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2,728,989

COMBINATION TOOL

Filed Feb. 25, 1954

2 Sheets-Sheet 1

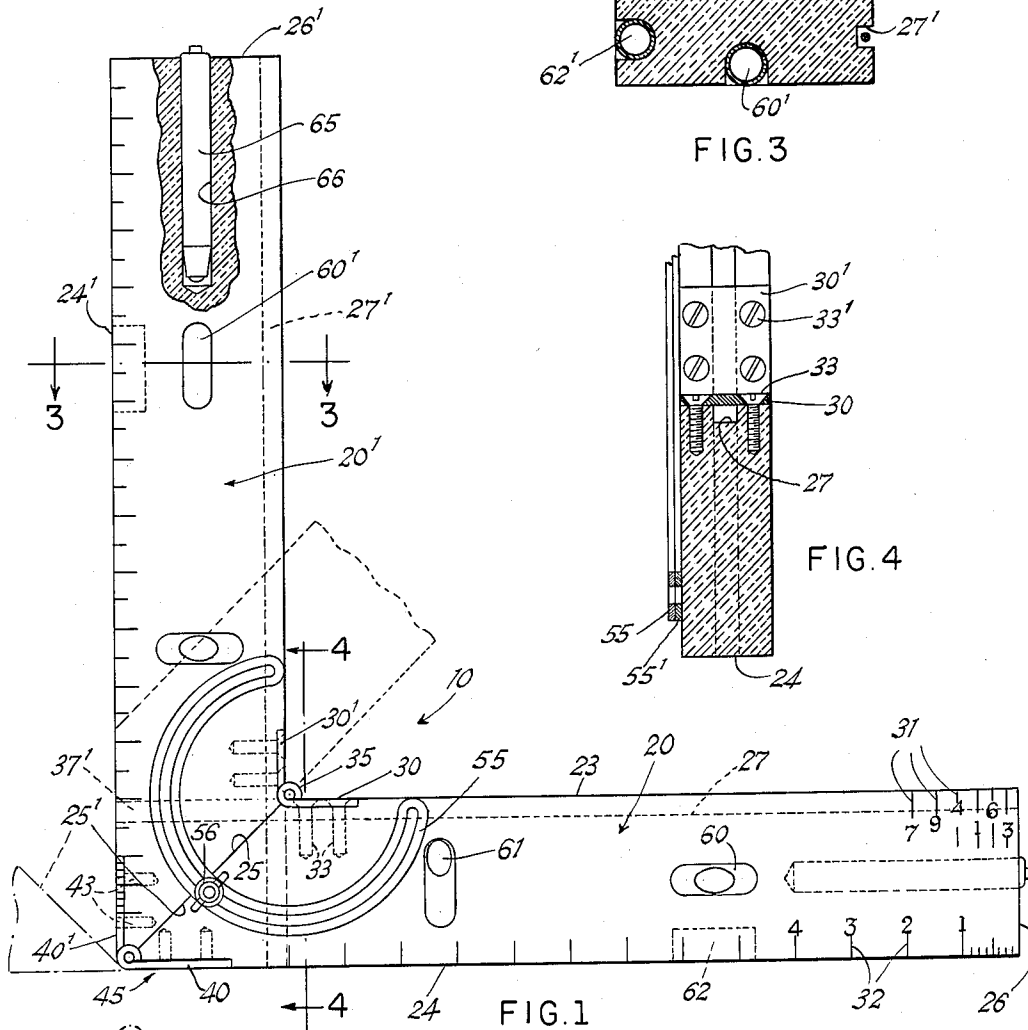


FIG. 1

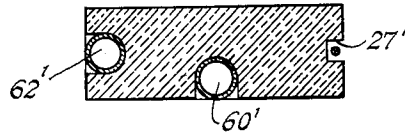


FIG. 3

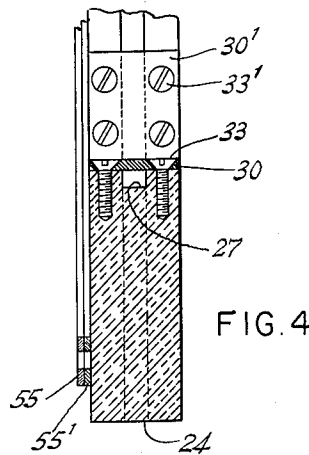


FIG. 4

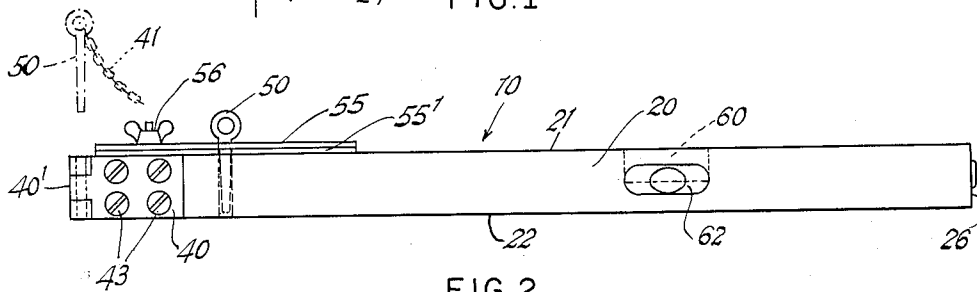


FIG. 2

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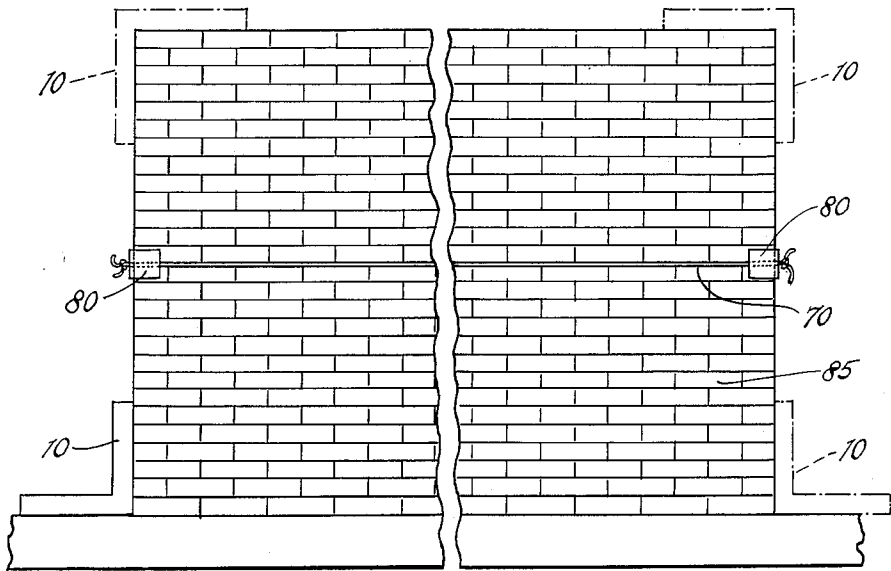


FIG. 7

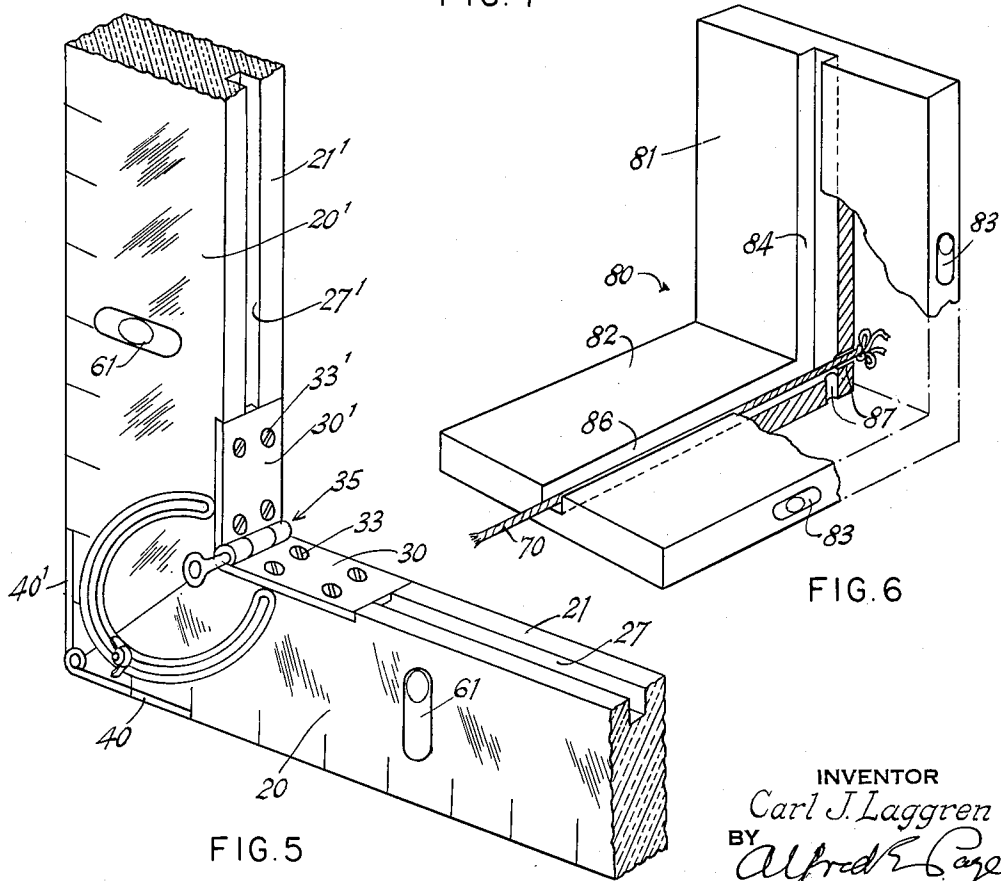


FIG. 5

FIG. 6

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COMBINATION TOOL

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4 Claims. (Cl. 33—88)

This invention relates to a combination tool, particularly useful in construction operations, and combining in one unit the functions of a level, a plumb, a square, a straight-edge, a scale and an angle or protractor.

The tool of the present invention is designed, in the normal relation of its parts, to function as a carpenter's or bricklayer's square, incorporating therein spirit levels extending in three mutually perpendicular directions. To this end, the tool includes a pair of rectilinear arms or legs having mating bevelled edges accurately formed to position the legs perpendicular to each other when the bevelled edges are inter-engaged. The side edges of each arm are appropriately graduated to form the scales.

To adopt the tool for use as a straight-edge, angle, or square, the arms of the tool are arranged to be pivotally or hingedly interconnected selectively at either the outer or the inner corner of the square. For this purpose, each leg has hinge leaves on both its inner and outer edges adjacent its bevelled end, each leaf mating with a similarly located leaf on the other arm of the tool. A removable hinge pin is attached to the tool so that it may be selectively used with either hinge.

To use the tool as a square or angle, the hinge pin is positioned to complete the hinge at the inner corner of the tool. The arms, adjacent their bevelled edges, are provided with juxtaposed circular guides concentric with the axis of the inner hinge. One of the arms has a threaded aperture receiving a winged clamping stud cooperating with the two circular or arcuate guides to clamp the guides firmly to hold the arms in any adjusted angular relation.

If the tool is to be used as a straight-edge or an elongated level, the hinge pin is withdrawn from the inner hinge and inserted in the outer hinge, and the winged clamping stud is removed. The two arms may then be swung outwardly so that their outer edges are aligned.

As a further feature, the invention tool can also be used as a levelling anchor for a "line," either in cooperation with a similar tool or with a clip. To this end, the inner edge of each arm has a channel groove therealong so that an elastic line can be laid along either groove and anchored adjacent the corner of the tool. The other end of the elastic line is secured in a similar manner to an identical tool or to a cooperating clip. The tools, in the form of squares, are then "squared" over the ends of a brick wall or the like with the elastic cord stretched therebetween to provide a level line for laying up a course of brick.

While the invention tool may be made of any suitable material, it is preferably made of translucent material, such as a suitably rigid transparent plastic. Thereby, elongated recesses may be provided in the outer ends of the arms to receive "pencil" flashlights, and the illumination from these flashlights is transmitted to the several spirit levels incorporated in the tool.

For an understanding of the invention principles, reference is made to the following detailed description of a

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typical embodiment thereof as illustrated in the accompanying drawing. In the drawing:

Fig. 1 is a plan view of the invention tool when used as a square, alternative angular relations of the arms being shown in broken lines;

Fig. 2 is a side elevation view corresponding to Fig. 1;

Figs. 3 and 4 are transverse sectional views on the correspondingly numbered lines of Fig. 1;

Fig. 5 is a parital perspective view of the tool;

Fig. 6 is a perspective view of a clip usable with the tool or with a similar clip to anchor an elastic cord to form a straight line; and

Fig. 7 is an elevation view illustrating uses of the tool and the clip in laying up a brick wall.

Referring to Figs. 1 through 5, the combination tool 10 of the invention comprises a pair of pivotally and detachably interconnected and mating arms 20, 20' of substantially rectangular cross section and formed of any suitable, preferably translucent material. As the arms are mating opposites of each other, only one will be described in detail, corresponding reference characters primed being used to designate corresponding parts of the other arm.

Arm 20 includes a front side surface 21, a rear side surface 22, an inner edge 23, an outer edge 24, a bevelled end 25, and an outer end 26. For a purpose to be described, a channel groove 27 is formed along the inner edge 23. Adjacent each edge 23, 24, front surface or wall 21 is marked with calibrated graduations, such as 31, 32, forming a scale adjacent each edge. Rear surface 22 may be similarly marked.

The bevelled inner edge 25 of arm or leg 20 extends at an exact 45 degree angle to edges as 23 and 24. Consequently, when the inner edges 25 and 25' of arms 20 and 20', respectively, are abutted, the edges 23 and 24 of arm 20 will extend at an exact 90 degree angle to the edges 23' and 24' of arm 20', so that tool 10 will then have the form of a square. Means are provided to hold the arms in this position, or at other angles to each other.

As best seen in Figs. 1, 2, 4 and 5, the inner edge 23 of arm 20, adjacent bevelled end 25, is recessed to receive one leaf or wing 30 of a hinge 35, this leaf being secured to arm 30 by countersunk screws 33, leaf or wing 30 mates with a similarly located leaf or wing 30' on arm 20', forming the other half of hinge 35. The outer edge 24 of arm 20 is similarly recessed to receive a hinge leaf 40 cooperating with a mating hinge leaf 40', similarly located on the outer edge 24' of arm 20; to form a hinge 45, leaf 40 being secured by countersunk screws 43.

A removable hinge pin 50, secured to tool 10 by suitable flexible means such as a chain 41, is arranged to be interchangeably inserted in either hinge 35 or hinge 45. With pin 50 in hinge 35, arms 20, 20' are swingable about the inner corner of the square to any angular relation not greater than 90 degrees to form an angle or protractor. For this purpose, arm 20 has secured thereto an arcuate, slotted protractor or guide 55 overlapping or mating arcuate, slotted protractor or guide 55' secured to arm 20'. The guides are concentric with the axis of hinge 35. The arms 20, 20' are held in adjusted position by a winged clamping stud 56 extending through the aligned slots in guides 55, 55' and threaded into a threaded recess in arm 20.

To use the tool as a straight-edge or elongated level, pin 50 is withdrawn from hinge 35 and inserted in hinge 45. Stud 56 is then withdrawn, and the arms 20 and 20' may be swung to an angle greater than 90 degrees, or to a position in which outer edges 24 and 24' are aligned.

The tool 10 may also be used as a level. For this purpose, spirit level bulbs 60 and 61 are recessed into face 21 of arm 20 at right angles to each other, and a spirit level bulb 63 is recessed into the outer edge 24 of arm 20. If the tool is made of translucent material, such as a

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translucent plastic, the spirit levels may be illuminated by the light from "pencil" flashlights 65 inserted, bulb end inwardly, into recesses 66 in the outer ends of the arms.

The groove 27 along inner edge 21 is arranged to have an elastic cord 70 stretched therealong, cord 70 extending through a passage 37' in arm 20' aligned with groove 27 and being secured to the outer edge of arm 20'. Cord 70 is designed to be used as a straight, taut line for laying up a course of bricks for example. For this purpose, the outer end of the cord is similarly disposed along and secured to an identical tool or may be secured to a special "clip" 80 shown in Fig. 6.

Clip 80 is an angle having perpendicularly related arms 81, 82, each preferably having a spirit level bulb 83 in a side edge. Aligned channel grooves 84, 86 extend centrally along the inner faces of arms 81, 82, and each arm has a passage 87 therethrough aligned with the groove in the other arm to receive an end of cord 70.

To use the cord, it is secured between two tools 10 or two clips 70, or between a tool and a clip. The cord is then stretched so that its anchors may be "squared" over the ends of a brick course 85 and levelled up. The taut cord 70 then forms a level line along the course, as shown in Fig. 7. This figure also illustrates how tools 10, arranged as squares, may be used to "square" the corners of the brick course.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A combination tool comprising, in combination, a pair of arms each having parallel rectilinear side edges and an end bevelled at an angle of 45 degrees to such edges, the bevelled ends of said arms being juxtaposable to position said arms perpendicular to each other to form a construction square having inner and outer corners; hinge leaves on each side edge of each arm adjacent its bevelled end, the hinge leaves on each arm mating with the correspondingly located hinge leaves on the other arm; and a removable hinge pin selectively operable to hingedly interconnect either pair of mating hinge leaves; whereby the arms are angularly adjustable about either the inner or outer corner of the square.

2. A combination tool as claimed in claim 1 in which each arm has a pair of parallel faces interconnecting said parallel side edges, said arms being formed of translucent

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material; a spirit level extending along one side edge of each arm; a pair of spirit levels parallel to said faces of each arm and perpendicular to each other; and a light source mounted within each arm to illuminate said spirit levels.

3. A combination tool comprising, in combination, a pair of arms each having parallel rectilinear side edges and an end bevelled at an angle of 45 degrees to such edges, the bevelled ends of said arms being juxtaposable to position said arms perpendicular to each other to form a construction square having inner and outer corners; hinge leaves on each side edge of each arm adjacent its bevelled end, the hinge leaves on each arm mating with the correspondingly located hinge leaves on the other arm; a removable hinge pin selectively operable to hingedly interconnect either pair of mating hinge leaves; whereby the arms are angularly adjustable about either the inner or outer corner of the square; and juxtaposable circular protractor means on each arm concentric with the hinge axis on the inner corner of the square.

4. A combination tool comprising, in combination, a pair of arms each having parallel rectilinear side edges and an end bevelled at an angle of 45 degrees to such edges, the bevelled ends of said arms being juxtaposable to position said arms perpendicular to each other to form a construction square having inner and outer corners; hinge leaves on each side edge of each arm adjacent its bevelled end, the hinge leaves on each arm mating with the correspondingly located hinge leaves on the other arm; a removable hinge pin selectively operable to hingedly interconnect either pair of mating hinge leaves; whereby the arms are angularly adjustable about either the inner or outer corner of the square; juxtaposable circular protractor means on each arm concentric with the hinge axis on the inner corner of the square; and releasable clamping means operatively associated with said protractor means to clamp said arms in adjusted angular relation.

References Cited in the file of this patent

UNITED STATES PATENTS

740,491	Tilley	Oct. 6, 1903
740,742	Bush	Oct. 6, 1903
914,635	Bryant et al.	Mar. 9, 1909
1,061,423	Sweum	May 13, 1913
1,124,310	Harris	Jan. 12, 1915
2,344,241	Flint	Mar. 14, 1944