

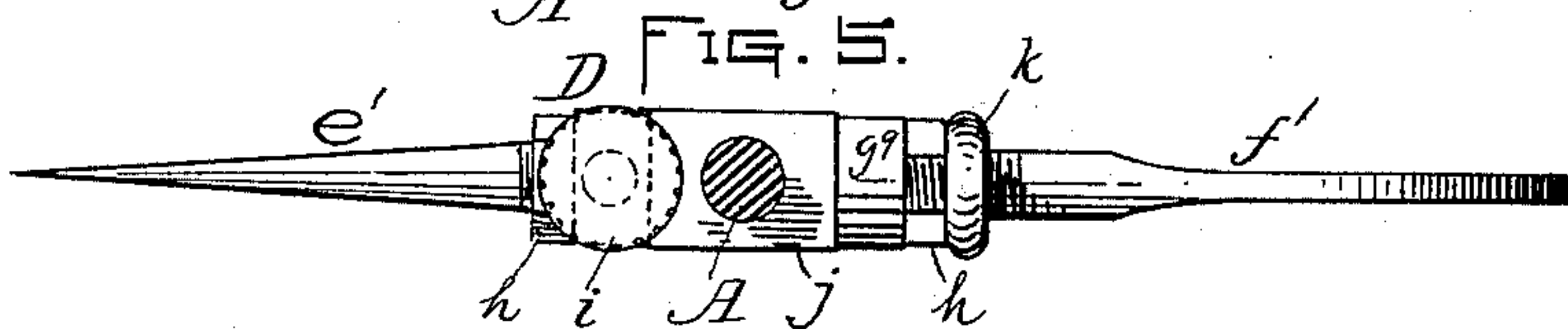
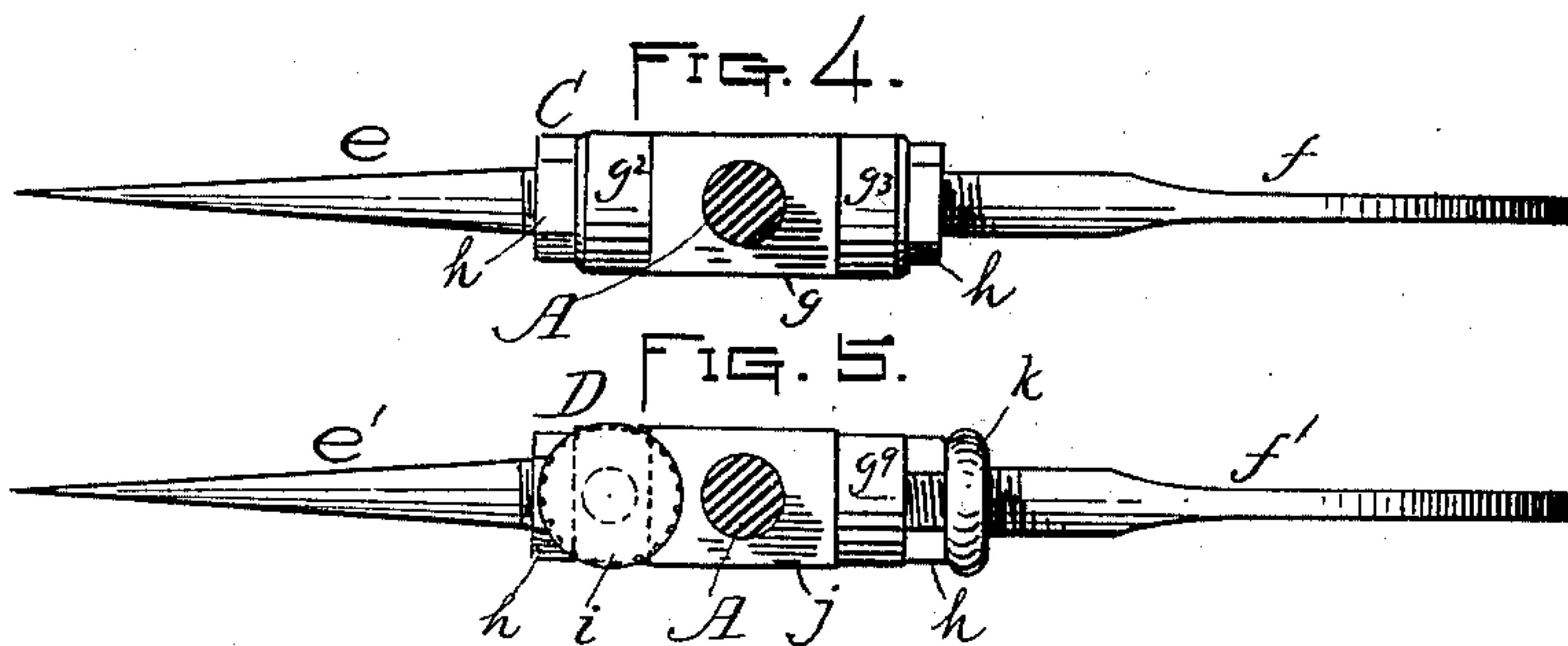
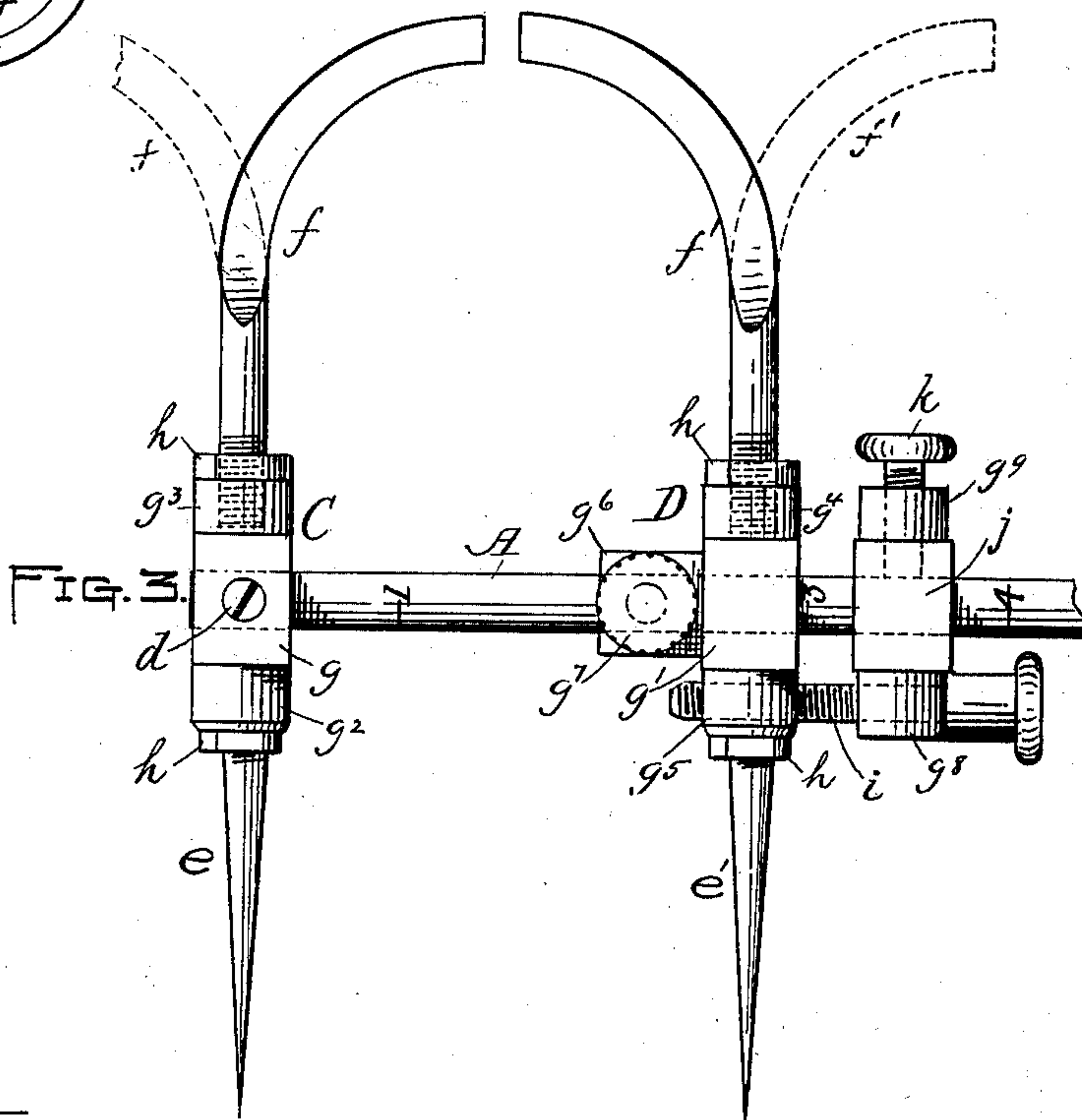
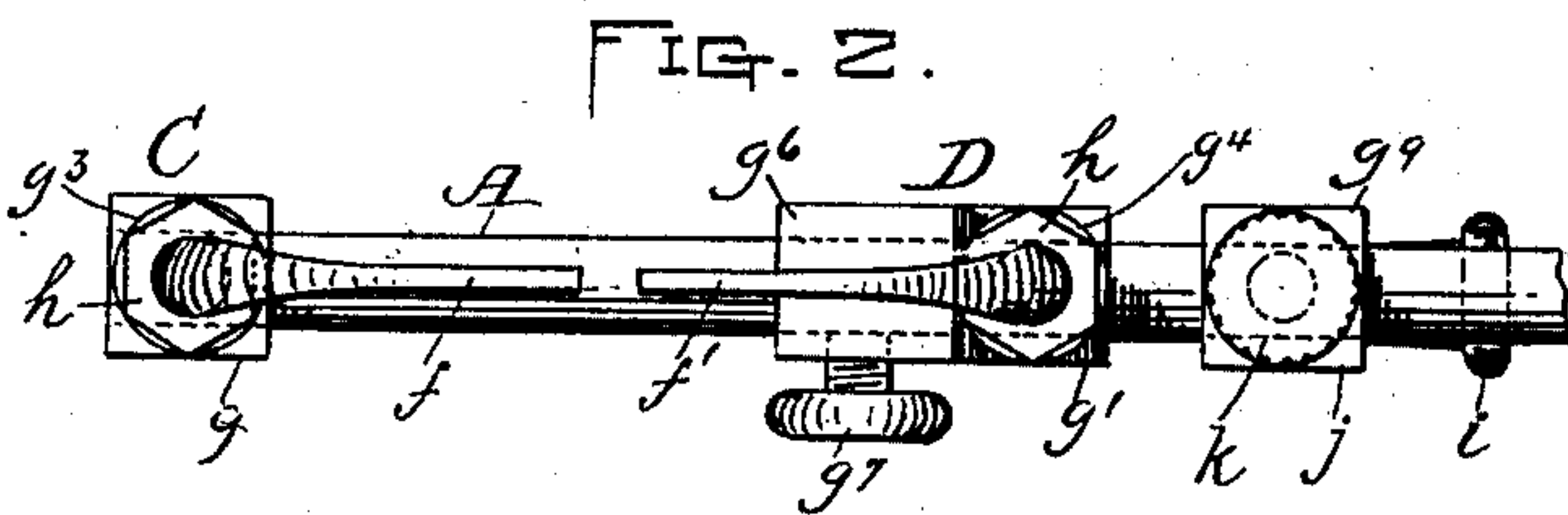
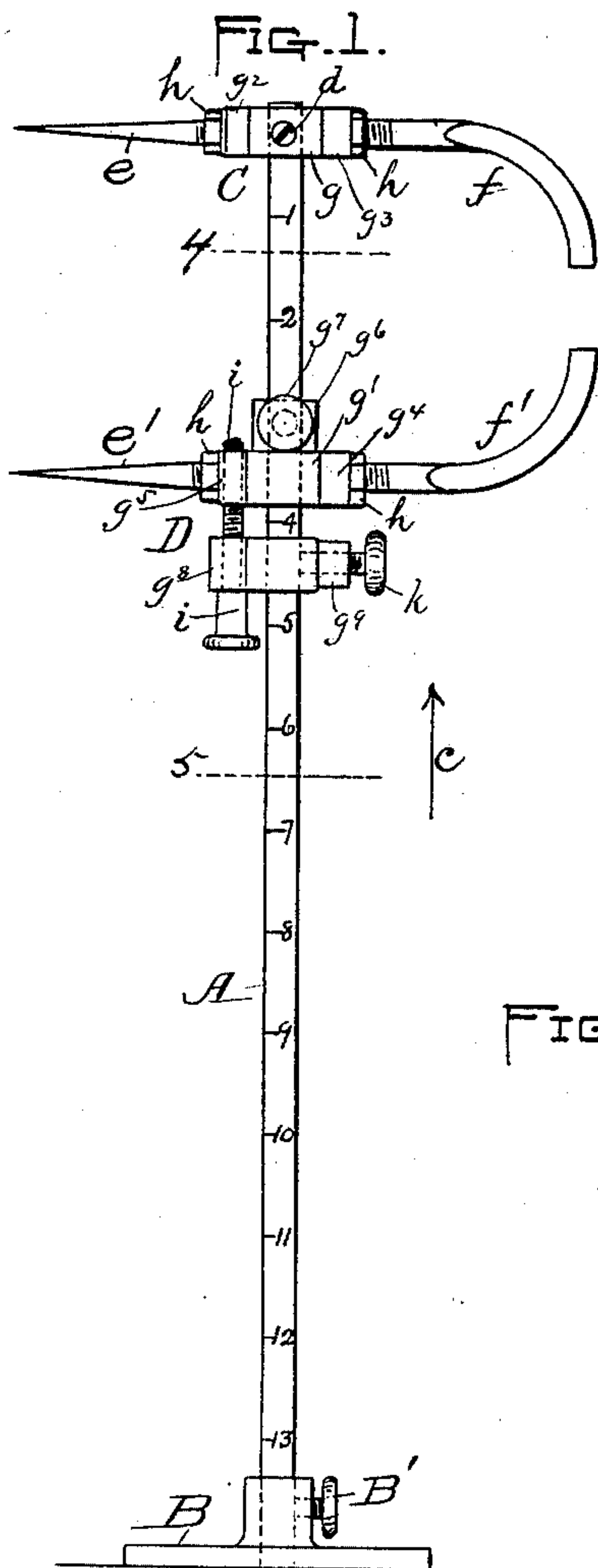
No. 707,723.

Patented Aug. 26, 1902.

F. A. ROBBINS.  
COMBINATION TOOL.

(Application filed Jan. 20, 1902.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 707,723, dated August 26, 1902.

Application filed January 20, 1902. Serial No. 90,391. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK A. ROBBINS, of the city and county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Combination-Tools; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a side view of my said improved combination-tool shown in the position which it occupies when used as a surface gage. Fig. 2 represents, upon an enlarged scale, a top or plan view of the parts shown in Fig. 3. All the following figures are also shown upon the same enlarged scale. Fig. 3 is a side view of the upper part of the tool shown in Fig. 1, showing its position when used as a beam-trammel with compasses or calipers. Figs. 4 and 5 are transverse sections taken on lines 4 and 5, respectively, looking up, as is indicated by arrow *c*, Fig. 1.

The object of my invention is to provide a tool principally for the use of iron and wood workers which shall combine three tools in one—a surface gage, a beam-trammel with compasses or dividers, and a beam-trammel with calipers, which latter are adjustable, so that they may be used either for inside or outside work. Said invention consists of certain improvements in the construction of said combination-tool, which comprises a rod constituting the beam of the trammels, having a detachable base to be employed when the tool is used as a surface gage and upon which rod are also mounted the trammels of the aforesaid compasses or dividers and calipers, one trammel being preferably secured rigid to the outer end of the rod and the other fitted to be adjusted to different positions thereon and provided with suitable means for fastening the same after adjustment, as will be hereinafter more fully set forth.

To enable others to better understand the nature and purpose of my said invention, I will now proceed to describe it more in detail.

Referring to the drawings, A represents the rod before alluded to. B is the detachable base thereof, and C D are the trammels, which carry the compass-points and caliper-legs of the tool. The base B is employed only when

said tool is used as a surface gage, the same being fitted to slide onto the end of rod A and fastened by means of a set-screw B'. The trammel C is similarly fitted and fastened to the opposite end of the rod by a screw *d*, and the trammel D is fitted to slide thereon toward and from said trammel C to decrease or increase the distance between them. The blocks *g g'* of trammels C D, which are provided with suitable openings to receive the rod, so as to slide thereon, are also provided with threaded openings at right angles thereto to receive the inner threaded ends of the compass-points *e e'* and caliper-legs *f f'*. After having been screwed therein, as is shown in the drawings, they are fastened from turning by the set-nuts *h*. Being thus fastened it is obvious that by loosening the nuts of the caliper-legs the latter may be turned to point inward toward each other, as is shown by full lines in Figs. 1, 2, and 3, so as to be used for obtaining the outside dimensions of bodies, or they may be adjusted to point outward, as is shown by dotted lines in Fig. 3, for obtaining inside measurements, being held in either adjusted position by tightening up said nuts again against the central slide-blocks *g g'*, in which said caliper-legs are fastened.

As is shown in the drawings, each trammel C D is provided with a separate threaded opening, one at each end thereof, at right angles to beam A to receive the compass-points and caliper-legs. Therefore either one separately or both may be employed upon the tool—as, for instance, if the tool is desired to be used only as a compass the caliper-legs may be removed, or, vice versa, if it is desired to use said tool only as calipers, and when thus employed they may be readily adjusted for either outside or inside calipers, as previously described. Then, again, if the tool is desired to be used only as a surface gage the caliper-legs may be left off or not, one or both of the compass-points applied, and the base secured to the bottom end of the rod or beam, and it is perfectly adapted for said purpose at little trouble in adjustment and no extra expense.

The trammel C, as previously stated, is preferably secured rigid to the end of the rod A, and therefore may be made very simple



in construction, consisting only of the sliding block or bearing  $g$ , having the laterally-projecting threaded hubs  $g^2$   $g^3$  for receiving and holding the compass-point  $e$  and caliper-leg  $f$ , respectively. The slide-block or bearing  $g'$  is similarly constructed, except that in addition to the hubs  $g^4$   $g^5$  thereof being threaded, as aforesaid, one of said hubs  $g^5$  is provided with a threaded transverse opening parallel to rod A to receive an adjusting-screw  $i$ , and said slide-block or bearing  $g'$  is also preferably provided on the side next to trammel C with another hub  $g^6$ , having an opening forming an extension of the opening in bearing  $g'$  to receive rod A for the purpose of forming a longer bearing on said rod to hold the compass-point  $e'$  and caliper-leg  $f'$  more steadily in position and also to form a hub to receive a set-screw  $g^7$  to further facilitate said purpose. At the opposite side of slide-block or bearing  $g'$  from trammel C is arranged another slide-block  $j$ , which is fitted to slide on rod A and is similar in construction to said slide-block or bearing  $g'$ , being provided with a threaded opening parallel to the rod through one of its hubs  $g^8$  to receive the adjusting-screw  $i$ , before referred to, and with a threaded opening at right angles to said rod in its other hub  $g^9$  to receive the set-screw  $k$ .

The purpose of the foregoing construction of trammel D is to provide a means of adjusting the compass-point  $e'$  and caliper-leg  $f'$  to exactness by turning the adjusting-screw  $i$  in or out after said trammel has been moved bodily along the rod or beam A to about the desired distance from trammel C in obtaining the desired measurements between the compass-points or the caliper-legs. In performing said operation the trammel D is first made free to slide on the rod or beam by unturning the set-screws  $g^7$  and  $k$ . It is then moved bodily to about the proper distance from trammel C to obtain the desired measurement, and the set-nut  $k$  turned up tight to hold the slide-block  $j$  rigid on the rod or beam. By now turning the adjusting-screw  $i$  in or out the slide-block  $g'$ , which carries the compass-point  $e'$  and caliper-leg  $f'$ , is moved forward or back to the right point to obtain the exact measurement desired, after which the set-nut  $g^7$  is turned up tight to hold the parts in a firm and rigid position.

While I prefer to employ the hub  $g^6$  and its set-screw  $g^7$  on the slide-block  $g'$ , since they are not an essential feature of my invention, I reserve the right to use the same or not, as desired, and also to make such other modifications in the construction as circumstances may require, coming within the scope of my invention—as, for instance, the size, shape, and length of the compass-points and caliper-legs may be varied as circumstances in practice may require. It is preferable also in practice to mark a scale on the rod or beam A, as is indicated in Fig. 1; but I do not limit myself thereto.

If desired, trammel C may be made similar

to trammel D and fitted to slide on the rod or beam without departing from the principle of my invention. A pencil-point may also, if desired, be substituted for one of the compass-points and the rod or beam A may be made to admit of extension to any desired length.

Having now described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. A combined surface gage and beam-trammel, comprising in combination the rod A, base B, trammel C, the latter secured to the opposite end of said rod from said base, and carrying the compass-point  $e$  and adjustable caliper-leg  $f$ , and trammel D, the latter consisting of the slide-block  $g'$ , carrying the compass-point  $e'$  and adjustable caliper-leg  $f'$ , slide-block  $j$ , its set-screw  $k$  and adjusting-screw  $i$ , the latter fitted to turn in said slide-blocks  $g'$  and  $j$ , substantially as and for the purpose set forth.

2. Rod or beam A, trammel C, compass-point  $e$ , and caliper-leg  $f$ , said trammel consisting of block  $g$ , fitted and secured to said rod or beam, and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking them in position, in combination with the trammel D, compass-point  $e'$  and caliper-leg  $f'$ , said trammel consisting of block  $g'$ , fitted to slide on the rod or beam and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking the same, also having a threaded opening in one of the hubs parallel to the rod or beam to receive the adjusting-screw  $i$ ; said trammel further consisting of the block  $j$ , also fitted to slide on rod or beam A, and having threaded hubs, one at right angles and the other parallel thereto, to receive respectively, the set-screw  $k$  and said adjusting-screw  $i$ , and said set and adjusting screws, substantially as and for the purpose set forth.

3. Rod or beam A, trammel C, compass-point  $e$  and caliper-leg  $f$ , said trammel consisting of block  $g$ , fitted and secured to said rod or beam, and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking them in position, in combination with the trammel D, compass-point  $e'$  and caliper-leg  $f'$ , said trammel consisting of block  $g'$ , fitted to slide on the rod or beam and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking the same, also having a threaded opening in one of the hubs parallel to the rod or beam to receive the adjusting-screw  $i$ , and also having a hub  $g^6$  and set-screw  $g^7$ , said trammel further consisting of the block  $j$ , also fitted to slide on rod or beam A and having threaded hubs, one at right angles and the other parallel



thereto, to receive respectively the set-screw *k*, and said adjusting-screw *i*, and said set and adjusting screws, substantially as and for the purpose set forth.

- 5 4. The combination of rod or beam A, with trammel D, compass-point *e'*, and caliper-leg *f'*, said trammel consisting of block *g'*, fitted to slide on said rod or beam and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking the same, also having a threaded opening in one of the hubs parallel to the rod

or beam to receive the adjusting-screw *i*, and also having a hub *g<sup>6</sup>* and set-screw *g<sup>7</sup>*, said 15 trammel further consisting of the block *j*, also fitted to slide on rod or beam A, and having threaded hubs, one at right angles, and the other parallel thereto, to receive respectively the set-screw *k*, and said adjusting-screw *i*, and said set and adjusting screws, 20 substantially as and for the purpose set forth.

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