

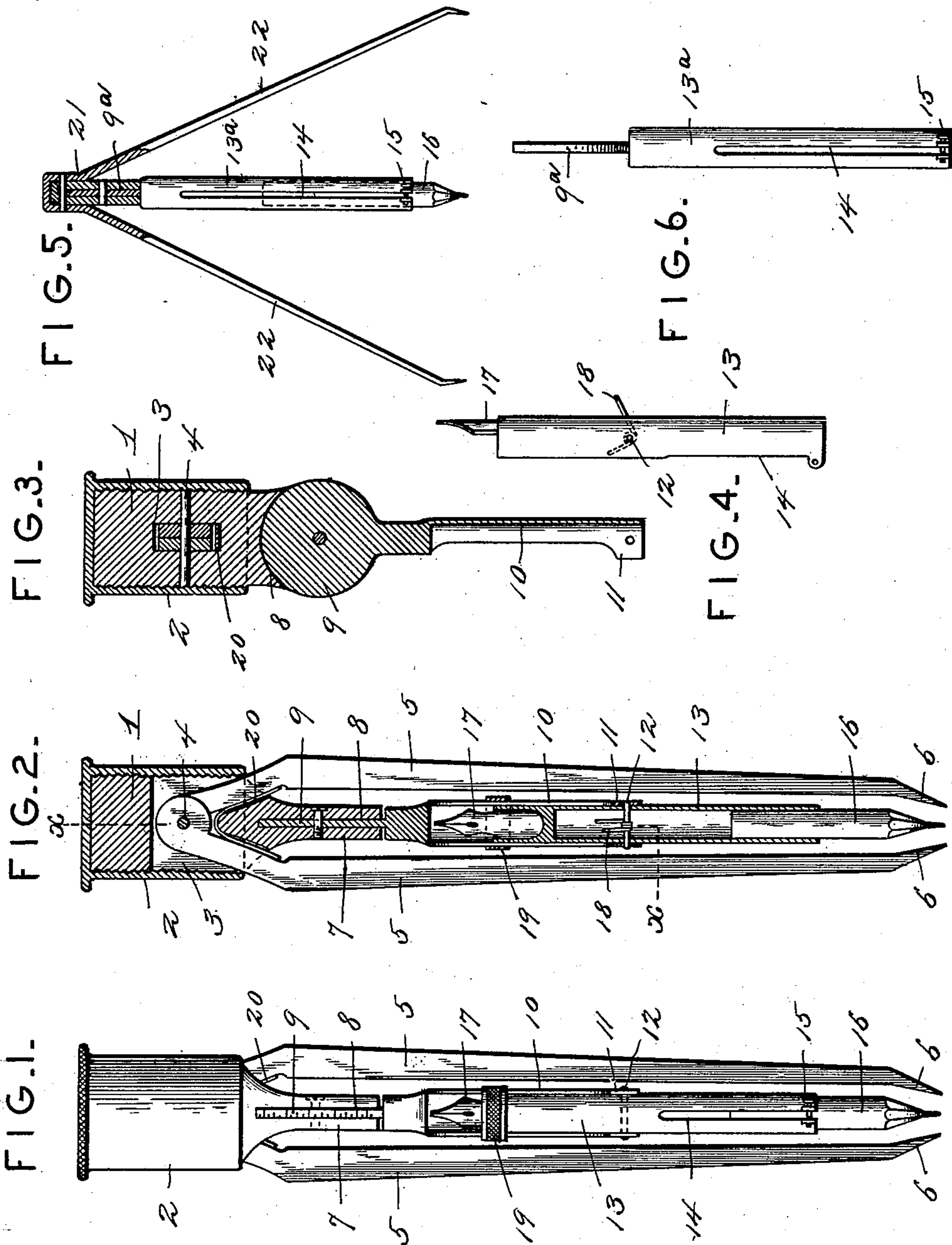
No. 742,665.

PATENTED OCT. 27, 1903.

C. R. JEFFORDS.  
COMBINATION TOOL.

APPLICATION FILED JAN. 28, 1903.

NO MODEL.



Witnesses

Harry L. Amer.  
Herbert D. Lawson

By

Inventor  
Clyde R. Jeffords.  
Victor J. Evans  
Attorney



# UNITED STATES PATENT OFFICE.

CLYDE R. JEFFORDS, OF ITHACA, NEW YORK.

## COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 742,665, dated October 27, 1903.

Application filed January 28, 1903. Serial No. 140,929. (No model.)

*To all whom it may concern:*

Be it known that I, CLYDE R. JEFFORDS, a citizen of the United States, residing at Ithaca, in the county of Tompkins and State of New York, have invented new and useful Improvements in Combination-Tools, of which the following is a specification.

My invention relates to a new and useful combination-tool adapted to be used by draftsmen for bisecting, drawing parallel lines, laying off angles, measuring distances, &c.; and its object is to provide a simple and compact device of inexpensive construction which may be readily employed for any of the purposes enumerated.

The invention consists in providing a head within which are pivoted the inner ends of arms which are adapted to be used as dividers, compasses, &c., and the head is provided at a point between these arms with an extension having a slot therein, within which is secured a revoluble disk having an arm projecting therefrom. A sleeve is pivotally mounted within this arm and is adapted to contain a pencil at one end and a pen-point at the other. The disk before referred to is provided with suitable graduations upon the periphery thereof, whereby the arm of the disk may be turned at any desired angle.

The invention also consists in the further novel construction and combination of parts, which will be more fully hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of my improved combination-tool. Fig. 2 is a central vertical section therethrough. Fig. 3 is a section on line  $x x$ , Fig. 2, with the pen and pencil holder removed. Fig. 4 is a detail view of said holder detached. Fig. 5 is a similar view of a modified form of device, the upper portion thereof being shown in section; and Fig. 6 is an elevation of a modified form of holder.

Referring to the figures by numerals of reference, 1 is a cylindrical head having its outer face threaded and adapted to project into a cap 2. A slot 3 extends into the head from the inner face thereof, and pivoted upon a point 4 in the center of this slot are the inner ends of arms 5, having straight edges and terminating at their outer ends in pointed extensions 6, projecting inward toward each

other. An extension 7 is formed at the inner end of the head 1 and is arranged between the arms 5, before referred to. This extension has a slot 8 therein arranged in a plane at right angles to slot 3, and within this slot is pivotally mounted a disk 9, having graduations upon the periphery thereof. This disk has an arm 10 projecting therefrom and substantially U-shaped in cross-section, and ears 11 project laterally from the end of the arm and are adapted to form bearings for the ends of a pin 12 which project from opposite sides of a sleeve 13. This sleeve has a longitudinally-extending slot 14 in one end, and a clamping-screw 15 is adapted to bind the slotted portion of the sleeve upon a pencil 16 or other device which may be inserted thereinto. The opposite end of sleeve 13 is adapted to contain a pen-point 17.

A spring 18 is arranged within sleeve 13 and coiled upon pin 12. One end of this spring bears upon the inner surface of the sleeve, while the opposite end extends through the sleeve and is adapted to bear upon the inner surface of arm 10. This spring is adapted to force outward that end of the sleeve 13 which contains the pen-point, and when it is desired to hold the sleeve in alinement with arm 10 a ferrule 19 must be slid longitudinally upon arm 10 and over the inner end of sleeve 13, as clearly illustrated in Figs. 1 and 2. A bow-spring 20 is arranged within slot 3 and adapted to bear upon the inner edges of the arms 5. This spring will force the arms outward when the cap 2 is screwed upward upon head 1. It is obvious that the arms 5 will be automatically extended any desired distance from each other in proportion to the distance the cap 2 is removed from the inner end of head 1. The straight edges of these arms can be used as rulers. The graduations upon one side of disk 9 are preferably so arranged as to indicate degrees, while those upon the opposite side of the disk indicate inches and fractions thereof. With this arrangement, therefore, the arm 10 and the sleeve connected therewith can be moved any desired distance from the plane within which the arms 5 are located, and this distance will be promptly indicated in inches upon the periphery of disk 9. The degrees of a circle can also be obtained in the same



manner by referring to the graduations upon the opposite side of the disk. As the arm 10 swings in a plane at right angles to the planes of arms 5, it will be understood that the same are always at equal distances from the two arms. With this device, therefore, the center of a circle can always be quickly and accurately located.

In Fig. 5 I have shown a modified form of instrument which may be employed where it is deemed unnecessary to have both a pen and pencil for marking purposes. By referring to this figure it will be seen that the sleeve 13 has the central portion of a spring-strip 21 riveted to the opposite sides of the ends thereof, forming a head, and the ends of this strip form spring-arms 22, which are the equivalents of the arms 5, before referred to. The disk 9<sup>a</sup> is mounted within the end of this modified form and has a tubular extension 13<sup>a</sup> integral therewith for the reception of a pen, pencil, or other marking device. This form of instrument is adapted to be used in the manner described in connection with the device shown in Figs. 1, 2, and 3; but instead of employing a cap to adjust the spring-arms it is necessary to press them inward by hand. The disk and tubular extension 9<sup>a</sup> and 13<sup>a</sup> are illustrated in detail in Fig. 6, and, if desired, the graduations shown in Fig. 1 may be omitted from disk 9<sup>a</sup>, as shown in Fig. 6.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

Having thus described the invention, what is claimed as new is—

1. In a device of the character described, the combination with a slotted head having a cap adjustably mounted thereon, of spring-pressed arms pivoted within the slot and adapted to be operated by the cap, an extension to the head projecting between the arms and having a slot therein at right angles to the slot in the head, a graduated disk revolvably mounted within said slot, and an arm to the disk.

2. In a device of the character described, the combination with a slotted head having a cap adjustably mounted thereon, of spring-pressed arms pivoted within the slot and adapted to be operated by the cap, an extension to the head projecting between the arms and having a slot therein at right angles to the slot in the head, a graduated disk revolvably mounted within said slot, an arm to the disk, a holding-sleeve pivotally mounted within the arm, and a marking device within the sleeve.

3. In a device of the character described, the combination with a slotted head having a cap adjustably mounted thereon, of spring-pressed arms pivoted within the slot and adapted to be operated by said cap, an extension to the head projecting between the arms and having a slot therein at right angles to the slot in the head, a graduated disk revolvably mounted within said slot, an arm to the disk, a spring-pressed sleeve pivotally mounted within the arm, a marking device within the sleeve, and means for holding the sleeve in alinement with the arm.

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

CLYDE R. JEFFORDS.

Witnesses:

P. F. MCALLISTER,  
J. I. REYNOLDS.