No. 858,491. PATENTED JULY 2, 1907.

J. VITTITOE.

ROOFING CHART.

APPLICATION FILED APR. 9, 1906.

Fig. 3.

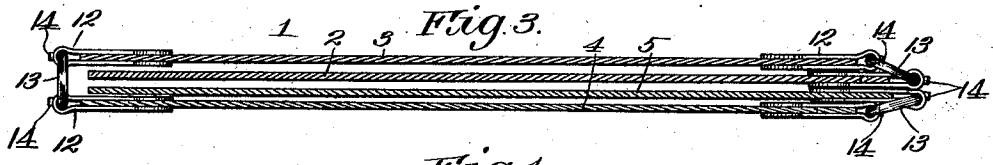


Fig. 1.

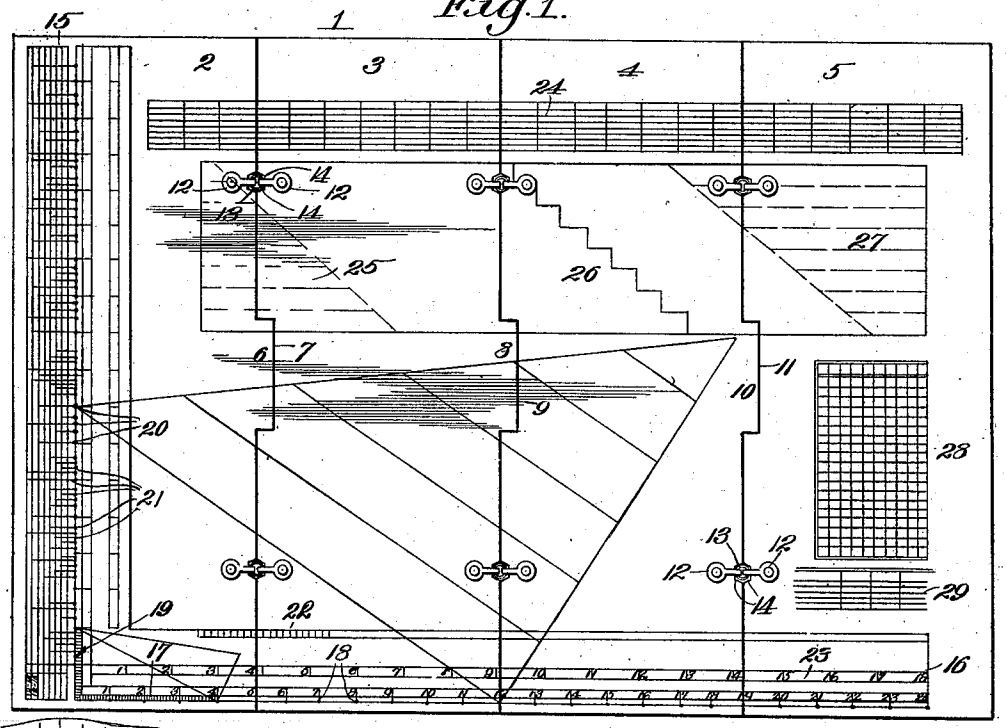
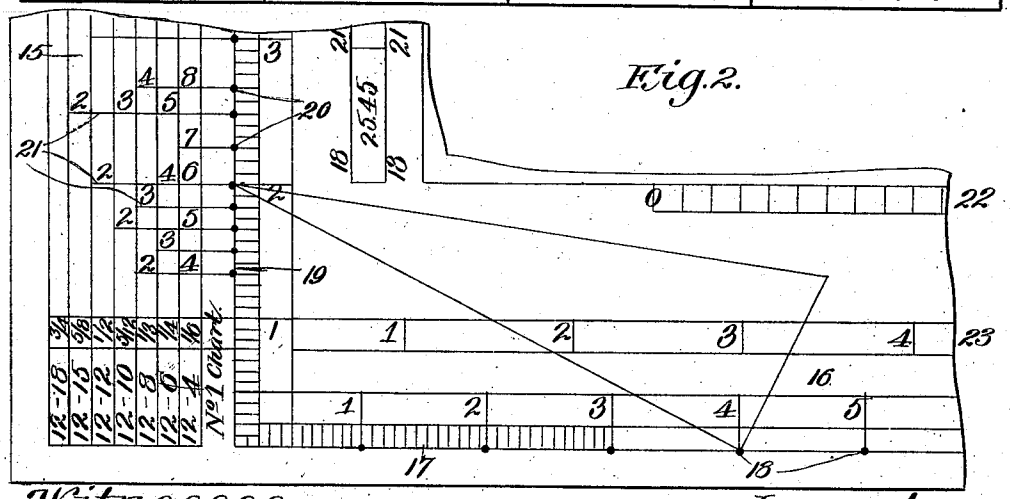


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES VITTITOE, OF KANSAS CITY, MISSOURI.

ROOFING-CHART.

No. 858,491. Specification of Letters Patent. Patented July 2, 1907.

Application filed April 9, 1906. Serial No. 310,863.

To all whom it may concern:

Be it known that I, JAMES VITTITOE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Roofing-Charts, of which the following is a specification.

This invention relates to roofing charts, and my object is to produce a chart whereby any carpenter can lay out a roof without figuring and without cutting and trying.

A further object is to produce a foldable chart by which the length and cuts of what are known as "common" rafters can be easily and expeditiously determined.

With these general objects in view and others as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a plan view of a chart embodying my invention. Fig. 2, is an enlarged plan of a portion of the same. Fig. 3, is a sectional view of the chart in folded condition.

Before proceeding with the detailed description of the chart and of the method of using the same, it will be well to state that a chart of the proportions shown can be conveniently used for finding lengths and cuts of "common" rafters in seven different pitches and that it has been prepared for all widths of buildings from four to forty-six feet. By it one hundred and twenty six lengths and cuts of "common" rafters can be found, and the same number of "hips" and "valleys" can also be found by the simple use of the steel square, as illustrated and described in this chart, the diagram of the steel square being the essential part of the chart and being graduated in inches and twelfths, and the blade of the diagram is provided with holes through which marks can be made to indicate half the width of buildings, the holes in the diagram of the tongue representing the different pitches.

In the said drawing, 1 indicates a chart of celluloid, cardboard or other light and preferably stiff material, composed of a plurality of sections, four being shown in this exemplification, numbered, 2, 3, 4, and 5, section 2 being provided midway its length by preference, with a rectangular tongue 6, section 3 with a rectangular recess 7 at the edge contiguous to section 2, and at the opposite edge with a rectangular tongue 8. Section 4 is provided at the edge contiguous to section 3 with a rectangular recess 9, and at the opposite edge with a rectangular tongue 10, and section 5 with a rectangular recess 11, tongues 6, 8, and 10, being adapted to fit snugly in recesses 7, 9, and 11 when the chart is in its open or operative condition, this relation of tongues and recesses preventing independent edgewise movement of the sections transversely of the chart. The sections are prevented from movement longitudinally of the chart by hinge connections consisting of straps 12 connected by links 13, the contiguous edges of the charts being provided with matching recesses or notches 14, to accommodate said strips and links. By this method of linking the sections together it will be seen that the chart may be folded up substantially as indicated in Fig. 3, and therefore occupy comparatively small space, so as to be conveniently carried. It will also be understood that the chart is preferably made in sections because it must be of comparatively large size when unfolded to render decipherable the numerous figures thereon, as hereinafter explained.

Printed, stamped or otherwise inscribed upon the chart is the representation of a steel square consisting of the tongue 15 and the blade 16, the latter extending contiguous to and parallel with the lower or side margin of the chart and therefore appearing on all of the sections of the latter as shown in Fig. 1; the tongue appearing on section 2, near the left-hand edge of the same, by preference.

The lower margin of the blade is divided into inches and fractions thereof as at 17, and at inch intervals, as shown, is preferably provided with holes 18, through which the point of a pencil can be passed. The graduated portion 17 of the blade has no special connection with the chart.

The representation of the tongue is provided with a line 19 divided into inches and fractions thereof and at proper points along said line the chart is provided with holes 20 through which the point of a pencil may be passed. To the left of said line are a series of "pitch" spaces or columns parallel with said line and in said columns near the lower margin of the chart by preference appears the characters—12—4, 12—6, 12—8, 12—10, 12—12, 12—15, 12—18, and other characters if desired though those shown will be sufficient for ordinary use, and preferably above said characters respectively appear the fractions $\frac{1}{6}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{5}{12}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$, these fractional characters representing different pitches. In the columns representing the pitches appear numbers which increase progressively away from said fractional numbers, and extending transversely of the tongue and therefore longitudinally of the chart are lines 21, leading from said progressing numbers to and intersecting the subdivided line 19, and in this connection it will be noticed that the holes 20 always occur at such intersection points. It will furthermore be noticed that there may be only one of said progressive

or pitch column lines 21 registering with one of said holes or there may be one of said lines for several of said progressing numbers, registering with a single hole.

For the convenience of the carpenter and to make the chart more valuable it is provided with other features hereinafter referred to briefly because they form no special or essential part of the invention.

To obtain the length of the "common" rafters of a building twentyfour feet wide, for instance, the carpenter will place his chart upon a sheet of paper or plank and stick his pencil through hole 18 registering with the 12-inch mark on the blade 16, of the diagram, and make a dot on the paper or plank below because twelve inches represents twelve feet, which is one-half the width of the building.

If the roof is to be one-third pitch, reference will then be made to the pitch column 12—8 or ⅓ on the tongue of the diagram, and he will follow up that column on the tongue of the diagram until the number 12 is reached, which number must always be the same as the number on the blade of the diagram opposite which the mark is made on the paper or plank. The line 21 extending longitudinally of the chart and transversely of the tongue, which extends from said number 12 of the pitch column to the subdivided line 19, is then followed to the right until said subdivided line is encountered, at which point will be found a hole 20 as hereinbefore explained and through this hole the pencil point is passed to make a second dot upon the paper or plank. The chart is then removed and the carpenter draws a line from one dot to the other, which line will be exactly one-twelfth of the extreme length of the "common" rafters, which length can be ascertained by means of a carpenter's rule or square.

To obtain the top cut of the "common" rafter, a steel square is placed upon the rafter so that the 12-inch mark on the outer edge of the blade and the 8-inch mark on the outer edge of the tongue intersect the same edge of the rafter. A line is then drawn on the rafter along the outer edge of the tongue to give the angle of the top cut. To obtain the bottom cut, the square is shifted along the rafter until the 12-inch line of the blade and the 8-inch line of the tongue intersects the same edge of the rafter and a second line is drawn across the rafter along the outer edge of the blade which line gives the angle of the bottom cut. This method of obtaining the cuts, however, is well-known and really forms no material part of the invention because when the length of the rafter is determined the cuts follow as a matter of course because the pitch is known and the carpenter generally knows that 12-inch and 8-inch marks on the blade and tongue respectively, are representative of one-third pitch. After the length of the "common" rafter is ascertained by measuring a line between the parts marked on the paper (or board if preferred) a steel square is placed with the outer edge of its blade or tongue on said line and a line is drawn along the outer edge of the tongue or blade as the case may be, twelve inches in length, which represents one-twelfth the length of the "plate" of the building. A line is then drawn from the extremity of the "plate" line to the opposite extremity of the rafter line, this line representing one-twelfth of the length of the "hip" or "valley" rafter. The distance apart which the "jack" rafters are to be placed is then stepped off along the "plate" line, and lines are drawn intersecting said points stepped off, perpendicularly to the "plate" line until they intersect the line representative of the "hip" or "valley." These perpendicular lines represent the "jack" rafters and their respective lengths are multiplied by twelve to determine the exact length of the "jack" rafters. The end cuts of the "jack" rafters are determined by any of the various methods employed by those skilled in the art.

For purposes of illustration only, as it forms no part of the invention, a diagram is printed on the chart with its "common" rafter line extending from the 12-inch mark of the blade (representative of twelve feet) to the 8-inch mark on the graduated line 19, because the pitch is what is known as one-third pitch, the 8-inch mark being preferably found by following up the 12—8, ⅓ pitch column on the tongue until the number 12 is encountered in said column and then following line 21 leading therefrom to the right when it will be found that it intersects the hole at the 8-inch mark as hereinbefore explained. This diagram also includes the "plate" line, viz. the line extending at right angles to the common rafter line; "hip" and "valley" rafter line, viz., the line connecting the common rafter and plate lines; and the "jack" rafter lines, viz., the lines paralleling the common rafter line. This diagram is clearly shown in Fig. 1 and is simply a guide to assist in explaining the use of the chart.

22 designates a divided space which is utilized in laying out an octagon roof. This feature, however is common in squares and the method of laying out an octagon roof therefrom is wellknown to those skilled in the art. For this reason no detailed description of the method of laying out this roof is given.

23 indicates a spacing forming no indispensable feature of the chart, by which one can readily ascertain how many studding or joists are needed.

24 indicates a board measure table. This table is old and is no indispensable feature of the chart.

25, 26, and 27 represent diagrams to show how to divide a number into equal parts by the use of the steel square and said diagrams likewise form no indispensable feature of the invention.

28 indicates a ready reckoning table of piece-stuff, and 29 a fence-board table.

The various diagrams are shown in blank without the explanatory reference numbers which in practice will be used upon them. Said diagrams and tables are illustrated simply to show that the chart for ascertaining quickly and easily the length of the "common", "hip", "valley" and "jack" rafters may be made more valuable to the trade by including upon it common and wellknown tables and diagrams.

From the above description it will be apparent that I have produced a chart embodying the features of advantage enumerated as desirable and which may obviously be modified in minor particulars without departing from the spirit and scope of the invention.

Having thus described the invention what I claim as new and desire to secure by Letters-Patent, is:—

1. A chart composed of sections having registering recesses in their meeting edges, U-shaped strips secured to the opposite faces of the sections and passing through the recesses, and connecting links passed through the bends of said strips.

2. A roofing chart having on its face a representation of a square, the blade of the square being marked with a scale and provided with holes along the scale, and the tongue of the square being marked with a divided line and provided with holes at the points of division on said line, the chart being provided adjacent to and parallel with said line with a series of pitch columns, progressive numbers in said columns, lines leading from said columns and intersecting the divided line at the holes thereon, and indicia in the corner of the chart at the ends of said columns.

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

JAMES VITTITOE.

Witnesses:
W. H. WELLER,
G. Y. THORPE.