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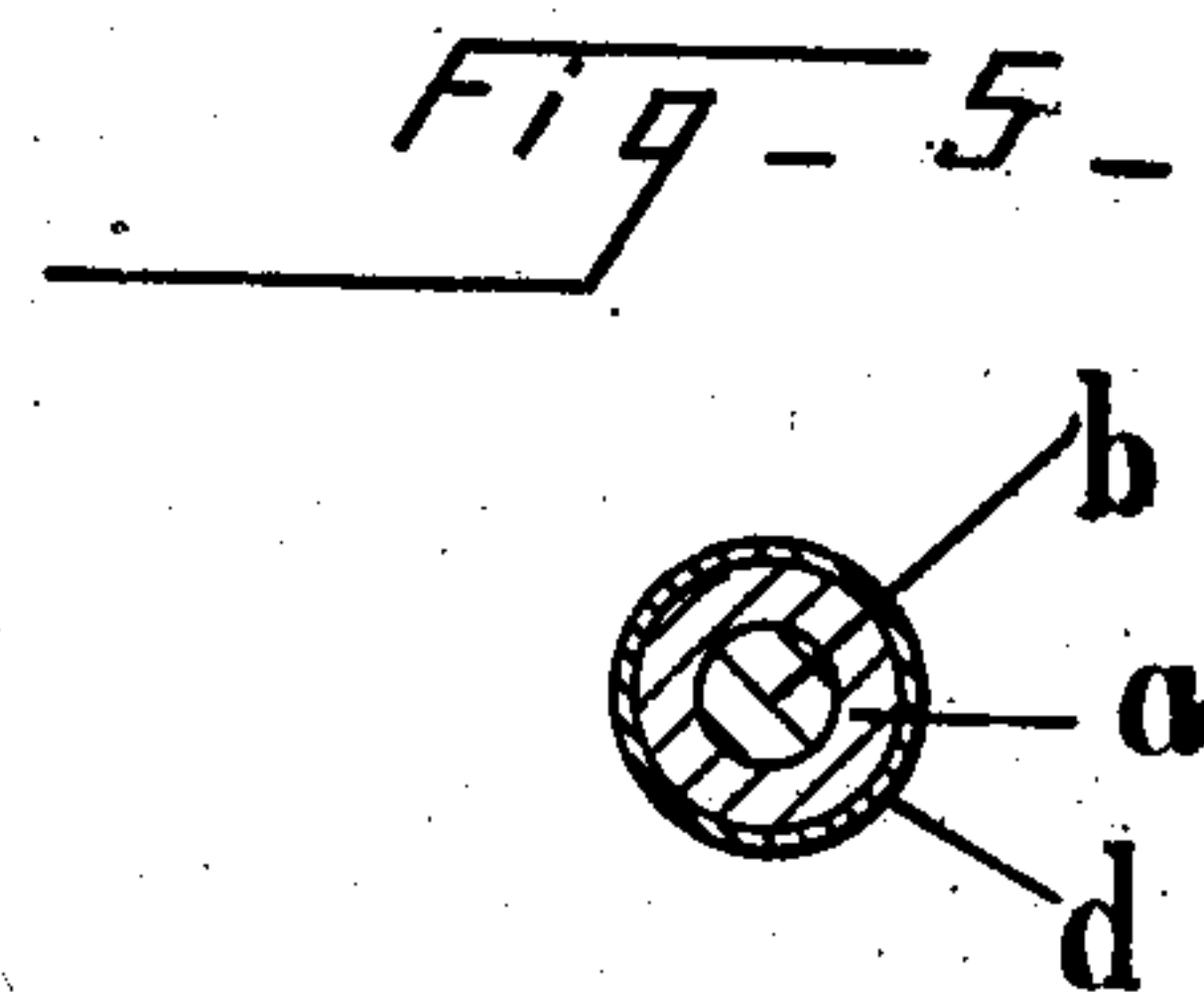
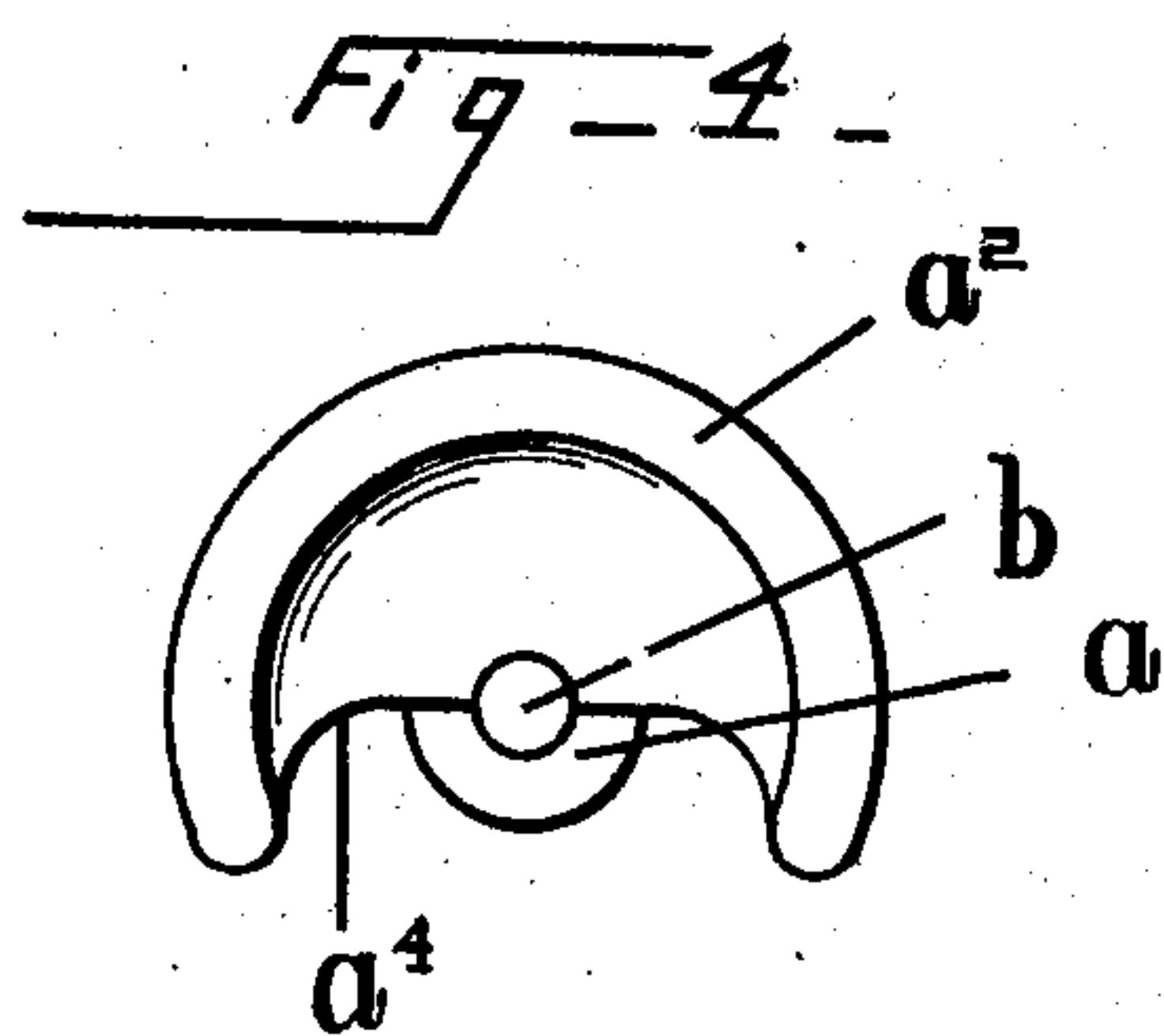
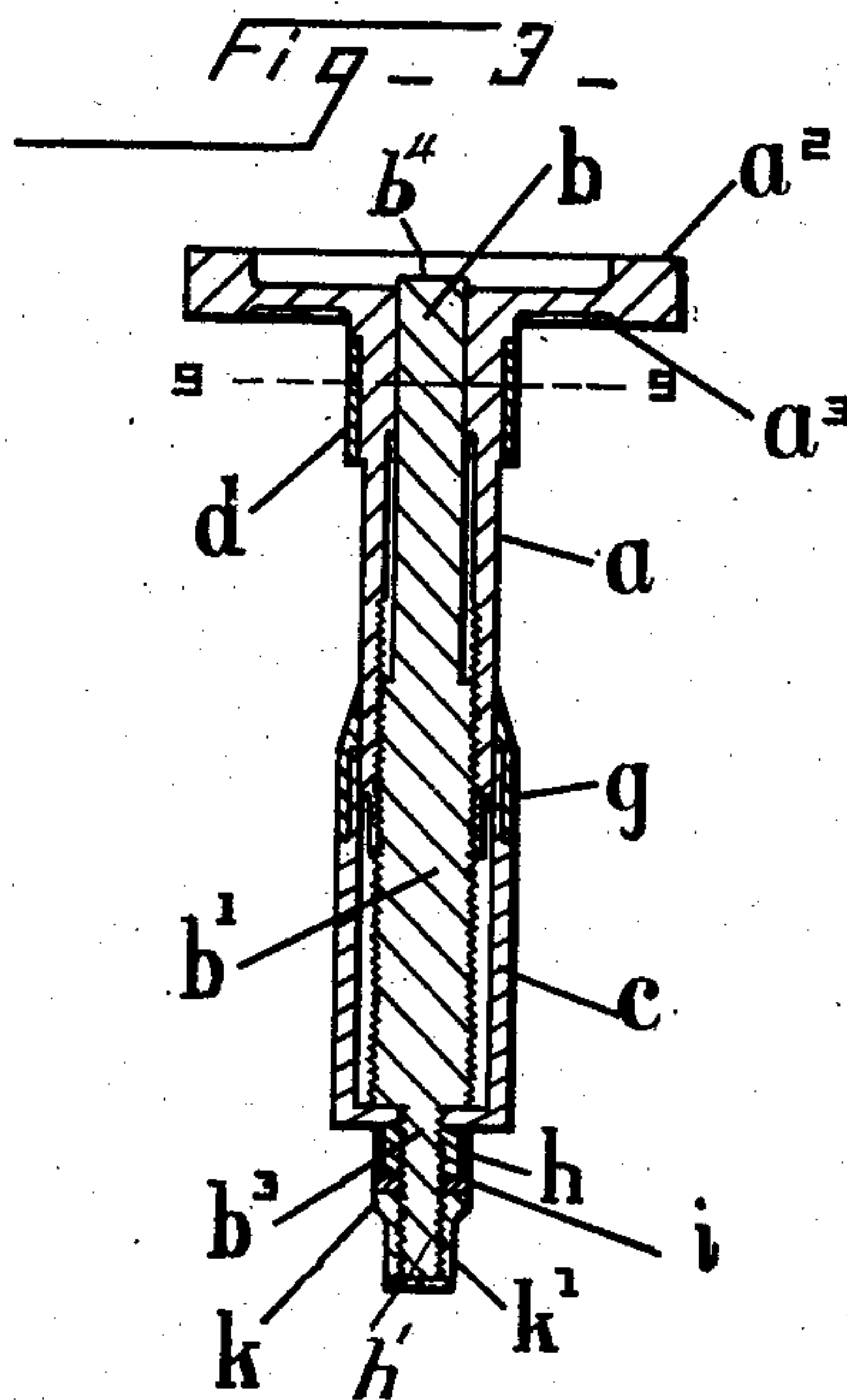
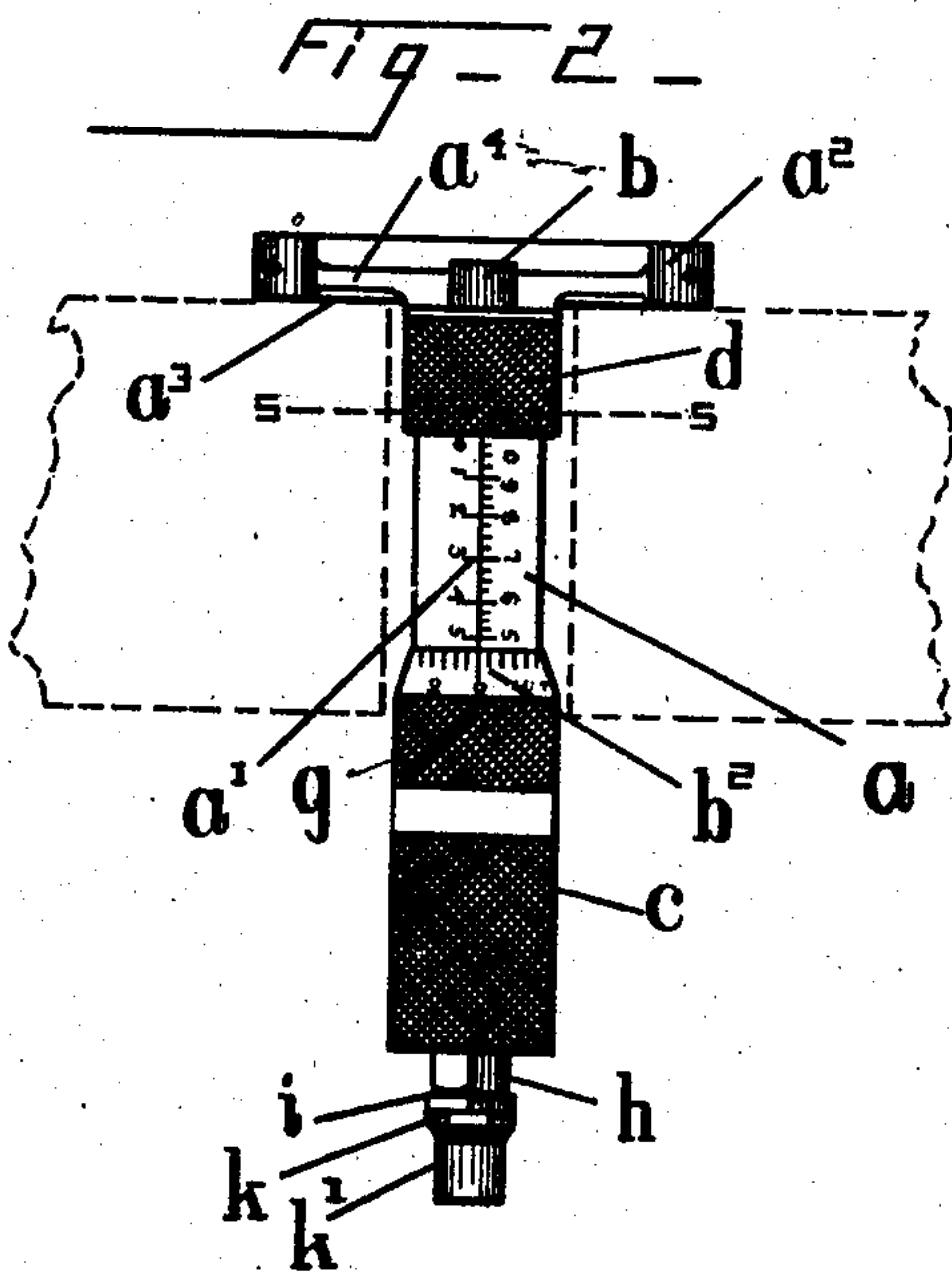
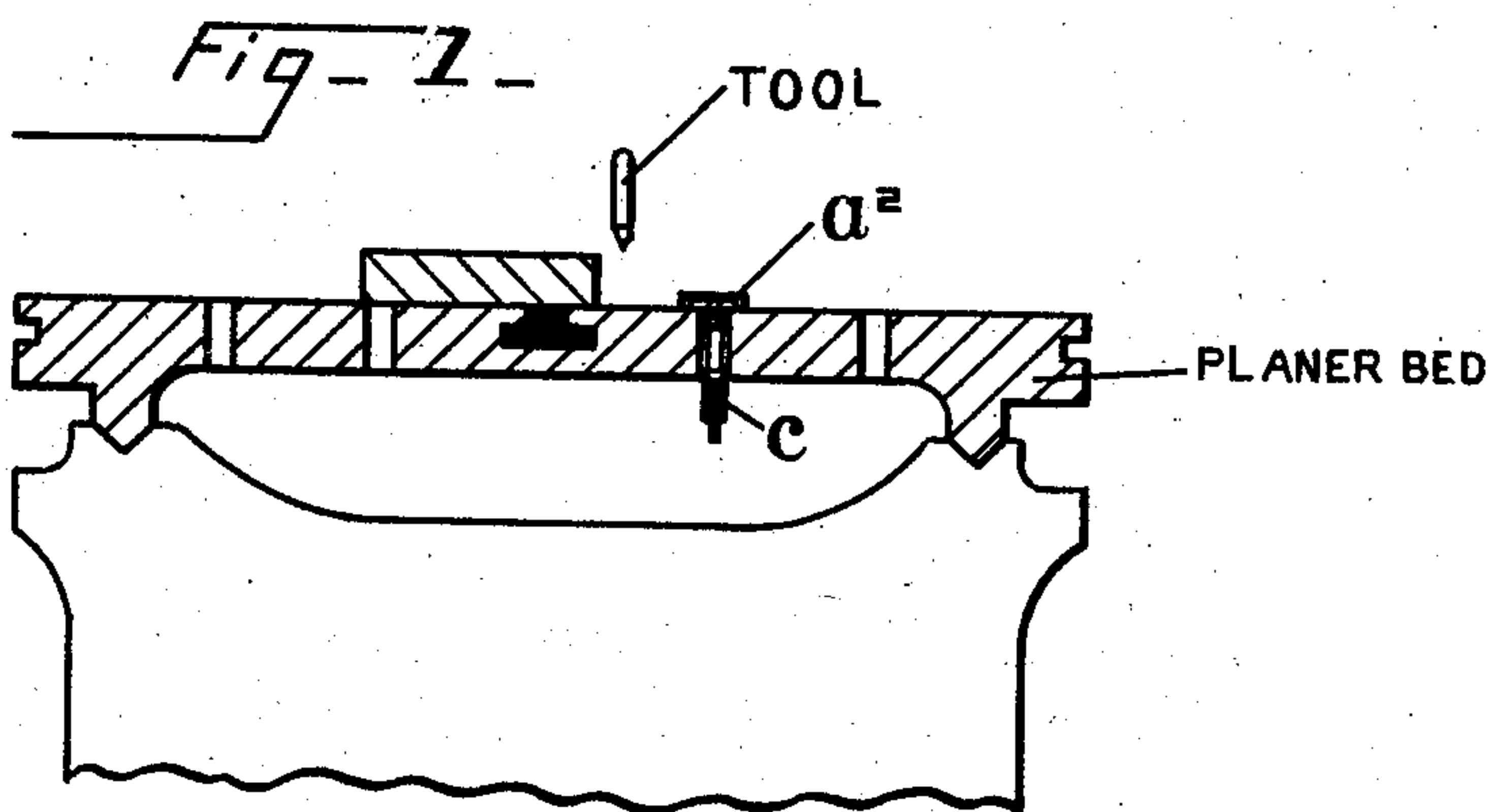
PATENTED JULY 31, 1906.

J. C. E. LEACH & W. O. WOODMAN.

MICROMETER GAGE.

APPLICATION FILED MAY 27, 1905.

2 SHEETS—SHEET 1.



James C.E. Leach,
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Witnesses
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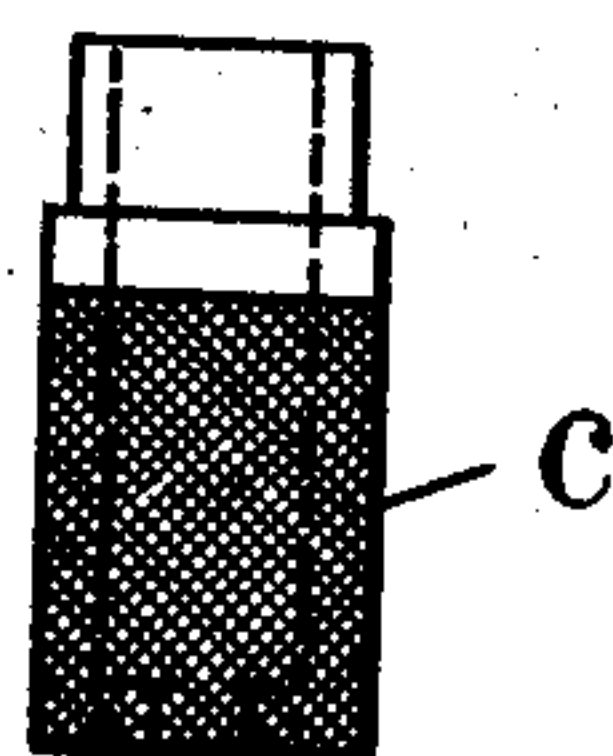
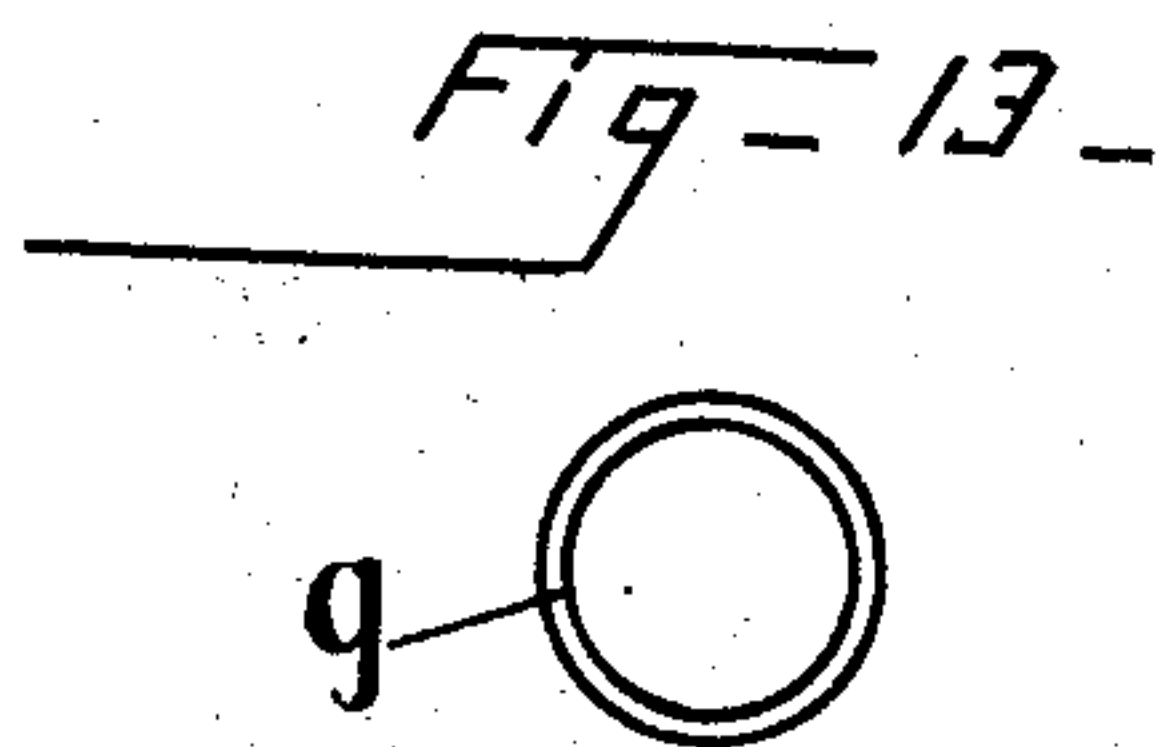
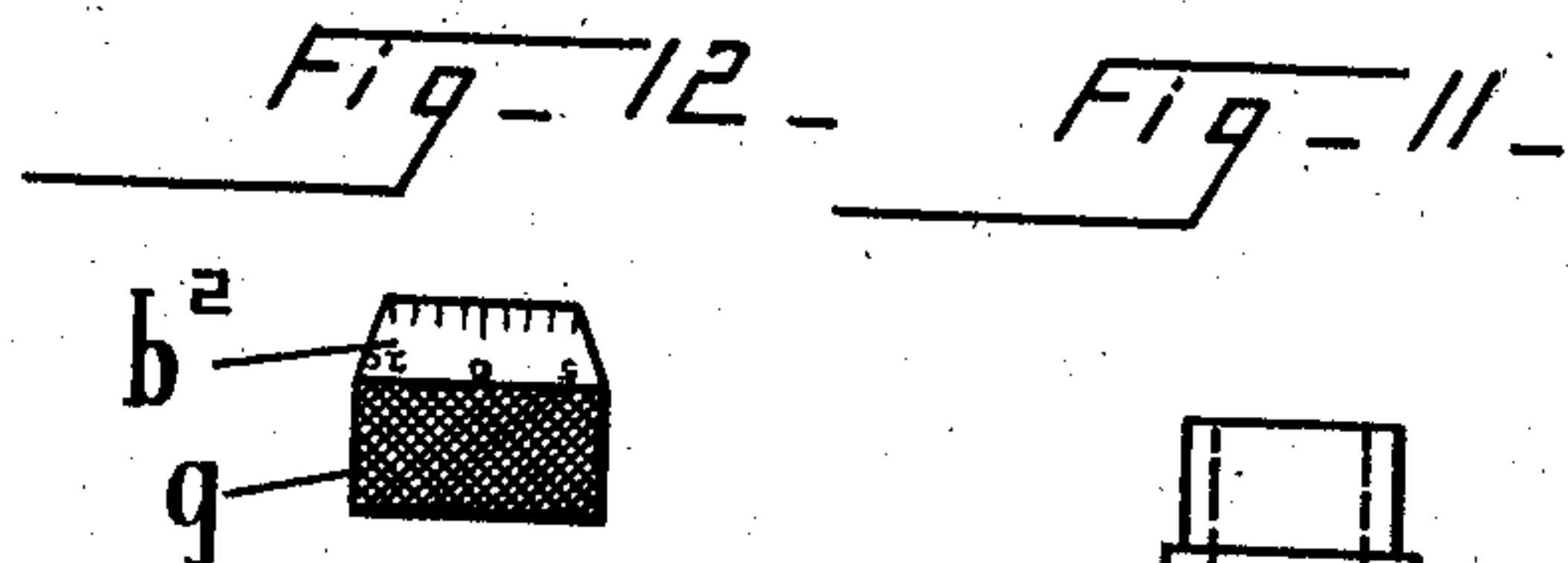
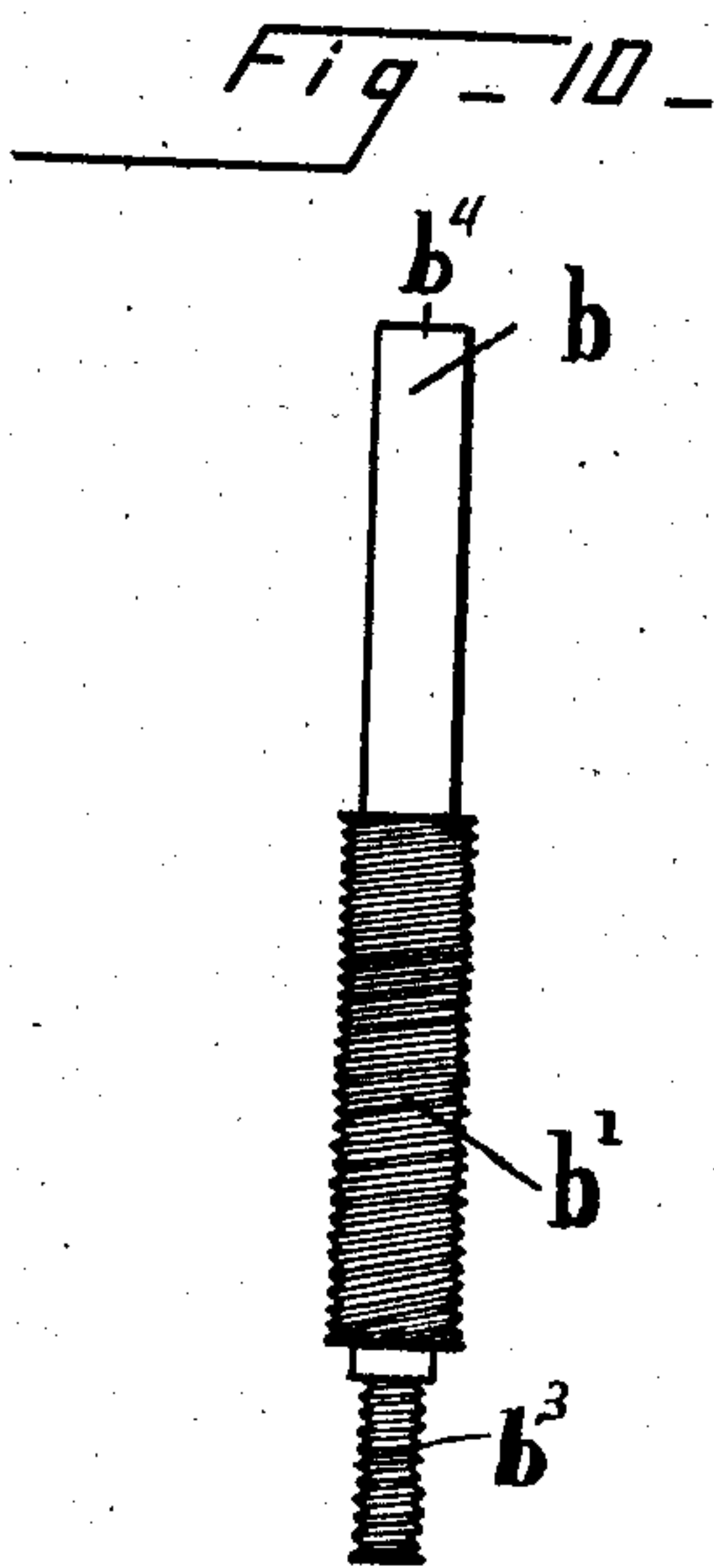
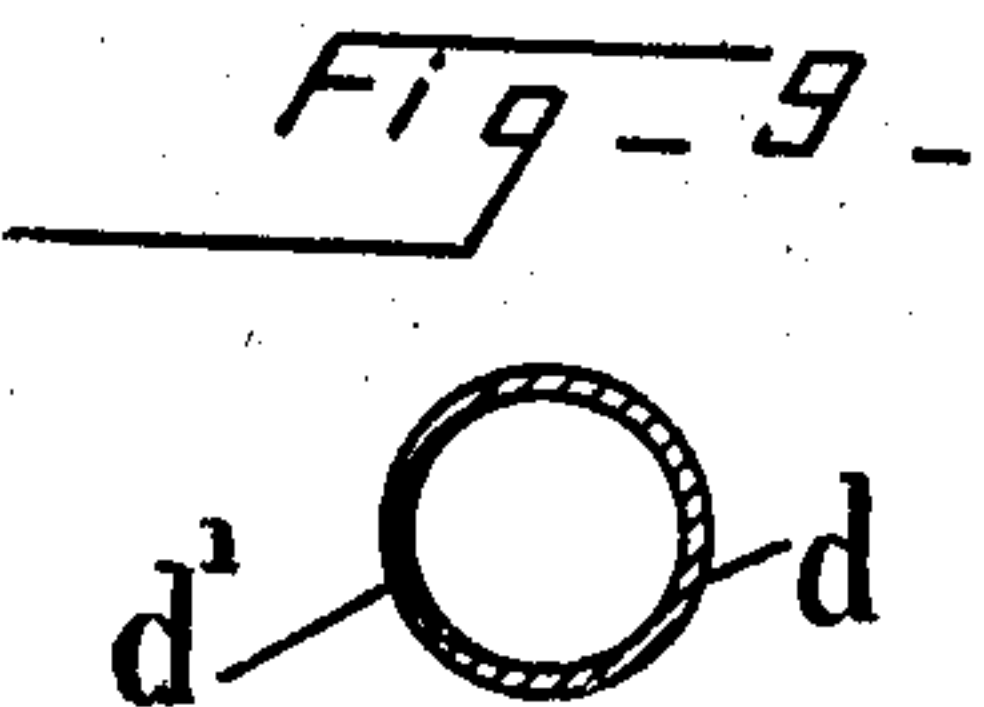
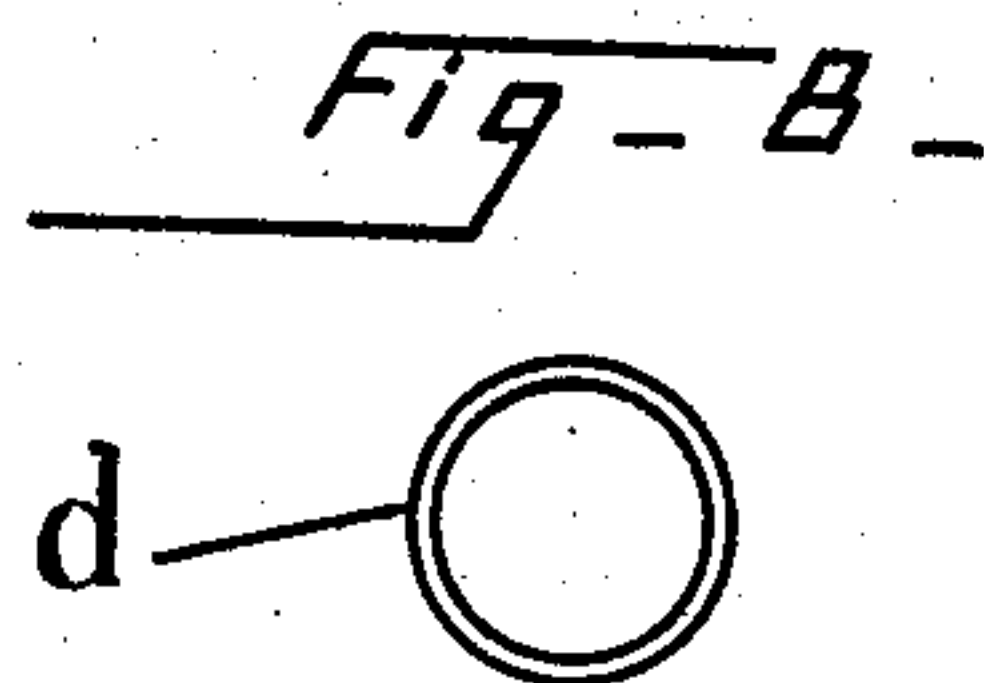
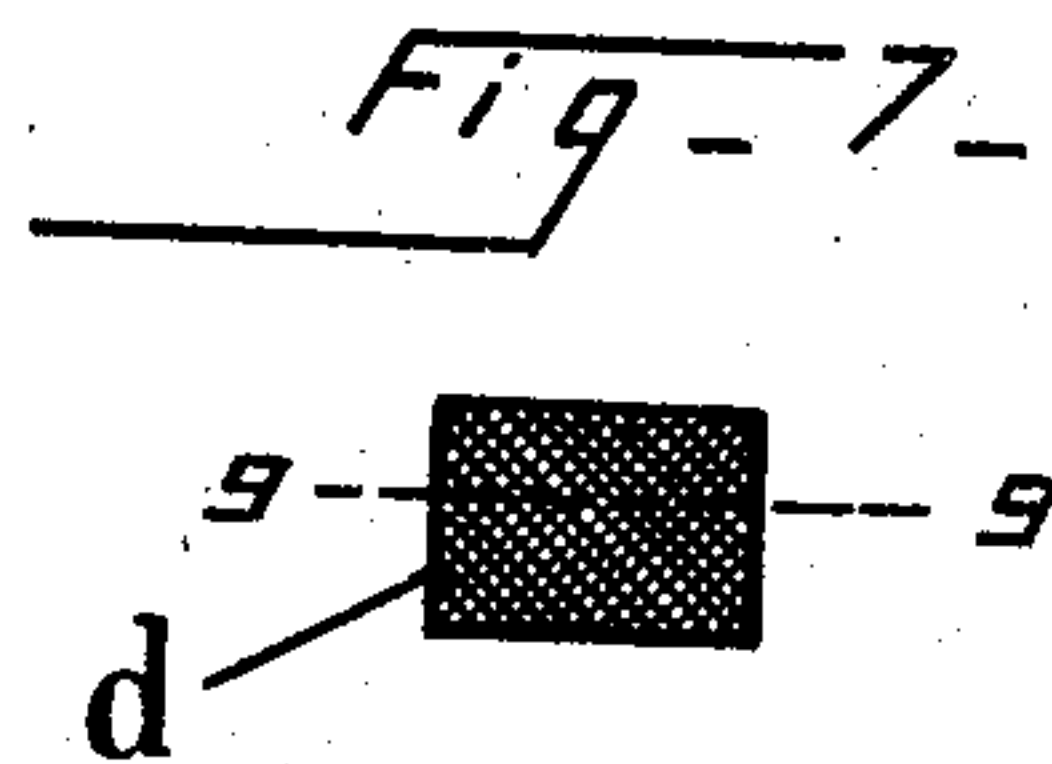
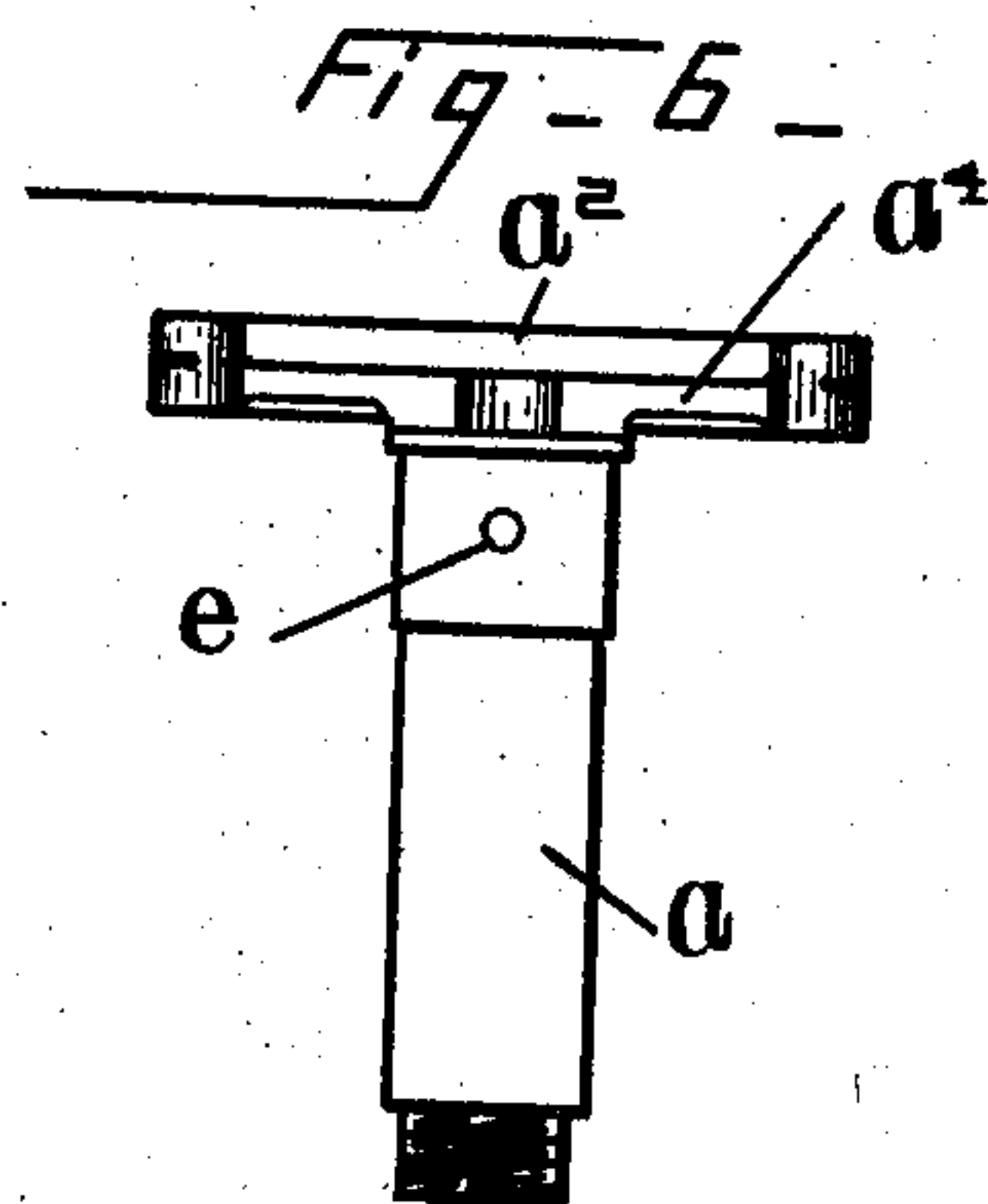
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MICROMETER GAGE.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JAMES C. E. LEACH AND WILLIAM O. WOODMAN, OF NORWICH,
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MICROMETER-GAGE.

No. 827,453.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed May 27, 1905. Serial No. 262,614.

To all whom it may concern:

Be it known that we, JAMES C. E. LEACH and WILLIAM O. WOODMAN, citizens of the United States, residing at Norwich, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Micrometer-Gages, of which the following is a specification.

This invention is in micrometer-gages for machinists' use; and our immediate purpose is to provide a convenient form of gage specially adapted for use with planing and milling machines of the class in which the work-supporting table is arranged to reciprocate relatively to the cutting tool or mill.

In the accompanying drawings we have illustrated our improved micrometer-gage, Figure 1 being a transverse sectional view of the bed of a planer and its supporting-ways and a portion of a planer-tool. In this view the block to be planed is shown upon the bed and a gage of our newly-improved form is suspended in said bed. Fig. 2 is a relatively enlarged view of a gage embodying our present improvements. Fig. 3 is a longitudinal central sectional view of said gage. Fig. 4 is a view of said gage from the upper or flanged end of the same. Fig. 5 is a transverse sectional view taken on line 5-5 of Fig. 2. Fig. 6 is a side elevation of section *a* detached. Figs. 7 and 8 are respectively side and end views of the binding-collar *d*, and Fig. 9 is a cross-sectional view of said collar on line 9-9 of Figs. 3 and 7. Fig. 10 is a detached view of the externally-threaded section *b'*. Fig. 11 is a detached view of the barrel-section *c*, and Figs. 12 and 13 are respectively side and end views of the collar *g*, that is adjustably mounted upon said barrel-section.

Our invention consists in the main of means for suspending a micrometer-gage from the upper face of the bed of a planer or miller, utilizing the holes or slots in said bed. Incidentally we have improved certain other details of construction, as we will explain later on.

Referring to the drawings hereto annexed, the letters *a b* indicate the two body-sections of our said gage, section *a* being threaded internally to receive the externally-threaded portion *b'* of section *b*. The perimeter of section *a* is suitably graduated longitudinally, as at *a'*, to coact with circumferential graduations *b²* on the barrel portion *c* of sec-

tion *b*, that surrounds the screw *b'*, the construction thus far described being substantially the same as that of micrometer-gages as now commonly constructed.

The screw *b'* and surrounding barrel portion *c* are, in effect, a single solid structure; but for convenience and economy of construction we make them as separate parts and then secure them rigidly together, as we will now explain. The inner end portion of the screw *b'* is shouldered down and threaded, as at *b³*, and the end wall of the barrel-section *c* is bored through to receive the said "shouldered-down" portion. (See Fig. 3.) When the parts are thus assembled, a cupped nut *h* is screwed upon the threaded end of the extension *b³*, thus clamping the screw *b'* and barrel *c* rigidly together. The screw *b'* is also formed with a threaded extension *h'*, upon which we screw, first, a check-nut *i* and then a cupped nut *k*, having an extension *k'*. By properly adjusting the nut *k* upon the extension *h'* the length over all of the screw *b*, barrel *c*, and nuts *h k* may be varied to compensate for wear, and when thus adjusted the nut *k* may be securely fixed to the nut extension *h'* by means of the check-nut *i*.

The outer end of the body-section *a* is formed with an enlarged head *a²*, that is cupped, as at *a³*, this head serving as a suspension-support when it is desired to use the gage with the bed of a planer or other machine. (See Fig. 1.) The micrometer-scale is so designed that when it registers zero the free or upper end *b⁴* of the screw *b'* is in exactly the same plane as the under side of the head *a²*, and it will therefore be understood that when the micrometer stands at zero and the gage is suspended in the planer-bed the free end *b⁴* of the screw will be in exactly the same plane as the top of said planer-bed. Should it be desired to plane a piece of work to one-half an inch thick, for example, it is only necessary to adjust the gage until it registers five-hundred one-thousandths of an inch, when the said free end of screw *b'* will project exactly one-half inch above the planer-bed. The planer-tool may then be adjusted until it rests upon the free end *b⁴* of the screw, and if it (the tool) be then fed across the piece of work the latter will obviously be planed to exactly one-half an inch in thickness.

Should it be desired to use our described

gage for taking measurements greater than the limited adjustment provided by screw b' , the said gage may be inverted bodily and placed upon the broad head a^2 , when by suitably adjusting the micrometer any desired measurement within the limit of the screw may be readily obtained. Should it be desired to provide for still longer measurements, extension-collars may be used—as, for example, one inch in height. Such extensions, however, form no part of our present invention.

It will be noted by referring to Figs. 2, 4, and 6 of the annexed drawings that a segment of the head a^2 is cut away, as at a^4 . This is done for a particular and important purpose—to wit, in order that a broad-nosed planer-tool may reach the end of the screw when said end is below the outer face of said head. Otherwise the tool would engage the flange of the head before it could be dropped down to the level of the end of the screw. By cutting away a segment of the circumferential wall of the head the tool may enter from the cut-away side, and thus reach the screw end or gage without hindrance.

In order to clamp the sections a b together after they have been properly adjusted, we have provided simple but effective means, consisting of a binding or clamping collar d , loosely mounted upon the internally-threaded body-section a , and a plug e , that is loosely mounted in a radial opening in said section a immediately under the collar d . The said collar is formed with an interior eccentric cam-groove d' of a width sufficient to receive the outer end of the plug e . When the collar is suitably adjusted, the plug lies largely in said cam-groove and has no binding effect upon the screw-section b' ; but when the collar d is partially rotated the cam-groove d' forces the plug inward into close engagement with the screw-section, and thus binds the two sections a b frictionally together with sufficient force to prevent the accidental displacement of said parts with respect to each other. A partial turn of the collar will, however, immediately release the said parts.

By preference we mount the graduated scale b^2 upon a collar g , that is fitted tightly, but not immovably, upon the barrel-section c . Should the end of the gage-screw b' become worn, the defect may be quickly corrected by partially rotating the collar g , so as to set the scale at zero, after having tested

and adjusted the gage by means of a standard micrometer-gage.

It will be obvious that our described device may be utilized as an inside micrometer-caliper, as well as a gage for use with planers and milling-machines, and we find by actual practical demonstration that absolutely-correct results may be quickly obtained.

Having thus described our invention, we claim—

1. In a micrometer-gage, the combination with an internally-threaded section having a cupped flanged head serving as a suspension-support, of a screw engaging the threads of said section with its upper end adapted to be received within the flange with its upper face flush with the under surface of the cup thereof when the scale registers zero, said screw having reduced portion with shoulder at its lower end, a barrel portion surrounding said screw and forming therewith a rigid solid structure, the lower end of the barrel portion being shouldered to engage the shoulder of the screw and a nut on the extended reduced end of the screw and clamping the screw and barrel rigidly together, and a binding-collar and plug cooperating therewith for clamping said threaded section and screw together.

2. In a micrometer-gage, the combination with an internally-threaded section having a cupped flanged head serving as a suspension-support, of a screw engaging the threads of said section with its upper end adapted to be received within the flange with its upper face flush with the under surface of the cup thereof when the scale registers zero, said screw having reduced portion with shoulder at its lower end, a barrel portion surrounding said screw and forming therewith a rigid solid structure, the lower end of the barrel portion being shouldered to engage the shoulder of the screw, a nut on the extended reduced end of the screw and clamping the screw and barrel rigidly together, and means loosely mounted on said section, and a plug cooperating therewith for clamping the said section and screw together after they have been adjusted, said means acting by friction.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES C. E. LEACH.

WILLIAM O. WOODMAN.

Witnesses:

FRANK H. ALLEN,

MAY F. RITCHIE.