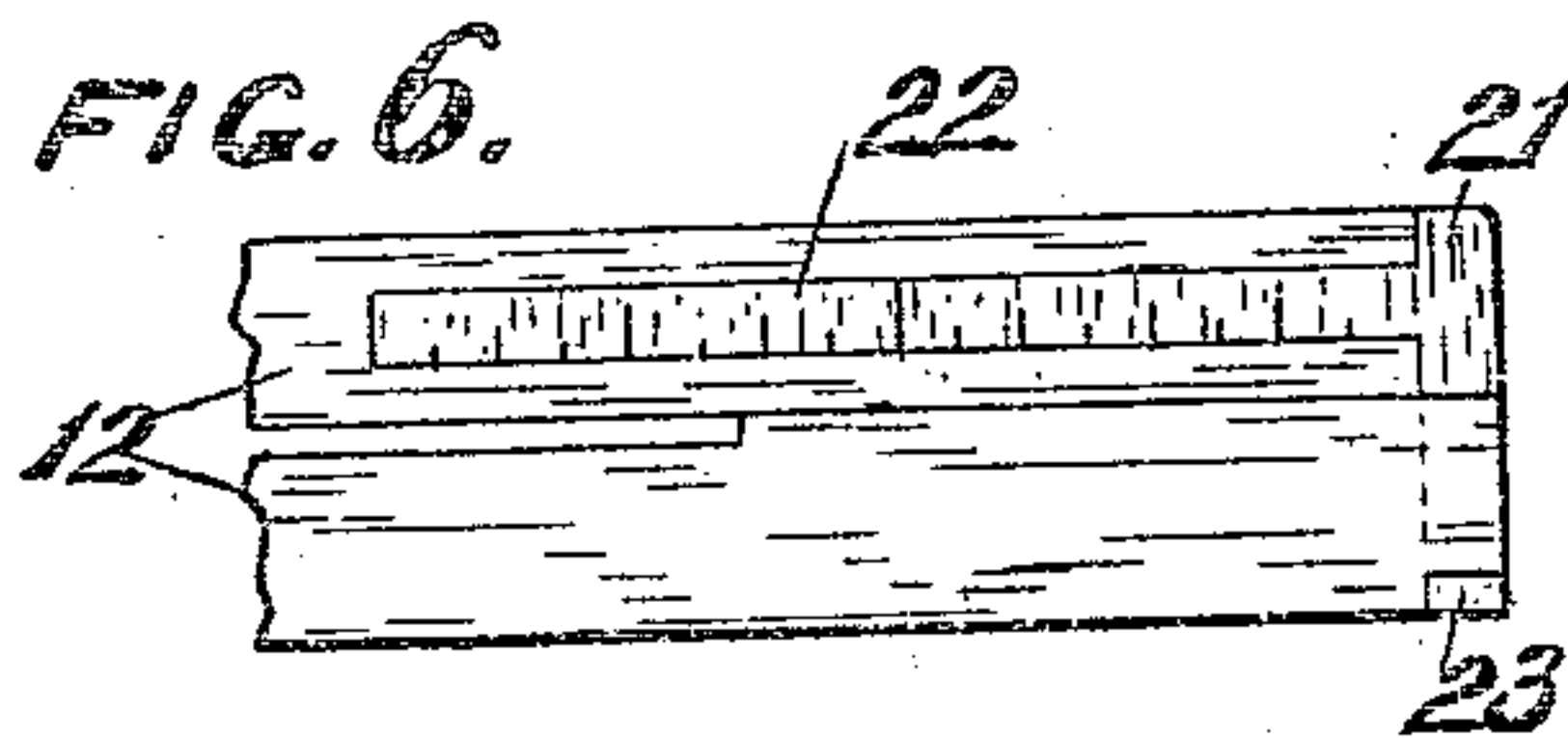
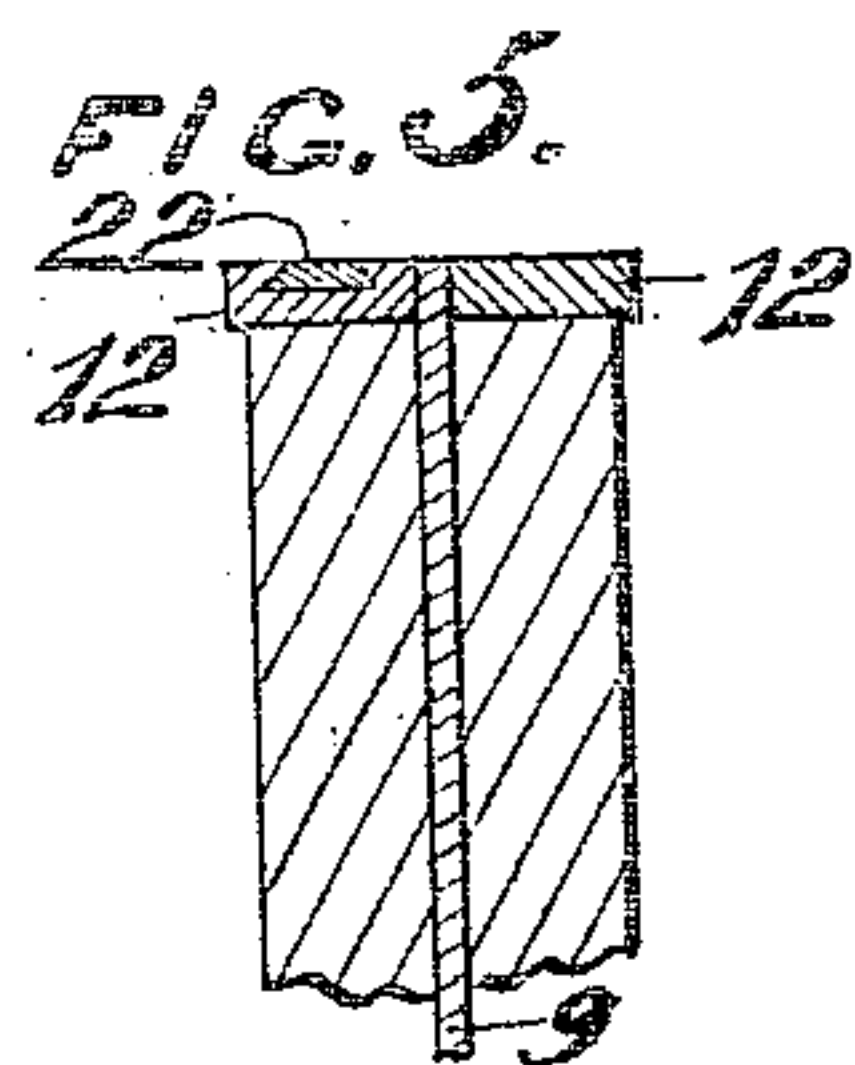
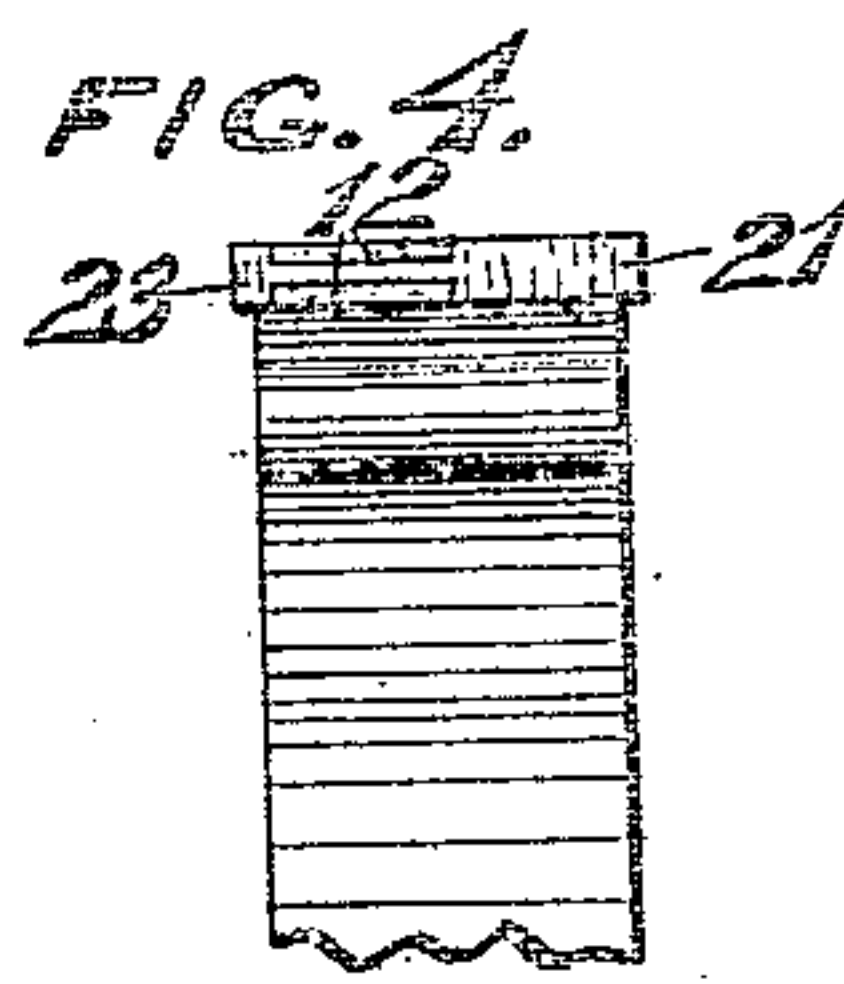
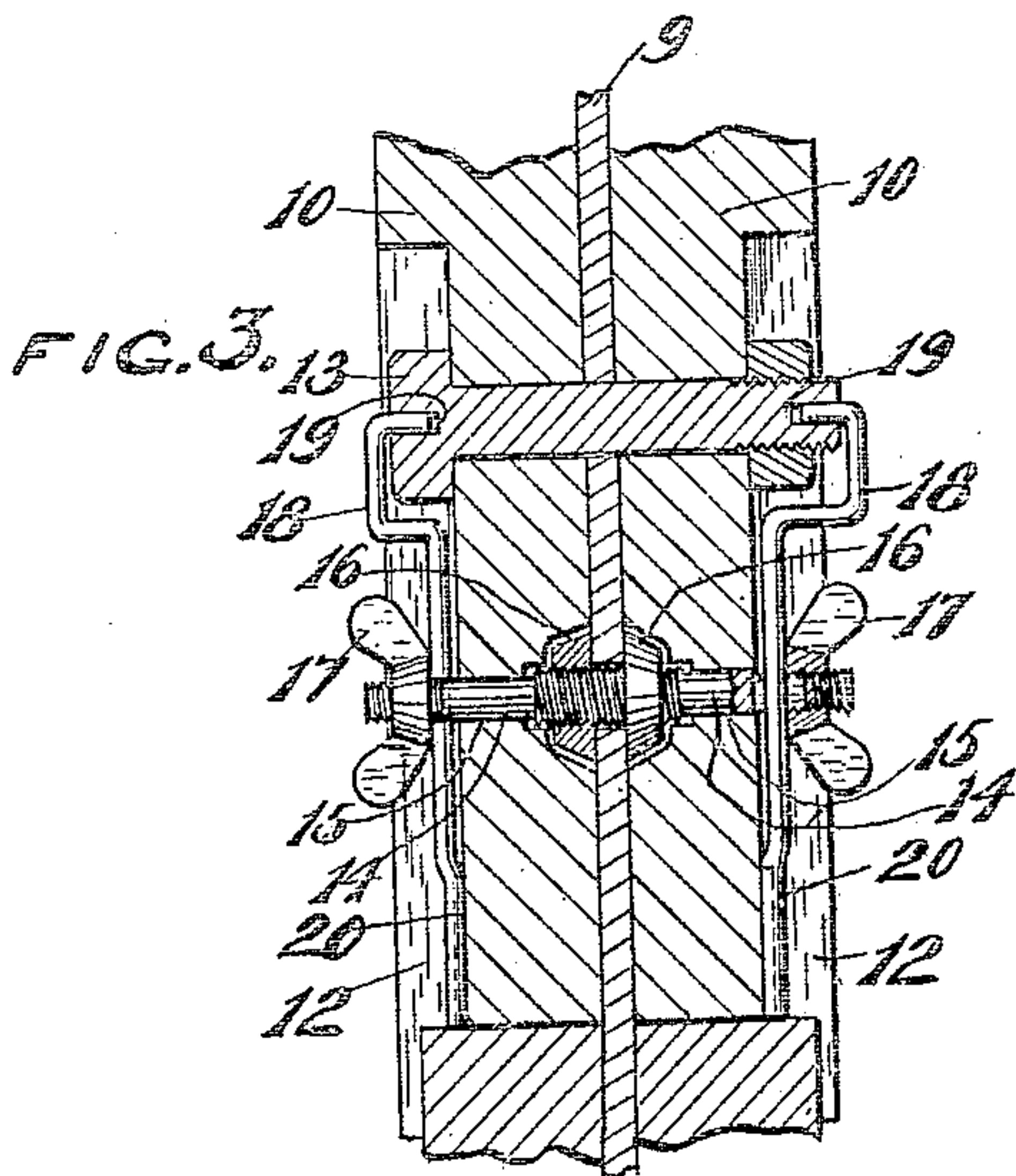
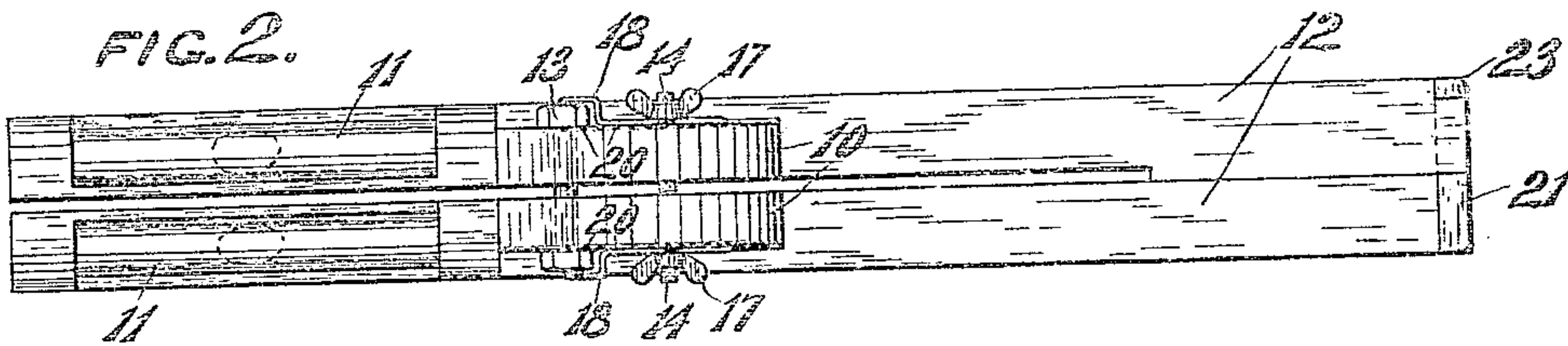
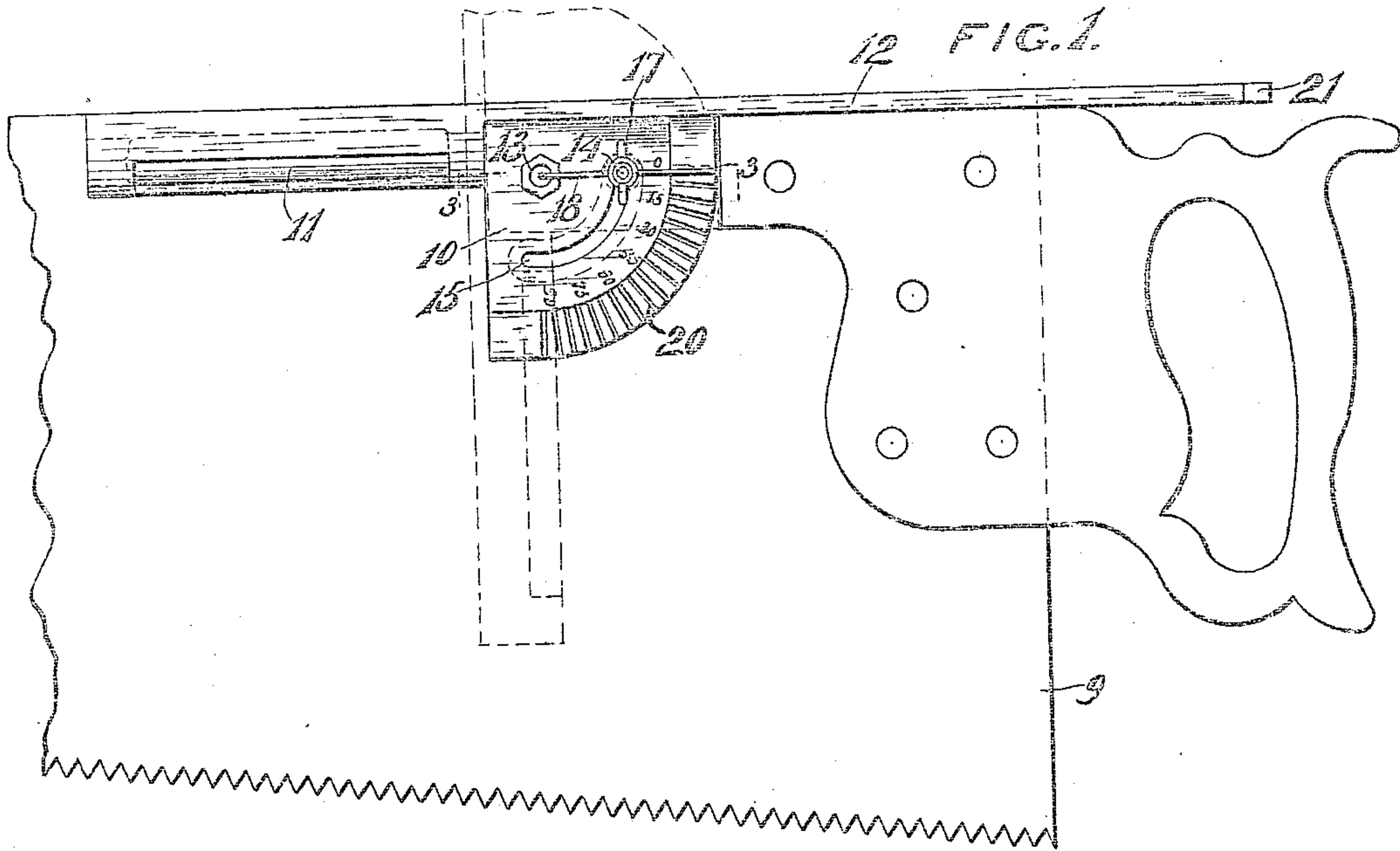


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COMBINATION ATTACHMENT FOR TOOLS.
APPLICATION FILED APR. 23, 1909.

Patented Apr. 5, 1910.

953,863.



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COMBINATION ATTACHMENT FOR TOOLS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID E. SHAW, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Combination Attachments for Tools, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 This invention has for its object to provide an attachment for a straight edge or any tool having a straight edge, such as the common hand saw, which attachment may be swung upon the tool to a desired angle with relation to the straight edge so as to enable the straight edge to be used as a try-square or an adjustable miter square, and being provided with an index finger and a graduated scale to show the degrees of the angle formed by the attachment with relation to the straight edge so as to constitute a protractor for producing the angle which it is desired to use.

25 Another object of the invention is to provide such an adjustable attachment with a spirit level by means of which the straight edge of the tool may be employed as a level, when the attachment is parallel therewith, or may be employed as a plumb, when the attachment is adjusted to its angle of ninety degrees with relation to the straight edge, or may serve as a means for measuring the degree of inclination of a surface.

35 Another object of the invention is to provide such an attachment with means for rigidly locking it in its adjustments and for readily finding the adjustment for the angles most frequently used.

40 Another object of the invention is to provide such an attachment with duplicate members for opposite sides of the straight edge which may be locked together to move in unison, or which may be disconnected from each other to move independently so that one may form a different angle from the other.

50 Another object of the invention is to provide such locking means for the adjustable members in the form of a sliding caliper gage on one member adapted to engage the other member.

55 With the above and other objects in view the invention consists in the combination attachment for tools herein claimed, its parts and combinations of parts and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views; Figure 1 is a side elevation of a combination attachment for tools constructed in accordance with the present invention and applied to a hand saw; Fig. 2 is a plan view thereof inverted and removed from the saw; Fig. 3 is an enlarged sectional view on the plane of line 3—3 of Fig. 1; Fig. 4 is an end view of the attachment in position on the saw; Fig. 5 is a transverse sectional view thereof; and, Fig. 6 is a plan view of the end of the blades of the attachment showing the construction of the caliper gage for locking them together.

In these drawings the invention is shown as comprising a pair of members for attachment to the opposite sides of a saw blade or other straight edge, each member being provided with a sector-shaped plate 10 at its intermediate part with a spirit level 11 at one end and a flat blade 12 at the other end. The blade 12 extends across the plate 10 and is an extension of a plane surface of the portion containing the spirit level so that the member has a plane surface extending from one end to the other and at right angles to the plane of the inner face of the sector plate so as to stand at right angles to the plane of the saw blade or other plate to which it is attached. A bolt 13 passes through the two sector-shaped plates 10 at the center point thereof and also through an opening provided therefor in the saw blade, and upon this bolt the two members are pivotally mounted to swing together or independently. A clamping bolt 14 also passes through the saw blade and projects through slots 15 in the plates 10 which are curved about the bolt 13 as center. A nut 16 is threaded on the clamping bolt 14 on each side of the saw blade to clamp it firmly in place thereon and the slots 15 are widened at the inner face of the members to accommodate the nuts 16 throughout the range of adjustment of said members. On its projecting ends the clamping bolt 14 is provided with winged nuts 17 which may be tightened upon spring wire index fingers 18 having bent ends let into openings 19 in the ends of bolt 13 and projecting through openings near the ends of bolt 14 with their other ends bent slightly inwardly to fit in series of grooves or notches 20 along the outer arc-shaped raised edges of plates 10. When

the winged nuts 17 are loose the members 10 may be swung on the bolt 13, the ends of index fingers 18 springing into the successive notches 20 as they pass, and when the desired angle for the blades 12 with relation to the straight edge is reached, as indicated by the index finger 18 on the scale of graduations appearing alongside of the notches, the winged nuts are tightened and thereby firmly lock the attachment in its adjustment. It is obvious that the index finger 18 by being held tightly in the notches 20 by the winged nut will serve the purpose of locking the attachment in its adjustments, but by tightening the winged nut 17 further the index finger may be forced against the swinging member so that the clamping action is direct from the bolt 14, with the index finger interposed as a washer between the winged nut and the swinging member, and thereby avoid the possibility of the adjustment being disturbed by the yielding of the index finger should the attachment receive a blow.

In order to detachably lock the two swinging members together one of them is made slightly shorter than the other and this difference is made up by the head 21 of a caliper gage whose graduated stem 22 is dove-tailed in the face of said member, there being a T-shaped arm 23 extending laterally from the head 21 and fitting in a correspondingly shaped slot and recess in the end of the other member, as shown in Figs. 4, 5 and 6. When the caliper gage is closed so that the arm thereof fits in the seat provided for it the two blades 12 are locked together so that they stand at the same angle with relation to the straight edge and move in unison during their adjustment. The caliper gage may be drawn outwardly so as to disconnect the blades 12, and then the two members may be adjusted independently so that they may stand at different angles with relation to the straight edge.

In use, it is only necessary to adjust the attachment to the angle of ninety degrees when the tool may be used as a try-square to accurately indicate a right angle by means of the straight edge when either of the swinging members bears flat against the edge of the work. If other angles are desired the attachment may be adjusted accordingly so that the device may serve the purpose of a miter square, and furthermore by means of the graduated scale and index finger the degree of the angle is indicated so that the tool constitutes a protractor. When the attachment is in its normal or zero position, as shown in Fig. 1, the straight edge may be used as a level, the spirit level 11 on either side thereof indicating when said straight edge is in a horizontal position, or when the degree of inclination of a slanting surface is desired to be measured the straight

edge is placed thereon and the attachment swung to the position where its spirit level indicates that the blades 12 are horizontal, then the index finger 18 will indicate on the graduated scale the degree of inclination. The spring index finger engaging the notches 20 and snapping from one to another as the blade is swung serves to assist in the adjustment to the degrees of angularity which are most commonly used and permit of such adjustments being quickly made.

When the attachment is mounted on a saw and is not in use it stands in a position with relation to the saw blade where it will not interfere with the usual work of the saw and where it will not be liable to injury.

It is obvious that the invention is not confined in its use to its application to a saw blade, but that it is adapted to be applied to any tool having a straight edge, such as a square or a draftsman's triangle or the like, and the term straight edge is therefore employed to designate any tool suitable for the purpose.

What I claim as my invention is—

1. An attachment for straight edge tools, comprising a member having pivotal connection with the tool and provided with an arc shaped slot, a clamping screw mounted on the tool and passing through the arc-shaped slot of the member, there being a series of notches in the member radial to the pivotal connection, and a finger mounted on the pivotal connection of the member and held by the clamping screw in engagement with the notches.
2. An attachment for straight edge tools, comprising a member having a pivotal connection with the tool and provided with an arc shaped slot, a clamping screw mounted on the tool and passing through the arc-shaped slot of the member, there being a series of notches in the member radial to the pivotal connection, a spring finger mounted on the pivotal connection of the member guided by the screw, and a nut threaded on the clamping screw and engaging the index finger for holding it in engagement with the notches.
3. An attachment for straight edge tools, comprising a member having a pivotal connection with the tool and provided with an arc-shaped slot, a clamping screw mounted on the tool and passing through the arc-shaped slot of the member, there being a series of graduated notches in the member, and an opening in the clamping screw, a spring index finger mounted on the pivotal connection and passing through the opening in the clamping screw, a nut threaded on the clamping screw for holding the index finger in the notches, and a spirit level carried by the pivotal member.
4. An attachment for straight edge tools,

comprising a pair of members having the independent pivotal connections with the tool and provided with arc shaped slots, a clamping screw mounted on the tool and passing through the arc-shaped slot in each of the members for clamping them in their independent adjustments, and means for detachably locking the members together.

5. An attachment for straight edge tools, comprising a pair of members having independent pivotal connections with the tool provided with arc-shaped slots, a clamping screw mounted on the tool and passing through the arc-shaped slot in each of the members for clamping them in their independent adjustments, means for detachably locking the members together, and a spirit level carried by each of the members.

6. An attachment for straight edge tools, comprising a pair of members having pivotal connection with the tool and provided with arc-shaped slots, a clamping screw mounted on the tool and passing through an arc-shaped slot in each of the members for clamping them in their adjustments, there being a series of notches on each member radial to the pivotal connection, and a spring finger for each member mounted on the pivotal connection thereof and guided by the clamping bolt and adapted to engage the notches for locking the members in their adjustments.

7. An attachment for straight edge tools, comprising a pair of swinging members, a pivotal bolt passing through the tool on which the members are pivotally mounted, and having openings in its ends, a clamping bolt passing through the tool and having nuts threaded thereon engaging opposite sides of the tool, there being arc-shaped slots in the swinging members through which the ends of the clamping bolt project, each of

the swinging members having a series of graduated notches, and each end of the clamping bolt having an opening, a spring wire index finger for each of the members having its end entered in an opening in the end of the pivot bolt and passing through the opening in the end of the clamping bolt and engaging the notches, and winged nuts threaded on the ends of the clamping bolt for clamping the members in their adjustments.

8. An attachment for straight edge tools, comprising a pair of swinging members having pivotal connection with the tool and provided with arc-shaped slots, a clamping bolt mounted on the tool and projecting through arc-shaped slots of the swinging members and adapted to clamp them in their adjustments, and means for locking the swinging members together comprising a caliper gage sliding in one member and having a T-shaped arm engaging a slot in the other member.

9. An attachment for straight edge tools, comprising a pair of members having independent pivotal connections with the tool on opposite sides thereof and provided with arc-shaped slots, a clamping screw passing through the tool, nuts threaded on the clamping screw and engaging the opposite sides of the tool, the ends of the clamping screw passing through the arc-shaped slots in each of the members, and nuts threaded on the ends of the clamping screw for clamping the members in their independent adjustments.

In testimony whereof, I affix my signature, in presence of two witnesses.

DAVID E. SHAW.

Witnesses:

R. S. C. CALDWELL,
ALMA A. KLUG.