

Sept. 3, 1963

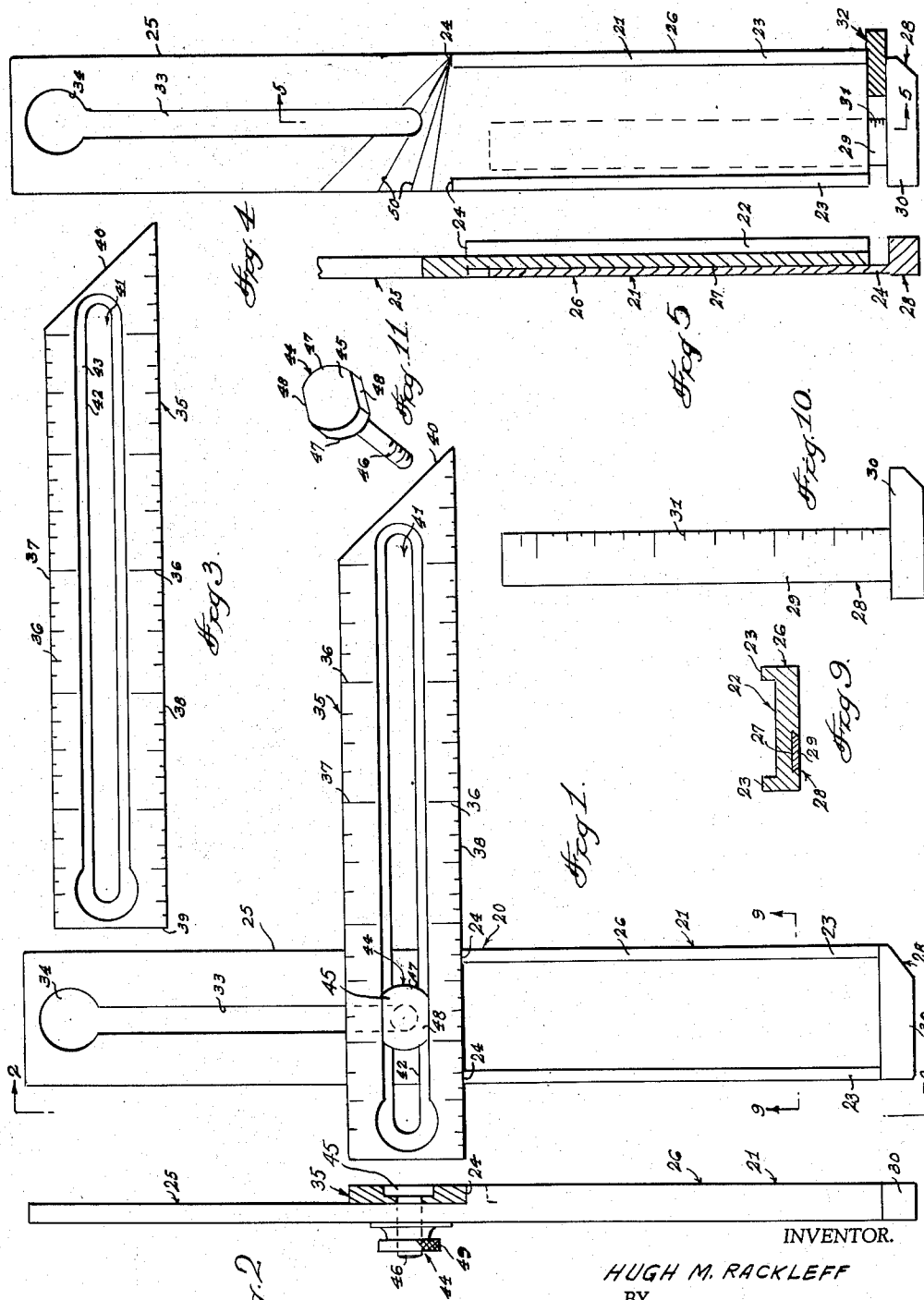
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3,102,340

COMBINATION BEVEL SQUARE

Filed May 20, 1960

2 Sheets-Sheet 1



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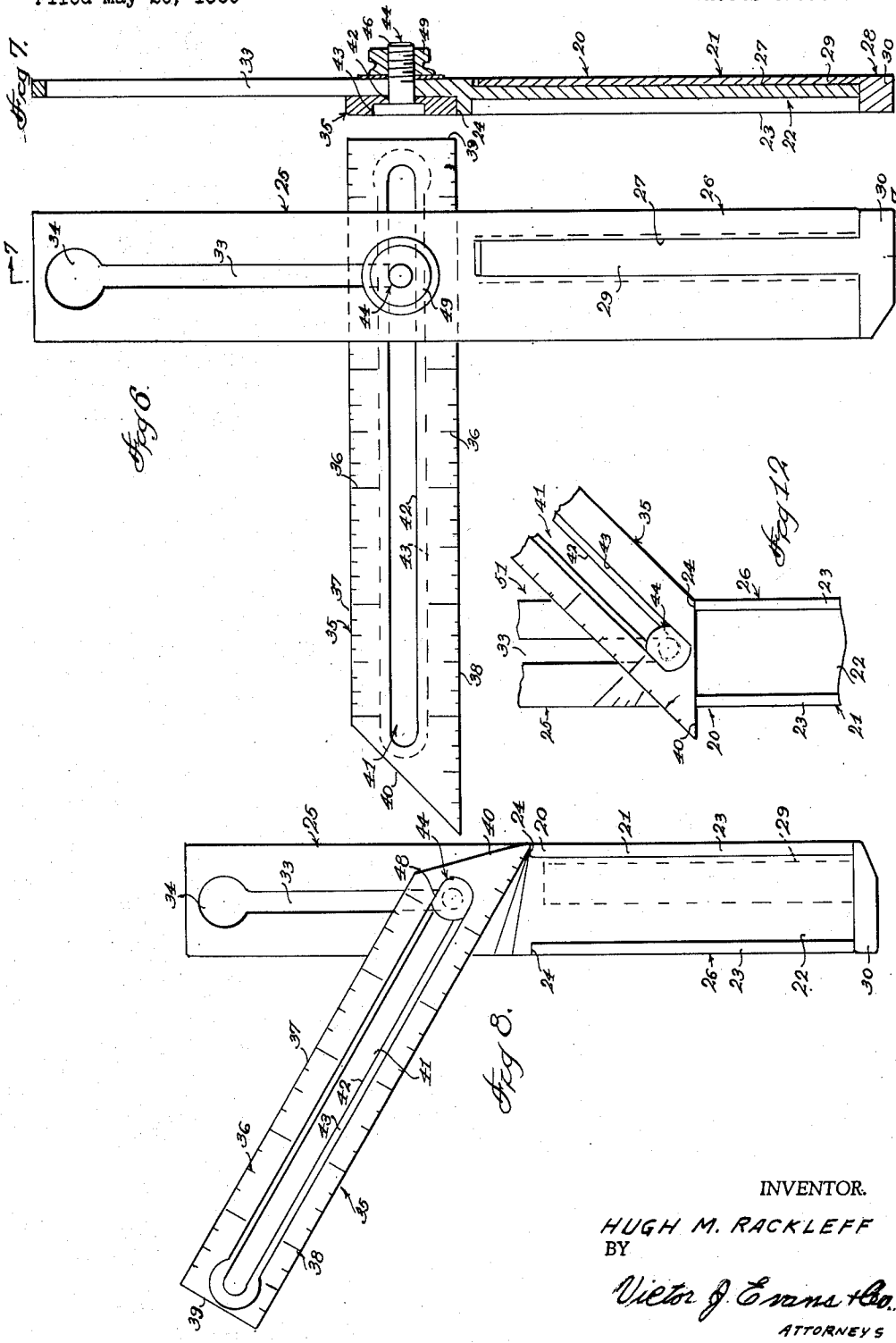
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COMBINATION BEVEL SQUARE

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1 Claim. (Cl. 33—102)

This invention relates to a tool, and more particularly to a combination tool which can be used for a multiplicity of purposes.

The object of the invention is to provide a tool which is in the nature of a combination bevel square so that the single tool of the present invention will eliminate the necessity of having three separate tools such as three separate wood working tools.

Another object of the invention is to provide a combination bevel square tool which can be used as a combination square, or else it can be used as a bevel square or wherein specific angles can be measured or marked off, or unknown angles can be determined, and wherein the tool of the present invention is constructed so that the tool can be laid flat on a board or paper as for example when making layout drawings or drawing any angles, and wherein the tool can be folded so that it will occupy a small space whereby it can be conveniently carried in the pocket or the like.

Another object of the invention is to provide a combination bevel square which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

FIGURE 1 is a plan view of the combination bevel square of the present invention.

FIGURE 2 is a view taken generally on the line 2—2 of FIGURE 1.

FIGURE 3 is a plan view of the calibrated arm.

FIGURE 4 is a plan view of the base or body member per se.

FIGURE 5 is a sectional view taken on the line 5—5 of FIGURE 4.

FIGURE 6 is a view looking at the opposite side from FIGURE 1.

FIGURE 7 is a sectional view taken on the line 7—7 of FIGURE 6.

FIGURE 8 is a plan view showing the arm in a different position.

FIGURE 9 is a sectional view taken on the line 9—9 of FIGURE 1.

FIGURE 10 is a plan view of the caliper.

FIGURE 11 is a perspective view of the securing element.

FIGURE 12 is a fragmentary plan view showing the parts in a different position.

Referring in detail to the drawings, the numeral 20 indicates the tool of the present invention which is shown to comprise an elongated body member 21 having opposed side edges and the body member 21 is provided on one side thereof with a rectangular recess which is indicated generally by the numeral 22, there being spaced parallel flanges or ribs 23 on opposite sides of the recess 22. The numeral 24 indicates transversely disposed shoulders on the ends of the ribs 23. The ribs 23 extend from one end of the body member 21 and terminate along a line transversely of the body member 21 at a point substantially mid-length of the body member 21. The body member 21 thus includes a first portion 25 which is arranged on one side of the shoulders 24, and there is also provided on the body member a second portion 26 on the opposite side of the shoulders 24. As shown in FIGURE 5 for example the second portion 26 is of greater

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thickness than the first portion 25 for a purpose to be later described.

The numeral 27 indicates a dove tail groove in the second portion 26 and the numeral 28 indicates a caliper which has a blade 29 slidably mounted in the groove 27, and the blade 29 has a dove tail shape conforming in cross-sectional configuration to the groove 27, as for example as shown in FIGURE 9. The caliper 28 further includes an enlarged outer end portion or base 30, and the blade 29 is calibrated or provided with scale markings as indicated by the numeral 31 whereby a work piece such as the work piece 32 can be measured as for example as shown in FIGURE 4.

There is further provided a movable or adjustable arm which is indicated generally by the numeral 35, FIGURE 3. The first portion 25 of the body member 21 is provided with an elongated slot 33 which terminates in an enlarged circular section or opening 34, FIGURE 4. The arm 35 has calibrations or scale markings 36 thereon, and the arm 35 includes spaced parallel longitudinal side edges 37 and 38 as well as a flat end portion 39 and a tapered or beveled end portion 40.

As shown in FIGURE 3 for example the arm 35 is provided with a longitudinally extending slot 41 shaped to include a first section 42 and a second section 43, the second section 43 being of greater size than the first section 42.

The numeral 44 indicates a bolt which is provided with an enlarged head 45, and the head 45 includes spaced apart arcuate or curved edges 47 and the head also includes spaced parallel flat surfaces 48. The securing element 44 includes a threaded shank 46 such as adapted to project through the slots such as the slots 41 and 33, and a fastener or knurled nut 49 is arranged in threaded engagement with the threaded portion of the shank 46, FIGURE 2.

As shown in FIGURE 4 for example, there is provided a plurality of radially disposed lines or scale markings 50 which permit the tool of the present invention to be used for measuring or marking at different angles.

From the foregoing, it is apparent that there has been provided a tool which is in the nature of a combination bevel square, and in use the parts may be arranged as shown in FIGURE 1 for example so that the arm 35 has its longitudinal axis arranged at right angles to the longitudinal axis of the body member 21 whereby right angles, or the like can be readily measured or marked off. The arm 35 is provided with the calibrations or scale markings as indicated by the numeral 36 so that accurate measurements can be made, and with the parts arranged as shown in FIGURE 1, the edge 38 abuts the shoulders 24 so that for example a 90° angle will be provided between the edges 37 or 38 and the side edges of the body member 21. The nut 49 is adapted to be tightened on the securing element 44 so as to maintain the parts immobile in their adjusted position. It is to be noted that as shown in FIGURE 2 for example, the head 45 of the securing element 44 fits snugly in the slot 41 so that as shown in FIGURE 2 for example the tool 20 has one side thereof which is flat whereby the tool can be laid down on a work piece or other flat surface without having any projections interfering therewith. That is, as shown in FIGURE 2 the right side of the tool provides a generally flat surface which is adapted to be laid down on a work sheet or other area. Thus, the thickness of the portion 26 is equal to the combined thicknesses of the portion 25 and the arm 35.

When the arm 35 is to be adjusted, the nut 49 is loosened, and after the arm 35 has been moved to its desired position, the nut 49 is tightened in order to maintain the arm immobile in its adjusted position. The head 45 of the bolt 44 includes the flat opposed side

surfaces 48 which snugly engage the section 43 of the slot 41, and the slots terminate in enlarged circular portions which can receive the arcuate surfaces 47 of the head 45 when desired. The caliper 28 has its blade or shank 29 slidably mounted in the groove 27 so that for example a workman such as a work piece 32 can be measured by arranging the work piece or article 32 between the portion 30 of the caliper and adjacent end of the body member 21. The scale markings 31 on the blade 29 provide a means for accurately measuring the diameter such as the diameter of the article or member 32. The groove 27 has a dove tail shape as for example as shown in FIGURE 9 and the blade 29 has a corresponding cross-sectional configuration so that the blade 29 is free to slide in the groove 27, but nevertheless the blade will not accidentally fall out of the groove.

As previously stated the arm 35 can be arranged so that its edge 38 abuts the shoulders 24 as shown in FIGURE 1 in order to permit the tool to be used for measuring or marking right angles. Or, as shown in FIGURE 8, the arm 35 can be arranged in a different position so that an edge such as the edge 38 will coact with a radial line 50 in order to permit measurement or marking of different angles. Or, as shown in FIGURE 12 the beveled edge 40 of the arm 35 can abut a shoulder 24 to provide measuring or marking a 45° angle as indicated by the numeral 51.

The parts can be made of any suitable material and in different shapes or sizes.

The provision of the slots 33 and 41 through which extends the shank 46 of the bolt 44 provides a means whereby the arm 35 can be adjusted or moved to different positions on the body member 21 as desired. Thus, the tool or instrument of the present invention can be used as a square, or else it can be used as a protractor, as for example due to the provision of the radially disposed lines 50 which are printed or otherwise arranged on the body member. The caliper 28 has measurement markings 31 thereon. The handle or body member 21 is provided with the space or recess 22 for the arm to lie in when closed.

Thus, it will be seen that there has been provided a combination bevel square which will replace the necessity of having three separate tools such as three separate wood working tools. When the arm 35 is pressed firmly against the shoulders 24 of the body member 21, and the nut and bolt tightened, the arm 35 will be at right angles to the body member 21. With the arm 35 moved so that the beveled end 40 rests against a shoulder 24, as for example as shown in FIGURE 12, then the arm 35 and the body member 21 coact to form a 45° angle as for example as indicated by the numeral 51. The angles 50 marked on the body member help to position

the arm 35 in the proper location, as for example for specific angles or for determining an unknown angle.

An important feature of the present invention is the ability of the tool to lie flat on a board or paper when making layout drawings, or drawing any angle which cannot be done with standard beveled squares or combination squares. In addition the tool will fold small enough to be carried in the pocket by loosening the nut bolt and folding the arm over the body member. The tool can be made of wood, plastic, metal or the like.

The arm 35 is adapted to lie between the ridges or ribs 23 when the tool is folded so as to provide a compact folded unit. The shoulders 24 are at the edges or ends of the ridges or ribs 23. The space 22 is for receiving the part of the arm 35 adjacent thereto when the device is in the folded position, and the remaining portion of the arm 35 extends parallel to the body member 21.

Minor changes in shape, size and rearrangement of the details coming within the field of invention claimed, may be resorted to in actual practice if desired.

What is claimed is:

A bevel square comprising an elongated body member having on one face thereof a rib extending along each of the side edges of said body member from one end of said body member to a point substantially midlength of said body member, the inner ends of said ribs constituting shoulders disposed along a line which is transverse of said body member, the portion of said body member remote from said ribs having an elongated longitudinally arranged slot, an elongated arm having a longitudinally extending closed slot, said arm being disposed in face to face relation with respect to said body member portion, a bolt extending through and slidable along said body member portion slot and said arm slot adjustably connecting said arm to said body member, one end of said arm being beveled at an angle of forty-five degrees with respect to the longitudinal axis of said arm, said arm having a side edge abuttingly engageable with said shoulders to define with said body member a ninety degree angle and when positioned with the beveled end abuttingly engaging said shoulders defining with said body member a forty-five degree angle, said arm being movable to a position between said ribs when in a none use condition.

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