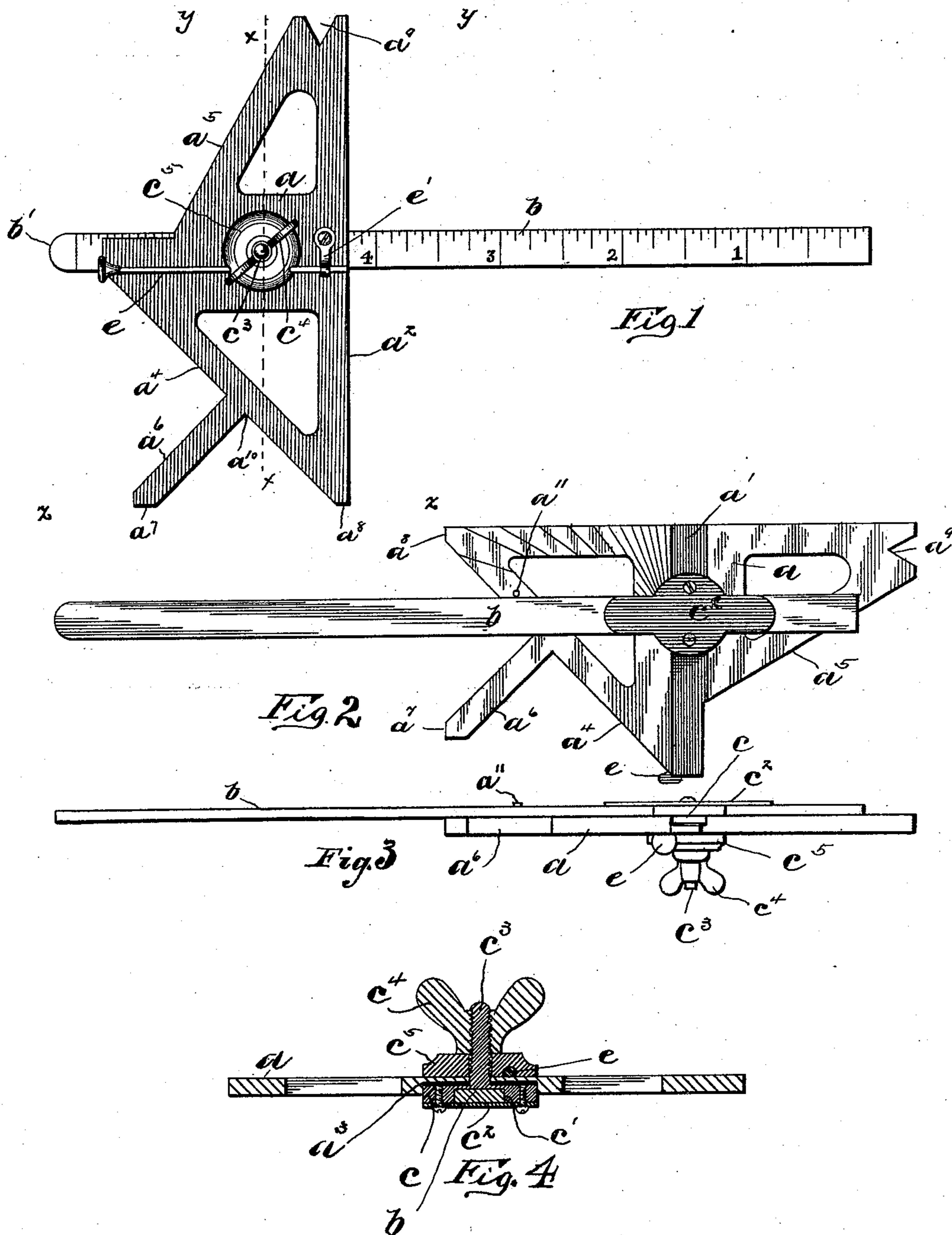


(No Model.)

S. COLLEY.  
COMBINATION TOOL.

No. 506,416.

Patented Oct. 10, 1893.



WITNESSES:

H. B. Bradshaw  
Frank Watt

INVENTOR

Simon Colley

BY

Edward M. Shepherd

ATTORNEYS



# UNITED STATES PATENT OFFICE.

SIMEON COLLEY, OF SPRINGFIELD, OHIO.

## COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 506,416, dated October 10, 1893.

Application filed December 24, 1892. Serial No. 456,234. (No model.)

*To all whom it may concern:*

Be it known that I, SIMEON COLLEY, a subject of the Queen of Great Britain, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Combination-Tools, of which the following is a specification.

My invention relates to improvements in combination tools, and it especially relates to a tool designed for machinists, mechanical engineers and mechanics generally.

The object of my invention is to provide a single tool adapted to perform successfully the functions of various tools which have heretofore been generally constructed separately.

My invention consists in the various constructions and combinations of parts herein-after described and pointed out in the claims.

In the accompanying drawings Figure 1 is a plan view of my improved tool. Fig. 2 is a similar view from the opposite side, showing the parts in a different position of adjustment. Fig. 3 is a side elevation of the tool, as illustrated in Fig. 2. Fig. 4 is a transverse sectional view on the line XX in Fig. 1.

Like parts are represented by similar letters of reference in the several views.

The tool consists essentially of a head  $a$ , of a peculiar construction, (the exact description of which will more fully appear hereinafter) and a blade or rule  $b$ . The head  $a$ , is provided on one side with a groove or depression  $a'$ , formed exactly at right angles to one of the faces  $a^2$ , of said head which we will term the base. This depression  $a'$ , is adapted to receive the blade or rule  $b$ , which fits snugly therein; the groove or depression being of a depth equal to about half the thickness of the rule or blade, the blade being thus held in its normal position in said groove and at exactly right angles to the base  $a^2$ , of the head  $a$ . The head  $a$ , is further provided near the center, and in line with the depression or groove  $a'$ , with a swivel piece  $c$ , which fits in a depression  $a^3$ , in the head, of a depth greater than the depth of the groove  $a'$ . This swivel piece  $c$ , is also provided with a groove  $c'$ , corresponding in size and depth to the groove  $a'$ , in the head  $a$ , and adapted, in the normal position, to stand in line with said groove or depression.

The swivel piece  $c$ , is further provided with a spring  $c^2$ , preferably formed to fit over and cover the end of the swivel piece as well as the groove  $c'$ , therein, said spring being provided with projecting ends in line with the said groove  $c'$ , and adapted to bear on the rule or blade  $b$ , when inserted into said groove  $c'$ ; this spring  $c^2$ , being thus adapted to exert a yielding pressure against the blade  $b$ , forming the tension therefor, which will hold the same yieldingly in any position of adjustment and yet permit it to be moved readily to change the adjustment thereof. The swivel piece  $c$ , is further provided with a screw-threaded stud  $c^3$ , which projects through the head  $a$ , and is provided with a thumb-nut  $c^4$ , and a suitable washer  $c^5$ , on the opposite side of said head, by means of which the swivel piece may be drawn firmly into the depression  $a^3$ , thus clamping the blade  $b$ , firmly against said head in any position which it may occupy, as hereinafter more fully described.

The head  $a$ , is provided on opposite sides with beveled faces  $a^4$ ,  $a^5$ , formed at an angle of forty-five degrees and the other at an angle of thirty degrees to the base  $a^2$ , the said faces being thus at an angle of forty-five degrees and sixty degrees, respectively, to the blade  $b$ , when in its normal position in the groove  $a'$ . The face  $a^4$ , is further provided with a perpendicular projection  $a^6$ , the respective sides of which are thus at right angles to the face  $a^4$ , and at an angle of forty-five degrees to the base  $a^2$ , and the blade  $b$ , when in its normal position. The outer end of this projection  $a^6$ , is provided with a face  $a^7$ , which is exactly in line with the end  $a^8$ , of the base  $a^2$ , and in a plane parallel to the groove  $a'$ , of said head, as indicated by the dotted line ZZ in Fig. 1. At the opposite end of the head  $a$ , is a V-shaped notch  $a^9$ , the sides of which occupy the same angular positions with relation to each other as the sides of a screw-thread; this end of the head being also formed on a right line parallel to the groove  $a'$ , and thus at right angles to the base  $a^2$ , as indicated by the dotted line YY in Fig. 1. That side of the head  $a$ , which contains the groove  $a'$ , is graduated, so that when the blade  $b$ , is removed from the groove  $a'$ , and turned so as to rest on the face of the head  $a$ , the



graduations will indicate the different degrees in the arc of a circle, extending from the center of the swivel piece  $c$ ; the device being thus adapted to operate as a beveled square or protractor. The juncture of the projection  $a^6$ , with the face  $a^4$ , is in such relation with the swivel piece  $c$ , that when the blade  $b$ , is turned exactly parallel with the base  $a^2$ , one edge of said blade bisects the angle formed at  $a^{10}$ , by the projection  $a^6$ , and the face  $a^4$ ; a small projection  $a^{11}$ , being formed on the face of the head at this point to limit the movement of the blade and thus determine the exact location thereof when turned to this position as shown in Fig. 2. The sides of the angle  $a^{10}$ , together with the blade  $d$ , form a center gage by means of which the center of any circular piece may be determined by placing the sides of the angle against the periphery of the said piece with the blade extending over the top thereof, in a well known manner.

It should be stated that the blade  $b$ , is preferably graduated into units and fractions thereof, or any other unit of measurement. When in the normal position, the blade being exactly at right angles to the base  $a^2$ , which is adapted to be used as a T-square or a tri-square, the projecting end of the blade, together with the base  $a^2$ , is adapted to be used as a depth gage, to measure the depth of holes or openings. One end of the rule  $b$ , is preferably rounded, as shown at  $b'$ , for this purpose; the rule being reversed from end to end to bring the rounded portion opposite the base  $a^2$ , when desired; this being accomplished by swinging said rule about the head in the swivel piece  $c$ . To provide a depth gage for smaller openings than those adapted to receive the blade  $b$ , I provide a small rod  $e$ , which normally lies in a groove in the washer  $c^5$ , which maintains said pin parallel with the groove  $a'$ , and at right angles to the base  $a^2$ ; a small spring  $e'$ , being preferably provided to bear against said rod, to furnish the proper tension therefor; the washer  $c^5$ , being adapted to clamp said rod and hold it firmly against displacement when the thumb-nut  $c^4$ , is tightened.

The V-shaped notch  $a^9$ , it will be seen, forms a gage for a thread tool, both for grinding and setting the same. In setting a thread tool the head  $a$ , is placed in position against the lathe rest with the line  $Z Z$  determined by the faces  $a^7 a^8$ , as a base line. The tool is turned until it comes in the groove  $a^9$ , which brings it to the proper position. The beveled sides  $a^4, a^5$ , of forty-five and sixty degrees, furnish the means of laying off hexagon and octagon figures and take the place of the ordinary angles usually employed by draftsmen and mechanical engineers. By using the faces  $a^7, a^8$ , as a base line a perpendicular is obtained by the base  $a^2$ ; the head  $a$ , being thus adapted to be used as a triangle, the blade  $b$ , in this case being removed or slipped back beyond the base  $a^2$ . When the blade  $b$ , is turned upon the head  $a$ , out of the groove

$a'$ , it rests directly in contact with the side of said head and can be secured in any position by tightening the thumb-nut  $c^4$ ; at the same time by loosening said thumb-nut it may be adjusted to any position about said head or through the swivel, while the spring  $c^2$ , maintains the proper tension thereon at all times.

It will be seen that a tool as thus described may be readily adjusted to any work for which it is adapted, and furnishes in a single tool what the mechanic or artisan must usually seek for in various different devices.

Having thus described my invention, I claim—

1. In a combination tool, a head formed with a base, and a groove or depression at right angles to said base, a blade adapted to normally fit in said groove or depression, a swivel piece also having a groove to receive said blade, a spring attached to said swivel piece to form a tension for said blade, and a thumb-screw extending through said head, adapted to tighten said blade in said head and in said swivel piece, respectively, substantially as specified.

2. In a combination tool, a head formed with a base, and angular sides arranged at an angle of forty-five and sixty degrees, respectively, to said base, a projection on one of said sides at right angles thereto and at an angle of forty-five degrees to said base, the end of said projection being on a right line with the end of said base, so as to lie in a plane at right angles to said base, substantially as specified.

3. In a combination tool, the head formed with a base and a side at an angle of forty-five degrees thereto, a projection at right angles to said side, said projection being formed at its outer end with a face in line with the end of said base and in a plane at right angles thereto, the opposite end of said head being provided with a V-shaped recess in a plane parallel to the base of said head, substantially as specified.

4. The combination with the head having the thumb-screw projecting laterally therefrom, a washer on the thumb-screw, the adjustable rod  $e$ , extending between said washer and head, and the tension device  $e'$ , adapted to bear against said rod, substantially as and for the purpose specified.

5. The combination with the head having the groove or depression, and the swivel piece pivoted in said head, said swivel piece being provided with a groove corresponding to the groove or depression of said head, and a tension spring over said groove, and means for tightening said swivel in said head, substantially as specified.

6. The combination with the head having the swivel piece, as described, and the tension spring on said swivel piece, of the blade passing through said swivel piece to contact with said spring, said head being provided with a beveled angular side with a right an-



gled projection, and a stop projection for said blade adjacent to the angle formed by said side projection, substantially as specified.

7. The combination with the head having  
5 the base and angular sides, as described, the swivel piece in said head, and the blade adapted to fit in said swivel piece, and a tension spring to engage said blade, the projection at right angles to one of said sides, and  
10 a stop projection for said blade adjacent to said side, substantially as specified.

8. The combination with the head having the base and angular sides, as described, with a vertical projection from one of said sides, a  
15 graduated blade adapted to fit in a swivel

piece in said head, a tension spring on said swivel piece for said blade, and means for tightening said swivel piece in said head, and a sliding rod on the opposite side of said head from said blade and parallel therewith, and  
20 means, substantially as described, for tightening said rod by the operation of tightening said blade, substantially as specified.

In testimony whereof I have hereunto set my hand this 20th day of December, A. D. 25  
1892.

SIMEON COLLEY.

Witnesses:

ROBERT C. RODGERS,  
FRANK WATT.