

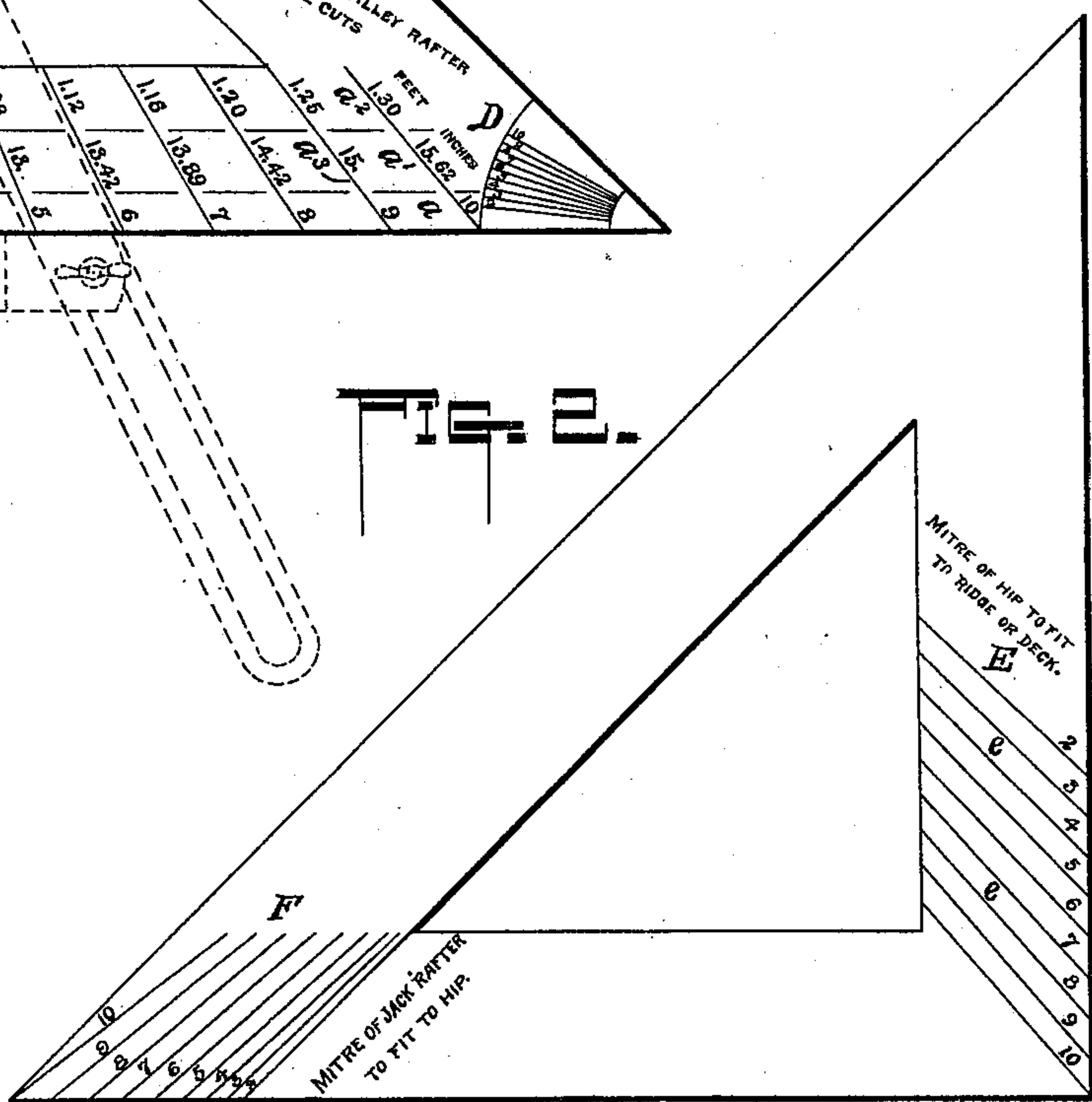
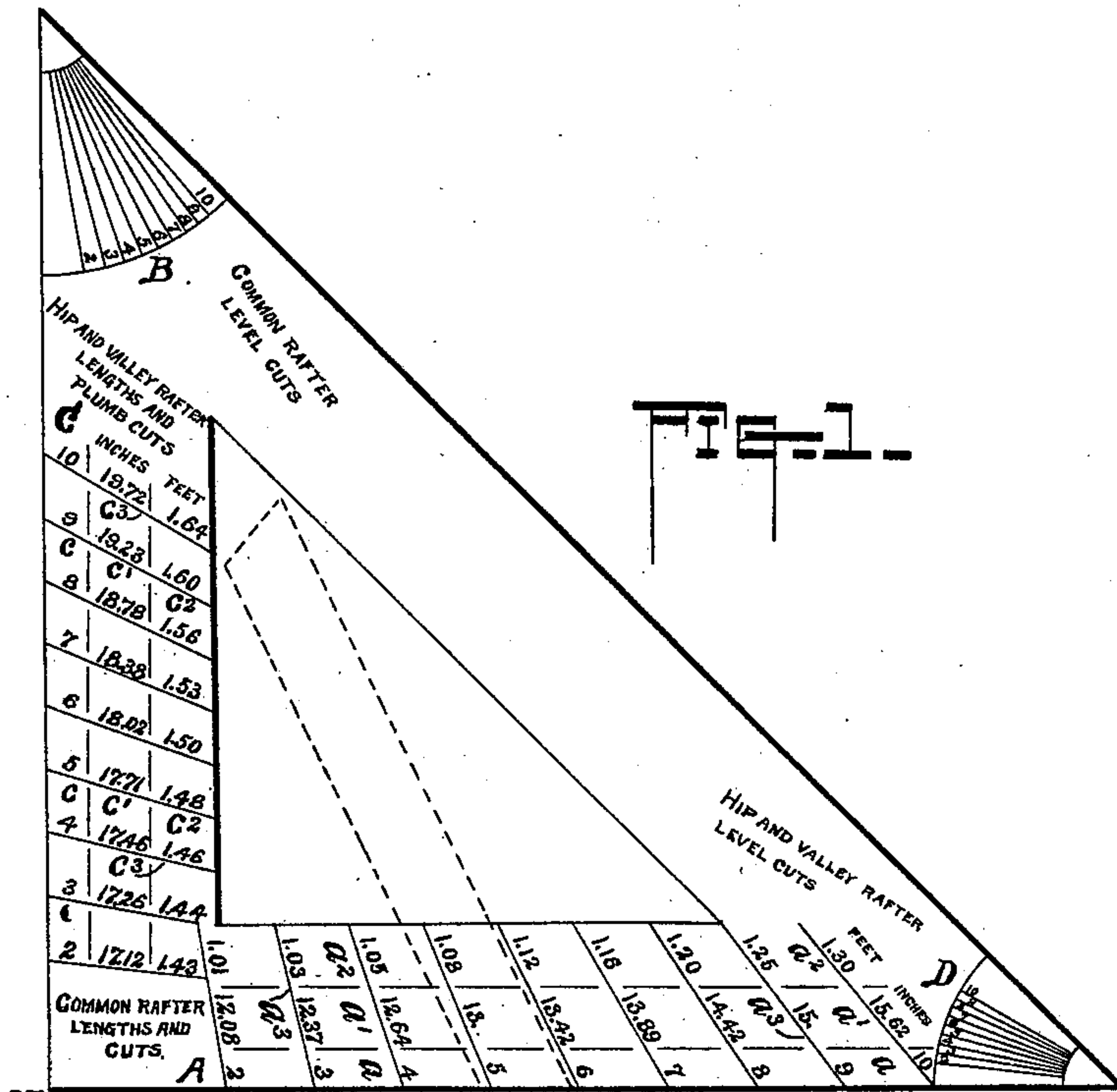
No. 614,144.

Patented Nov. 15, 1898.

G. C. THOMPSON.  
ROOF FRAMING TOOL.

(Application filed May 27, 1896.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE CRANE THOMPSON, OF SALINAS, CALIFORNIA.

## ROOF-FRAMING TOOL.

SPECIFICATION forming part of Letters Patent No. 614,144, dated November 15, 1898.

Application filed May 27, 1896. Serial No. 593,305. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE CRANE THOMPSON, a citizen of the United States, residing at Salinas, in the county of Monterey and State of California, have invented a new and useful Roof-Framing Tool, of which the following is a specification.

My invention relates to a roof-framing tool or square designed to indicate the lengths and terminal cuts or bevels of common, hip-and-valley, and jack rafters when the rise per foot of the roof is known.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings, Figure 1 is a side view of a square embodying my invention, a miter-bevel being shown in dotted lines applied in the operative position thereto. Fig. 2 is a view of the opposite side of the square.

Similar letters of reference indicate corresponding parts in both figures of the drawings.

The tool embodying my invention is preferably constructed in the form of a forty-five-degree triangle wherein one of the angles is ninety degrees. Upon one of the sides or perpendicular arms A of the triangle is a scale having a column of figures  $a$ , indicating in inches different rises per foot of run—as, for instance, “2,” “3,” “4,” &c.—a contiguous column  $a'$  of numerals indicating in inches the relative lengths of rafters arranged at the several pitches corresponding with a foot run and the given rise in inches, the measurements in said column  $a'$  being given in inches and hundredths of an inch, and a third column  $a^2$  of numerals giving the lengths of the rafters for the several pitches in feet and hundredths of feet. Hence when the lengths of run and the total rise of a given rafter are known the rise in inches per foot of run can be readily determined by the ordinary process of division. When the result is applied to the scale and the length of run of the rafter is multiplied by the numeral in the column  $a^2$  opposite the numeral representing the rise per foot, the length of said given rafter will be attained. The scale A also includes for each numeral representing rise an

inclined line, (designated by the reference-letter  $a^3$ ,) said lines representing the vertical or upper terminal cuts of the rafters having the respective pitches designated by the numerals contiguous to which they are arranged. When a miter-bevel is applied to the scale with its stock in contact with the edge of the arm A and its blade in alinement with the inclined line  $a^3$  contiguous to the numeral in the column  $a$  which indicates the rise of the rafter, said miter-bevel will indicate the cut of the upper extremity of the rafter or that portion which is jointed to the ridge-piece. In the same way a bevel-scale B is arranged at one of the forty-five-degree angles of the triangle, the same consisting of a series of radiating lines marked, respectively, to correspond with the numerals of the column  $a$ , as “2,” “3,” “4,” &c., and by applying the miter-bevel to the scale B the adjustment thereof necessary for forming the lower or horizontal cut of the given rafter is secured, said lower or horizontal cut being that which provides the desired bearing of the rafter upon the plate. Upon the other perpendicular arm C of the triangle is arranged a scale corresponding with that upon the arm A in that it contains columns  $c$ ,  $c'$ , and  $c^2$  of figures representing, respectively, the rise, length in inches per foot of run, and length in feet per foot of run of hip and valley rafters, said scale also including inclined lines  $c^3$  to indicate the upper or vertical cuts of said rafters. In connection with the scale on the arm C is a scale D, preferably formed at the other forty-five-degree angle and consisting of a plurality of radiating lines marked to correspond with the numerals in the column  $c$ , indicating the rise of hip and valley rafters. The scales C and D are used in the same manner as described in connection with the scales A and B. Upon the reverse side of the tool is arranged a scale E, consisting of a plurality of inclined lines  $e$ , designated by numerals “2,” “3,” “4,” &c., indicating rise per foot of run and corresponding, respectively, with the numerals in the column  $c$ , said inclined lines designating the transverse miter or bevel of the hip or valley rafter to fit the ridge-piece. F represents another scale, also consisting of a series of inclined lines, designated by numerals “2,” “3,” and “4,” representing rise to a foot per



run and adapted to indicate the transverse bevel of jack-rafters to fit the hip-rafters having a given rise.

By the use of a device of the class described, which may be made of metal or any other suitable material, the measurement and terminal bevels of the various timbers used in roof-framing may be determined without being familiar with the art and without the trial necessary when the accurate measurements are unknown.

As will be seen from the foregoing description, the convergent lines arranged at each of the acute angles of the square are designated by a character corresponding with a character upon one of the inclined lines at the opposite perpendicular side of the square, the lines at the angle and side which are designated by corresponding characters being in alinement. This alinement of the inclined lines is due to the fact that the terminal cuts of a rafter are presumed to be perpendicular to each other. Hence any variation of a line at the angle from a vertical position will cause a corresponding variation of the relative line at the opposite side. The reason that lines disposed at the same angle or respectively in alinement with each other will give the angles, respectively, for the upper and lower ends of a rafter is that by disposing said lines, respectively, contiguous to one side and the opposite angle of the triangle the measurements of the angles are taken, respectively, from perpendicularly-disposed sides of the triangle. It is obvious that the cuts at the opposite ends of a rafter must be perpendicular to each other no matter what the pitch of that rafter may be.

The "rise" and "length" characters, which are arranged, respectively, in the columns  $a$  and  $a'$  for common rafters and in the columns  $c$  and  $c'$  for hip and valley rafters, are disposed contiguous to and are designed to des-

ignate each of the inclined lines which are located on one side of the triangle and which have a common point of convergence, while the alined lines at the opposite angle of the triangle are preferably designated simply by the rise characters.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

As an article of manufacture, a roof-framing tool comprising a body, of a right-angled triangular form, provided on one of its sides with a series of parallel columns extending longitudinally thereof and containing characters designating the rise of a rafter per unit of run, and the length thereof in inches and feet, and a series of transverse lines arranged adjacent to the characters in such columns, intersecting the latter, and converging to the opposite point or angle of the triangle to give the proper bevel or angle of the plumb cut at one end of the rafter; and an isolated group or scale of convergent lines arranged adjacent to the point or angle to which the transverse lines across said columns converge, said isolated lines being also arranged in alinement with the transverse lines and designated by the same characters as the latter to provide for indicating the angle or bevel of the cut at the opposite end of the same rafter, substantially as described.

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

GEORGE CRANE THOMPSON.

Witnesses:

FRED CHAPPELL,

FRANCIS A. ABBOTT.