



US00D346364S

United States Patent [19]

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Inoi et al.

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

[54] PIEZOELECTRIC ACTUATOR

[75] Inventors: **Takayuki Inoi; Kazumasa Ohya; 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

Feb. 17, 1992 [JP]	Japan	4-3973
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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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 mirror 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 embodiment of a piezoelectric actuator showing our new design, 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 embodiment of a piezoelectric actuator showing our new design, 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 embodiment of a piezoelectric actuator showing our new design, 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 embodiment of a piezoelectric actuator showing our new design, 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.

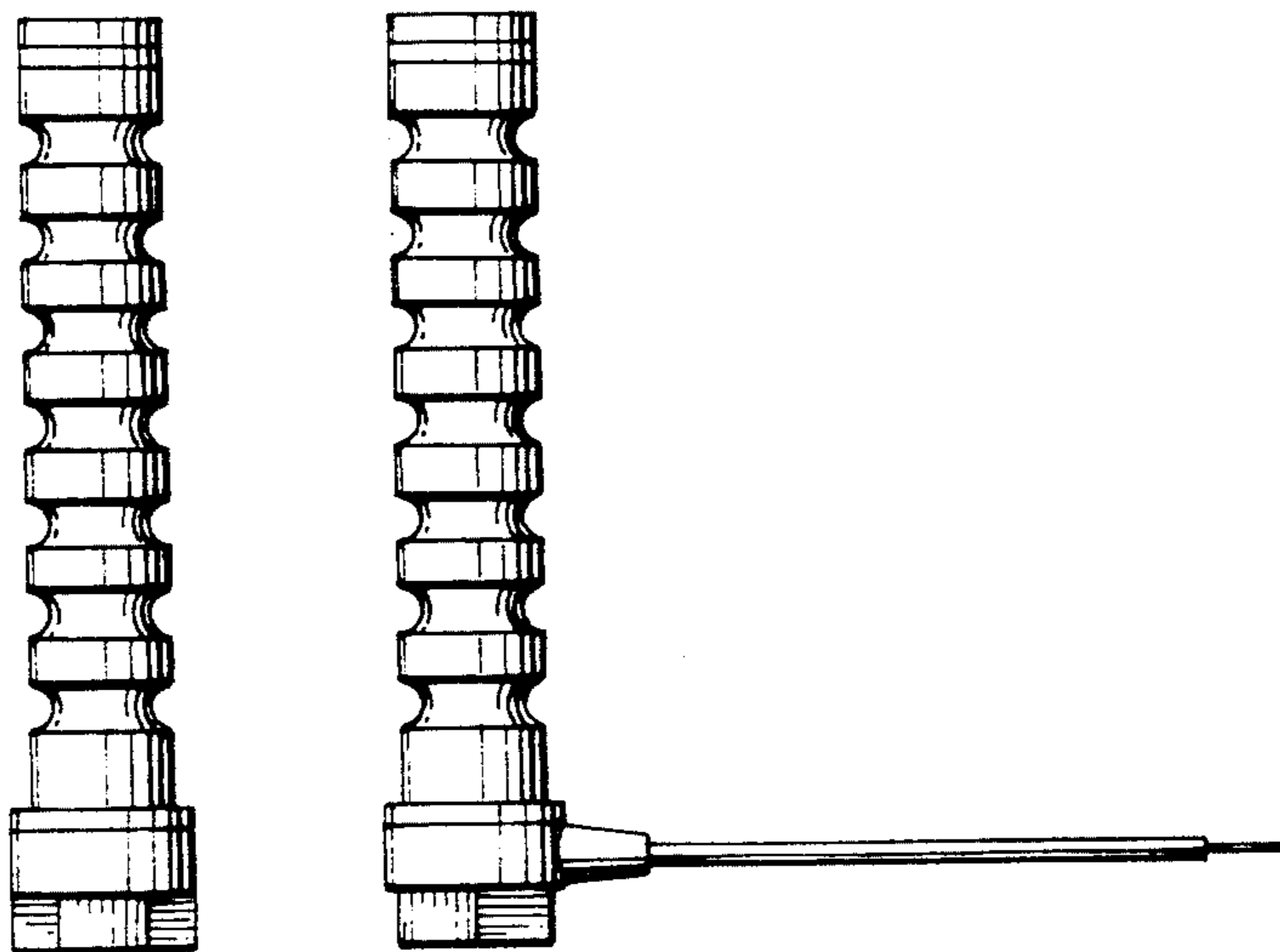


FIG. 2

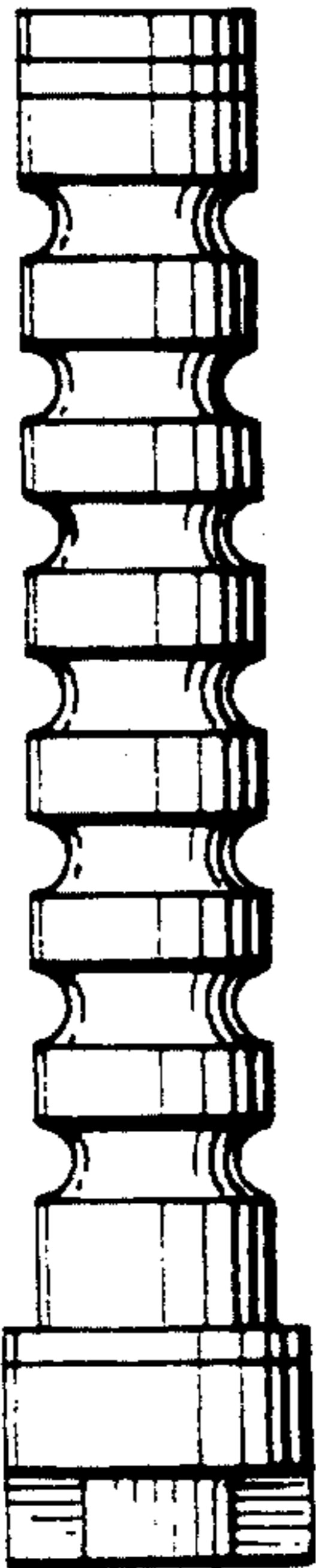


FIG. 1

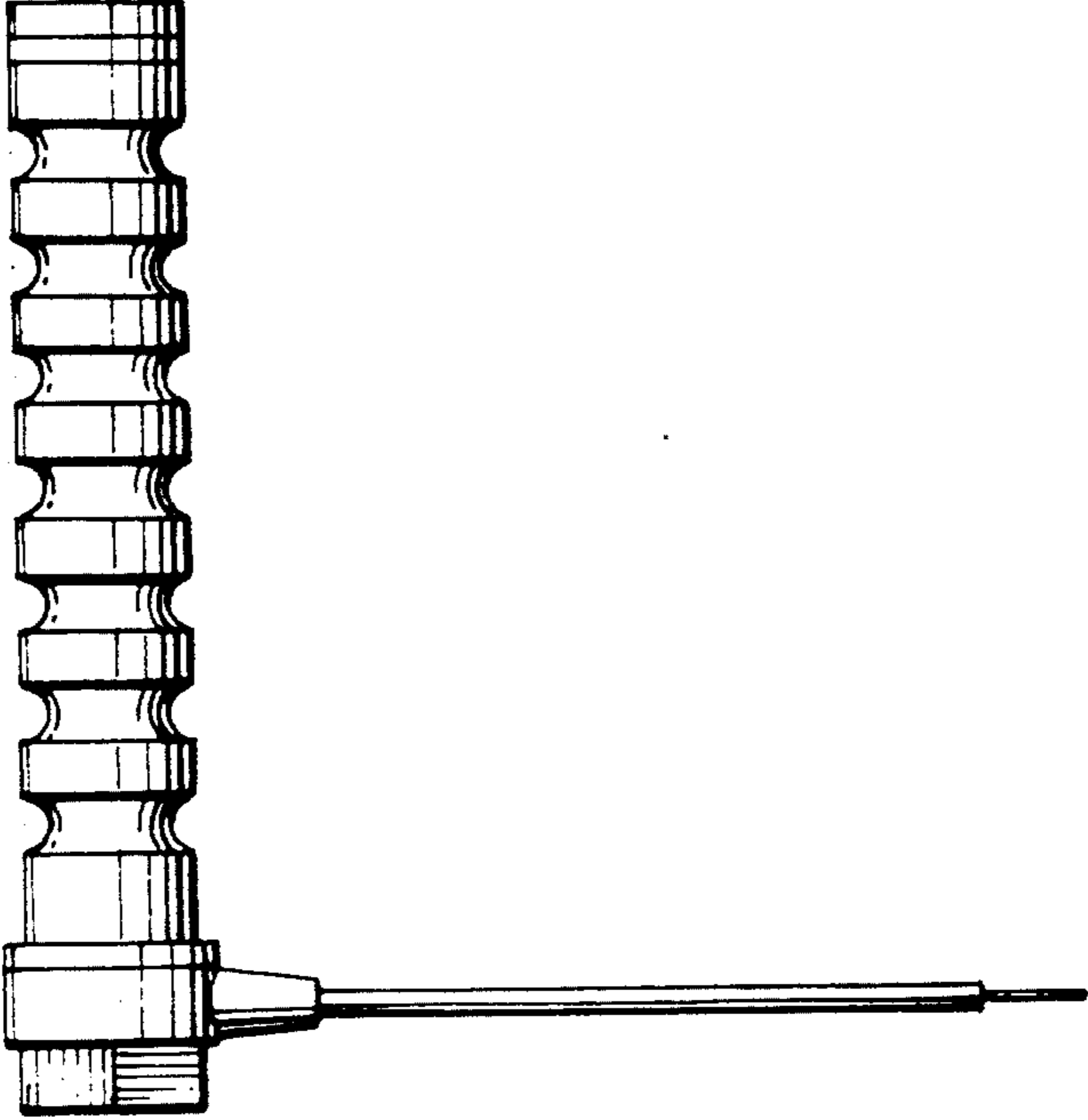


FIG. 3

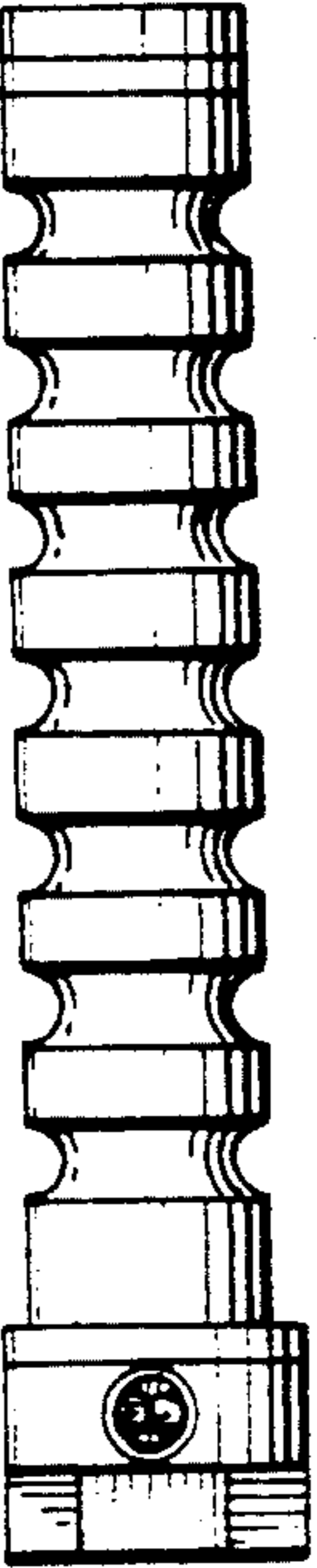


FIG. 4

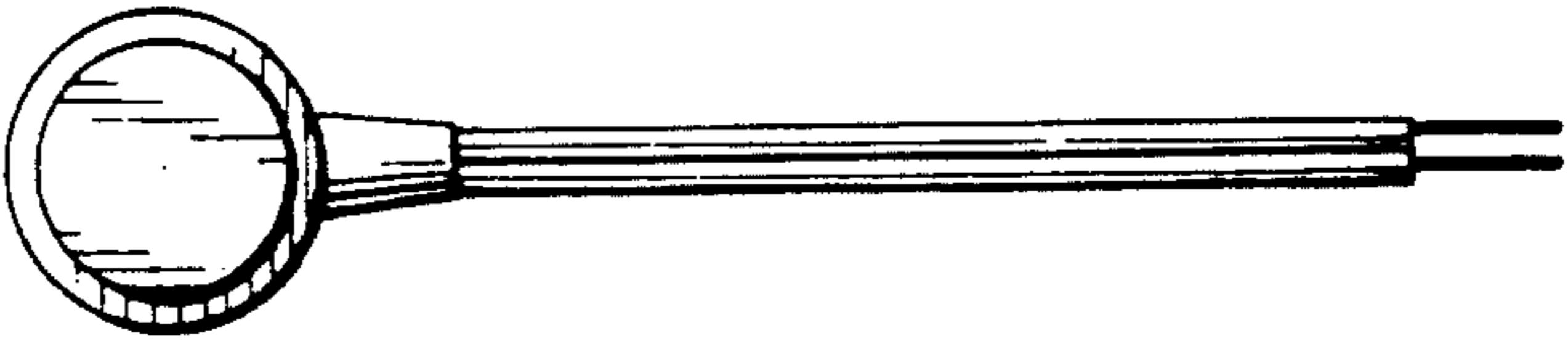


FIG. 5

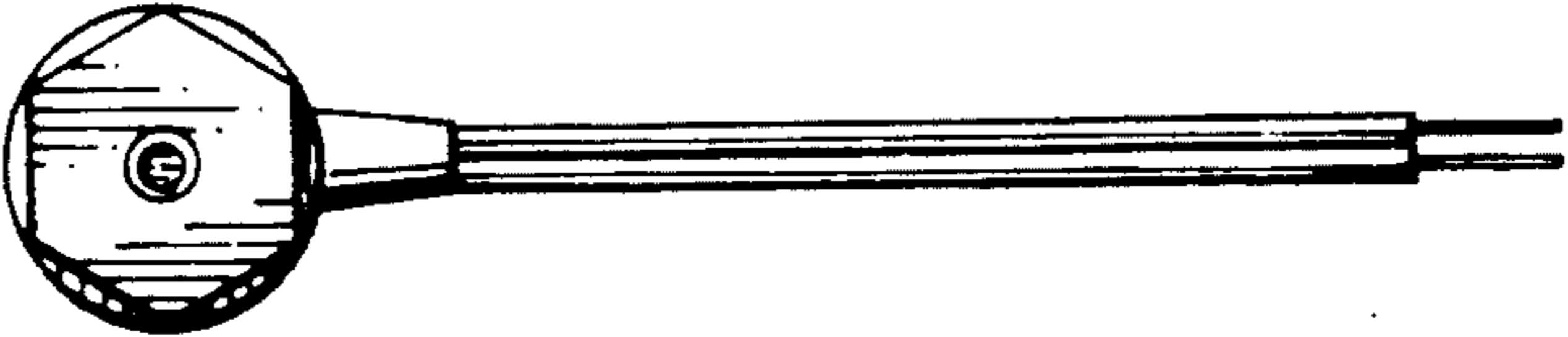


FIG. 7

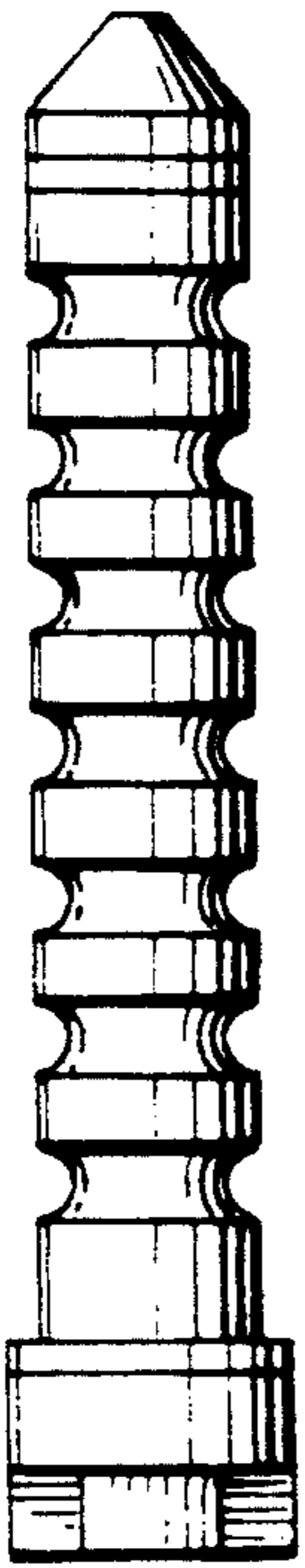


FIG. 6

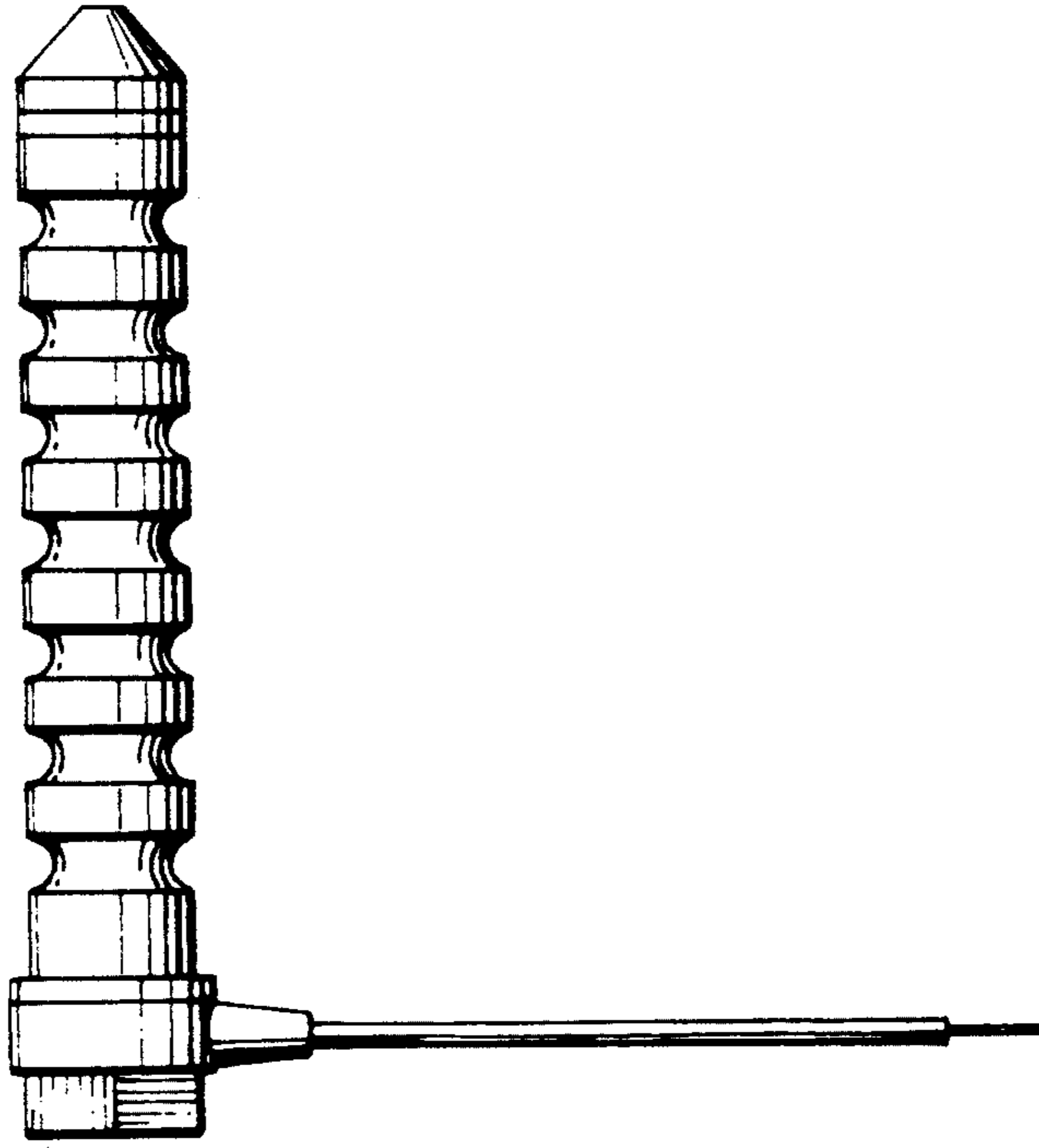


FIG. 8

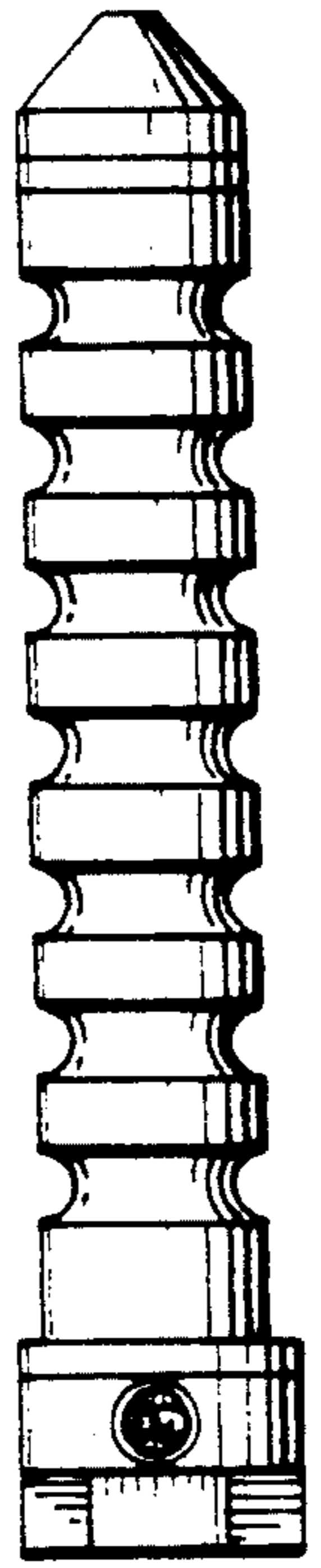


FIG. 9

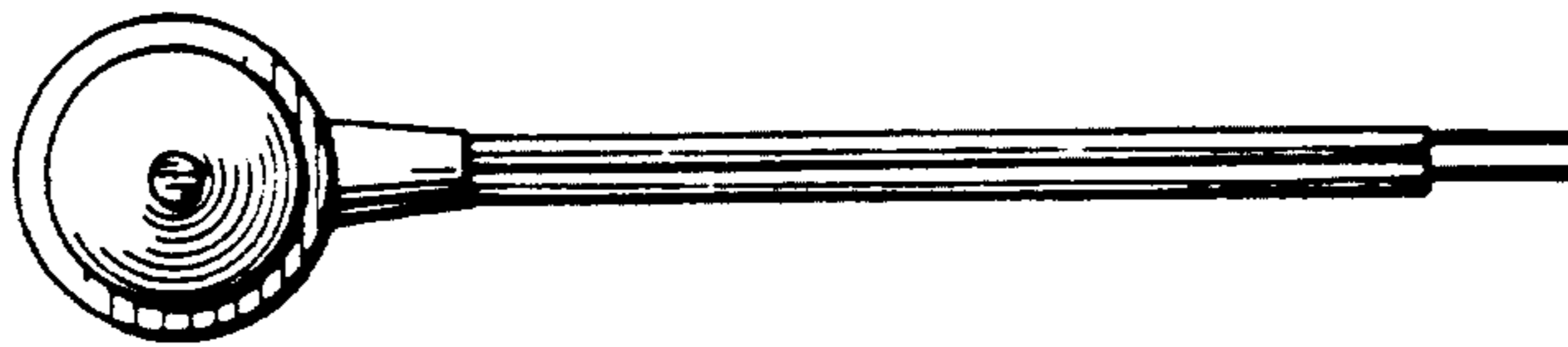


FIG. 10

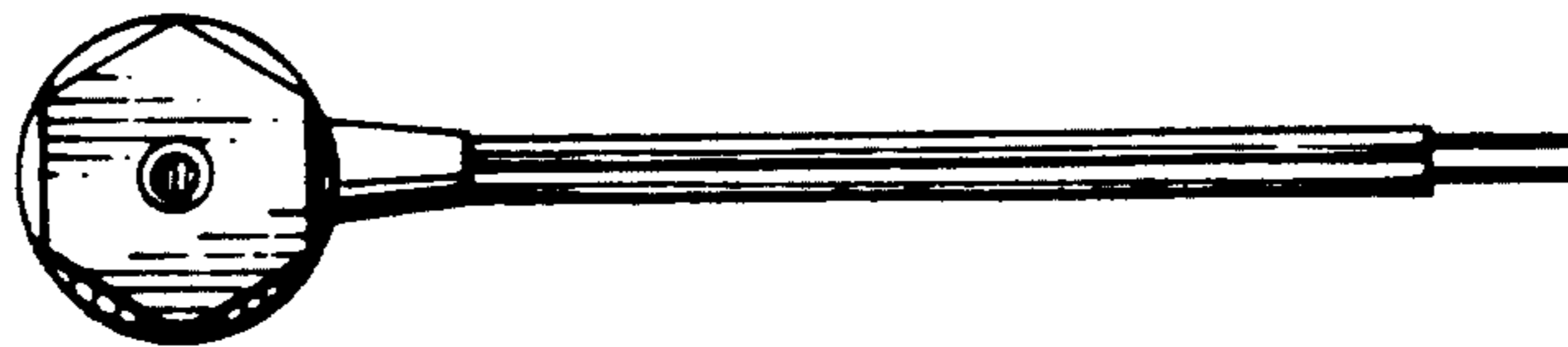


FIG. 12

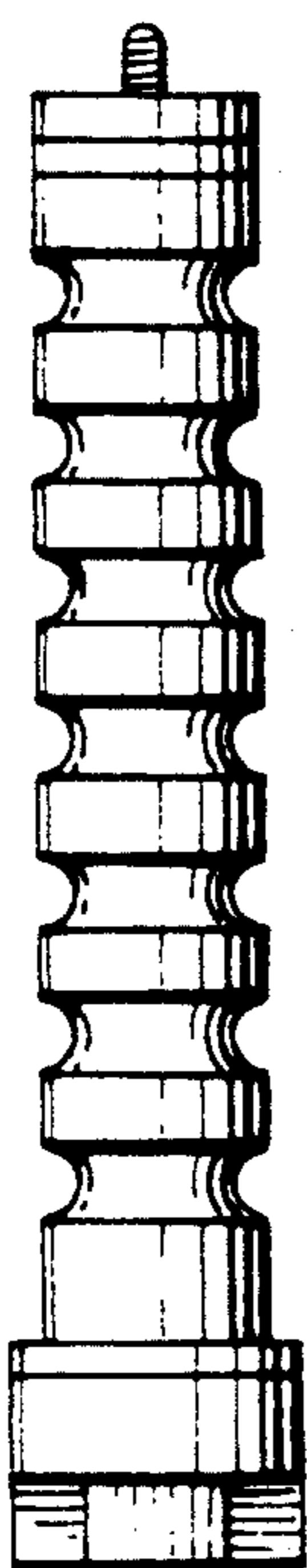


FIG. 11

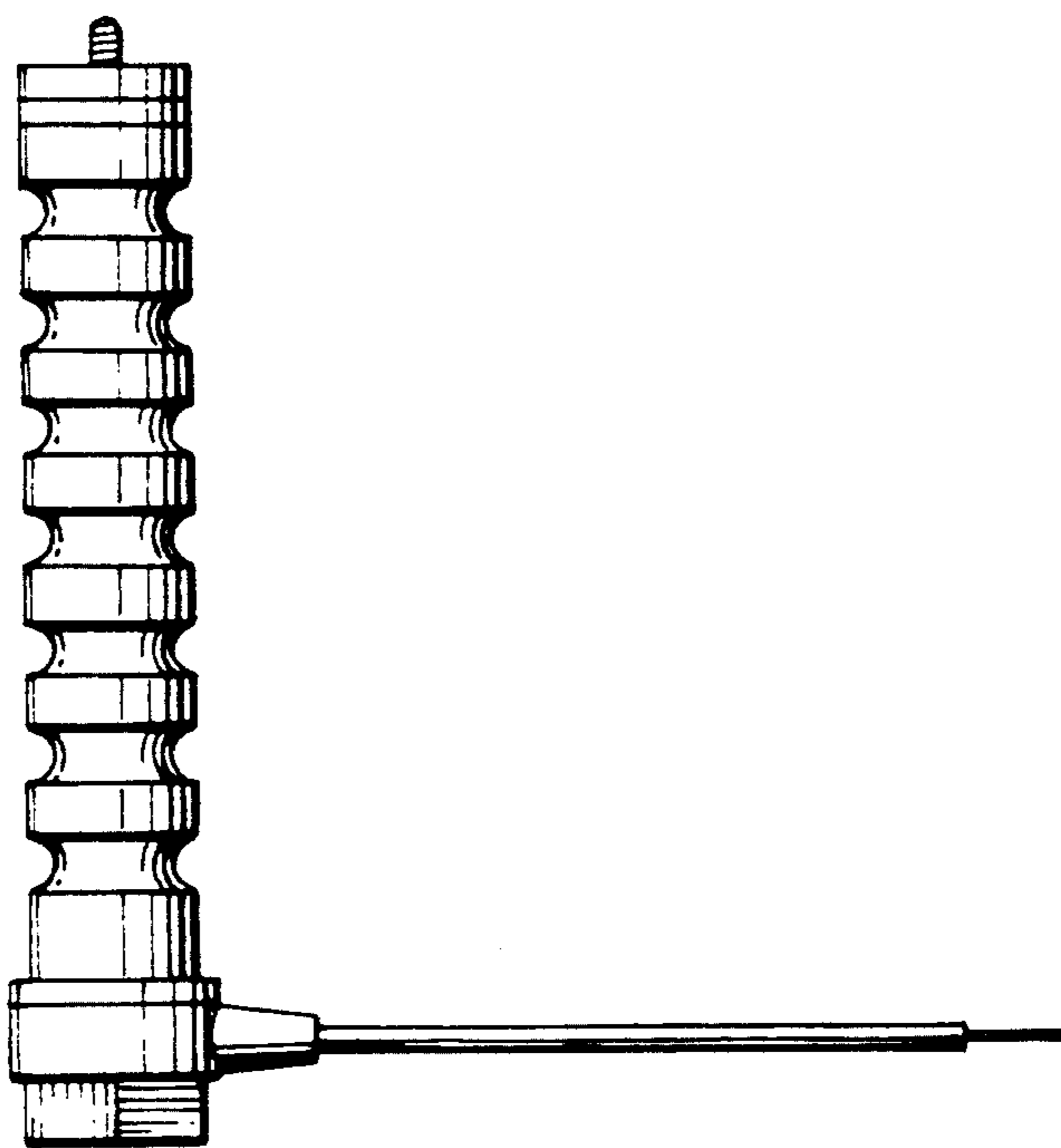


FIG. 13

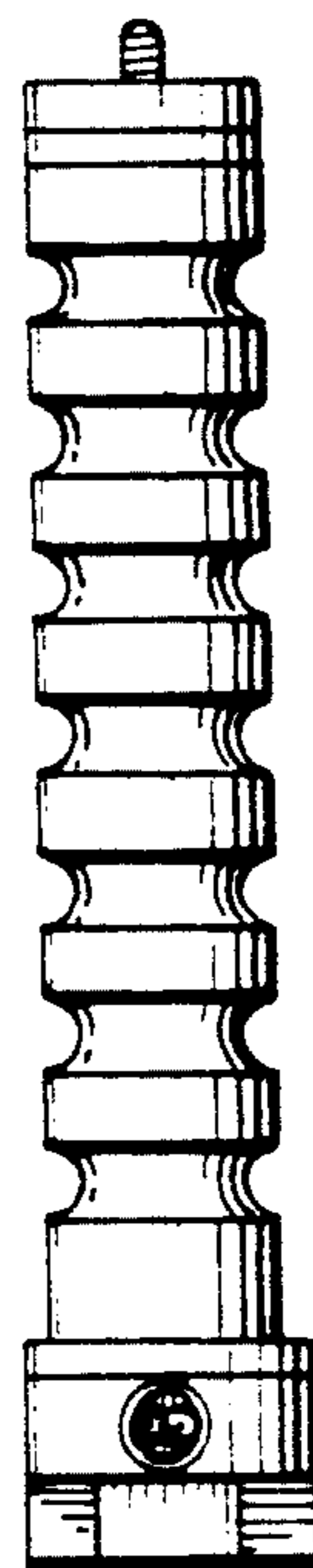


FIG. 14

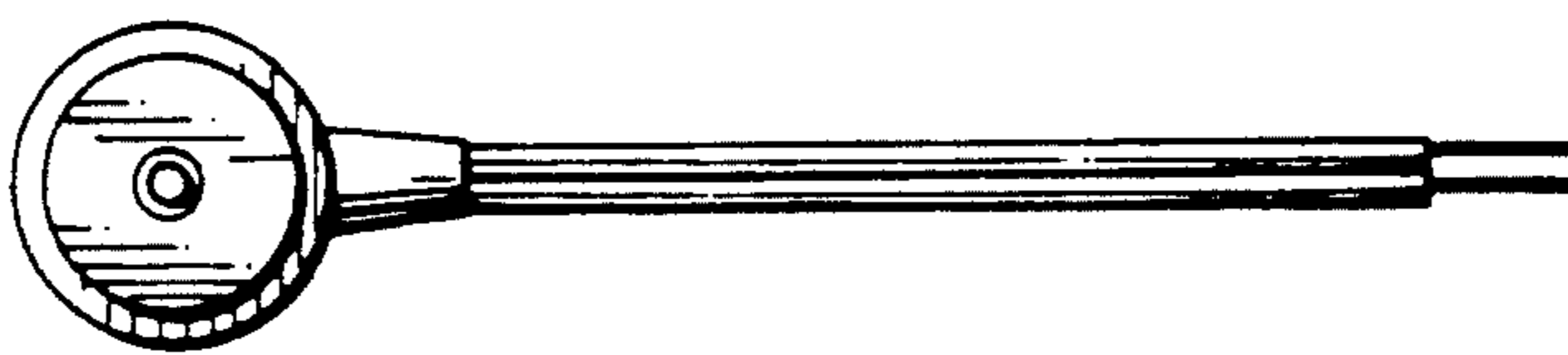


FIG. 15



FIG.17

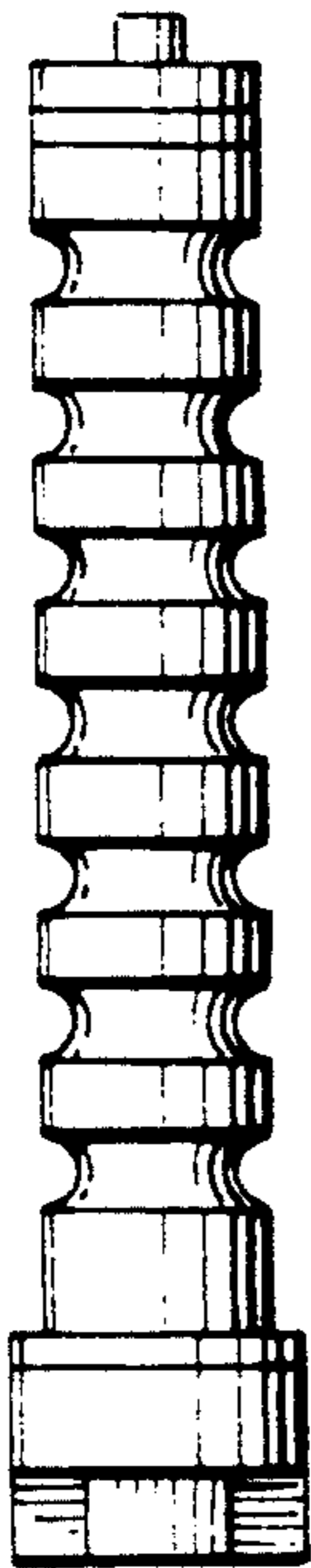


FIG.16

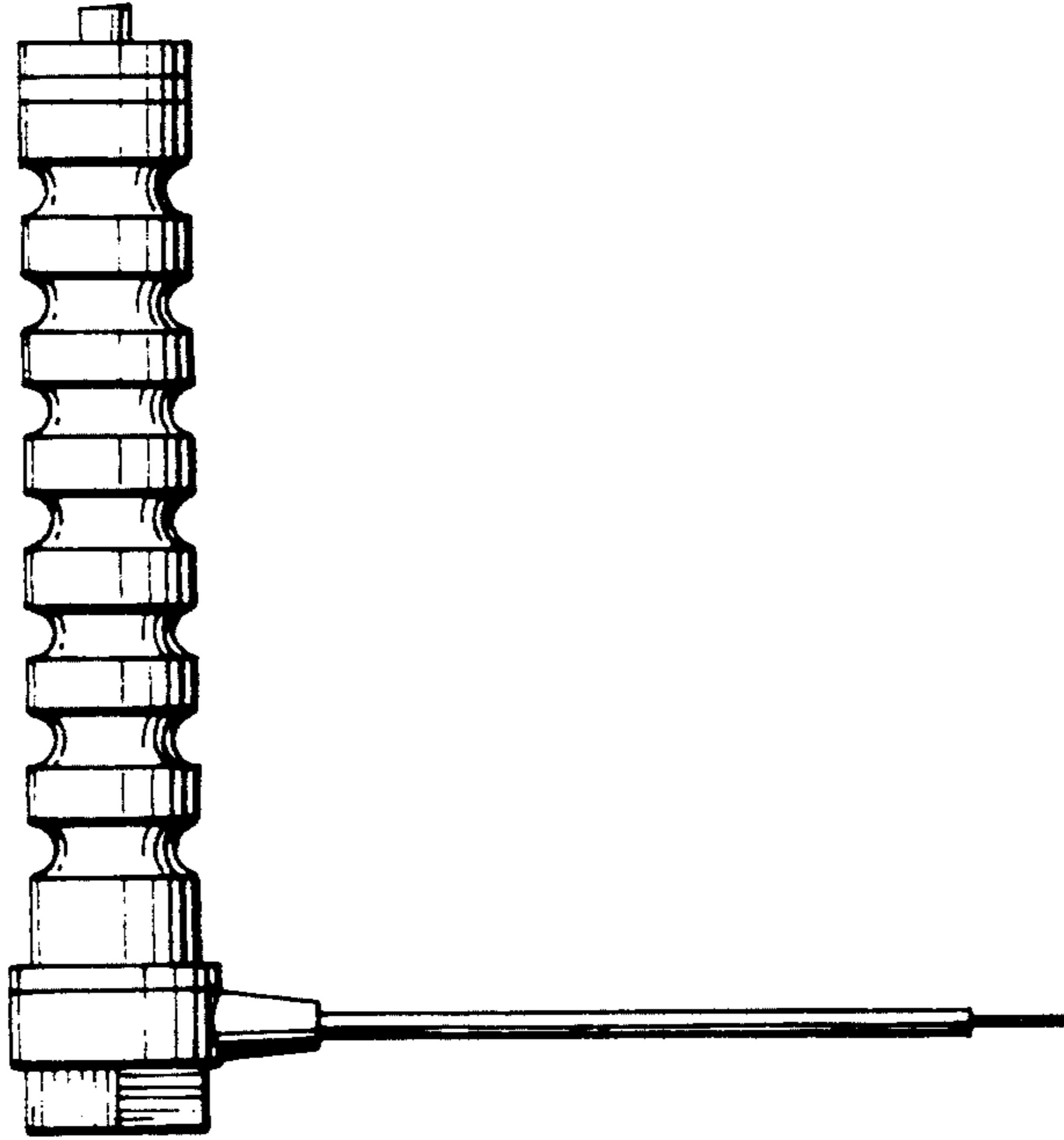


FIG.18

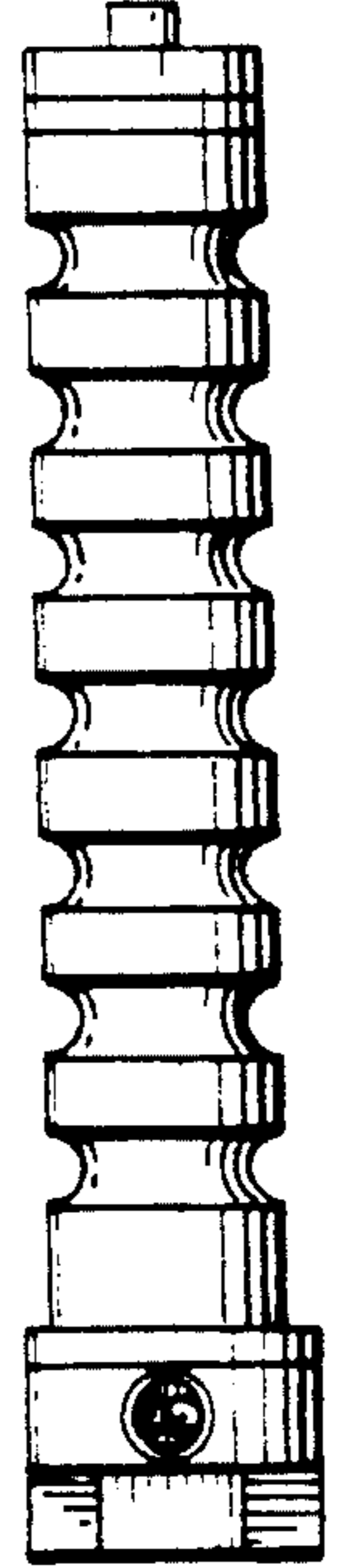


FIG.19

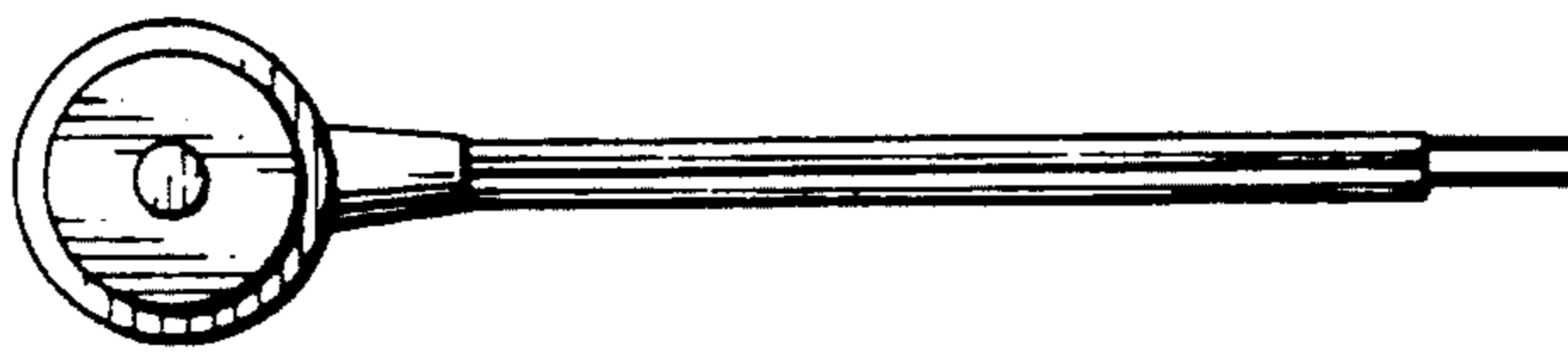


FIG.20



FIG. 22

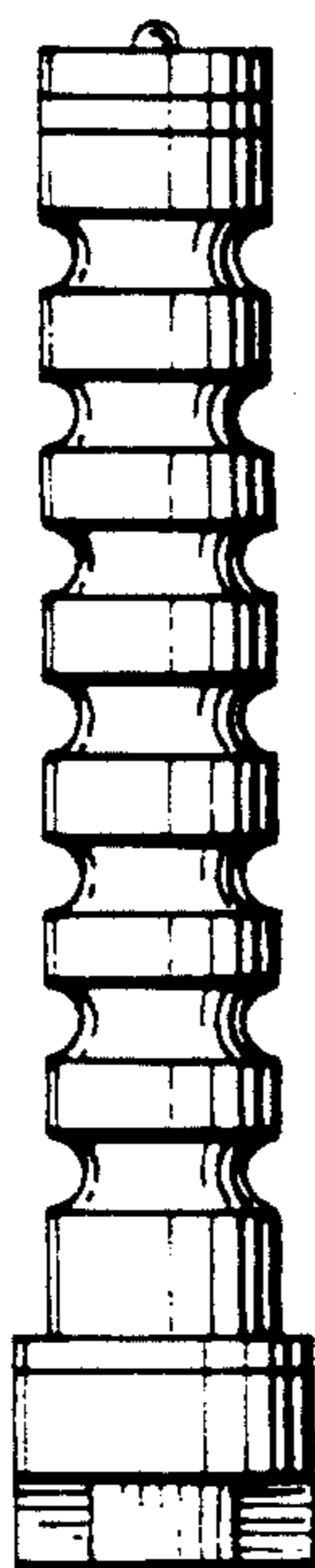


FIG. 21

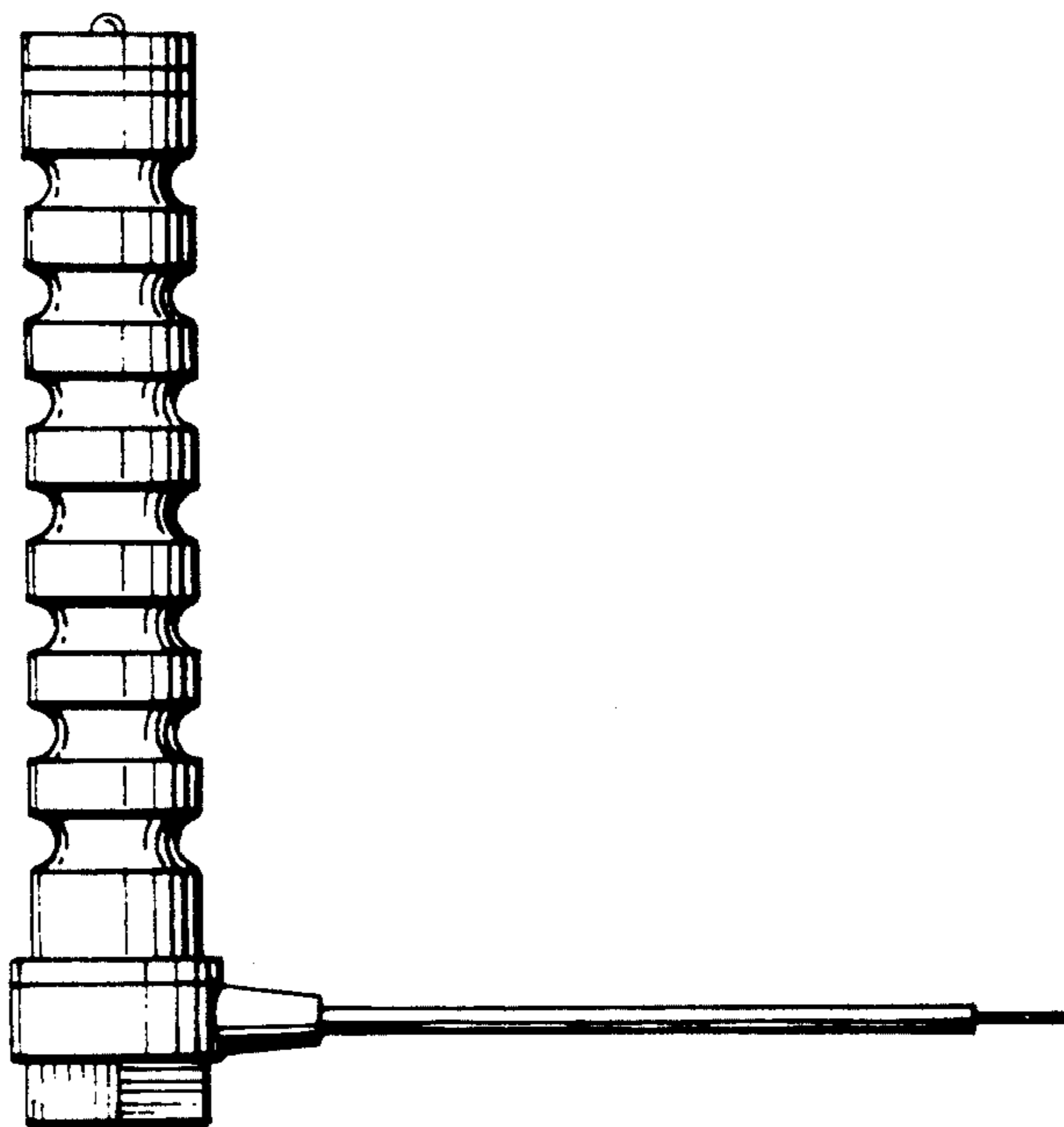


FIG. 23

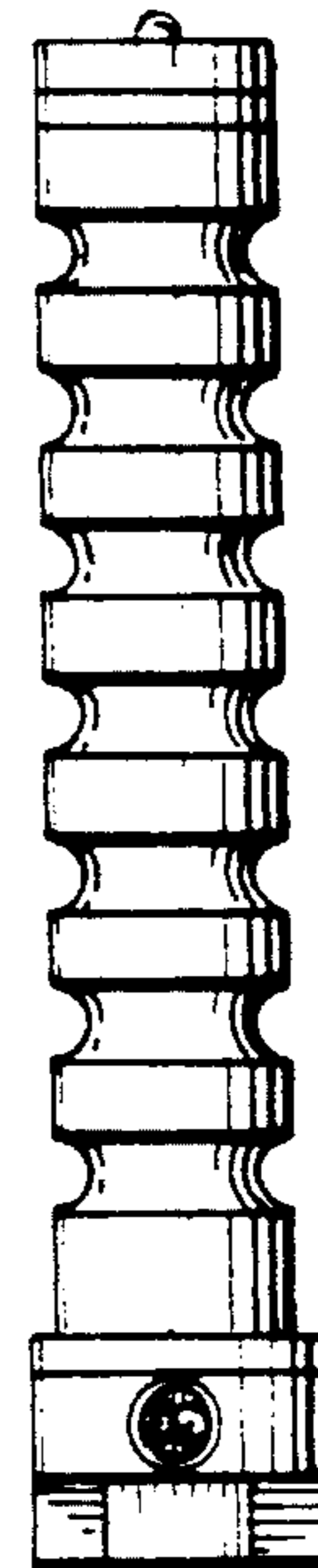


FIG. 24

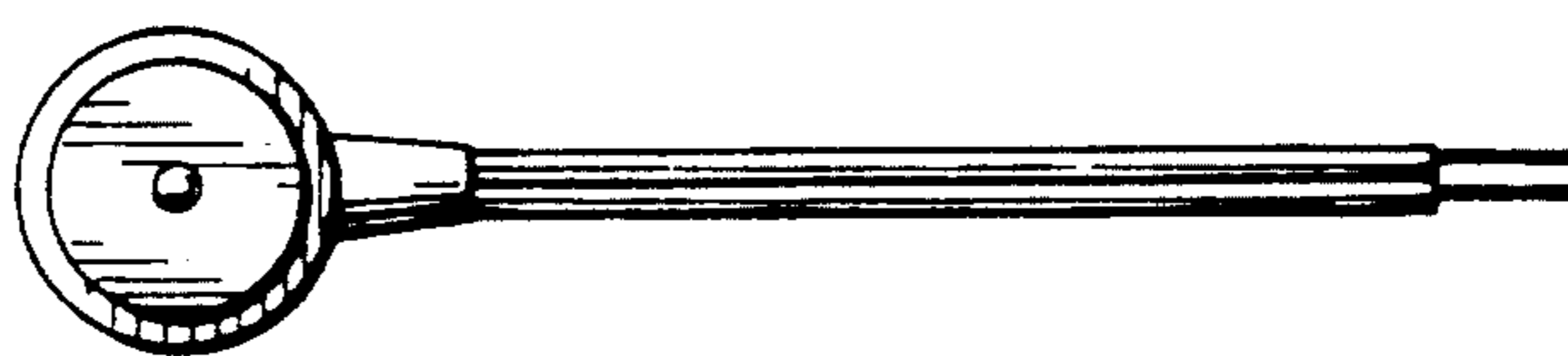


FIG. 25

