

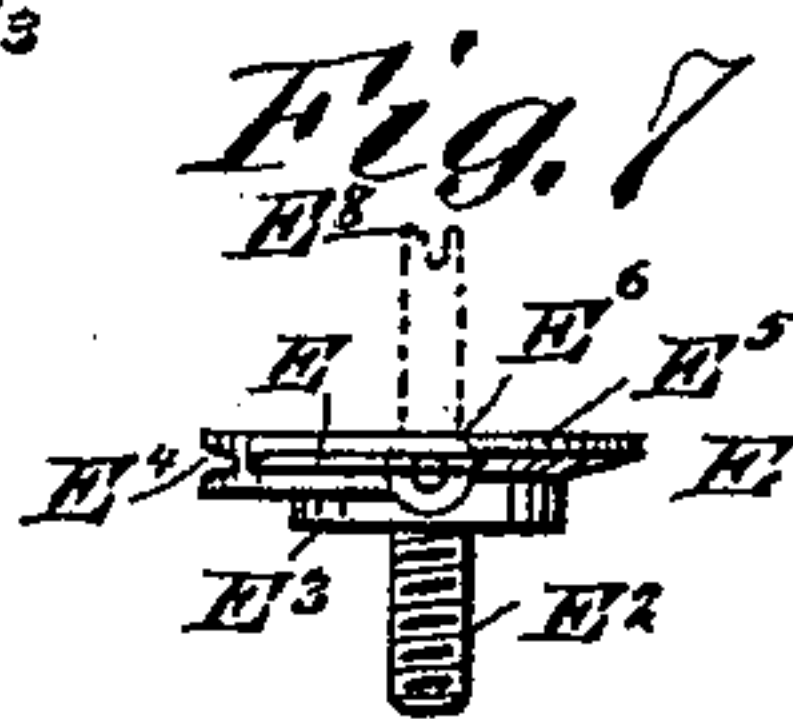
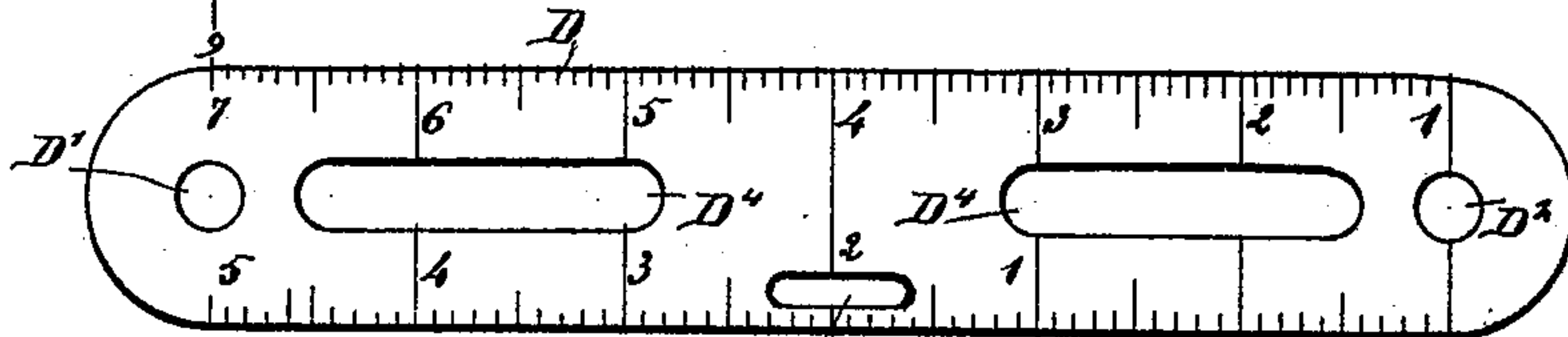
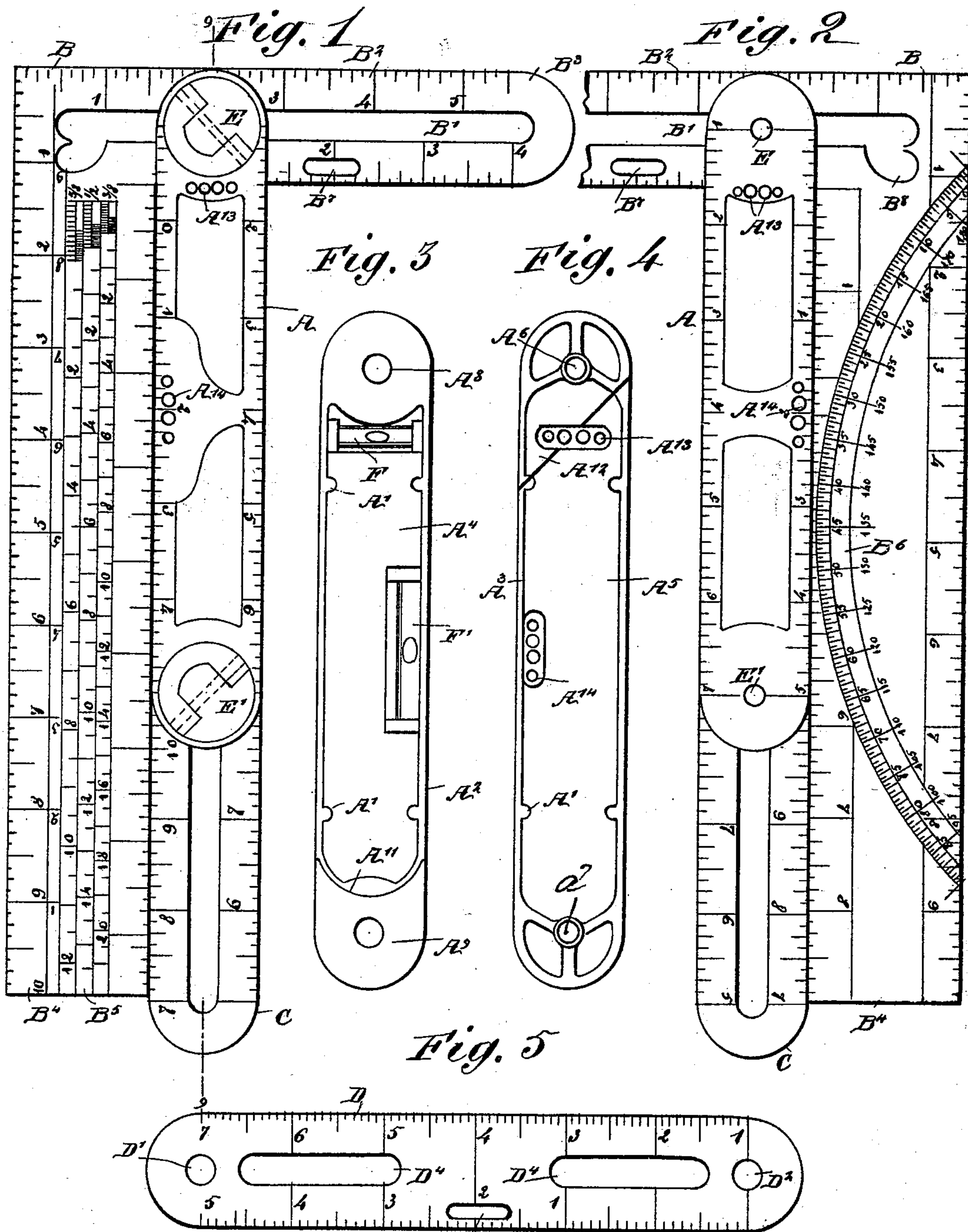
(No Model.)

3 Sheets—Sheet 1.

T. HARRIS.
COMBINATION TOOL.

No. 519,574.

Patented May 8, 1894.



WITNESSES:

C. Newell
C. Sedgwick

INVENTOR

J. Harris
BY Munn & Co

ATTORNEYS.

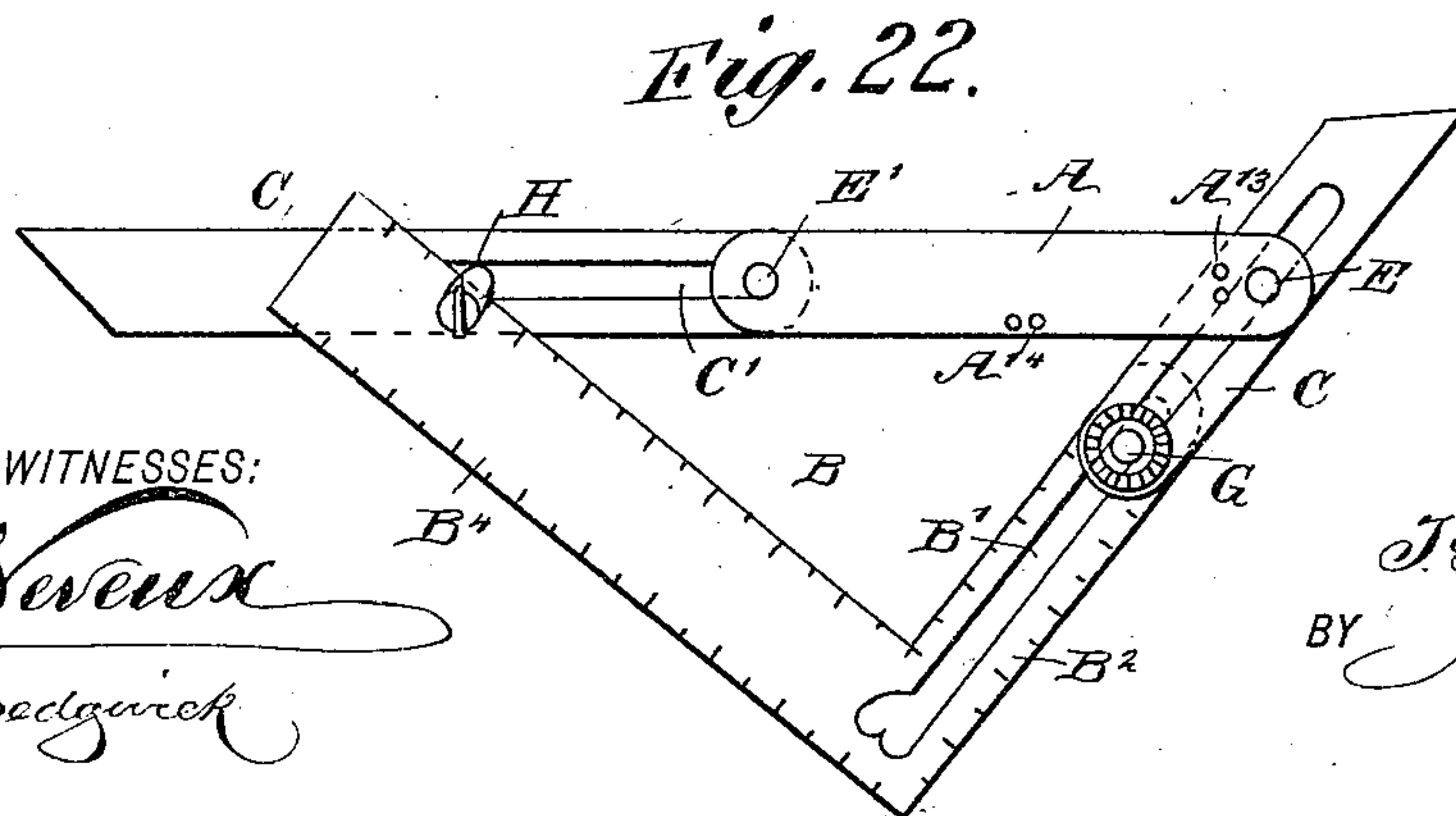
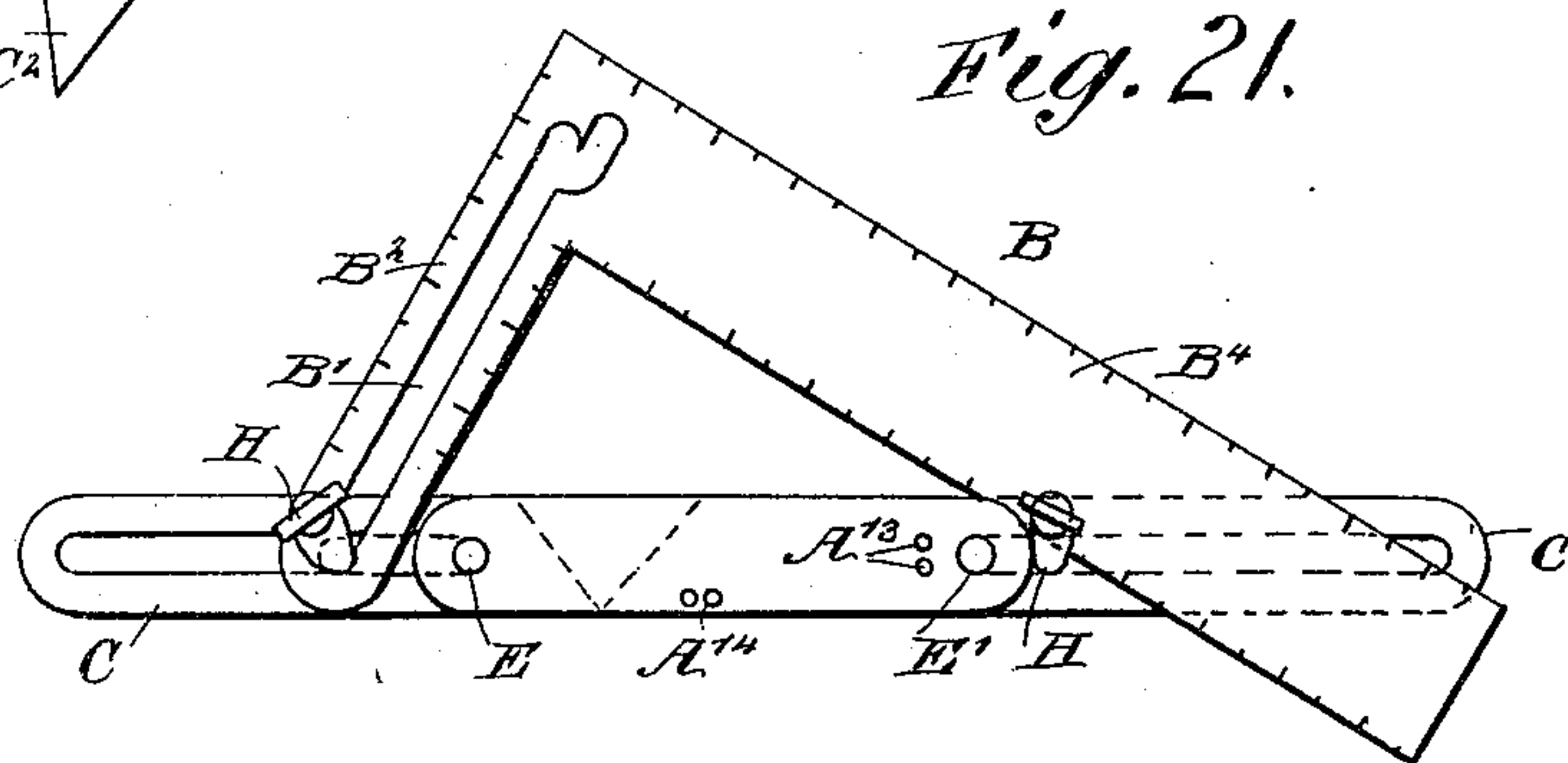
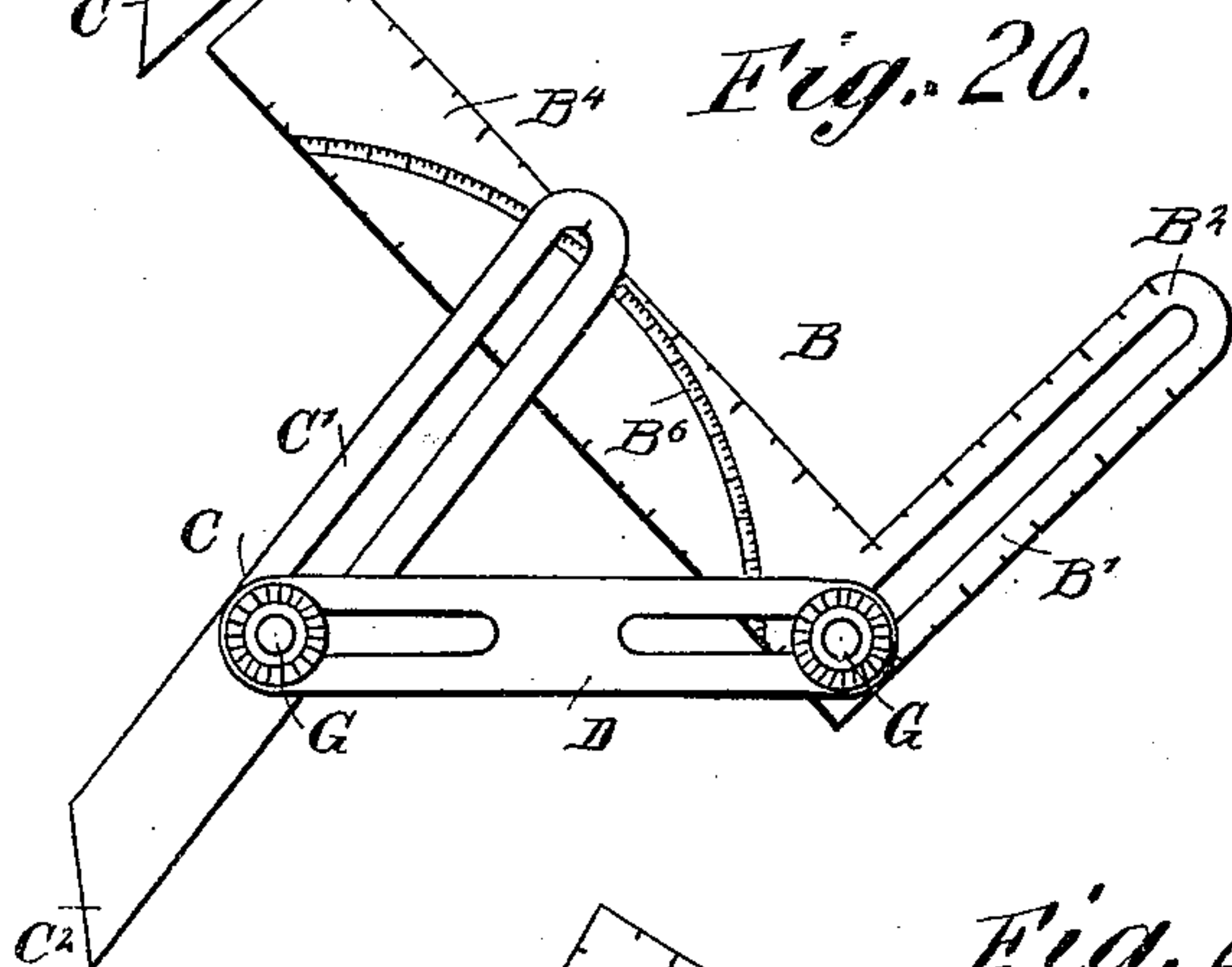
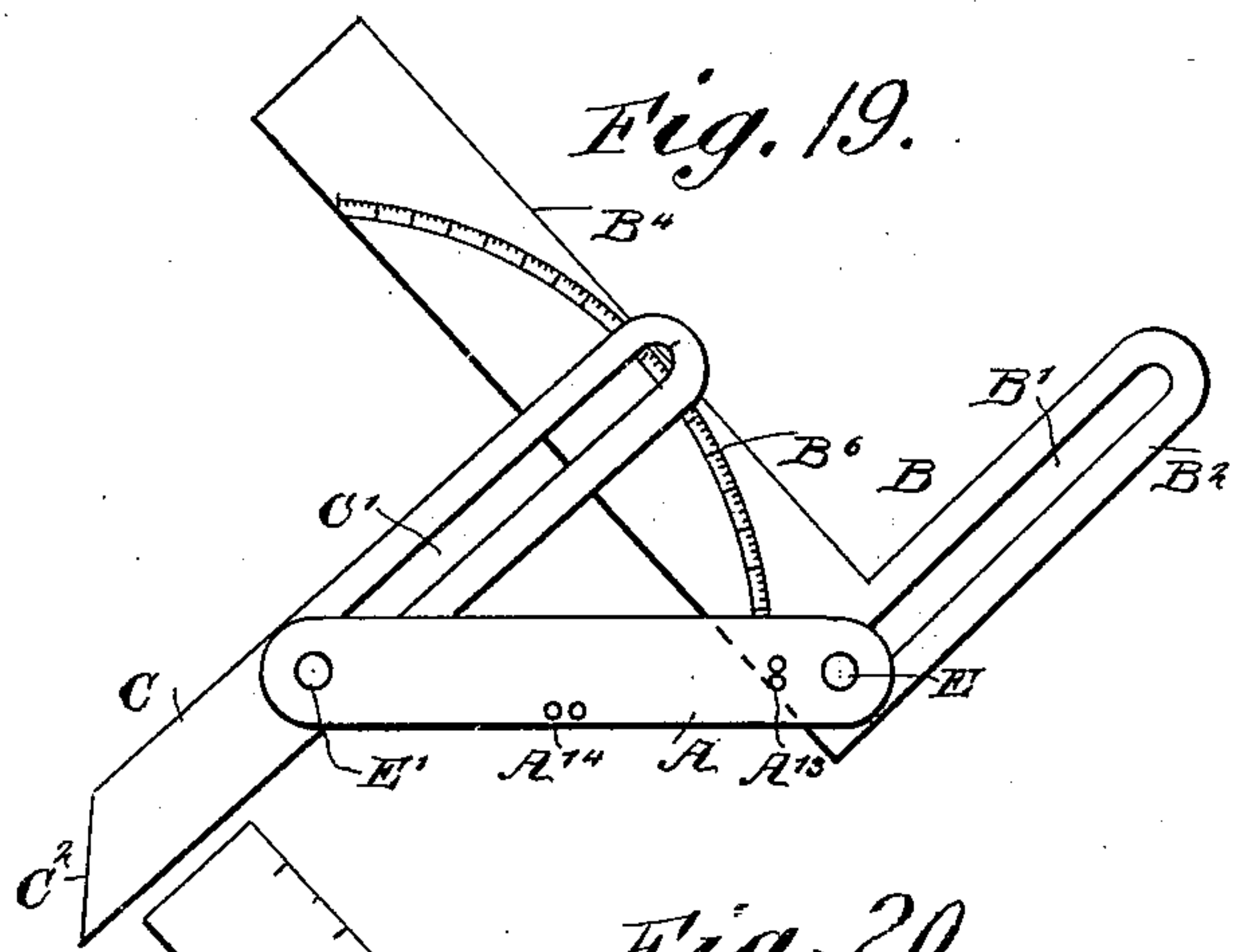
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

TOWNSEND HARRIS, OF BRAINERD, MINNESOTA.

COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 519,574, dated May 8, 1894.

Application filed April 24, 1893. Serial No. 471,693. (No model.)

To all whom it may concern:

Be it known that I, TOWNSEND HARRIS, of Brainerd, in the county of Crow Wing and State of Minnesota, have invented a new and Improved Combination-Tool, of which the following is a full, clear, and exact description.

The invention relates to measuring instruments, and its object is to provide a new and improved combination tool, which is simple and durable in construction, readily adjusted and applied, combining a variety of tools, such as T squares, try squares, in various forms, framing squares, bevels, plumbs, levels, &c., adapted to be used for various purposes.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is an inverted plan view of the same. Fig. 3 is a plan view of one-half the stock. Fig. 4 is a like view of the other half of the stock. Fig. 5 is a plan view of the center blade for the stock. Fig. 6 is an inverted plan view of one of the stock screws for fastening the stock parts together. Fig. 7 is a side elevation of the same. Fig. 8 is a side elevation of the improvement. Fig. 9 is a sectional side elevation of the same on the line 9—9 of Fig. 1. Fig. 10 is a cross section of the same on the line 10—10 of Figs. 8 and 9. Fig. 11 is a similar view of the same on the line 11—11 of Figs. 8 and 9. Fig. 12 is a like view of the same on the line 12—12 of Figs. 8 and 9. Fig. 13 is a plan view of part of the square blade as detached. Fig. 14 is a face view of a key-hole saw adapted to be secured to the stock. Fig. 15 is a face view of a modified form of bevel blade, and a clamp therefor. Fig. 16 is a sectional side elevation of the same on the line 16—16 of Fig. 15. Fig. 17 is a sectional side elevation of a clamp. Fig. 18 is a sectional plan view of a pencil holder. Figs. 19 and 20 are plan views of the device arranged for measuring angles. Fig. 21 is a plan view of the device arranged as a framing square, or pitch-board. Fig. 22 is a

similar view of the device arranged for the same purpose but differently set.

The improved combination tool is composed principally of a stock A, a square B, and a bevel blade C, of which the latter is arranged on one end of the stock, and the square on the other end thereof, as plainly illustrated in Figs. 1 and 2. The stock A is made of two principal parts or sections A² and A³, made in the form of metallic casings containing wooden linings A⁴ and A⁵ inlaid in cement and plainly shown in Figs. 9, 11 and 12, the said lining being inserted from the inside of the casings A² and A³ and secured therein by partitions or rivets A', as plainly shown in Figs. 3 and 4. In the ends of the casing A³ are arranged the interiorly threaded hollow lugs A⁶ and A⁷ fitting into apertured sockets A⁸ and A⁹ respectively, formed near the ends of the other casing A², so that when the two are fitted one upon the other as shown in Figs. 8 and 9, they are held in place by the apertured sockets engaging the threaded lugs. On the said lugs is also fitted between the two casings A² and A³, a middle blade shown in detail in Fig. 5, and formed with a graduation and apertures D' and D² engaging the lugs A⁶ and A⁷, as will be readily understood by reference to Fig. 9. The lugs A⁶ and A⁷ are provided with ferrules which when worn can be readily replaced by new ones. On the lug A⁶ is hung the square B, which latter is for this purpose provided with a slot B' in the short member B² of the square, as illustrated in Figs. 1 and 2. The other lug A⁷ forms a pivot for the bevel blade C, the latter being provided for this purpose with a slot C', through which passes the lug A⁷. The several parts of the stock are fastened together by screws E and E' engaging the threaded lugs A⁶ and A⁷ respectively. The two screws are alike in construction, and are shown in detail in Figs. 6, 7 and 9. Each screw is provided with a threaded shank E² screwing into the respective interior thread of the corresponding lug A⁶ or A⁷ and on the shank E² is arranged a head E³, from which projects a flange E⁴ on which is pivoted a flange E⁵ by means of a transverse pivot E⁶. When the flange E⁵ is swung downward as shown in the drawings, then the two flanges E⁴ and E⁵ form a disk which, with the head E³, fits into the

corresponding socket A⁸ or A⁹ in the casing A². See Fig. 9.

A spring E⁷ is arranged on the pivoted flange part E⁵ and bears against the inner surface or wall of the corresponding socket A⁸ or A⁹, so as to hold the said flange E⁵ in either a horizontal position or in a vertical position, as indicated in dotted lines in Fig. 7. In the outer edge of the flange E⁵ is arranged a recess E⁸ for conveniently applying a finger nail to raise the flange E⁵ to a vertical position when it is desired to unscrew the respective screw E or E'. When the latter are in their sockets, E⁸ and E⁹ and the flanges E⁵ of the screws are turned down, then top surfaces of the flanges E⁴ and E⁵ are flush with the outer surface of the casing A². Now, when the operator desires to unscrew one or both of the screws E or E', he presses lightly on the pivot end of the flange E⁵ to cause the latter to swing sufficiently upward to enable the operator to get hold with his finger nail in the recess E⁸ to raise the said flange into a vertical position. The operator then takes hold of this raised flange and conveniently unscrews the shank E² from the corresponding threaded lug A⁶ or A⁷.

On the casing A², at the inner face thereof and near the socket A⁹ is arranged a semi-circular shoulder A¹¹ against which is adapted to abut the rounded end B³ of the member B² of the square B at the same time the said square fits against the lug A⁶ at the end of the slot so as to lock the said member in place to hold the other member B⁴ in a right angle position relative to the stock A. A straight inclined shoulder A¹² is formed on the inner face of the other casing A³ (see Fig. 4), and on this shoulder is adapted to abut the bevel end C² of the bevel blade C so that the latter is prevented from swinging in a wrong direction, at the same time permitting of holding the blade in alignment with the stock, as plainly shown in Figs. 1, 2, 8 and 9.

It will be seen that by the formation of the shoulders A¹¹ and A¹² on opposite sides of the center blade D I form sufficient space for the passage of the member B³ of the square B and the bevel blade C, which latter hence, does not come in contact with the square B, but is set off to one side of the latter, corresponding to the thickness of the middle or center blade D. See Figs. 8 and 9.

In the casing A², near the socket A⁸, is arranged a level F extending transversely, as plainly shown in Figs. 3, 9 and 10, and near the middle of the said casing A², in a recess formed in the wooden lining A⁴, is arranged a level F', at right angles to the level F, longitudinal to the casing, as plainly illustrated in Figs. 3 and 12. The glass tubes of the levels F and F' are provided at their ends with rubber cushions F² embedded in the cement F³, which serves to hold the levels in place in the usual manner. By using the elastic cushions F² I guard against severe shocks of the stock A, to prevent breaking of the glass

tubes. The bubble in the levels F and F' is visible through registering apertures A¹³ and A¹⁴, respectively, formed in the casings A² and A³ of the stock A, as will be readily understood by reference to Figs. 2, 4, 9, 10 and 12.

In order to adapt the several parts for the various purposes hereinafter more fully described I provide the faces of the stock A as well as the faces of the square B and bevel blade C with graduations representing inches and subdivisions thereof, and I further provide the member B⁴ of the blade B with scale graduations B⁵ as indicated in Fig. 1 and one face of the said blade B⁴ I also provide with a protractor B⁶ graduated in degrees and subdivisions thereof as plainly indicated in Fig. 2. I further provide the member B² of the said square with a slot B⁷ adapted to register with the sight apertures A¹⁴ to permit of plainly seeing the bubble in the level F, whenever the member B² lies in the stock and member B⁴ is at right angles with the stock. For a like reason I provide the middle blade D with a slot D³ registering with the sight apertures A¹⁴, so that light can pass to the level F' to view the bubble therein from either side of the stock A. The middle blade D is further provided with longitudinally-extending slots D⁴ for lightening the said blade to reduce the weight of the tool, and also for the purpose of attaching other blades as desired with the bolt G. With the stock A I may use a number of squares B having their members B² and B⁴ of different lengths and I may also employ different length bevel blades C to increase the capacity of the tool, it being understood however that only one square and one bevel blade C is used at a time in connection with the stock A.

In Fig. 19 the several parts are adjusted so that the bevel blade C is set to the protractor B⁶ to form an indicator to give the two angles of forty-five degrees, and one hundred and thirty-five degrees respectively. The graduation on the protractor B⁶ is so arranged as to give any angle, and also the angle of a polygon at the same time.

In order to obtain the arrangement shown in Fig. 20, I detach the middle blade D of the stock from the latter and use the said blade in connection with the square B, and the bevel blade C. For this purpose, I employ two additional clamping bolts G for fastening the middle blade D to the square B and bevel blade C, the bolt passing through the slots B' and C' respectively, as readily understood by reference to the said figure. The clamp bolt G is illustrated in detail in Figs. 15 and 16, it being understood that the bolt is provided with a head G' and an offset G² fitted to slide in one of the slots, the shank G³ of the bolt being adapted to pass through the corresponding slot of the additional part, the nut G⁴ screwing on the face of the additional part. This device can readily be used for drawing purposes and also for transfer-

ring angles from drawings to the work, the several parts being adjusted to obtain the proper angles and lines, as indicated on the drawings, after which the parts are fastened in place by screwing up the nuts G^4 of the two bolts. The blade D may also be attached on the opposite side of the blades C and B.

In the device illustrated in Fig. 21, I employ two bevel blades C at the ends of the stock A and connect the two bevel blades with each other by a square B as shown. For this purpose I employ two clamps H illustrated in Fig. 17 and provided with a U-shaped body H' in one member of which screws the thumb screw H^2 on the lower end of which is arranged a blade H^3 guided on the part of the body H' and serving to clamp the two parts to be united together as will be readily understood by reference to Fig. 21. A common framing square may also be employed instead of square B if desired. A similar arrangement is shown in Fig. 22 in which however, the one bevel blade C extends at angles to the stock A, and only one clamp H is used to fasten the member B^4 to the straight bevel blade C while the angular bevel blade is connected by a bolt G to the member B^2 of the square B.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A combination tool, comprising a stock made of two parts connected with each other, a middle graduation blade arranged between the two parts, a square connected with one end of the said stock on one side of the said middle part, and a bevel blade connected with the other end of the said stock on the opposite side of the said middle blade, substantially as shown and described.

2. A combination tool provided with a stock comprising two casings having wooden linings and one formed with two threaded lugs near the ends, the other casing being formed with sockets engaged by the said lugs, a middle blade held between the two casings and engaging the said lugs and screws screwing in the said lugs and fitted with their heads in the said sockets each head being formed with a pivoted flange adapted to be turned to form a handle for the screw, substantially as shown and described.

3. A combination tool provided with a stock comprising two casings having wooden linings and one formed with two threaded lugs near the ends, the other casing being formed with sockets engaged by the said lugs, a middle blade held between the two casings and engaging the said lugs, screws screwing in the said lugs and fitted with their heads in the said sockets each head being formed with a pivoted flange adapted to be turned to form a handle for the screw, and a spring on the pivoted part of the head and engaging the

inner wall of the socket to hold the said movable part in position, substantially as shown and described.

4. A combination tool, comprising a stock made of two parts adapted to be fastened together, a middle blade held between the said two parts and two levels arranged in one of the said parts, substantially as shown and described.

5. A combination tool provided with a stock having levels, each formed at the ends of its glass tube with rubber cushions embedded in cement, substantially as shown and described.

6. A combination tool, comprising a stock made of two parts and having lugs near their ends between the two parts, a square having one slotted member engaging one of the said lugs between the two parts, and a slotted bevel blade engaging the other lug between the parts, substantially as shown and described.

7. A combination tool, comprising a stock made of two parts and lugs between the two parts to form pivots, a square having a slotted member engaging one of the said lugs and provided with a protractor on one of the members, and a bevel blade held on the other lug of the stock and adapted to hold on the said protractor, substantially as shown and described.

8. A combination tool, comprising a middle blade forming part of the stock, a square having a slotted member, and a member formed with a protractor, a bevel blade adapted to indicate on the said protractor, and bolts for uniting the said middle blade to the said square and bevel blade, substantially as shown and described.

9. A combination tool, composed of a square having its shorter member slotted longitudinally and its longer member inscribed as a protractor, the bevel blade, C, having a lengthwise slot, and a stock which connects said square and blade and is pivoted to each by devices that engage and slide in their respective slots, as shown and described, to operate as specified.

10. A combination tool, comprising a stock, slotted bevel blades held adjustable on the ends thereof, a square having a slotted member, a clamp for fastening one member of the square to one of the bevel blades, and a bolt for fastening the other member of the square to the bevel blade, substantially as shown and described.

11. A combination tool, comprising a stock, two levels arranged in the said stock, a square held adjustable on one end of the said stock, and a bevel blade held adjustable on the other end of the said stock, substantially as shown and described.

TOWNSEND HARRIS.

Witnesses:

S. F. ALDERMAN,
W. A. M. JOHNSTON.