W. D. ARMSTRONG.

FOLDING SQUARE.

APPLICATION FILED FEB. 12, 1916.

1,198,096. Patented Sept. 12, 1916.

Fig. 1

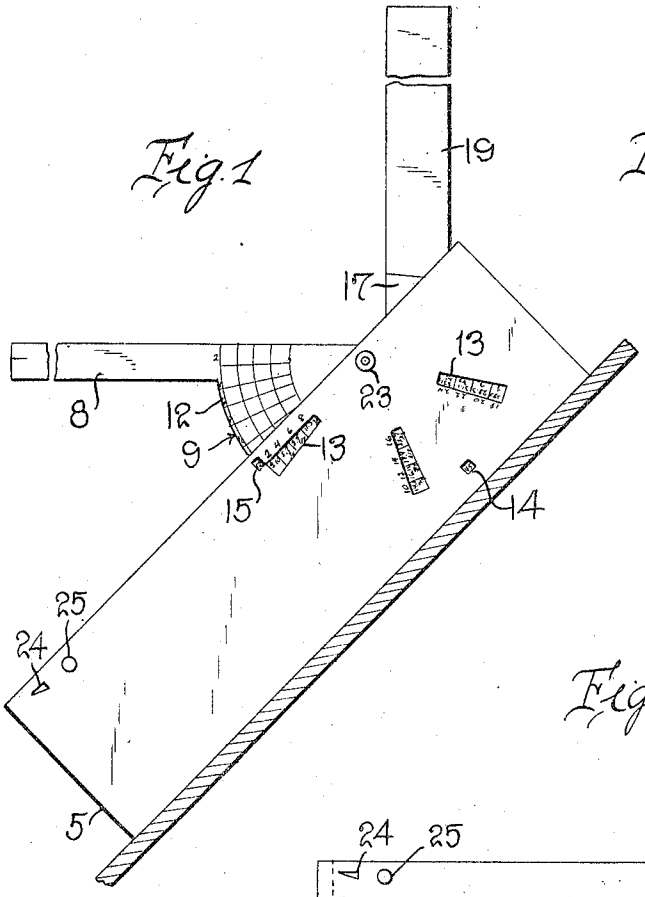


Fig. 3

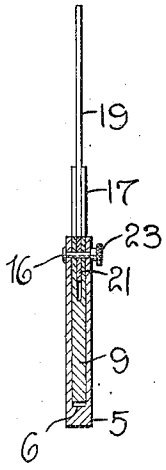
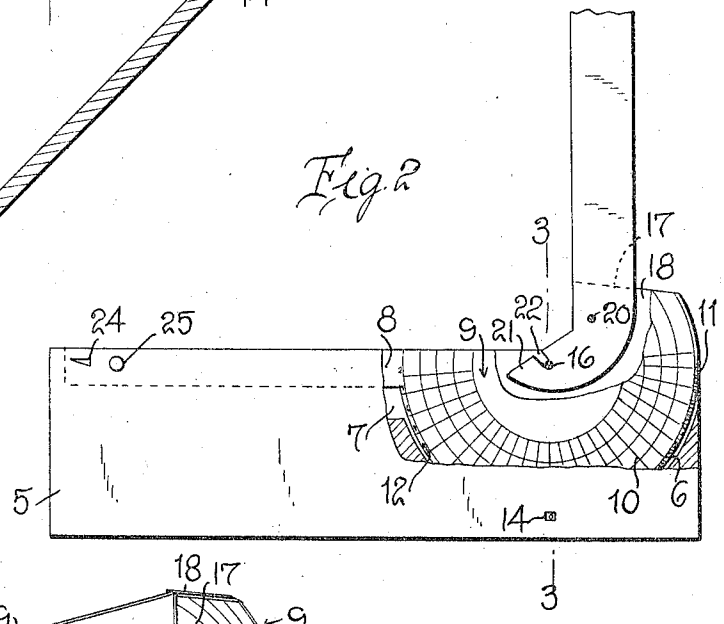


Fig. 2



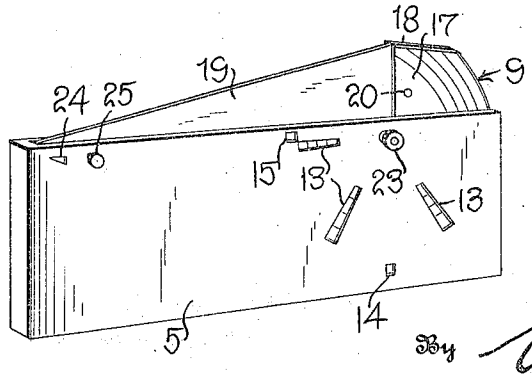


Fig. 4

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FOLDING SQUARE.

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To all whom it may concern:

Be it known that I, WALTER D. ARMSTRONG, a citizen of the United States, residing at Gate, in the county of Thurston and State of Washington, have invented certain new and useful Improvements in Folding Squares, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved folding square and has for its primary object to provide a very simply constructed and serviceable implement of this character for use by carpenters and other mechanics in ascertaining the rise or degree of inclination of rafters and the like, as well as the lineal measurement of the same, laying off stair steps, and for various other similar operations.

It is another and more particular object of the invention to provide a folding square embodying a frame, a square blade pivotally mounted in the frame and having a degree scale on its pivoted end whereby the blade will normally tend to gravitate to a horizontal position when the frame is set in place upon the work, and a tongue pivotally mounted in the scale and adapted to fold upon the blade, said blade and tongue being foldable together into the frame.

It is a further general object of the invention to produce a device of the above character which may be inexpensively manufactured, is strong and durable in construction and highly serviceable and convenient in practical use.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which,

Figure 1 is a side elevation of my improved folding square, showing the tongue and blade in one of their set positions with respect to the square frame; Fig. 2 is a similar view showing the device set in position for use as a tri-square, a portion of the frame being broken away: Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2; and Fig. 4 is a perspective view showing the square folded or closed.

Referring in detail to the drawing, 5 designates the frame of a square in which the movable parts are mounted. This frame consists of a single rectangular metal bar recessed or cut away to provide a substantially semicircular, transversely extending chamber 6 in one end thereof and a relatively narrow longitudinal channel 7 communicating with one side of this chamber and terminating adjacent to the opposite end of the frame bar. The chamber 6 and the channel 7 open upon one of the longitudinal edges of the frame, and into the same the foldable parts of the square are adapted to be closed.

8 designates the blade of the square which is relatively narrow and is integrally formed at one end with the substantially semi-circular scale plate 9 and projects laterally from said plate. One or both sides of the scale plate are marked off in any suitable manner into a multiplicity of blocks 10 which are adapted to contain suitable indicia, and at the outer edge of the scale plate the same is graduated through 90° of its circumferential extent, as shown at 11, the graduations being properly spaced and suitably marked. Indicating characters are also stamped along the remaining 90° of the edge of the scale plate, as at 12, and in the illustrated embodiment, these characters indicate the rise of roof rafters of various lengths when pitched to different degrees. The various lengths of rafters are stamped in the blocks 10 on the face of the scale plate and are visible through radially disposed slots 13 provided in one of the side walls of the compartment 6 in the square frame. The degrees 11 on the edge of the scale plate are read through a sight opening 14 and the indicating numerals 12 on the edge of said plate through a second opening 15 provided in the wall of the chamber 6. The scale plate 9 is mounted to pivot or turn upon a pin 16 which is fixed at one of its ends in one wall of the chamber 6. Upon one side of this pin, the plate 9 is formed with an extension 17 projecting out of the chamber 6 beyond the longitudinal edge of the frame 5. This extension affords additional weight on one side of the pivot 16 so that the plate will swing or turn upon the pivot by gravity and maintain the blade 8 at all times in a horizontal position, irrespective of the degree of inclination of the frame 5. The inner edge of this extension 17 is formed with a slot or recess 18 in which one end of the metal tongue 19 is

mounted to turn upon a pivot pin 20 traversing said slot and fixed in the extension 17 of the scale plate. The pivoted end of the tongue 19 is provided with an extension 21 having a notch 22 in one edge thereof which is adapted to engage around the pin 16 when the tongue is disposed in a position at right angles to the blade 8. The thumb nut, indicated at 23, is threaded upon one end of the pin 16 and, by threading said thumb nut inwardly, the opposite side walls of the slotted frame will be forced together into clamping engagement with the scale plate 9 and thus retain said plate and the square blade in their set positions.

One wall of the longitudinally extending channel 7 in the frame 5 is provided with an opening 24 at the end of the frame 6 so that the extremity of the blade 8 may be seen when the blade is disposed within the channel 7 and thus enable the user to ascertain when said blade is in its proper horizontal position, for which purpose the end edge of the blade is provided with a suitable index mark. At this end of the frame 5, a thumb screw 25 is threaded in one of the walls of the channel 7 and is adapted to be adjusted into binding engagement with the tongue 19 of the square in order to retain the parts in their closed or folded positions with respect to the frame.

In the drawing, I have shown numerals stamped on one wall of the frame 5 along one edge of each of the slots 13 thereof and in line with the respective semi-circular series of blocks 10 on the face of the scale plate. These numerals are indicative of the run of rafters in various lengths and the numerals in the blocks 10 are read in accordance with the run of the particular rafter, said numerals indicating the requisite lineal measurement of the rafter for the degree shown through the opening 14 and having a rise from the horizontal, as indicated on the edge of the scale plate through the opening 15. While I have thus illustrated in the drawing, the parts of the device provided with the indicating characters to be employed for a particular purpose, it is obvious that the scale plate and the walls of the frame 5 may be otherwise suitably marked in accordance with the various operations for which such an implement can be advantageously employed. As the present invention resides in the mounting and relative arrangement of the movable parts so that they can be compactly folded, it would be superfluous, for purposes of this specification, to elaborate further upon the many and varied uses of the invention.

In the actual use of my invention, I have found that the mounting and arrangement of the several parts as described, affords a device which may be easily and quickly handled and arranged in position upon the material whereby the degree of bevel or inclination or the lineal measurement of parts to be cut may be quickly ascertained. The construction of the frame or body of the device in which the movable elements are mounted may, of course, be considerably varied from that disclosed in the drawing. The device is also susceptible of a great many other modifications in the form, proportion and arrangement of the elements described and it will, therefore, be understood that I reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

What I claim is:—

1. In a folding square, a frame, a blade having a substantially semi-circular scale plate on one end thereof pivotally mounted in the frame and provided with a projection on one side of its pivot affording a weight to cause the gravity movement of the scale plate when the frame is disposed at an inclination, and a tongue mounted in said scale plate for movement to a position at right angles to said blade and adapted to be folded with the blade into said frame.

2. In a folding square, a frame, a blade having a substantially semi-circular scale plate on one end thereof pivotally mounted in the frame and provided with a projection on one side of its pivot affording a weight to cause the gravity movement of the scale plate when the frame is disposed at an inclination, a tongue pivotally mounted in said scale plate for movement to a position at right angles to said blade and adapted to be folded with the blade into said frame, and a set screw mounted in the frame for binding engagement upon said tongue to retain the same and the blade in their folded positions.

3. In a folding square, a frame, a blade having a substantially semi-circular scale plate on one end thereof pivotally mounted in the frame and provided with a projection on one side of its pivot affording a weight to cause the gravity movement of the scale plate when the frame is disposed at an inclination, a tongue pivotally mounted in the scale plate for movement to a position at right angles to said blade and provided with means for engagement with the pivot of said plate to limit the movement of the tongue in one direction to a position at right angles with respect to the blade, said tongue and blade being foldable into the frame, and means mounted in the frame to retain the parts in their folded positions.

4. In a folding square, a longitudinally recessed frame bar, a blade provided with a scale plate on one end pivotally mounted in the recess of the frame, said scale plate having a projection on one side of its pivot whereby the plate is caused to turn by grav-

ity, said projection having a recess in one edge, a tongue pivotally mounted in said recess for folding movement upon the blade, said tongue being provided with a notch to receive the pivot and the scale plate whereby movement of the tongue in one direction is limited to a position at right angles to the blade, said tongue and blade being foldable together into the recess of the frame bar, and means for retaining the parts in their folded positions within said frame.

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

WALTER DOANE ARMSTRONG.

Witnesses:
M. SPINNER,
FLORENCE M. SPINNER.