

W. G. HARRIS.
COMBINATION TOOL.
APPLICATION FILED JULY 20, 1901.

NO MODEL.

Fig. 1.

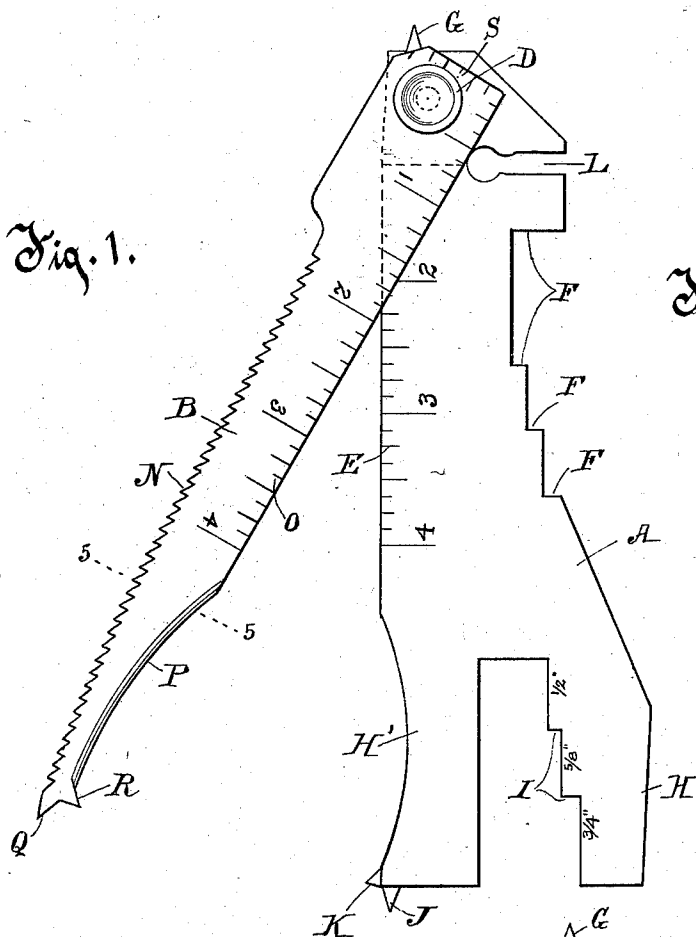


Fig. 2.

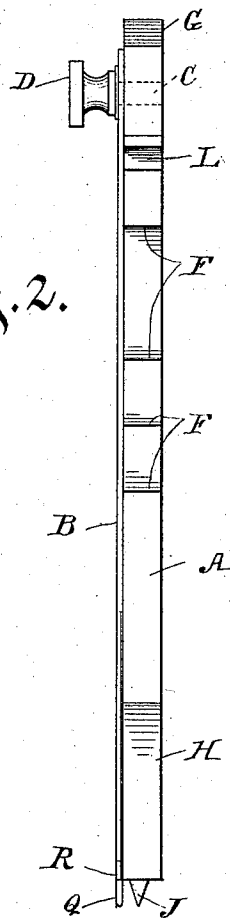


Fig. 2r.

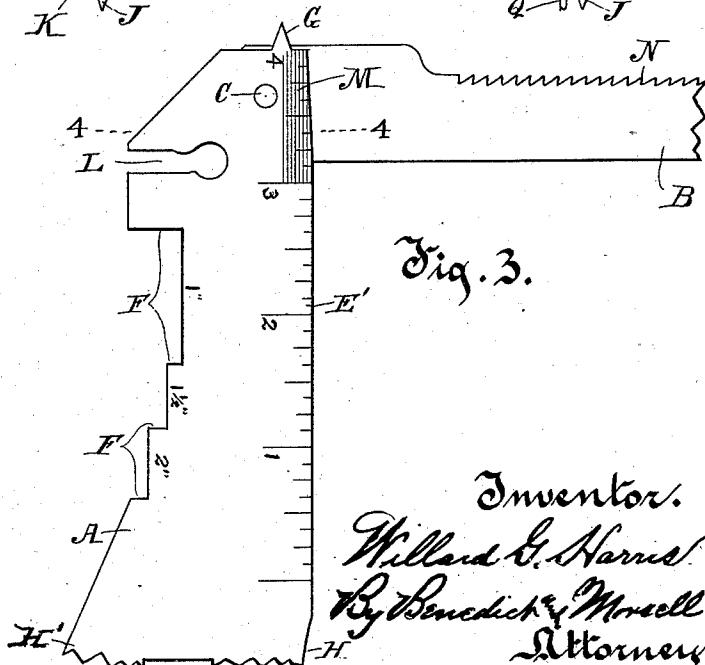


Fig. 5.



Witnesses:
A. H. Keeney
Anna V. Faust

Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLARD GERRALD HARRIS, OF OCONTO, WISCONSIN.

COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 743,076, dated November 3, 1903.

Application filed July 20, 1901. Serial No. 69,005. (No model.)

To all whom it may concern:

Be it known that I, WILLARD GERRALD HARRIS, residing at Oconto, in the county of Oconto and State of Wisconsin, have invented
 5 a new and useful Improvement in Measuring Devices, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 My invention has relation to improvements in measuring devices; and it consists in the improved construction and combination of parts, as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is
 15 a side elevation of the device, showing it adjusted for use as a bevel-square or as outside calipers. Fig. 2 is a right-hand edge view of Fig. 1. Fig. 3 is a view showing the reverse side to that shown in Fig. 1 and illustrating
 20 the device adjusted as a try-square. Fig. 4 is a section on the line 4 4 of Fig. 3, and Fig. 5 is a cross-section on the line 5 5 of Fig. 1.

Referring to the drawings, the letters A and B, respectively, indicate the two arms of my
 25 device, pivoted together at their upper ends on a bolt C, said bolt having a head D on its outer end. Upon opposite sides of the arm A and extending from the side edge inwardly are a series of scale-marks E E', forming rules
 30 on opposite sides of the arm. The opposite edge of the arm A is provided with a series of shoulders F with scale dimensions indicated thereon in order to form a lumber-gage. The space between the several shoulders is indicated by scale measurements, and by fitting
 35 the lumber between the upper shoulder and any of the lower shoulders the width of the strip of lumber may be determined.

The upper edge of arm A is provided with
 40 a beveled projection G, which forms a screw-driver, while the lower end of said arm is bifurcated to form the two jaws H H' of a wrench. The inner edge of the jaw H is preferably provided with a series of steps I, so as
 45 to make the wrench suitable for different sizes, and also by having graduated marks thereon serving to adapt this end of the arm to act as a lumber-gage. The leg H' of the wrench is provided with a downwardly-extending pointed projection J, which forms one
 50 point of the compasses. The outer edge of this leg is also provided with a laterally-ex-

tending projection K, which forms a calipers-point.

Near its upper end the arm A is provided
 55 with an inwardly-extending slot forming a saw-set L. The blade of the saw is inserted in the slot and the teeth of the saw bent laterally in opposite directions by any desired means. The preferable means, however, is
 60 to raise the outer end of arm B, so that the inner corner or angle of said arm will be swung downwardly, and thereby strike a saw-tooth and bend or deflect said tooth.

By reference to Figs. 3 and 4 it will be seen
 65 that one edge of the arm A at the upper end of said arm is beveled, as indicated by the letter M. This beveled portion is used as a saw-gage for determining whether or not the saw-teeth have been set at the proper angle.
 70 After the setting operation is completed the blade is placed against the non-beveled portion of the arm with the teeth extending over the beveled portion. If the points of the teeth touch the beveled surface, it is thereby known
 75 that the proper set has been given to said teeth.

One edge of arm B is provided with a series of teeth N, forming a keyhole-saw. For convenience the opposite edge of said arm may be provided with a scale forming a rule O,
 80 which extends downwardly for a desired distance from the upper end of the arm. The remaining portion of this edge of the arm is curved inwardly, as clearly shown in Fig. 1, and beveled on opposite sides to a sharp edge,
 85 as shown in Fig. 5, to form a knife P for sharpening lead-pencils, &c. The lower end of arm B has projecting downwardly therefrom a pointed projection Q, forming the other
 90 point of the compasses, and from the side edge is another pointed projection R, forming the other calipers-point.

In Fig. 1 of the drawings I show the arm B adjusted outwardly at an angle, so as to make the device adaptable for use as a bevel-square,
 95 and in Fig. 3 I show the arm B adjusted so as to extend at right angles from arm A, and thereby adapt the device to be used as a try-square. The device is capable of various other adjustments. For instance, instead of
 100 having the arm B swung out at an angle to the left, as shown in Fig. 1, said arm may be thrown out at an angle to the right, and thereby form a miter-square. When the device is

desired to be used as a compasses, both arms A and B are swung out at angles and the points J and Q employed as the compasses-points. For use as outside calipers the device is adjusted as shown in Fig. 1, with the arm A also at a slight angle. The points K and R are then brought in contact with the outside surface of the device it is desired to secure the dimensions of. For use as inside calipers the arm B is thrown to the right and the two arms inserted inside of the article of which the dimensions are desired to be secured, with the points K and R against opposite points of the inside surface of said article.

It will be noticed that the number of inches indicated on the scale E correspond to the number of inches indicated on the scale O. Now if the arm B is swung to the right so as to be at right angles to arm A its then under edge registers with the dotted line shown near the upper end of arm A in Fig. 1 of the drawings, with a scale descending from arm A, the first inch of said scale being delineated on the edge of arm B (indicated by the letter S) and the remaining inches of said scale on the arm A, and also a scale along the arm B, the figures of the scales of both arms being an equal distance from the square corner of arm B, and thereby forming a square. It will be evident

from the construction which I have heretofore described that when the square is not in use the saw-set and screw-driver are left free to accomplish the work desired of them.

What I claim as my invention is—

A combination-tool, consisting of two arms pivoted together at corresponding ends, and said arms provided along their inner edges with scale measurements, the upper portion of the scale measurement of one of the arms being devoid of the initial subdivision or inch of the scale, and the other arm having such initial subdivision or inch of the scale on its end edge which is at right angles to the longitudinal edge containing the complete scale, whereby when the latter arm is turned at right angles to the other arm, said initial scale subdivision or inch will be brought into registration with and complete scale measurement of said other arm, and thereby provide two complete scales, extending at right angles to each other.

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

WILLARD GERRALD HARRIS.

Witnesses:

R. L. HALL,
C. R. BASSETT.