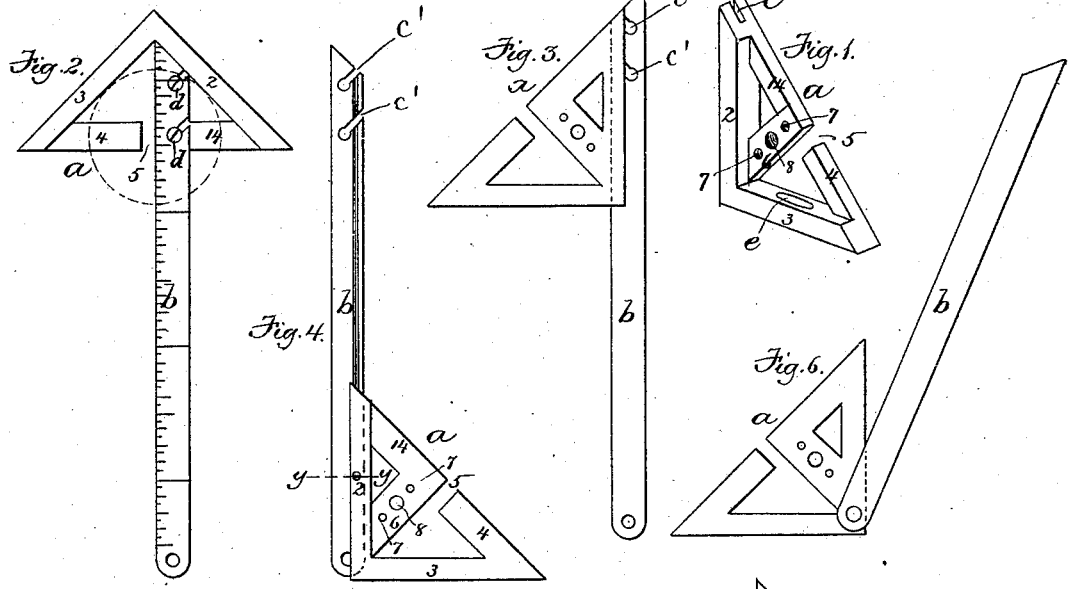
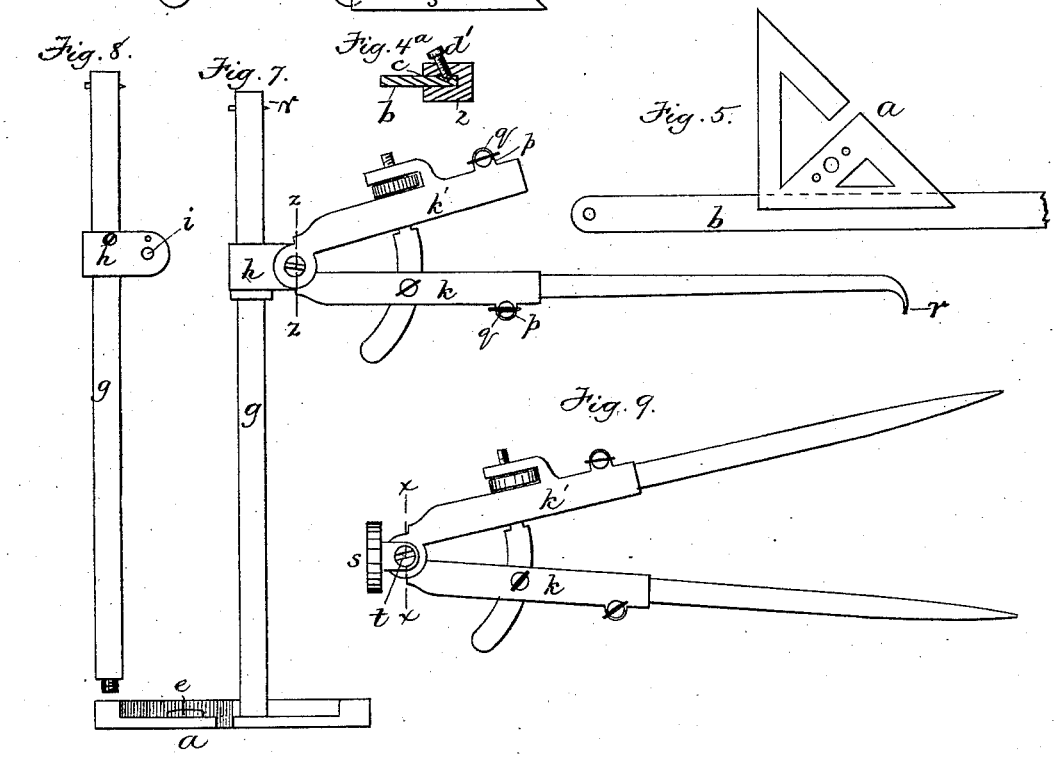
(No Model.)

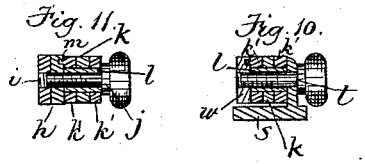
H. K. AUSTIN.

COMBINATION TOOL.

No. 305,993. Patented Sept. 30, 1884.







Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY K. AUSTIN, OF READING, MASSACHUSETTS.

COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 305,993, dated September 30, 1884.

Application filed February 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY K. AUSTIN, of Reading, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Combination-Tools, of which the following is a specification.

This invention has for its object to provide an improved combination-tool for the use of machinists and others, adapted to be used as a T-square, a center-square, an ordinary square, a miter, a bevel, and having attachments whereby it may be adapted for use as a surface-gage, one of said attachments being also adapted for use as a compass, and another as a scratch-gage.

To this end my invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a perspective view of a part of my improved tool. Fig. 2 represents a top view of the tool, showing it adapted for use as a T-square and as a center-square. Figs. 3 and 4 represent top views showing it adapted for use, respectively, as a re-entrant and salient angled square. Fig. 4ª represents a section on line *y y*, Fig. 4. Fig. 5 represents a top view showing it adapted for use as a square and as a miter. Fig. 6 represents a top view showing it adapted for use as a bevel. Fig. 7 represents a side elevation showing the part shown in Fig. 1 with attachments, the whole forming a surface-gage. Figs. 8 and 9 represent views of the attachments shown in Fig. 7, one adapted for use as a compass and the other as a scratch-gage. Fig. 10 represents a section on line *x x*, Fig. 9. Fig. 11 is a section on line *z z*, Fig. 7.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a triangular head, formed with its right-angled sides 2 3 of greater thickness than the bars 4 and 14, forming its hypotenuse, and projecting at one side of said bars, as shown in Figs. 1 and 2. The bars 4 and 14 are separated by the opening 5, and at one side of said opening a bar or seat, 6, extends to the angle of the sides 2 3, and is provided with screw-holes 7 7, to receive screws which attach the blade *b*, and with a larger screw-hole, 8, which receives a standard when the blade is removed, as hereinafter described. The blade *b* has screw-holes *c' c'*, and is thus adapted to be screwed by screws *d d* to the head *a*, as shown in Fig. 2, said parts forming a combined T-square and center-square, the blade being placed on the bar 6 so that the bars 4 and 14 project below its under side and form a shoulder at right angles with the blade for use as a T-square, while the inner surfaces of the right-angled sides 2 3 project above the upper surface of the blade and form bearings for a circular piece of work, as shown by dotted lines in Fig. 2, the inner edge of the blade extending across the center of such circular piece when it bears against the sides 2 3, while the opening 5 permits a marking-tool to be moved along the edge of the blade to the extreme inner end thereof, so that the center of the circular piece can be marked entirely across. One of the right-angled side pieces of the head is preferably slotted lengthwise at *c*, as shown in Fig. 4ª, the slot being adapted to receive the blade *b*, which may be secured to the head by a clamping-screw, *d'*. The blade is thus adapted to be secured to the head in either of the positions shown in Figs. 3, 4, and 5, the tool being thus adapted for use as a salient-angled square, Fig. 3, as a re-entrant-angled square, Fig. 4, and as a combined square and miter, Fig. 3. The blade preferably has a V-shaped slot, and the clamping-screw is placed diagonally, so as to bear against the inner side of said slot, and thus force the inner edge of the blade firmly against the bottom of the slot *c* and insure a good bearing of the blade. The blade may be pivoted at one end to the head by a screw, *d*, as shown in Fig. 6, the tool in this condition forming a bevel. The side piece, 3, of the head has a glass tube, *e*, inserted in a cavity formed in it in the space between the bars 4 and 6, said tube having a liquid and air filling, and enabling the side piece, 3, to serve as a spirit-level. The bars 4 and 6 form a guard over the exposed portion of the tube. The cavity holding the tube may extend through to the outer surface of the side 3, so that the level can be viewed from either side.

g represents a standard adapted to be screwed into the hole 8 in the head *a*, the head serving

as a base to hold the standard in an upright position, as shown in Fig. 7. Said standard has an ear, *h*, clamped to it, so as to be vertically adjustable by slacking the screw *j*, which screws into the hole *i* of the ear *h*, (see Fig. 11,) and sliding the ear *h* on the rod *g*. Said ear has a central screw-hole, *i*, which receives a screw, *j*, whereby a pair of divider or compass legs, *k k'*, may be secured to the ear *h*, so as to project laterally from the standard *g*. The head or joint of the divider-legs is provided with a tubular bearing, *l*, through which the screw *j* passes, and with a stud, *m*, formed of a small cylindrical piece of metal securely fastened into the leg *k'*, and projecting therefrom into a small hole drilled in the ear *h* to receive it. (See Fig. 11.) The screw *j* secures the legs *k k'* against the ear *h*, and the stud *m* prevents the leg *k'* from turning when the screw *j* is slackened. The lower leg, *k*, is made adjustable, in the usual manner, by means of a thumb-screw in said lower leg bearing on a segment-bar projecting from the upper leg. The tool thus arranged constitutes a surface-gage to be used with a metal-planer, the head *a* serving as a base adapted to rest on the bed of the planer, and the lower leg of the dividers being adapted to project over the work resting on the bed and indicate differences in height between different parts of the surface of the work. When the divider-legs are removed from the ear *h*, both may be provided with extension-points, as shown in Fig. 9, the dividers being thus adapted for the ordinary uses of dividers or compasses.

The standard *g* is provided with a marking-point, *r*, near its outer end, so that it may be used as a scratch-gage when the surface-gage attachment is removed from the ear, as shown in Fig. 8, said ear serving as an adjustable shoulder for the scratch-gage.

When the dividers are removed from the ear *h*, a milled head or knob, *s*, may be secured to the joint by a screw, *t*, passing through an ear on said head into the tubular bearing, and screwing into the washer *w*. (See Fig. 10.)

It will be seen that the described tool is capable of a large number of adjustments, and is simple in construction, so that it can be manufactured at a small expense.

I claim—

1. The bars 4 and 14, separated by the opening 5 of the triangular head *a*, in combination with the right-angled sides 2 and 3 and the bar or seat 6, adapted to receive the blade *b*, whereby the instrument, adapted to serve as a T-square, can also be used as a square for marking the centers on the end of any cylindrical body, substantially as shown and described.

2. The triangular head *a*, having the right-angled sides 2 3, the divided or slotted bar 4, and the bar or seat 6, combined with a blade adapted to be secured to said head in the different positions shown in Figs. 3, 4, 5, and 6, as set forth.

3. The triangular head having a longitudinal slot, *c*, in one of its sides, adapted to receive the blade *b*, combined with the blade having a V-shaped slot, and a screw, *d*, inserted diagonally into the head and bearing against one side of the slot, as set forth.

4. The combination of the divider-legs *k k'*, the stop *m*, tubular bearing *l*, and screw *j*, with the standard *g* and ear *h*, having a hole, *i*, threaded to receive screw *j*, so that the divider-leg *k'* is held rigid with the standard *g* when the ear *h* is clamped upon it and said standard, and the leg *k* remains adjustable for use as a surface-gage, substantially as shown and described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 2d day of February, 1884.

HENRY K. AUSTIN.

Witnesses:
MARIA J. AUSTIN,
C. F. BROWN.