(No Model.) 2 Sheets—Sheet 1.

J. PARKHILL.

ROOF FRAMING TOOL.

No. 516,575. Patented Mar. 13, 1894.

Fig. 1

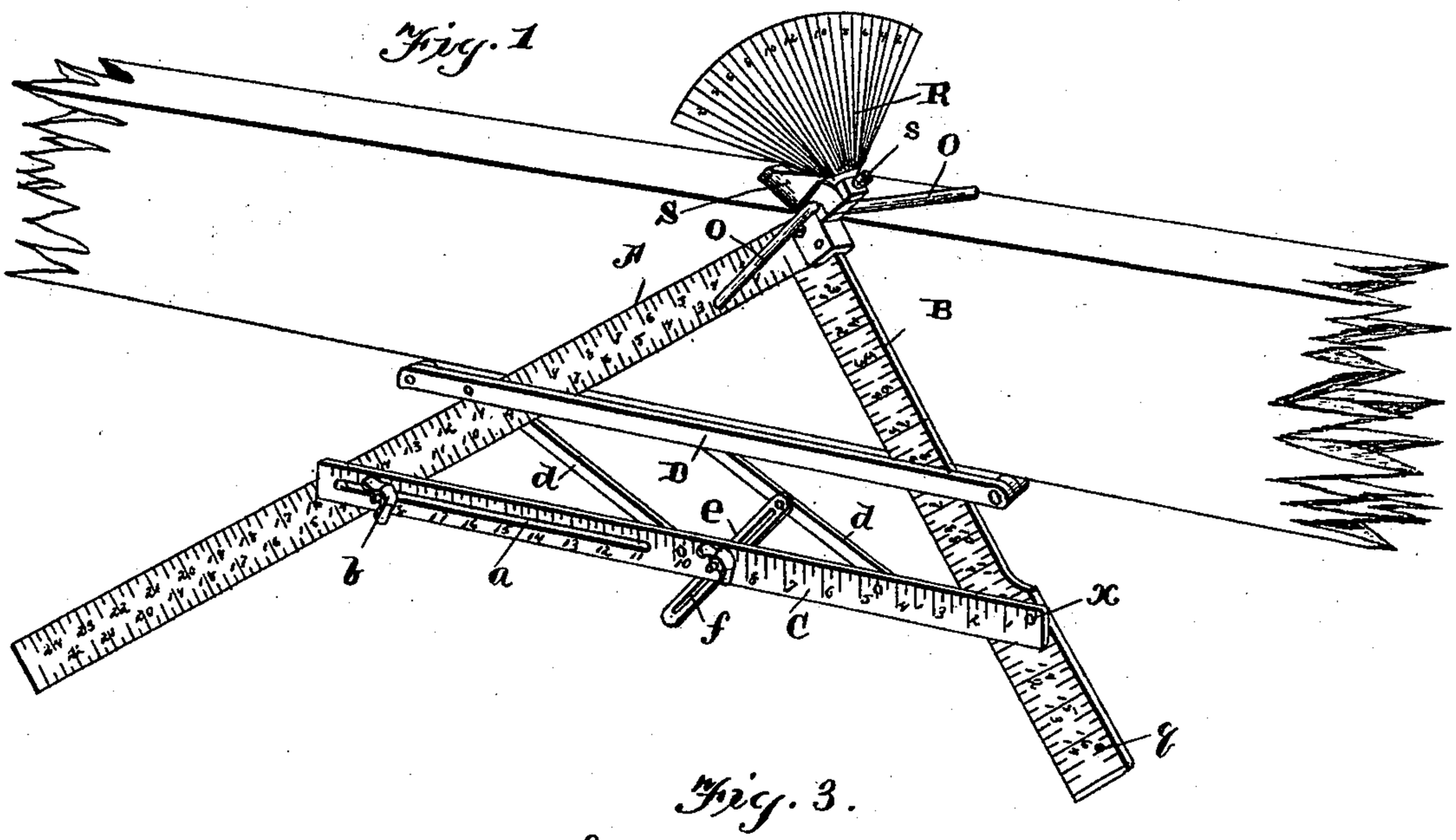


Fig. 3.

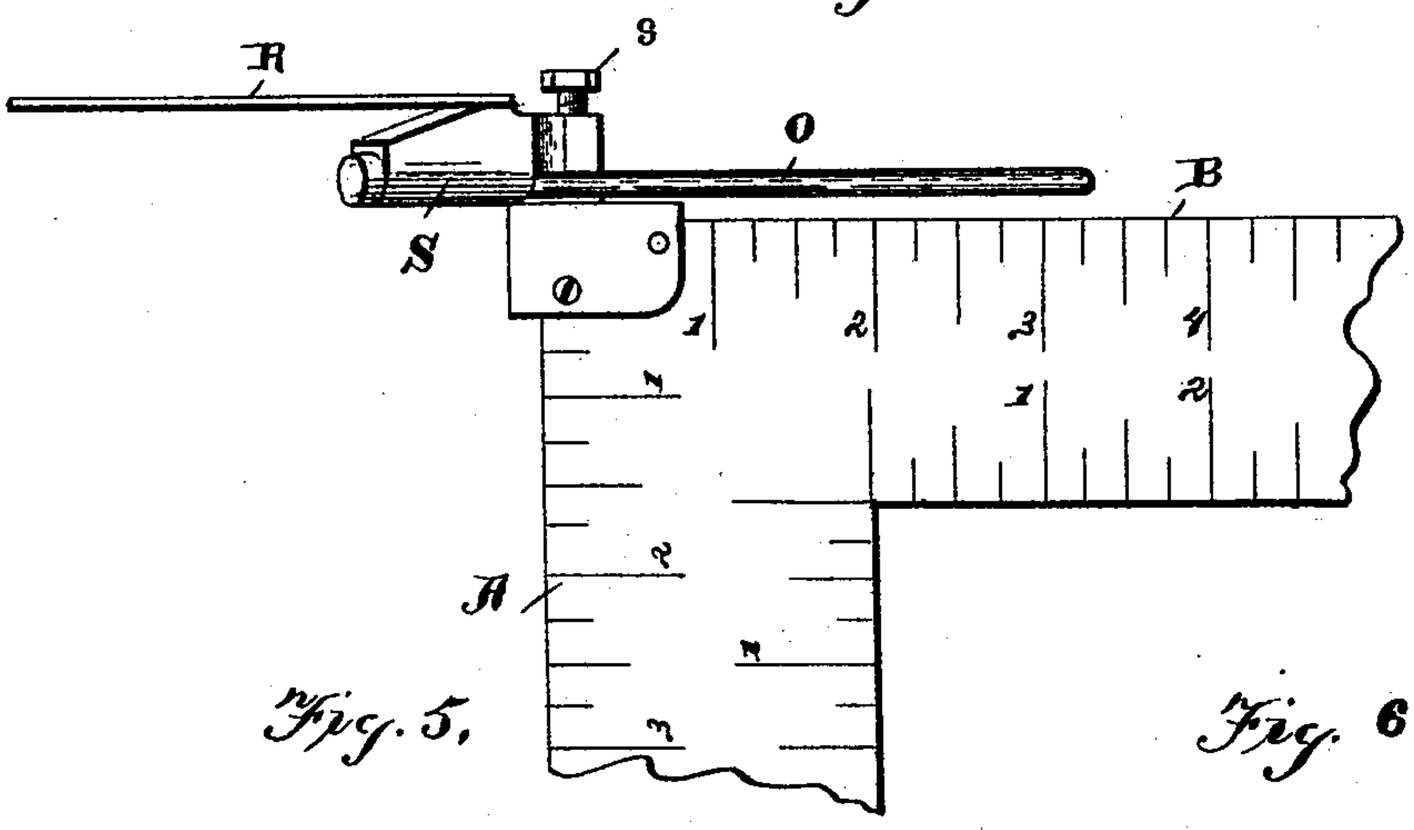
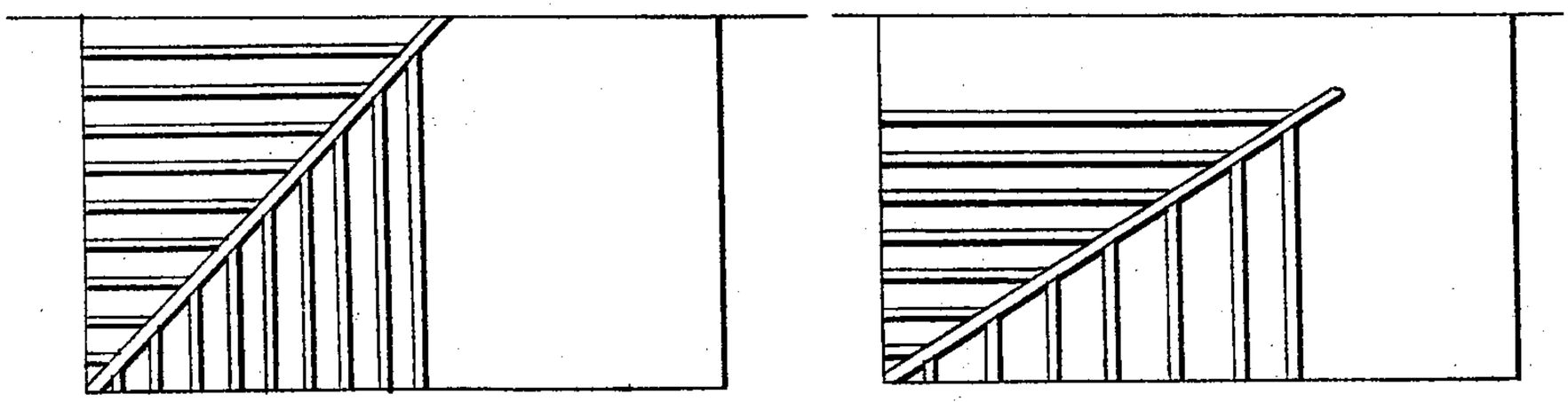


Fig. 5.

Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

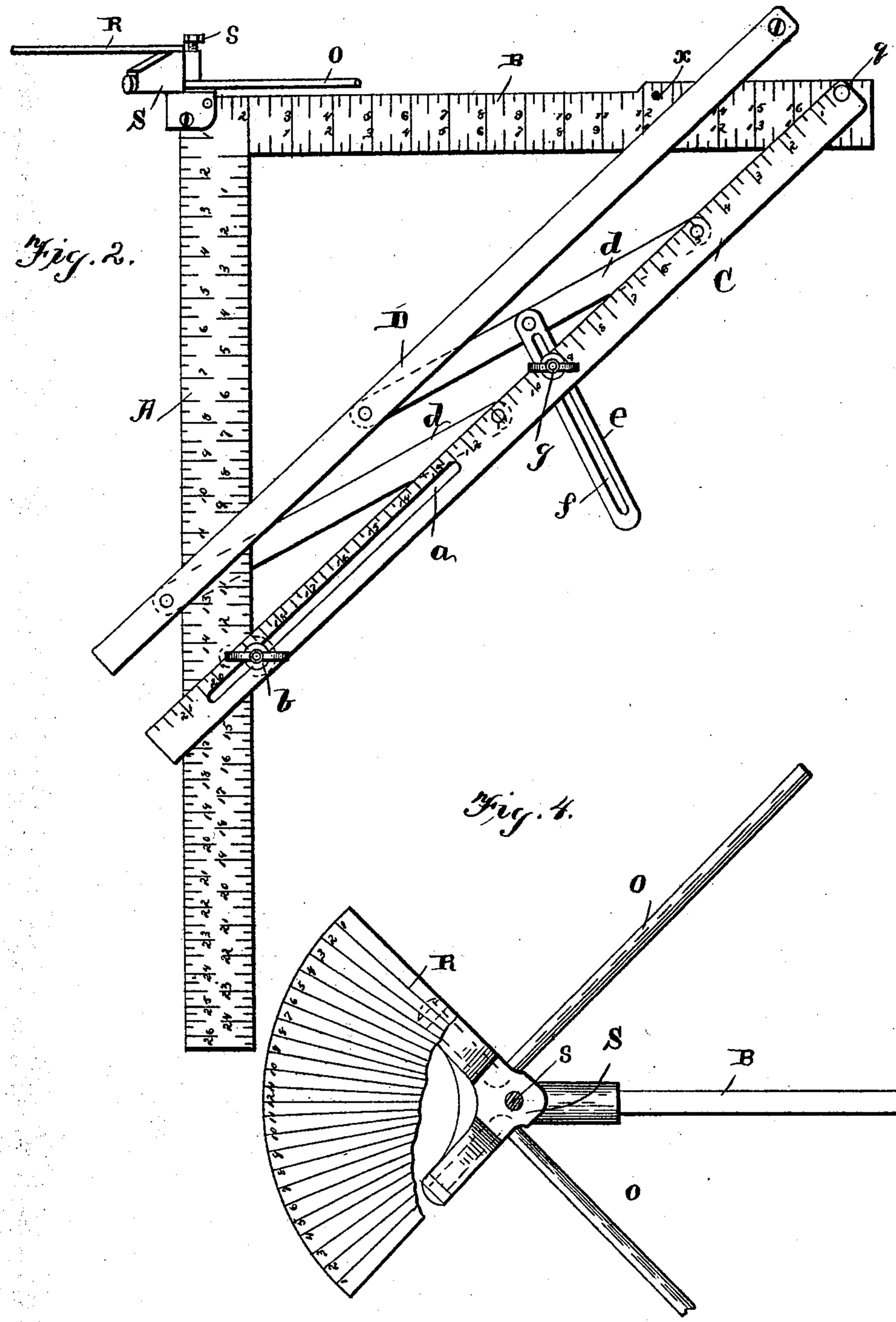

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN PARKHILL, OF ROCHESTER, MINNESOTA.

ROOF-FRAMING TOOL.

SPECIFICATION forming part of Letters Patent No. 516,575, dated March 13, 1894.

Application filed August 14, 1893. Serial No. 483,117. (No model.)

To all whom it may concern:

Be it known that I, JOHN PARKHILL, of Rochester, in the county of Olmsted and State of Minnesota, have invented certain new and useful Improvements in Roof-Framing Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in roof framing tools, and it consists in the construction and arrangement of parts which will be fully described hereinafter, and particularly referred to in the claims.

The object of my invention is to provide a tool for carpenters' use in cutting out rafters which form the various styles of roofs; ascertaining the length of the several styles of rafters which compose the frame of the said roof; to mark the beveled and side cut of the ends of the several styles of rafters used in constructing roofs; the said tool also being adapted for some other uses, which will be fully described hereinafter.

In the accompanying drawings: Figure 1, is a perspective view of my invention showing it in position upon a rafter for the purpose of ascertaining the beveled and side cut thereof. Fig. 2, is a plan view of the same. Fig. 3, is a side elevation of the corner of the square showing the device for marking the side cut attached thereto. Fig. 4, is a top plan view of the same. Figs. 5 and 6, are top plan views of roofs showing the hip, and jack rafters.

A and B designate the two sides of a carpenter's square, which are figured either in inches, meters or other desired systems of measurement, and upon the outer edge of the part B, are the two pivotal openings or points *x*, *q*, which are in a line with the said outer edge thereof. The pivotal points *x*, *q*, are at such respective distances from the part A of the square as the side of a square is to its diagonal. That is to say, a line drawn from the point *x*, parallel with the part A of the square, and a transverse line connecting the said part A and this line to form a square, the diagonal of this square will be equal to the distance of the point *q* from the upper end of the part A, of said square.

C is a blade or plate interchangeably pivotally connected at the points *x*, and *q*, and figured commencing at its pivotal point in divisions of the same character as those made upon the said square. A longitudinal slot is made in this blade C, and moving in this slot *a*, is a clamp *b*, by means of which the free ends of the blade C can be attached to the part A of the square at any desired point.

D is a bar which is connected with the blade C by means of the links *d*, which have their ends respectively pivoted to the said bar D and the blade. A slotted arm *e*, has one end pivotally connected with one of the links *d*, and is provided with a longitudinal slot *f*, in which a clamp *g*, extending from the blade C moves. By means of this construction the bar D can be supported from and parallel with the blade C any desired distance and held in the adjusted position by means of the clamp *g*, holding the arm *e*.

The device for marking side cuts of the ends of the rafters consists of a block S or holder, which is pivoted at a point about in a line with the outer edge of the part A of the square. Each marking finger is pivotally fastened to the said block S at or near the angle of the parts A, B, of the square so as to swing in planes at right angles to each other, and in planes at an angle to the part A of the square and on an axis radially to the axis of the block S. Attached to the block S and carried thereby is a segmental plate R which is marked with lines radiating from the axis of the block S. It is attached to block S so that the point of converging of the lines coincides with the axis of the block S, so that the center line which equally divides the plates 12, in Fig. 4, forms an angle of forty five degrees with the axis of either of the said fingers O. These fingers O are pivoted in the block S and on an axis which is at right angles to the part A of the square, the pivotal point of each finger being practically in the axis of the said block S, and each arm is free to swing upon its axis. It will also be noticed that the axis of one finger forms a right angle with the axis of the other finger, and that each finger extends at a right angle to its own axis, the object and operation of which will be fully described presently.

The operation of my invention is as follows:

The parts of the block S being fastened in place by means of a clamping screw *s*, or other suitable device, with the central line 12, of the plate R in line with the upper edge of the part B of the square as shown in Fig. 4, and the blade C pivoted at *x* the length and side cuts of common, hip, valley and jack rafters can be ascertained for roofs of different pitches, and the side cuts or side bevel on hip or valley and jack rafters, also quickly and accurately ascertained in the following manner: When C is pivoted at *x* or *q* the distance at right angles from edge of C to a point on B half the thickness of hip rafter from *x* or *q*, will be the depth of "backing" for hip. The blade C being pivoted at the point *x*, the opposite or free end thereof is clamped to the part A of the square at the numeral thereon which represents the rise to the foot of the roof. The distance indicated then on C from the point *x*, to the figure on the part A of the square, where the blade C intersects it, is the length of common rafters for each foot of run. The same distance is the difference in length of jacks for each foot apart. The length of common rafters is thus ascertained for roofs of any required pitch. The length of hip and valley rafters is obtained by changing the pivotal point of blade C from the point *x* to the point *q* shown in Fig. 2, and the same method followed just described in respect to the common rafters. For example; if the pitch of a roof is six inches rise to the foot and the blade C pivoted at the point *x'* then by fastening the free end of the blade C to the part A of the square at the numeral 6, the length of the common rafter as indicated by the blade from its pivotal point to its point of attachment to the part A will be thirteen and five-twelfths inches long for each foot of run for the common rafter. The difference in length of a jack rafter for every foot apart will be the same, namely thirteen and five-twelfths inches. So also for a hip or a valley rafter, pivot the blade C at a point *q*, and fasten the free end of the said blade at the same figure 6, on the part A of the square, when the blade C from its pivotal point to the point of attachment to the part A, will indicate eighteen inches as the length of the hip or valley rafter for each foot of run that the common rafter has. When it is desired to mark the plumb or vertical, the horizontal and side cuts on any rafter the said rafter is placed in position shown in Fig. 1, with the edge of the rafter resting against the bar D of which there is one on each side of the square as clearly shown, the said bar D having been adjusted the proper distance from the blade C to bring the opposite edge of the rafter at the extreme intersecting point of the outer edge of the part A, B, of the square, when the outer edge of the part A will give the plumb or vertical cut of the said rafter. In this way it will thus be seen that the plumb or top end cut of the rafter is obtained by the outer edge of the part A of the square and the horizontal or bottom end cut by the part B. Where the pitch of the jack rafters is the same upon opposite sides of the hip rafter, as shown in Fig. 5, and the jack rafter joining the hip rafter at an angle of forty five degrees, the side cut of the said rafter is indicated by one of the fingers O, which automatically drops down against the side of the rafter, as shown in Fig. 1. When the jack rafters are of the same pitch at opposite sides of the hip rafters as just specified, then the plate R is secured so that its center line will be in a line with edge of the part B of the square, and in this position as just stated the finger O adjacent to the rafter will automatically drop and give the proper side cut for the rafter. I here show two fingers, one for right and the other for left hand rafters as a matter of convenience, as will be readily understood. When however, the pitches of the roof are at different angles on opposite sides of the hip rafter, as shown in Fig. 6, then swing the plate R around to the figure thereon which represents whatever run on the steeper pitch the rise to the foot of the latter pitch requires. That is to say, for pitches of six to eight inches to the foot, the rise of the flatter pitch (six inches) requires a run on the steeper pitch of nine inches, and the plate R is swung around until the line representing the figure 9, is in line with the part B of the square, when one finger O will give the side bevel on one side of the hip and the other finger the bevel on the other side of the hip. In ascertaining the side cut the edge of the part A of the square is always on the plumb or vertical cut of the rafter, as will be seen.

While I here show the blade C and the bar D as the means of ascertaining the length of the rafter and supporting the tool at the proper incline in relation to the rafter to give the proper bevel at the end of the rafter, I do not desire to limit myself to the use of these parts for it will be readily understood that if the bevel of the end of the rafter is ascertained in the ordinary manner the side cut can be ascertained by the use of the plate S and the fingers connected therewith, by simply placing the edge of the part A on the plumb line of the rafter, and in this instance the part B of the square may be omitted, and a plain bar used for the part A. In this position the fingers will indicate the side cut in the same manner as though the blade C and the bar D were used for supporting the tool in the proper position to determine the plumb cut. It will also be understood that by placing the part A of the square on the perpendicular cut of board it will automatically indicate the miter cut on timber to stand at any angle desired, as for example, the lower end of frieze or gable. So also by removing the part S out of the way it makes a gage for marking step stringers by rigidly fastening the bar D at the desired point to correspond with the required rise and tread of the stairs.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. A device for ascertaining the side cut of rafters comprising a rule or bar adapted to have its edge placed on the plumb cut of the said rafter, and a swinging finger pivotally attached in line with the edge thereof to swing in a plane parallel with the length of the said rule or bar and at an angle to the width thereof, substantially as and for the purpose set forth.

2. A device for ascertaining the side cut of rafters comprising a rule or bar to be placed on the plumb cut of said rafters, a finger pivotally connected with the said bar at substantially its edge, and swinging in a plane parallel with the length of the said bar, and at an angle to the width thereof, and an indicator plate connected with the said finger, substantially as set forth.

3. A device for indicating the side cut of rafters comprising a rule or bar which is placed on the plumb cut thereof, an indicator plate pivoted in a line with the edge of said bar and adapted to swing at right angles to its length, and a finger pivotally connected with the said indicator plate to swing at right angles to the swing of said indicator plate, substantially as set forth.

4. A device for indicating the side cut of rafters comprising a rule or bar adapted to have its edge placed on the plumb cut of the rafter, an indicator plate pivoted to the said bar to swing at right angles to its length, the said plate having indicating lines marked from a common center thereof, and fingers pivotally connected with the said plate at opposite sides of its pivotal point and adapted to swing in a plane at right angles to the said plate, substantially as described.

5. A roofing tool comprising a square, a blade having one end pivoted to one part of the said square and adapted to be adjustably connected with the other part of the said square to indicate the pitch of the roof, and a side bevel marker pivoted to the said square at the junction of the two parts thereof and substantially in a line with the edge of one of said parts, substantially as shown and described.

6. A roofing tool comprising a square, a blade having one end pivotally connected to one part of the square and its opposite end adapted to be adjustably connected with the other parts of the square, a device for indicating the side cut of the rafters pivoted to the square at the junction of the two parts, and in a line with one edge of one part, and swinging in planes at angles to the length of the said square, substantially as specified.

7. A roofing tool comprising a square, a blade having one end pivoted to one part of the square and its opposite end adapted to be adjustably connected with the other part of the square, a bar adjustably held parallel with the said blade, and a device for indicating the side cut of the rafter pivoted at the junction of the two parts of the square and in a line with the edge of one part, the said device swinging in planes at angles to the face of the said square, substantially as specified.

8. A roofing tool comprising an L-shaped rule one part thereof having an inner and an outer pivotal point, the outer point being a distance from the part A of the rule equal to the length of the diagonal of a square formed by drawing a line from the said inner point parallel with the part A of the rule, and a line at right angles to and connecting the said drawn line and the part A, and a blade or bar pivoted at one of said points, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN PARKHILL.

Witnesses:

L. B. JASSELYN,

C. E. CALLAGHAN.