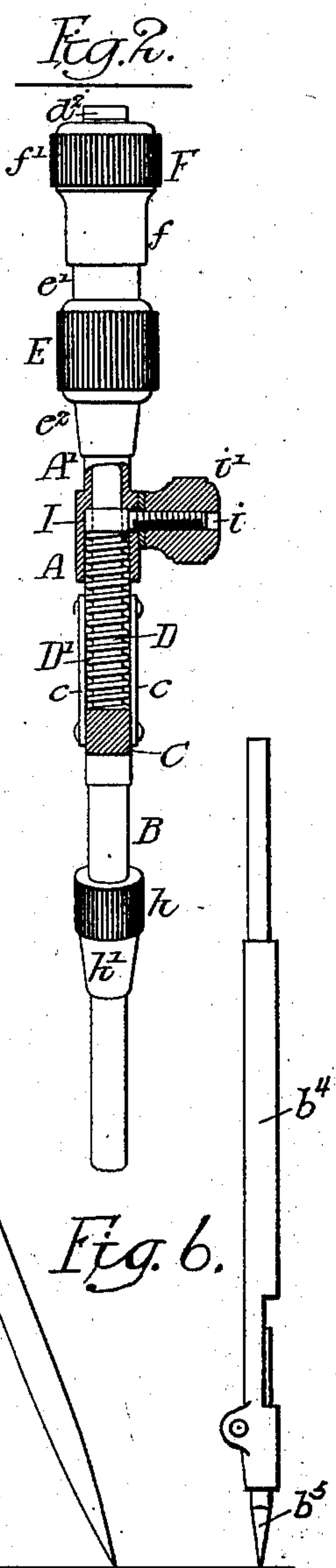
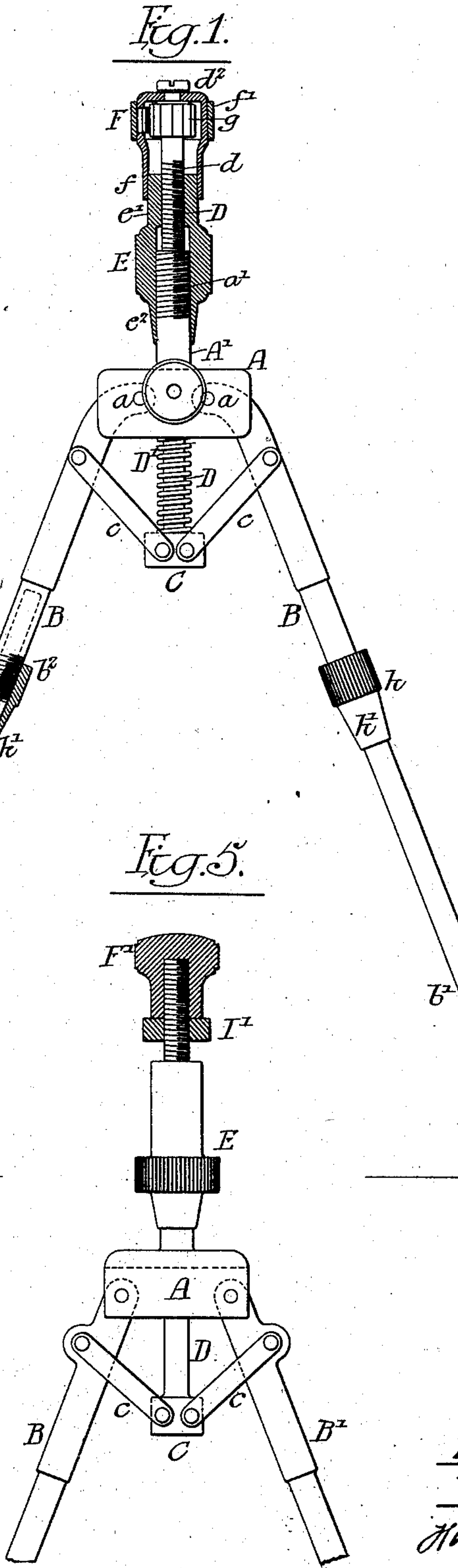
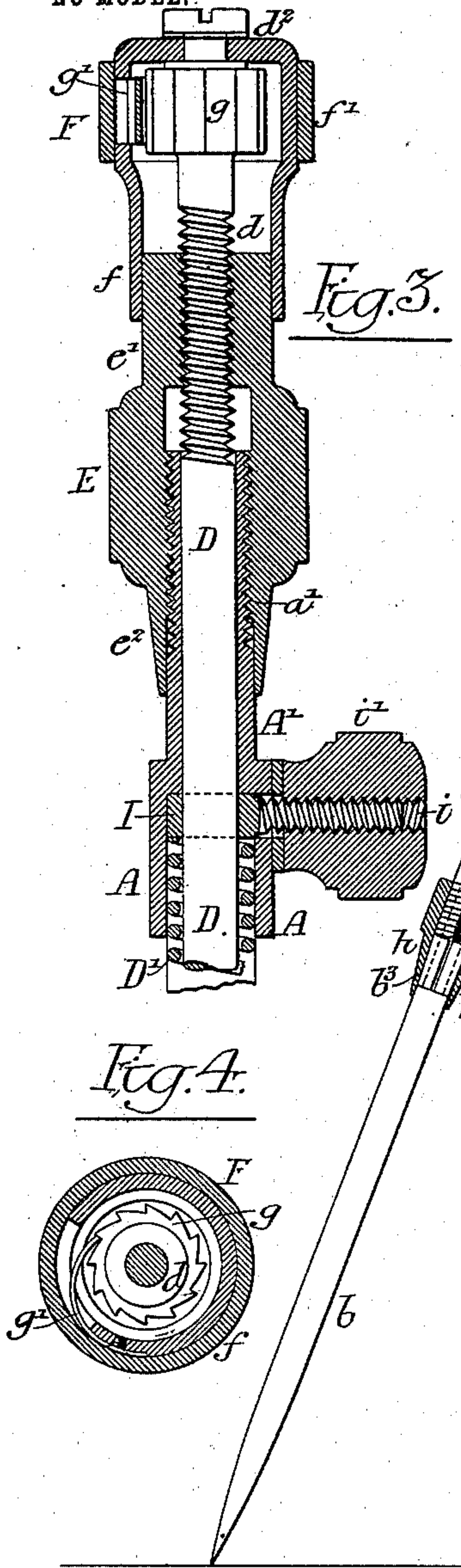


Z. T. FURBISH.
CALIPERS.

APPLICATION FILED JULY 5, 1902.

NO MODEL.



Witnesses:-

Hamilton D. Turner
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UNITED STATES PATENT OFFICE.

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CALIPERS.

SPECIFICATION forming part of Letters Patent No. 719,783, dated February 3, 1903.

Application filed July 5, 1902. Serial No. 114,469. (No model.)

To all whom it may concern:

Be it known that I, ZACHRY T. FURBISH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Calipers, of which the following is a specification.

The object of my invention is to so construct dividers that they can be readily manipulated to open and close the points and to
10 set the dividers at any given point desired.

My invention is especially applicable to dividers used by machinists or carpenters; but it will be understood that my invention can be applied to dividers for any work.

15 In the accompanying drawings, Figure 1 is a side view, partly in section, of my improved dividers. Fig. 2 is an edge view, partly in section. Fig. 3 is an enlarged sectional view of part of Fig. 1. Fig. 4 is a section on the
20 line 4-4, Fig. 3; and Figs. 5 and 6 are views of special forms of my device.

A is the head of the dividers.

B B' are the two arms pivoted at *a a* to the head, and these arms have pointed extensions
25 *b b'*. In the present instance each arm has a point; but it will be understood that one may have a pencil-holder of the form shown at *b⁴* in Fig. 6 of the well-known construction and provided with a pencil-lead *b⁵*. There
30 may also be used, if desired, any of the other forms of extensions known in this class of apparatus.

Connected to the two arms B B' by links *c c* is a block C, to which is attached a rod D,
35 having its upper end *d* threaded with a left-hand thread in the present instance.

On the head A is a tubular extension A', having a threaded portion *a'*. The thread is right-handed in the present instance. The rod D
40 passes up through the threaded tubular portion.

E is a nut having an internal thread *e*, adapted to the thread *a'* of the extension A', and has a thread *e'*, adapted to the thread of
45 the rod D, so that when the nut is turned the rod will be given double the movement of the pitch of the threads, so that the arms can be quickly adjusted.

F is a cap which in the present instance in-
50 closes ratchet mechanism and is attached to

the end of the rod D by a screw or other fastening *d²*. The cap has a portion *f*, which overlaps the nut, and the nut E has a portion
e², which overlaps the extension A', so that
neither thread is exposed.

D' is a spring mounted between the head A and the block C, so as to press the block out-
ward, and thus keep the joints always taut.

It will be seen that by simply turning the nut E in one direction the arms B B' will be
60 quickly extended and will remain in their extended position, and if the nut is turned in the opposite direction the arms will be contracted. In order to lock the arms in their
extended position, I provide a locking device 65 consisting of a ring I, through which the rod D passes, and this ring has a threaded extension *i*, on which is mounted a nut *i'*. The extension *i* of the ring passes through the head A, so that when the nut is turned the ring
70 will tightly grip the rod and hold it in its adjusted position. By simply backing off the nut the rod is released.

In some instances I may make the extensions *b b'* of the arms B B' removable, and
75 for this purpose I thread a portion *b²* of each arm and split a portion *b³* and use a nut *h*, having a tapered portion *h'*, so that when the nut is turned in one direction its tapered portion will bind upon the split portion *b³*, and
80 this portion in turn will grasp an extension *b* of the arm; but as soon as the nut is released the extension *b* is free to be removed and another can be placed in its stead. Thus I am enabled to provide dividers with any
85 desired form of extensions, so that I can use them as calipers or substitute other forms of points for the extensions *b b'*—as, for example, of the type shown in Fig. 6.

In Figs. 1, 3, and 4 I have shown ratchet
90 mechanism within the cap of the calipers. I secure a ratchet-wheel *g* on the end of the rod D and provide a cap F with a spring-pawl *g'*, which acts on the ratchet-wheel, so that the cap can be turned first in one direction
95 and then in the other and a constant movement in one direction given to the calipers. The cap is simply cut away and a pawl of spring metal secured to the cap and inclosed
by a ring *f'*. This ratchet mechanism is es- 100

pecially useful on calipers used by draftsmen when it is desired to make a continuous circle without removing the fingers from the calipers.

5 In Fig. 5 I have shown a modification of the locking device. In place of the ring I, I may use a jam-nut I', the jam-nut being mounted on the screw-threaded section of the rod D and adjusted so as to bear against the
10 nut E and prevent it turning either on the extension a' or on the rod. In this figure I have dispensed with the spring D' and the ratchet mechanism within the cap, the cap F' in the present instance being secured di-
15 rectly to the rod D.

I claim as my invention—

1. The combination in a pair of calipers, of a head having a threaded portion, arms pivoted to said head, a threaded rod connected
20 to said arms, means acting upon said rod to open or close the calipers and a nut acting on the threaded portions of the head and of said rod, substantially as described.

2. The combination in a pair of calipers, of
25 a head, arms pivoted to the head, a block connected to the arms, a rod extending from the block through the head, an extension on the head, a screw-thread on the extension and a reverse screw-thread on the rod, and a nut
30 having threads for meshing with the threads of the rod and of the extension, substantially as described.

3. The combination of a head, arms pivoted to the head, a block, links connecting the
35 block to the arms, a rod extending from the block up through the head, and having a threaded end, an extension on the head having a threaded portion, a nut having two sets of threads, one meshing with the threads of
40 the extension and the other with the threads of the rod, with a cap secured to the end of the rod, and a spring mounted between the block and the head, substantially as described.

45 4. The combination of a head, arms pivoted to the head, a block, links connecting the block to the arms, an extension on the head having a threaded portion, a rod extending from the block through the head and through
50 its extension, said rod having a thread the

reverse of the thread on the extension of the head, a nut having threads meshing with the threads of the rod and the threads of the extension, and means for locking the parts after adjustment, substantially as described. 55

5. The combination of a head having an extension, arms pivoted thereto, a block, links connecting the block to the arms, a rod connected to the block extending through the
60 head and having a threaded portion, the extension of the head also having a portion threaded the reverse to the threads on the rod, a nut having threads meshing with the threads on the rod and the threads on the ex-
65 tension, a ring through which the rod passes, said ring having a threaded projection passing through the head, with a nut on the thread of said extension, substantially as described.

6. The combination in a pair of calipers, of
70 a head, arms pivoted to the head, a rod connected to the arms, passing through the head, and having a threaded portion, the extension of the head also having a threaded portion, a
75 nut having two sets of threads, one set meshing with the threads of the rod, the other meshing with the threads of the extension, a ratchet-wheel on the end of the rod, a cap, and a pawl on the cap engaging the teeth of
80 the ratchet-wheel, substantially as described.

7. The combination of a pair of calipers, of a head, arms pivoted to said head, a rod connected to the arms, the head having an extension provided with a threaded portion,
85 said rod also having a threaded portion, a nut common to both the threaded portions, one of the arms having a split end and a threaded portion, a nut adapted to said portion and provided with a tapered end constructed to
90 compress the split portion of the arm and a detachable point arranged to be held in the arm by the nut, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ZACHRY T. FURBISH.

Witnesses:

WILL. A. BARR,
JOS. H. KLEIN.