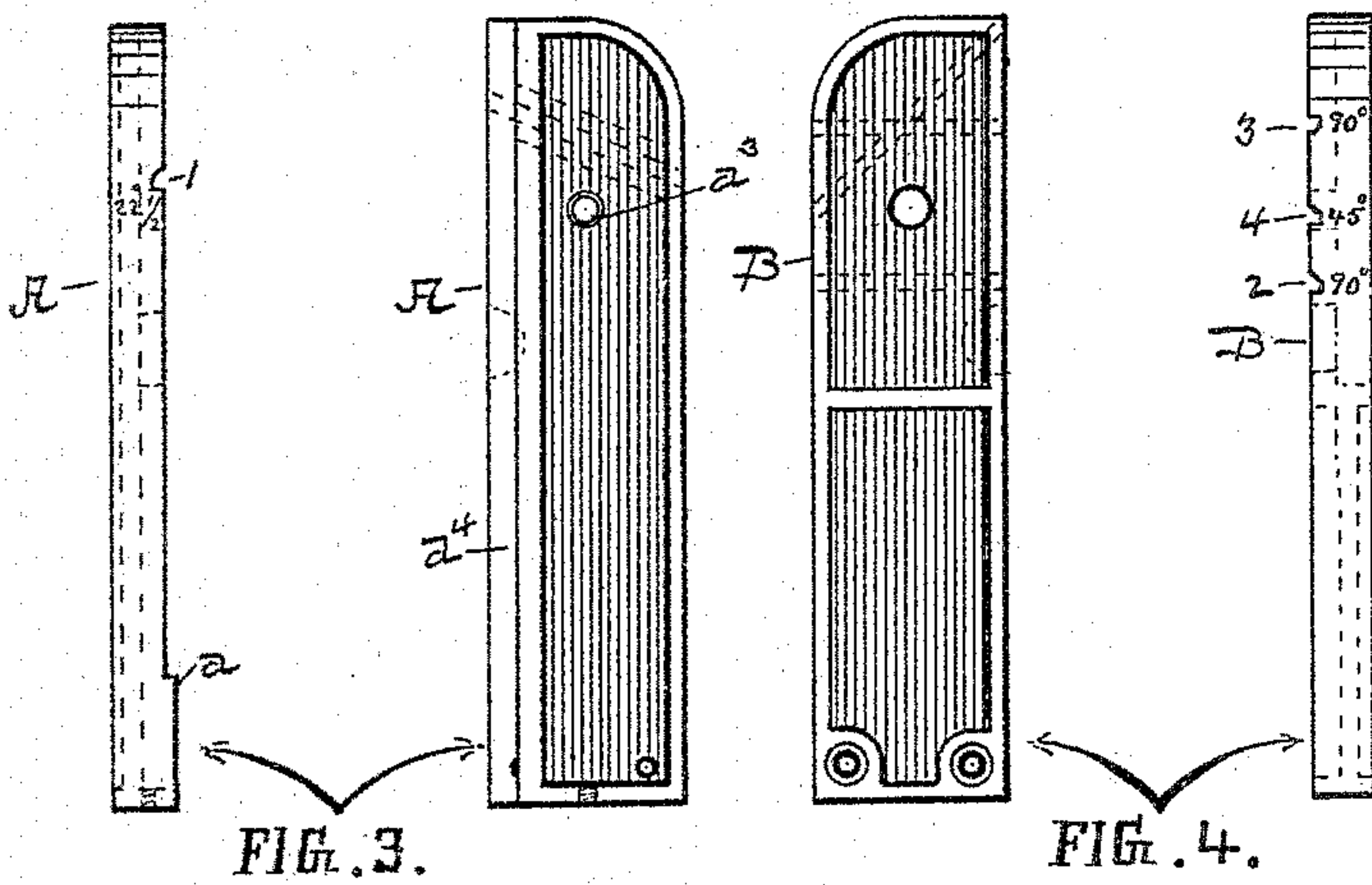
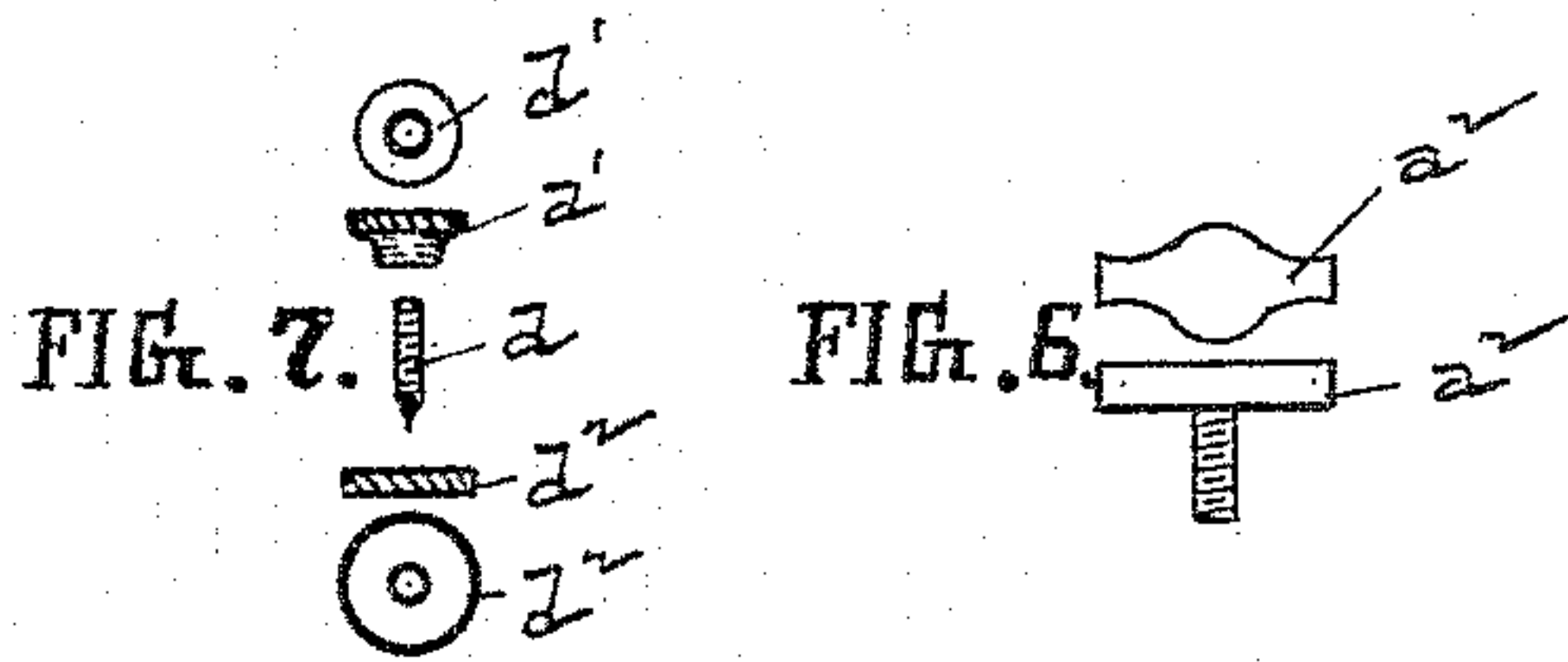
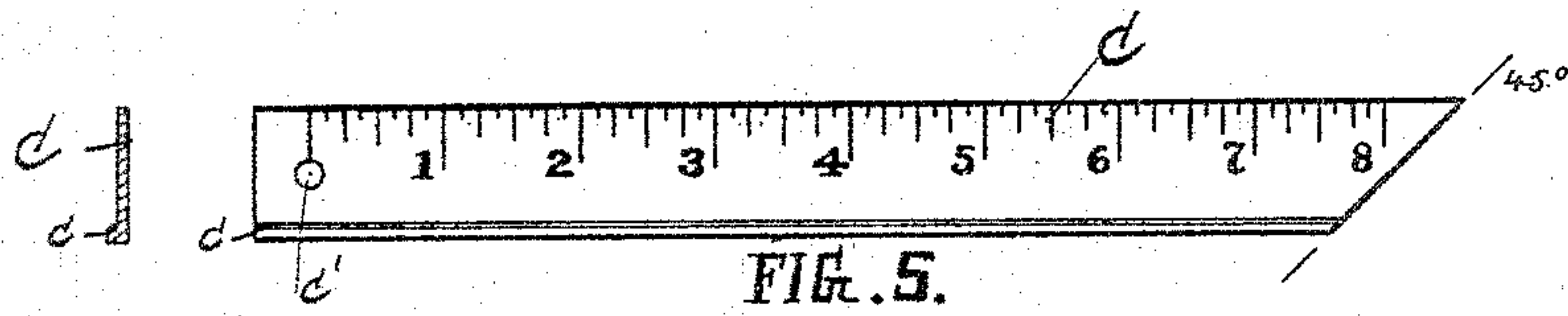
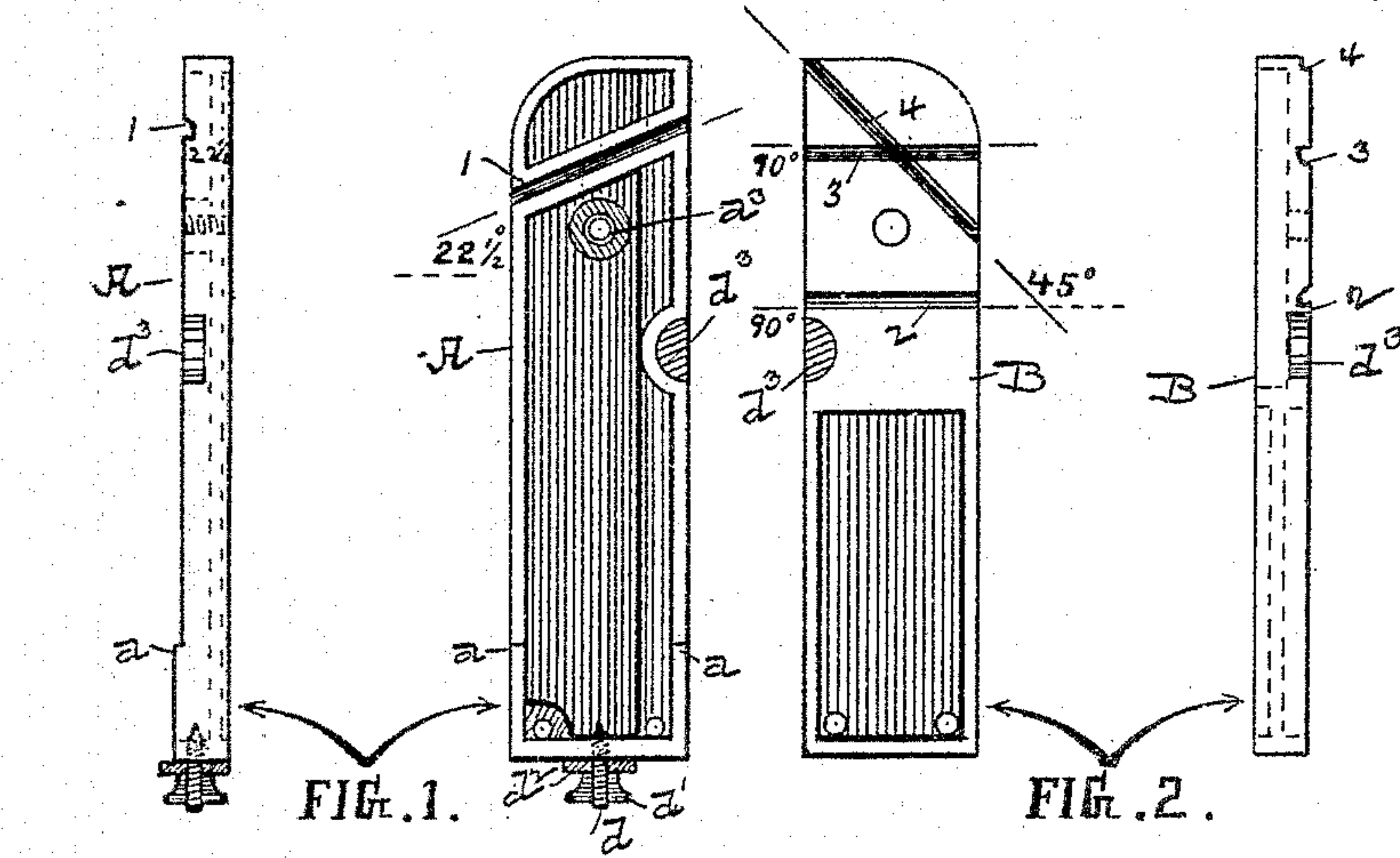


A. HETU,  
BEVEL SQUARE.

No. 491,351.

Patented Feb. 7, 1893.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ARTHUR HETU, OF HOLYOKE, MASSACHUSETTS.

## BEVEL-SQUARE.

SPECIFICATION forming part of Letters Patent No. 491,351, dated February 7, 1893.

Application filed October 4, 1889. Renewed January 23, 1892. Serial No. 418,987. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR HETU, of Holyoke, in the county of Hampden and State of Massachusetts, have invented a new and useful Combination-Tool, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to tools used by carpenters, machinists, &c., in laying out work, making angle joints between separate pieces of work and other similar operations; and it has for its object to combine in a single tool a square, a bevel gage adapted to be set at any desired angle, and a joiner's gage.

A further object of the invention is to provide a combination tool of this nature in which means are provided for setting the blade at those angles most frequently used, such as ninety degrees, forty-five degrees, and twenty-two and one-half degrees, without the necessity of using an independent square, or the exercise of particular care and skill; and in which the blade, when thus adjusted, is securely clamped in position and cannot be accidentally moved.

To these ends my invention consists in the tool constructed and operating as hereinafter fully described and particularly pointed out in the claims.

Referring to the drawings, in which like letters and numerals designate like parts in the several views, Figure 1 is an elevation of one edge and the inner side of one of the members composing the holder. Fig. 2 is an elevation of the inner side and one edge of the second member of the holder. Figs. 3 and 4 are similar views showing the outer sides and opposite edges of the same parts. Fig. 5 is an end view and side elevation of the blade detached from the holder. Fig. 6 is a plan and side view of the thumb-screw which secures the clamping action between the two members of the holder. Fig. 7 is a side elevation of the gage point, and plan and side views of its holding nuts. Fig. 8 is an edge view of the upper ends of the two members of the holder, with the blade clamped between them. Figs. 9, 10, 11, 12 show the blade in various positions in the holder as hereinafter described. Figs. 13 and 14 are a side and end view, respectively, of the tool—arranged to be used as a joiner's gage. Fig. 15 is a cross-section

of one of the members of the holder, taken upon line  $x-x$  of Fig. 11.

The letters A and B designate, respectively, the two members composing the holder, which are preferably made of brass and paneled as shown to reduce their weight. The member A is provided at its rear end with the offset or shoulder  $a$ , whereby, when the two members are applied the one to the other, a slight space is left between them, from said shoulder to their front ends, as shown in Fig. 8, to facilitate the insertion of the blade between them. Screws  $a'$  hold said members securely together at their rear ends, and a thumb-screw  $a^2$  passing through a hole in member B into a threaded hub  $a^3$  on member A enables the front ends of said members to be forced securely against the interposed blade to clamp it in any desired position—Said thumb-screw  $a^2$  is preferably made with a flattened head, as shown in Fig. 6, whereby said head will lie wholly within the plane of the raised edge of member B, as shown in Fig. 15, where it does not interfere with the use of the holder upon plane surfaces, and is less likely to be accidentally loosened.

The blade C is preferably made from sheet steel, with one end inclined at an angle of forty-five degrees, and is provided with the usual or any desired scale marks. By inserting said blade between the members of the holder, at the front end of the latter, it can be set at any desired angle, as indicated in Fig. 12, and when so set can be securely clamped in its position by means of thumb-screw  $a^2$ . The blade and holder thus form a very simple and effective tool for locating angles; but, as the use of a square in setting the blade is necessary, thus rendering the adjustment an operation requiring great care and skill, and as the position of the blade is liable to be disturbed by accidentally dropping the tool or striking it against other objects, I have devised means for setting the blade at those angles most frequently used without the exercise of particular care or skill, or the use of a square; and for locking the blade, when so adjusted, in such manner that its position cannot be accidentally disturbed. Such means consist of suitable grooves cut the inner face of one or both of the members of the holder, and a rib or flange on the blade



adapted to occupy said grooves in the different positions of the blade. As herein shown, the member A of the holder is provided with one of said grooves, designated by the numeral 1, which groove is arranged at an angle of twenty-two and one-half degrees relatively to the two edges of the holder, while the member B is provided with three grooves, viz; grooves 2 and 3 arranged at an angle of ninety degrees or a right angle, and groove 4 arranged at an angle of forty-five degrees. One of the walls of said grooves is preferably beveled as shown, and the rib or flange  $c$  extending along one edge of blade C has one of its sides correspondingly beveled, whereby, when said blade is applied to the holder with said rib occupying one of said grooves, and the thumb-screw  $a^2$  is turned to press the two members of the holder together, a wedging action between said beveled surfaces is caused, which locks the blade firmly within the holder and renders it impossible for it to be accidentally loosened. The angle at which the several grooves in the holder are arranged being known, it is obvious that the blade can be set at either of said angles by pushing the latter through the holder with its rib in the desired groove, without loss of time or the exercise of any particular care or skill. To facilitate starting the rib in the proper groove, I prefer to stamp or otherwise mark upon the edge of the holder, opposite the end of each groove, the angle at which it is arranged, as shown in Figs. 3, 4 and 8.

In Fig. 9 I have shown the blade located in groove 3, in which position the tool is adapted to be used as a square, a small miter gage being provided by the inclined end of the blade. In Figs. 10 and 11 the blade is shown as occupying grooves 1 and 4, respectively, whereby angles of twenty-two and one-half degrees and forty-five degrees can be located. In Fig. 13 the blade is shown as occupying groove 2, with its ends extending an equal distance upon both sides of the holder, in which position the tool is very useful in locating lines drawn upon the arc of a circle of which the holder forms the radius by supposing the center of the circle to lie at the lower end of the holder and its circumference to lie at some point beyond the groove 2 in which the blade is located. In the latter position of the blade, moreover, the tool becomes a joiner's gage, for which purpose a marking point  $d$  having a threaded shank, and two nuts  $d'$   $d^2$  are provided, as shown in Fig. 7. When not in use, said point  $d$  is inserted in a threaded hole in the rear end of member A of the holder, as shown in Figs. 1, 9, 10, 11 and 12, where it does not interfere with the use of the tool as hereinbefore described. When the tool is to be used as a gage, said point is removed from the holder and is inserted within a hole  $c'$  in the blade, with nuts  $d'$   $d^2$  located upon opposite sides of the blade, as shown in Fig. 14, whereby it is securely held in position. The member A of the holder is

rabbeted along one edge thereof as shown at  $a^4$ , and when the point  $d$  is thus secured to the blade a perfect gage is formed, and one which can be accurately adjusted by means of the scale marks on the blade, which are graduated from the center of the hole  $c'$ . To enable the point  $d$  to be adjusted nearly to the edge of the holder, semicircular recesses are formed in the inner surface of the two members of the latter, as shown at  $d^3$ , to receive the nuts  $d'$   $d^2$ . The blade C, being readily detachable from the holder, is always ready for use as an ordinary ruler.

As hereinbefore stated, for all angles other than those for which grooves in the holder are provided, the blade can be reversed in the holder to bring its rib  $c$  outside of the latter, and can then be adjusted in the usual manner by the use of a square, as indicated in Fig. 12.

The number and arrangement of the grooves in the holder can be varied at will, but for ordinary use those herein shown will be sufficient.

I prefer to make one of the corners of the holder, at its front end, rounded as shown, as it enables me to use a narrower blade than would be possible if both corners were square.

While, as hereinbefore stated, the tool thus constructed is primarily designed for use by carpenters and machinists, in which case it will preferably be made from metal, it will be obvious that by making the blade and holder from hard wood, a very convenient tool for use by draftsmen and designers will be formed.

I am aware that tools comprising a holder and a blade pivotally secured thereto and adapted to be set at different angles to the holder, have been heretofore devised; but such tools are open to the objection that the blade is adjusted by means of a graduated scale, thus necessitating very careful manipulation thereof in making the adjustment, and, the blade being held by lateral pressure only, is liable to be moved from its adjustment by dropping the tool or striking the blade against some object. Furthermore, the blade is not detachable and cannot be used as a simple ruler.

I am also aware that it has been proposed to make in a blade, grooves extending transversely across the same, at different angles, to receive a projecting part of a handle, and thus set the blade at different angles; but such construction, besides materially weakening the blade itself, is open to the objection that when the blade is once adjusted at any angle, it cannot be moved lengthwise to cause it to project a greater or less distance from the handle, without disturbing the angle. In the tool devised by me, the blade can be set at the desired angle and can then be drawn its entire length through the holder without disturbing the angle, thus enabling it to be used in many situations in which the tool just referred to would be useless. The tool herein



shown and described overcomes each of these objections and in addition thereto forms a perfect gage, as previously described.

I do not wish to limit myself to the exact details of construction herein shown and described, as modifications therein can be made within the spirit of my invention.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is,

1. In a combination tool, the holder composed of members A, B secured together at one end and having their opposite ends adjustably connected together, (one of said members having a marking point detachably connected thereto,) and blade C adapted to be adjustably held between said members said blade having means, as the hole  $c'$ , for receiving and holding said marking point, when the tool is used as a gage, substantially as set forth.

2. In a combination tool, a holder composed of member A having shoulder  $a$  upon its inner face and having groove 1 within said face,

member B having grooves 3, 4 within its inner face, and thumb-screw  $a^2$  passing through a hole in one of said members into a threaded hub on the other, and blade C corresponding substantially in thickness with the width of said shoulder on member A and having rib  $c$  extending longitudinally thereof, said rib, in cross-section, corresponding substantially with said grooves, substantially as set forth.

3. In a combination tool, the holder composed of members A, B, said member A having the rabbeted edge  $a^4$  and a threaded hole in its rear end, and said member B having groove 2 therein, combined with blade C having rib  $c$  and hole  $c'$ , and marking point  $d$  having a threaded shank and the binding nuts  $d'$   $d^2$ , whereby said point is adapted to be interchangeably held in said holder and blade, substantially as set forth.

ARTHUR HETU.

Witnesses:

W. H. CHAPMAN,  
JOSEPH D. MORIN.