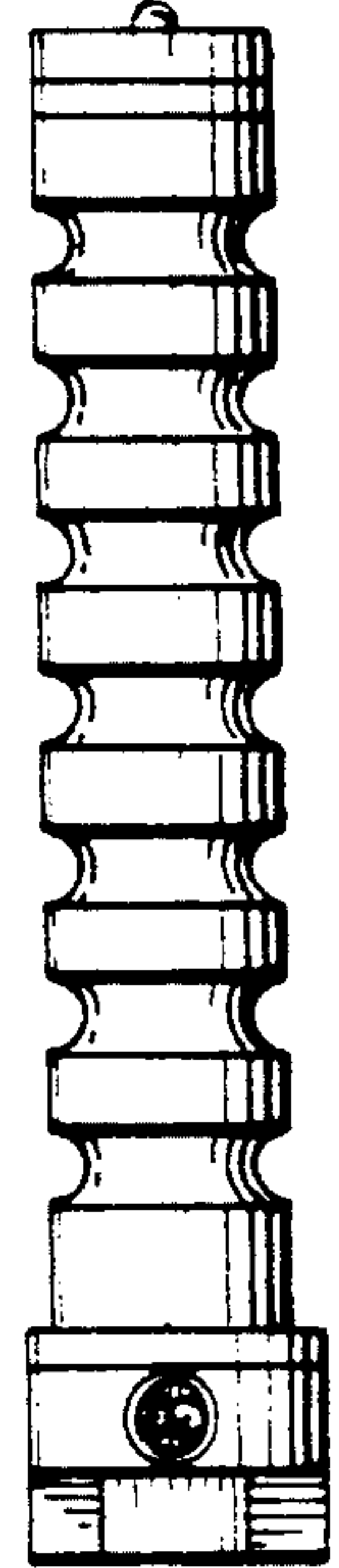


FIG.24



FIG.25

