(No Model.)

B. B. MERRILL.

COMBINED SQUARE, BEVEL, AND LEVEL.

No. 312,743. Patented Feb. 24, 1885.

Fig. 1

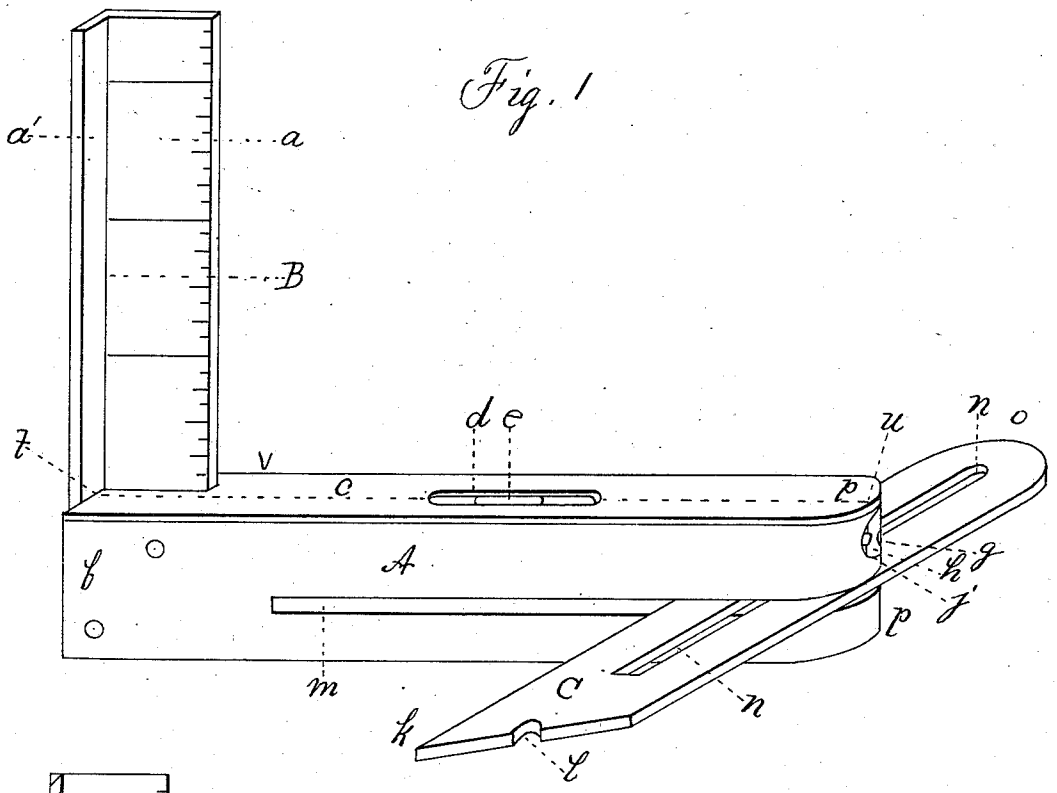


Fig. 3

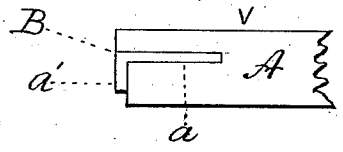


Fig. 2

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UNITED STATES PATENT OFFICE.

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COMBINED SQUARE, BEVEL, AND LEVEL.

SPECIFICATION forming part of Letters Patent No. 312,743, dated February 24, 1885.

Application filed October 2, 1884. (No model.)

To all whom it may concern:

Be it known that I, BISBEE B. MERRILL, a citizen of the United States, residing at Brewer, in the county of Penobscot and State of Maine, have invented a new and useful Combination-Tool; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a combination-tool so constructed and arranged in its different parts as to combine the merits and perform the functions of several distinct and separate tools all in one.

The object of my invention is to construct a combination-tool which shall have a capacity to perform the functions of the different tools for which it is a substitute more handily and perfectly and with less and better arranged parts than any other combination-tool now known or used, and which, on account of its simplicity and compactness, can be more cheaply manufactured than any other.

I accomplish my object by the new and different formation and arrangement of several of the parts of its construction.

My invention will be understood by reference to the accompanying drawings, in which Figure 1 is a side view of my invention. Fig. 2 is a vertical longitudinal sectional view of my invention on the dotted line *t u*, with the bevel-blade closed and level-bulb arrangement shown in full. Fig. 3 is a top view of tongue B and the end of the head or stock A, which is shown broken off.

Similar letters refer to corresponding parts throughout the several figures.

A is the head or stock; B, the tongue; C, the bevel-blade. *a a'* are the angular sides of the tongue B. *b* is the tongue end of A; *c*, a metallic plate; *d*, an opening for a level-bulb; *e*, a level-bulb; *f*, a metallic tube inclosing the bulb. *g* is a rod connected to *f*. *h* is a winged head to the rod *g*. *i i* are metallic plates for bearings to *f*. *j* is a channel or groove in A; *k*, the beveled end of the bevel-blade. *l* is a notch in C. *m* is a lateral slot in the head or stock. *n* is a slot in the bevel-blade C. *o* is the rounded end of the bevel-blade. *p* is the rounded end of the head. *q* is a nut fixed in the head. *r* is a screw pivotal bolt. *s* is a countersunk cavity for the winged head of *r*. *t u* are the dotted line on which the section Fig. 2 is shown. *v* is the back side of the head.

In construction the head A is formed of wood or metal, preferably wood, and fitted with the metallic plate *c*, in which is the level-opening *d*. The tongue B is bent at a right angle longitudinally, forming the two sides *a a'*, similarly to two sides of a square. The sides may be of any relative width desirable, the side *a* being generally the wider and graduated as a measure. The side *a* is inserted and fixed in the head A at any convenient distance from the back side, *v*, of the head, leaving sufficient width to use conveniently for the purpose of squaring, and so far similar to any ordinary try-square. The side *a'* is fitted onto the end *b* of the head, extending to the back of the head, and also extending in width to the front side of the head and rigidly fastened to it, forming a wide bearing to place up against any perpendicular surface, and thus facilitate plumbing by means of the level *e*. The width given to the side *a'* is for this special purpose. The end *p* of the head is rounded laterally, and the slot *m* is also formed laterally. The bevel-blade C is formed similarly to any bevel-blade, and is fitted to coincide with the shape of the head, so as to be entirely out of the way when not in use. In the beveled end *k* is formed the slot or notch *l*, which catches onto the front edge of *a*, where it passes down through the head. The nut *q* is inserted and fixed in the end of the head, and the pivotal bolt *r*, formed with a winged head and screw end, is passed through the bevel-blade from the back of the head, and is operated as usual; or a bolt may be passed down with a countersunk hole from the front and used with a winged nut. A countersunk hole, *s*, is formed in the back of the head, so that the winged bolt or nut does not project beyond the face of the back or interfere in any way with the use of the tool. In closing the bevel-blade it is pulled slightly back and swung into place, so that the sides coincide with the sides of the head. It is then pushed forward into place, when the notch *l* fits onto the edge of the tongue *a* and holds it from swinging out. The channel or slot *j* is formed in the head, extending forward from the end *p* far enough to accomodate the level-

bulb. The metallic plates *i i* are inserted so as to form bearings for the level-tube, and each plate has a proper hole bored in it to receive the ends of the tube. A level-bulb is properly set in a cylindrical metallic tube, similarly to tubes used on mathematical instruments and many other instruments, with one side open, exposing the bulb to view. This tube is formed with suitable bearings at each end and mounted in the metallic plates *i i;* or any other suitable device may be employed, the tube being mounted so that it can easily and readily revolve. A rod, *g*, having a winged head, *h*, is attached to the end of the tube *f* and made long enough to come out just even or flush with the end *p* of the head. The inside of the head may be flanged to fit and close the channel *j;* or this may be arranged in any way to steady the rod in the channel. Whenever the rod is turned by means of the flanged head *h*, it rotates the tube *f*, and either turns the bulb *e*, so as to show it directly under the opening *d*, or turns it downward and on the underneath side of the tube, the tube *f* closing the opening *d* and protecting the bulb *e*. This rod and tube may be turned in either direction, so that it is perfectly simple in operation, while it thoroughly protects the level-bulb. The bevel-blade C is fixed and arranged to operate laterally across the head A at right angles to the blade *a*, in order to allow the convenient location of the level *e* in the center of the head, and also because when used as a bevel it can be operated in places where the angles would be too sharp to admit the bevel end with the tongue B projecting in the same plane from the other end of the handle. It is not imperative that the tongue B shall be formed integral, but may be formed in two pieces properly and rigidly united.

In use I turn the level *e* into place under the opening *d*. The level-bulb *e*, being in the middle of the handle, is more convenient when used as a level merely. The side *a'* being placed against any upright surface, the level *e* indicates whether it is plumb or not, and the width of the side *a'* gives greater surface of bearing than the edge of the tongue of the ordinary try-square, and therefore produces more reliable results.

The square used with the side *v* of the head answers all the purposes of the ordinary try-square, and the bevel C may be used to great advantage many times in connection with the square without interfering with the use of the square.

It will readily be seen that this is the most compact method of bringing these several parts together, and that the fewest possible parts are employed to perform all the functions, allowing of great economy of manufacture, and that the several operations are attained by new and original devices and arrangements of parts.

I am aware that combination-tools have been made consisting of varying combinations of different already-existing tools, and therefore I do not claim a combination-tool, broadly; but

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

1. In a try-square, the tongue B, bent or formed at right angles longitudinally, forming two sides or plates, *a a'*, at right angles to each other, whether formed integral or in two pieces rigidly united and united and attached to the head A, as shown and described.

2. In a try-square, the bevel-blade C, fixed in the lateral slot *m* in the head A in such a manner as to swing and operate laterally across the head A in a plane at right angles to the tongue B, as shown and described.

3. In a try-square, the level-tube *f*, having the level-bulb *e*, supported in the channel *j*, formed in the head A, and supported and held in place by the plates or other device, *i i*, connected to and rotated by the rod *g* and flanged head *h*, as and for the purpose shown and described.

4. A combination-tool consisting of the head A, formed with the lateral slot *m* and channel *j*, the bevel-blade C, formed with the slot *n* and notch *l*, the rotating level-tube *f*, having the rod *g* attached, and the tongue B, formed or bent at right angles longitudinally and inserted and fixed in the head A, as shown and described.

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Witnesses:
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