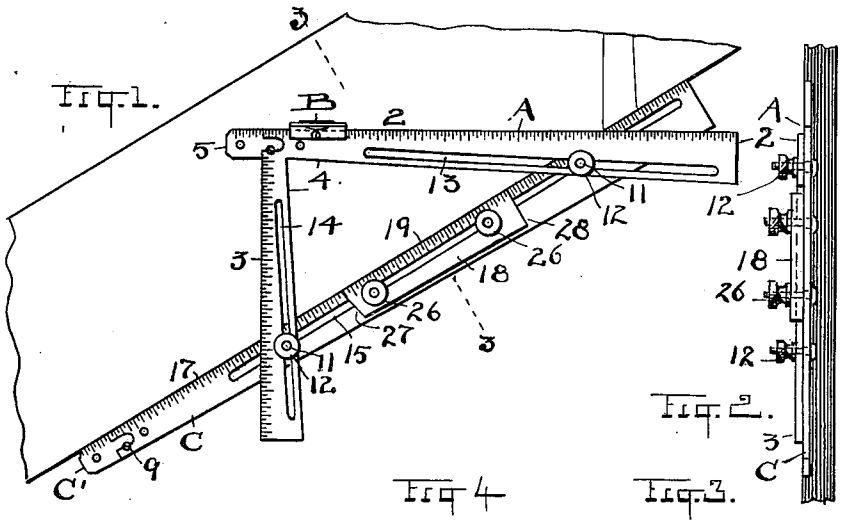
No. 650,992. Patented June 5, 1900.

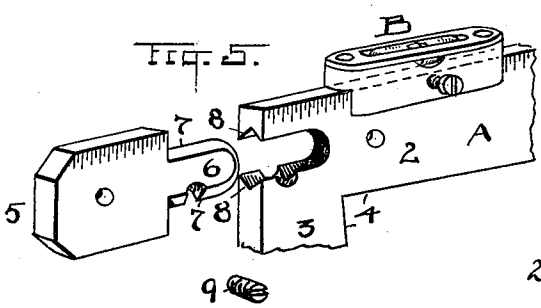
J. W. SAWYER.

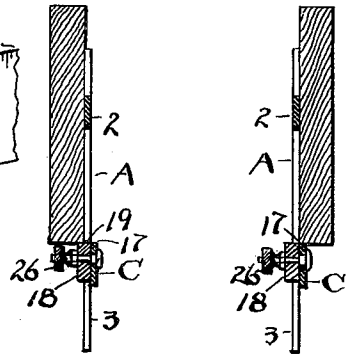
ADJUSTABLE SQUARE.

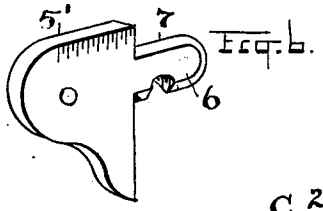
(Application filed Mar. 9, 1900.)

(No Model.) 2 Sheets—Sheet 1.









ATTEST.

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J. W. SAWYER.

ADJUSTABLE SQUARE.

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(No Model.) 2 Sheets—Sheet 2.

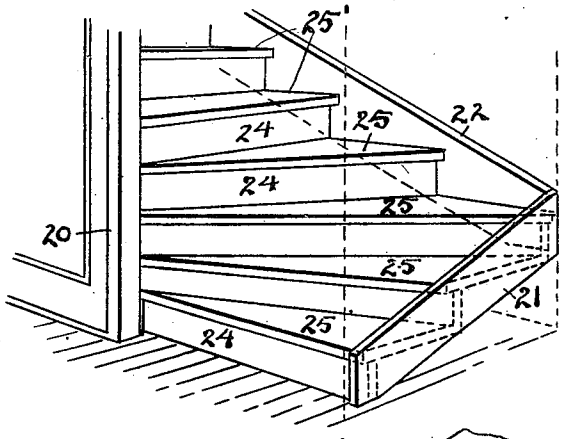


Fig. 9.

Fig. 10.

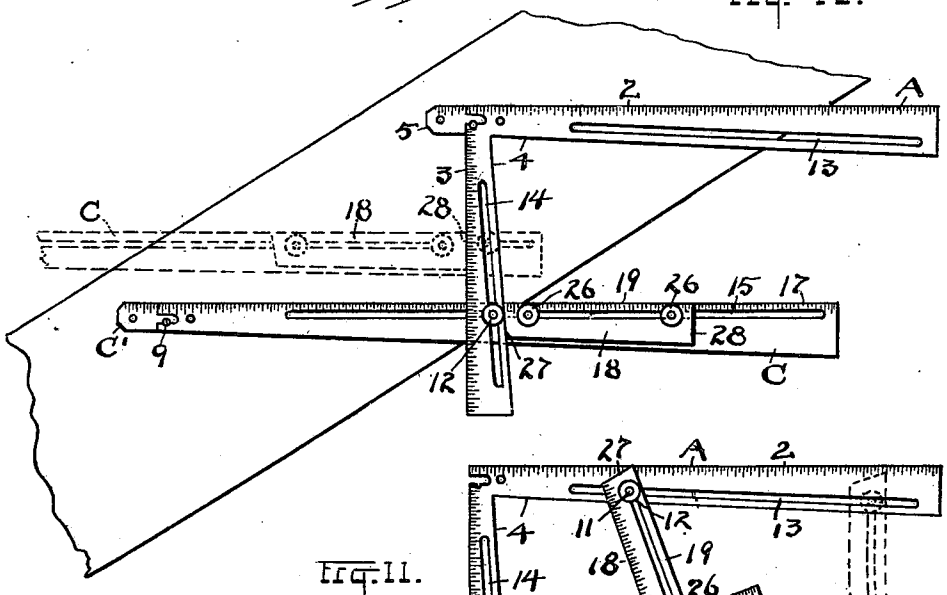
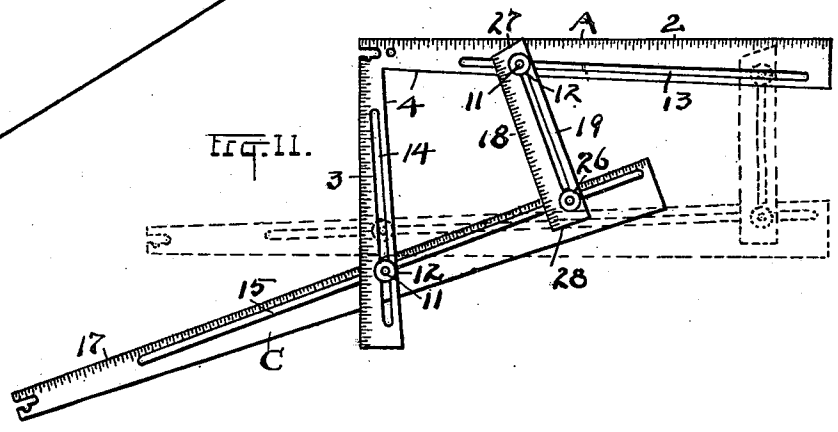


Fig. 11.



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UNITED STATES PATENT OFFICE.

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ADJUSTABLE SQUARE.

SPECIFICATION forming part of Letters Patent No. 650,992, dated June 5, 1900.

Application filed March 9, 1900. Serial No. 8,006. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. SAWYER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Adjustable Squares; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to adjustable squares for carpenters and other mechanics; and it consists in a square having a novel and original blade attachment constructed substantially as shown and described, and more particularly pointed out in the claims.

The main object of the invention is to provide a tool for carpenters and workers in wood which will serve all the purposes of the ordinary or rigid square when so desired and in addition have the advantages of a very wide range of adjustments and adaptations for simplifying the labor and lessening the time in laying out various kinds of work, and especially stairwork, whether straight or winding.

To these ends Figure 1 in the accompanying drawings shows a broad side or face view of my improved tool tightened up and shown as it appears in marking position on a board running diagonally and representing a portion of the stair-jack or side stringer and on which the tread and riser outlines of the stair are to be marked preliminary to grooving the same. Fig. 2 is an edge elevation of the tool and stringer-board looking in from the right of Fig. 1. Fig. 3 is a cross-section of the tool and stringer, taken on line 3 3, Fig. 1, and shows the independent blade member of the tool abutting the edge of the boards to obtain proper alinement on the right-hand stringer of the stairs. Fig. 4 is a similar sectional view of tool and stringer, but of the left-hand stringer, and with the tool laid against the face thereof to mark corresponding outlines to those on the right stringer, and in this instance the alining member used is the projecting edge of the separate bar attached to the free blade. Fig. 5 is a group view, in perspective and enlarged, of the detachable nose, the fastening-screw therefor, and the upper angle portion of the square with a spirit-level fastened temporarily thereon. Fig. 6 is a perspective view of a modified form of nose. Fig. 7 is a perspective view of the free blade detached and its adjustable bar in position thereon. Fig. 8 is a perspective view of one of the bolts for securing the adjustable bar and showing the flattened sides in its head. Fig. 9 is a perspective view of a winding stairs and designed here to illustrate the character of work required in laying or marking out the jacks or stringers therefor. Fig. 10 is a face view of my new tool with the free blade adjusted to a position for marking the jacks or stringers for winding stairs. Fig. 11 is a face view of the tool shown in full lines as adjusted for marking bevels and in dotted lines for outlining panels or the like.

The foregoing represent only some of the many varied uses to which this tool may be advantageously applied; but they serve to show that a great many different useful combinations and adjustments are possible and that it can be rigidly fixed in any position desired.

A represents a rigid square comprising the two integral blades 2 and 3, set at right angles to each other, and these blades taper in width from their outer ends to the angle where they intersect; but the outer running edges of both blades are at exactly right angles to form a perfect square and in this single respect are like the old common rigid square. The inner edges 4 are at an acute angle to each other, running into the angle or corner, and are thus fashioned to give the proper angle for the outlining of the back and bottom edges of the riser and tread-grooves in the jack or side stringers of the stair and as they are ordinarily outlined to provide for a fastening-wedge, as is usual.

At the intersection of the two blades and forming an extension to blade 3 outside the angle is a nosepiece or separate member 5. This nosepiece provides for the outlining of the nosing or overhanging portion of the tread-board when marking out stairs, but is made removable for two reasons—namely, to have a square end when used as an ordinary square and to provide for the exchange of various sizes and shapes of noses when used as a stair-outlining square, two forms of such noses being shown here in Figs. 5 and 6, respectively. Here it is seen that each nose

5 and 5′ has an extension 6, with beveled edges 7 adapted to slide in grooves 8 of corresponding shape in the edge of square A, the faces of the nose and square being flush when set together. A screw 9, having a length equal to the thickness of the metal, is used to lock the nose in place, the semicircular notches in the edge 7 and groove edge 8 when opposite each other providing a threaded opening for this purpose. This construction is simple and effective, and when the parts are together a pefectly-flat surface is had, which allows the square to lie flat upon its face at all points and assures perfect marking.

In marking out the stringer for stairs the angle or rise of the stringers or stair must be taken into consideration, so that the tread and riser boards will set in perfectly horizontal and vertical lines. Having found the proper inclination of the stringer—say as seen in Fig. 1—I place my square upon the side of the stringer-board to be marked and with a spirit-level B, temporarily fastened on the horizontal blade, I adjust the square to perfectly horizontal and vertical lines, and knowing the length of the tread and height of the riser boards I set the square correspondingly and mark my first lines. I then bring the determining member of the square into action, by the aid of which I set the square for the balance of the outlining of the stair-steps. This member is the tapering blade C, adjustably attached to blades 2 and 3 by means of bolts 11 and thumb-nuts 12. The two several blades 2 and 3 and the member C have longitudinal slots 13, 14, and 15, respectively, running parallel to the inner edge of each blade in this instance, and said slots are of such length as to give such a wide range of adjustment that any practical angle or inclination of a stringer can be met by the independent blade or member C. The bolts 11 for securing member C on the square have a head with flattened sides 16, which are adapted to slide in the grooves or channels therein, but which prevent the turning of the bolt when the nut is screwed on or off, and when the square has been set and adjusted, as previously explained, the nuts 12 and bolts 11 lock the member C on blades 2 and 3 at the inclination of the stringer-board the full length of the edge 17 of said member and abutting against the edge of the board, as seen plainly in Fig. 3. When the other or opposite stringer—say the left-hand stringer—is to be marked to correspond to the right-hand stringer, the opposite side of the square is laid flush upon the board and a separate bar or alining member 18 of twice the thickness of blade C is employed. This part 18 is adjustably held on blade C and has an edge 19 parallel with edge 17 and abuts against the edge of this board, as shown in Fig. 4. The abutting edges 17 and 19 are utilized to guide and set the square-blades to the horizontal length and vertical height as originally alined by blade C, and each successive stair is outlined, when the square A and blade C are bodily removed to the next marking position for the next stair-step. When once the blade C is set or fixed for the work, the marking of the stringers proceeds quickly and accurately and the square is moved along without any readjustment of its parts. This applies especially to straight stairwork; but where winding stairs are to be outlined the adjustment of the separate blade C and its relation to square A is differently arranged and further features of construction not hereinbefore specifically described are brought into use.

In Fig. 9 a simple form of winding stair is illustrated in which the first series of stair-steps radiate from the well or post 20 to the end jack or stringer 21 and side stringer 22. The risers 24 of the entire stair are of course all of the same height; but the tread-boards 25 of the four winders are of greater width at the meeting edge of the stringers 21 and 22 than the tread-boards 25′, which are higher up and form part of the straight stairway. To provide for outlining this greater width of tread-board, which in some cases is considerable, I adjust blade C to the position as seen in Fig. 10, removing nut 12 on blade 2 and bringing the blade C down, so that its edge 17 is on a parallel line with the top edge of blade 2. The blade C is then adjusted to extend to the left the distance required to outline the necessary length of the winder tread-board, and in order to fix the blade C in set position and to keep it horizontal and parallel with blade 2 the separate bar 18, removably fastened to blade C by nuts 26, is adjusted on a line with slot 15, and its abutting end 27 is brought flush up against the edge 4 of square-blade 3, and the nuts 12 and 26 are tightened to fasten the blade C and bar 18 in place and make the same rigid with the square A. The end face 27 of bar 18 corresponds to the inclination of the edge 4 of blade 3, so that the blade C can be set in perfect alinement with horizontal blade 2, and it has a sufficiently-lengthy bearing-face to securely hold the blade C rigid with blade 3 when the nuts are tightened. If an extremely-lengthy extension to the left of blade 3 is required, the bar 18 is bodily removed from blade C and shifted to the left of square-blade 3, as seen in dotted lines, Fig. 10, and the end face 28 is held flush against the vertical edge of blade 3, nuts 12 and 26 being tightened as before.

Any width of tread-board can be outlined, the blade C having a very wide range of adjustment in different directions and having, furthermore, the important advantage of being rigidly held and forming part of the square A itself and making substantially a compound or double square, the top edges of blade 2 and blade C being held absolutely parallel and at right angles to the vertical edge of blade 3.

In outlining the stringer for winders the blade C, which has been previously set to the proper length and height for the tread and riser boards, respectively, is laid with the square A upon the face of the stringer-board, as in Fig. 10, and the first marking is made. This initial marking on the board outlines two tread-boards, and then when the next succeeding stair-step is marked the square A and blade C are bodily moved along until the blade 2 covers or matches the outlines previously marked and a second marking is made, this time only around the edges of blades 3 and C. If the tread-board represented by C is of a different length than the first marked, the blade C is first adjusted before the outlining is made. To provide for the outlining of the nosing or overhanging portion of each tread-board, a separate and removable member or nose C′ is fastened to the extreme left end of blade C, and this nose corresponds to the nose 5 on blade 2 and also has an annular beveled and notched extension, and the end edge of blade C is grooved and has a similar fastening-screw 9 as that of blade 2.

The square A and blade C can be connected up, as shown in Fig. 11, where the separate bar 18 is shown adjustably fastened by bolt 11 and nut 12 in slot 13 of blade 2 of the square and bolt and nut 26 in slot 15 of the blade C, a nut and bolt adjustably fastening the blade C at another point in slot 15 and the slot 13 in vertical blade 3. This method of connecting up is of advantage in marking or laying out bevels or angles and also panels of various shapes, as well as for many other purposes too numerous and varied to be enumerated here and which one familiar with the capabilities of this tool will readily find when the need arises.

It will be noticed in Fig. 10 that both ends of the bar 18 are used for alining purposes, the use in dotted lines requiring its removal and resetting on the other side of the square.

For the purpose of clearness of definition the word "square" is used to mean more particularly the part A, comprising the so-called "blades" 2 and 3, while C is an independent blade or member adjustable thereon.

The part 18, referred to as an "alining-bar," is preferably slotted to extend the range of its adjustments and usefulness. It can be used without the slot, but not as extensively as with it.

What I claim is—

1. A combination-tool comprising a rigid square, in combination with an independent blade adjustable thereon, and a bar fixed on said blade and constructed at its end and edge to abut against the edge of said square and hold said independent blade in fixed position on the square, and means to fasten said square and blade rigidly together, substantially as described.

2. A square, in combination with an independent blade and means to adjustably fasten it on the square, and a bar adjustably fixed on one side of said independent blade, said bar constructed at its end and edge to serve for alining the said independent member at right angles to one of the square-blades and parallel with the other, substantially as described.

3. A square having the outer edges of its blades at right angles and its inner edges at an acute angle and slots in said blades parallel to the inner edges thereof, in combination with a detachable blade fixed to said square and a separate removable bar having alining end edges to abut against the edge of said square-blades, and means to fasten said detachable blade, bar and square in fixed relation, substantially as described.

4. A square having longitudinal slots in its two blades, in combination with a single longitudinally-slotted independent blade adjustably secured thereon, and a separate slotted alining member for said independent blade, substantially as described.

5. The combination of the square and the independent blade mounted thereon, means to adjustably fasten the square and blade together, and separate removable nose extensions for both the square and the independent blade, substantially as described.

6. The combination of the square and the independent blade adjustably secured thereon, a separate alining member adjustably fastened to said independent blade, and a separate removable nose extension for the end of said independent blade, substantially as described.

7. The square and the blade adjustably mounted thereon, and separate removable noses for both said square and blade, said noses having beveled and notched extensions fitting in notched grooves in said square and blade, and fastening-screws for said noses, substantially as described.

8. The combination of a square and an independent blade mounted thereon, means to adjustably fasten said blade to said square, and a separate nose extension removably fastened to the end of said blade, substantially as described.

Witness my hand to the foregoing specification this 3d day of March, 1900.

JOHN W. SAWYER.

Witnesses:
H. E. MUDRA,
R. B. MOSER.