

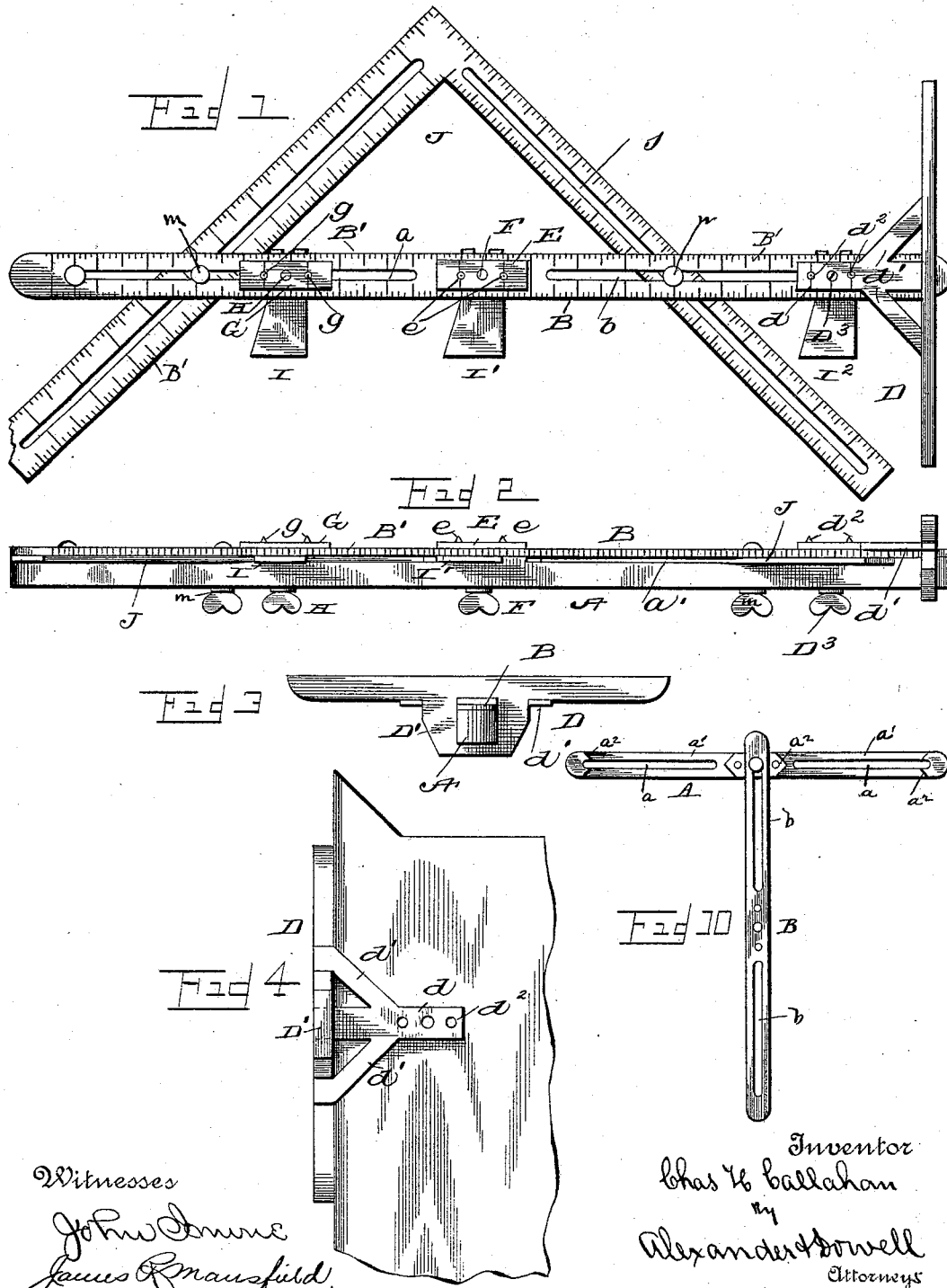
(No Model.)

2 Sheets—Sheet 1.

C. H. CALLAHAN.  
STAIR BUILDER'S LAYING OUT TOOL.

No. 494,322.

Patented Mar. 28, 1893.



Witnesses

John D. ...  
James R. Mansfield.

Inventor  
Chas. H. Callahan  
by  
Alexander S. Howell  
Attorneys

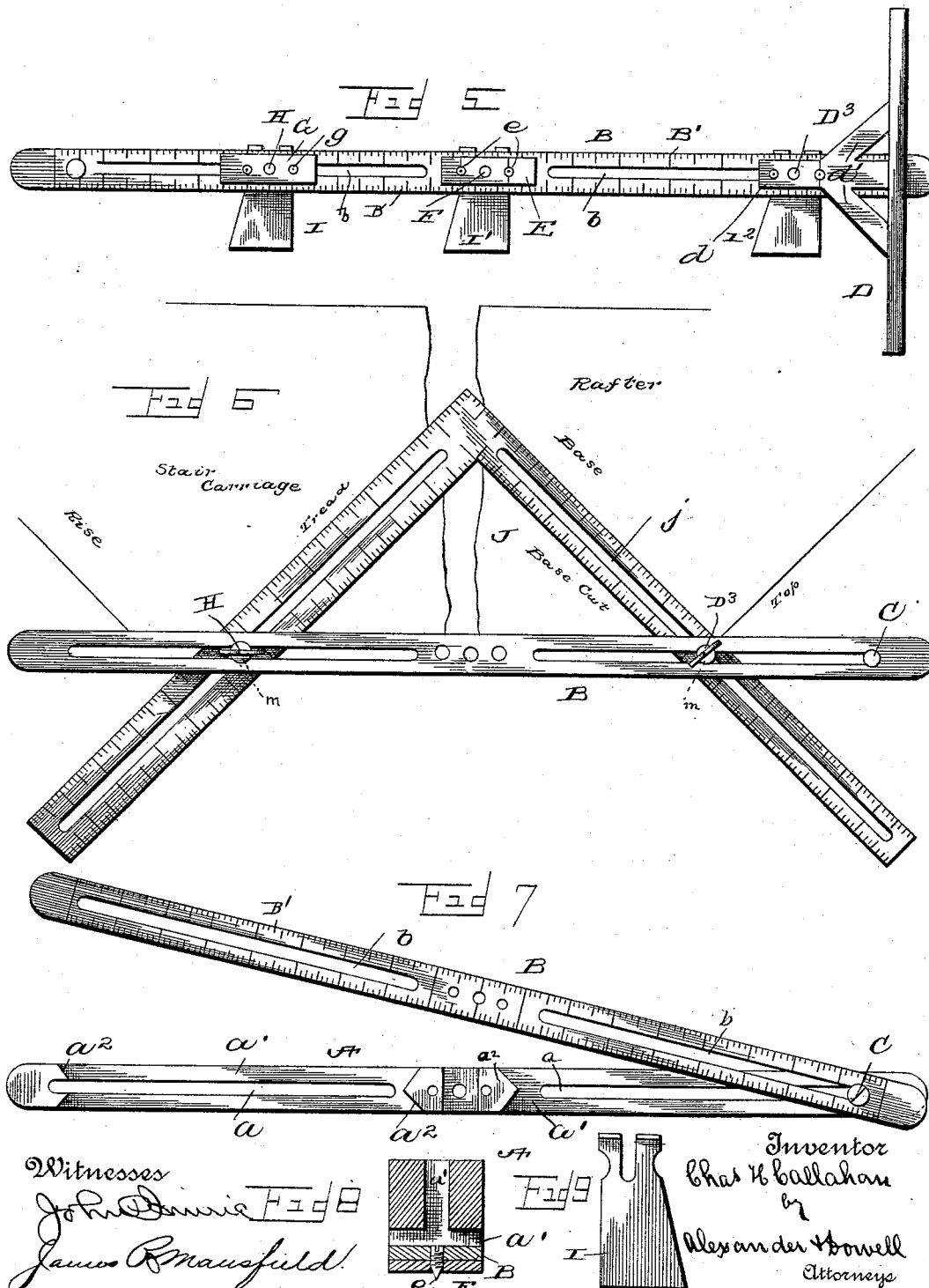
(No Model.)

2 Sheets—Sheet 2.

C. H. CALLAHAN.  
STAIR BUILDER'S LAYING OUT TOOL.

No. 494,322.

Patented Mar. 28, 1893.



Witnesses  
John D. Dinnie  
James R. Mansfield

Inventor  
Chas H Callahan  
by  
Alexander Howell  
Attorneys

# UNITED STATES PATENT OFFICE.

CHARLES H. CALLAHAN, OF ALEXANDRIA, VIRGINIA.

## STAIR-BUILDER'S LAYING-OUT TOOL.

SPECIFICATION forming part of Letters Patent No. 494,322, dated March 28, 1893.

Application filed September 19, 1892. Serial No. 446,282. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. CALLAHAN, of Alexandria, in the county of Alexandria and State of Virginia, have invented certain new and useful Improvements in Combination-Tools; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention is an improved combination or compound tool especially designed for use by carpenters, joiners and wood workers generally; its objects being to provide a tool which can be used as a miter-jack for general use; as an adjustable gage for framing and stair work; as an adjustable gage and scorer for marking the dovetails for balusters in step work; as a bevel; as a rafter gage for jack and hip and other rafters, and for marking ramps and twists and easements; as a right angle or T-square, and for many other purposes which will be obvious to a mechanic, and which it will be needless to specify here; and to these ends the invention consists in the novel construction and combination of parts hereinafter described and claimed.

Referring to the drawings by figures;—  
Figure 1 is a top view of the complete tool with all the parts assembled. Fig. 2 is a side view thereof; Fig. 3 an end view. Fig. 4 is a view showing the miter-jack detached and indicating one use thereof. Fig. 5 is a view indicating the tool adjusted as a step baluster gage or scorer. Fig. 6 is a view illustrating a manner of using the device for marking rafters or stair work. Fig. 7 is a detail view of the device adjusted as a bevel. Fig. 8 is a cross sectional view of the stock. Fig. 9 is a detail view of one of the dovetail patterns. Fig. 10 is a detail view.

The stock of the tool is formed of a straight bar A, and an overlying top piece B, both of which as shown, have two longitudinal and vertical slots *a, b*, respectively, the slots extending from near the ends to near the centers thereof. The bar A is also recessed on top, as shown, beneath piece B, forming two longitudinal slots *a'* of about the same length as, and intersecting slots *a, b*; the end walls of slots *a'* are double beveled as at *a<sup>2</sup>*, at an-

gles of forty five degrees to the slots *a, b*, as shown. The piece B is loosely connected to the bar A, and may be adjustably secured thereto by a set screw clamp C so as to form an adjustable bevel, as indicated in Fig. 7. The set screw passes through slots *a, b*, and by setting the edge of piece B against any one of the bevels *a<sup>2</sup>* the piece will stand at an angle of forty five degrees to the bar. A measuring scale or scales B' are applied to the outer edges and top of piece B as indicated in the drawings, and may be on bar A also if desired.

D designates a T-head mounted on the stock which passes through a slot in a central enlarged portion D' of the head as shown. The head stands at right angles to the stock, and when thereon the two can be used as a T-square. This head also constitutes the "miter-jack" having a short stem *d*, which extends parallel with piece B and is braced by lateral wings *d'* whose edges stand at angles of forty five degrees to the stock or head, as indicated.

D<sup>3</sup> is a clamping screw passing through slots *a, b*, and engaging stem *d*, and thereby the T-head can be secured in any position on the stock. Through the stem *d*, are tapped screws *d<sup>3</sup>, d<sup>2</sup>*, whose outer ends are pointed to serve as scorers. The T-head can be removed from the stock and used as a "miter-jack" as indicated in Fig. 3.

E designates a plate detachably secured to the center of the stock, exterior to piece B, by means of a thumb or clamp screw F; said plate has adjustable scorer screws *e, e*, in it as shown.

G designates a similar plate also having scorer screws *g, g*, but adjustably secured to the stock at the side of plate E opposite the T-head by means of clamping screw H. It will be evident that scorer plate G and the T-head can be adjustable toward or from the central plate, and therefore the tool can be used to make several scorers at one movement of the tool, at any distance apart desired. Plates E and G are narrower than piece B so as not to obscure the scales thereon. The scorer screws can be backed out so as not to score. I have shown two scorer screws in the T-head and each plate, but by backing out the screws the number of scores

may be varied. More scorer screws may be added. As shown, the scorer screws of each pair are set so that they will score a regulation width cut for the balusters of stairways  
5 in the steps thereof.

I, I', I<sup>2</sup>, designate dove-tail patterns which are removably secured to the stock, being clamped between piece B and bar A by means of stem *d*, and plates E and G, respectively  
10 as shown. Said markers project from the same side of the stock and have one straight edge and one beveled edge, and correspond in size to the contour of the dovetail cuts or mortises made in a stair step for the reception of the balusters. The center pattern I' is not adjustable but patterns I, and I<sup>2</sup>, are adjustable with the T-head and plate G respectively. By this means after the scoring is effected, as above suggested, the workman  
20 by simply adjusting the stock at the edge of step with the patterns vertical and against the end edge thereof, can mark the "dove-tail" cuts by drawing his pencil along the edges of the patterns, the marks of the "dove-tails" registering with the scores previously made.

J designates an angle having limbs J' J<sup>2</sup>, perpendicular to each other and provided with measuring scales as usual, and indicated  
30 in the drawings. The limbs of the angle are longitudinally slotted as at *j* and are passed respectively through the adjoining slots *a'* of the stock and the angle may be adjusted on the stock to any position desired and secured when adjusted by the screws D<sup>3</sup>, and H, the patterns I, I<sup>2</sup>, being removed when the angle is used, or other clamping screws *m* may be provided for the angle. The use of the angle is clearly shown in Fig. 6, the parts D, I, and  
40 I' and I<sup>2</sup>, being removed. By placing the stock along the side edge of the stair or rafter, one limb of the angle will mark the rise of the stair, or base cut of rafter, and the other limb the tread of stair, or top cut of rafter; limb J' is just the width of an ordinary stair step or tread mortise, and limb J<sup>2</sup> the width of the ordinary stair riser mortise, so that in mortised stair work the workman can mark the width of mortises by drawing his pencil along  
50 both edges of the limbs at the time he marks the pitches or angles. It will be observed that both limbs of the angle are adjustably secured to the stock so that the pitch or length of either, or both, tread and rise, or base or top cut, can be varied or regulated at pleasure. By the use of the tool in this manner the workman can readily determine the various angles of cuts of rafters for different widths of roofs, and can ascertain the length of such rafters  
60 by the scale on the stock. For instance, supposing the width of the roof to be twenty feet, and the height at center eight feet; taking as a scale, one inch to one foot, he should adjust the angle so that one limb projects eight inches (all the height) from the stock to apex of angle, and the other limb projects

ten inches (one half the width of roof) from stock to apex of angle. The short limb gives the top cut of rafter, the long limb the bottom cut; and by noting on the stock the number of inches between the outer edges of limbs of angle (indicated in drawings at X—X) or the base of the triangle formed by the projecting portion of angle and stock, and multiplying these inches by twelve, he will ascertain the correct length of rafters. By securing part B to bar A in the manner shown in Fig. 10, a perfect T-square is formed.

The uses of the tool are so various that it would be prolix to attempt to specify them, and they will be readily ascertained by workmen, and therefore I deem further description unnecessary.

Having described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. The stock having a vertical longitudinal slot in combination with the removable T head or miter jack having a slot for the passage of the stock, substantially as described.

2. The slotted stock in combination with the dove-tail patterns having their shanks secured in the stock slots, substantially as described.

3. The combination of the stock with a removable and adjustable T head or miter jack having a stem provided with scorers, substantially as specified.

4. The combination of the stock having scorers and dove-tail patterns secured thereto adjoining and at right angles to the scorers, substantially as and for the purpose described.

5. The combination of the stock composed of a bar and a scaled piece, with an adjustable miter jack or T head thereon having a stem and wings as and for the purpose set forth.

6. The combination of the stock having scorers and dove tail patterns secured thereto in relation to the scorers, both the scorers and dove tail patterns being adjustable, substantially as specified.

7. The combination of the stock, the scorers, the dove tail patterns and the miter jack, substantially as and for the purpose described.

8. The combination of the bar A having angular shoulders *a*<sup>2</sup> on its upper face, with the scale piece B adjustably connected to the bar and adapted to abut against one of said shoulders, substantially as described.

9. The stock having a vertical longitudinal slot in combination with the removable T head or miter jack having a stem, and the scorers connected to said stock and stem, substantially as and for the purpose specified.

10. The stock having a vertical longitudinal slot in combination with the removable T head or miter jack, and the dove tail patterns connected to the stock and T head, substantially as described.

11. The combination of the stock, the adjustable plates G, E, provided with a pair of

relatively non-adjustable scorers, and the clamping screws securing the plates to the stock, substantially as described.

12. The combination of the stock having  
5 non-adjustable scorer at center, with the miter jack adjustably mounted on the stock, and the scorer attached to said jack, substantially as set forth.

13. The combination of the stock, the plates  
10 G and E provided with scorers, and the clamping screws securing the plates to the stock, and the patterns attached to said stock by said screws, substantially as and for the purpose set forth.

14. The combination of the stock having a  
15 non-adjustable scorer at center, with the miter jack adjustably mounted on the stock and the scorer attached to said jack, and the scorer adjustably mounted on the opposite end of  
20 the stock, substantially as described.

15. The combination of the stock, the central fixed pattern, and the adjustable pattern on opposite ends of the stock, substantially as and for the purpose set forth.

16. The combination of the stock, the central fixed pattern, and the adjustable pattern  
25 on opposite ends of the stock, and the adjustable scorers adjoining each pattern, substantially as described.

17. The combination of the slotted stock,  
30 with the angle slotted in both limbs, and each limb adjustably secured to the stock in a slot thereof, substantially as and for the purpose described.

18. The miter-jack or T head having a stem  
35 and adjustable scorers mounted on said stem, substantially as described.

19. The miter jack, having a stem  $d$  wings  
40  $d'$   $d'$  substantially as and for the purpose described.

In testimony that I claim the foregoing as  
my own I affix my signature in presence of  
two witnesses.

CHARLES H. CALLAHAN.

Witnesses:

C. W. SEVILLE,  
A. E. DOWELL.