(No Model.) 2 Sheets—Sheet 1.

T. J. WEAVER.

T-SQUARE.

No. 458,606. Patented Sept. 1, 1891.

Fig. 1.

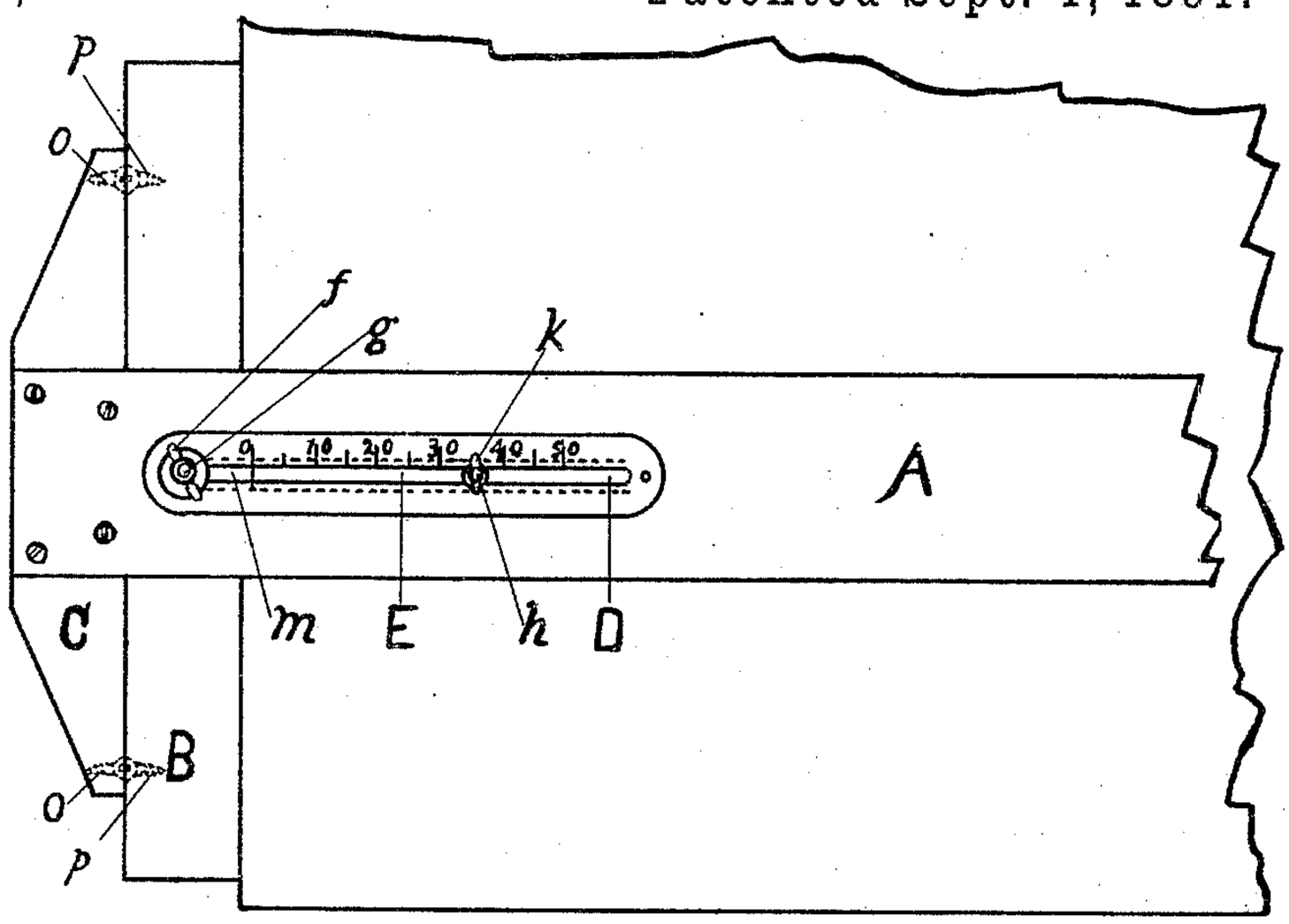

Fig. 2.

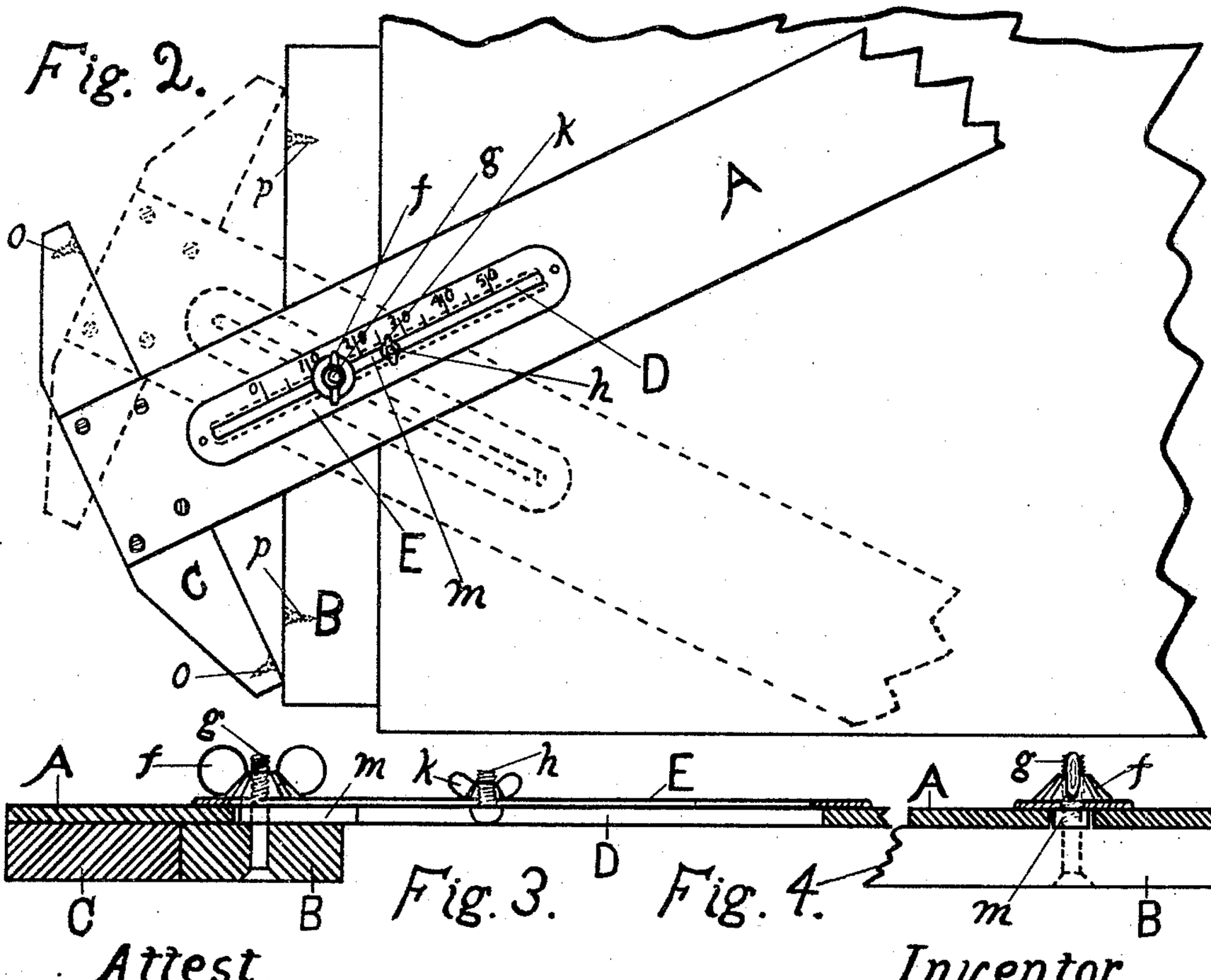

Fig. 3.

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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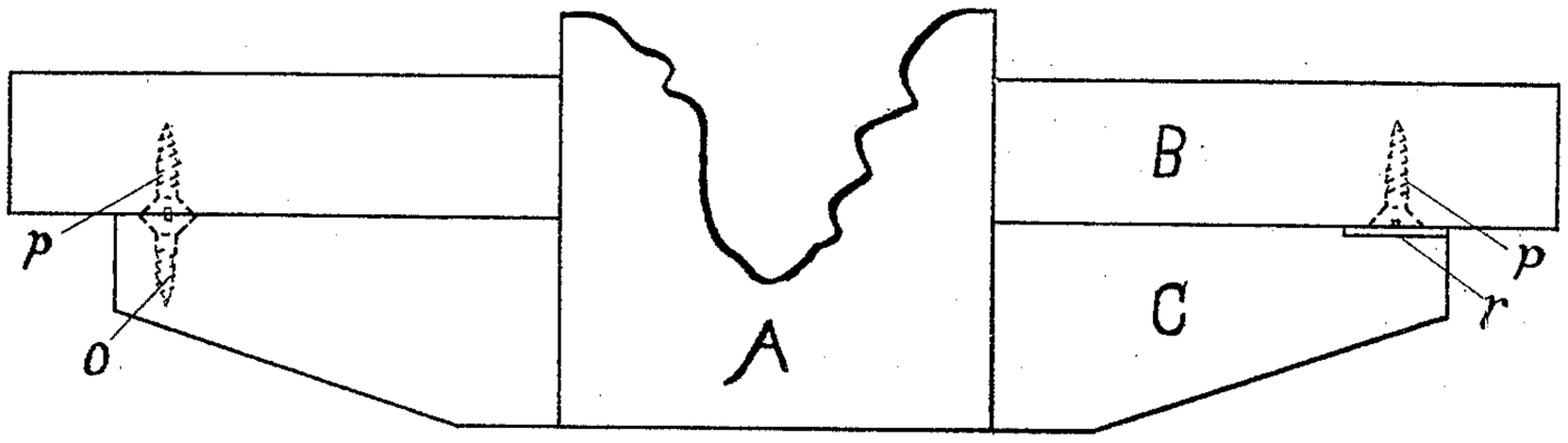
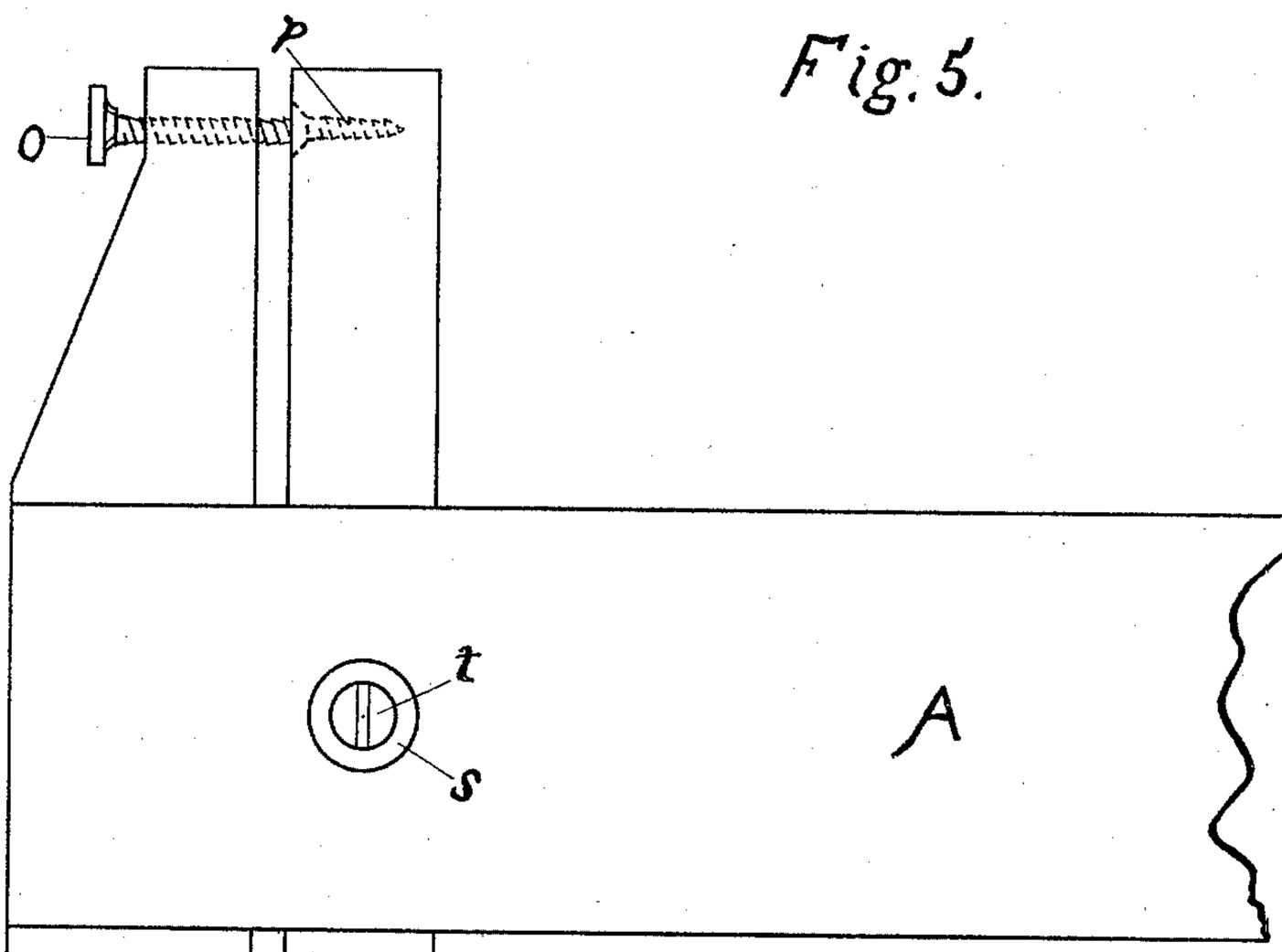


Fig. 5.



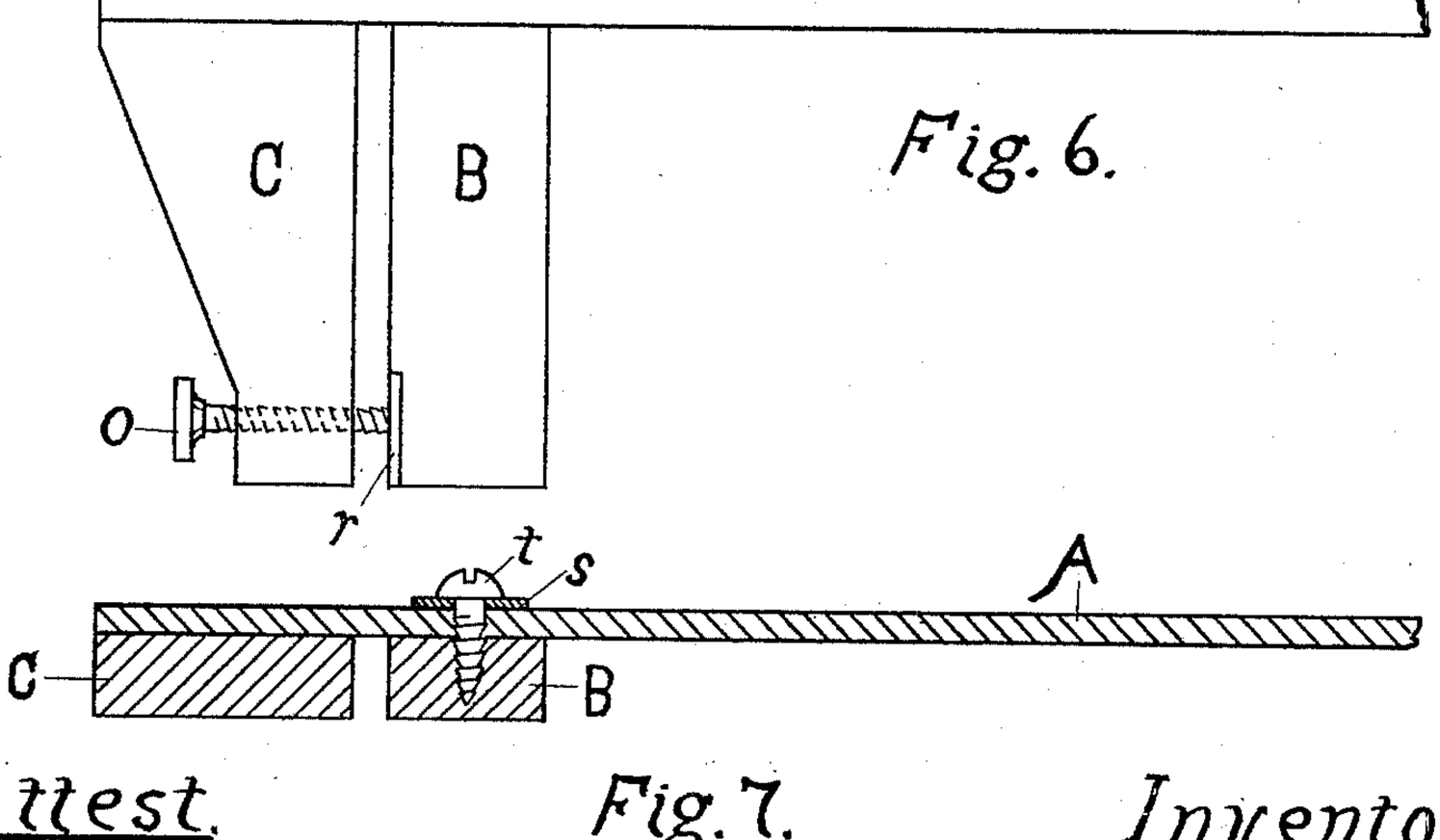


Fig. 6.

Fig. 7.

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THOMAS J. WEAVER, OF CINCINNATI, OHIO.

T-SQUARE.

SPECIFICATION forming part of Letters Patent No. 458,606, dated September 1, 1891.

Application filed November 4, 1890. Serial No. 370,307. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. WEAVER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in T-Squares, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to improvements in T-squares known as "swivel" and "adjustable" heads, the object being to provide a cheap and reliable instrument so constructed that a part of the head may be quickly and conveniently shifted to form any desired angle with the blade and as quickly returned to its normal or square position.

Figure 1 shows my improved square with the parts in position for making lines at right angles to the edges of the board. Fig. 2 shows the square set for making oblique lines. Fig. 3 is a longitudinal section of the square through head and edge of slot. Fig. 4 is a cross-section through blade and slot. Fig. 5 is an enlarged detail of the adjusting-screws in the head shown in the previous figures. Fig. 6 shows another form of adjustable head, in which the adjustment is limited to keeping the head at right angles to the blade. Fig. 7 is a longitudinal section through same.

Similar letters in the different figures represent similar parts.

A is a blade of the T-square, of any desired material provided with longitudinal slot D at or near one end. The head is composed of two pieces B and C, of suitable material, the piece C being fixed in any suitable manner at right angles to the under side of the slotted end of the blade A. The shifting piece B bears against the piece C and is movably attached to the blade A by the screw *g*, passing through its center and through the slot D and engaging with the thumb-nut *f* in such a manner that it may be shifted to form any angle with the blade.

To prevent the thumb-nut *f* from cutting the blade, a slotted plate E, of suitable material, is secured thereon in such a manner that a rabbet is formed on each side of the slot D. The rabbets thus formed receive the head of the set-screw *h*, which passes through the slot in the plate E and is held at any point therein by the thumb-nut *k*. To prevent the screw *g* from cutting the sides of the slot D, a long washer *m* is placed therein and held in position by the screw. To make oblique lines, the thumb-nut *f* is loosened, allowing the screw *g* to move within the slot D until the shifting piece B, one end of which is made to bear against the piece C, forms the desired angle with the blade A. By tightening the thumb-nut *f* the blade A and shifting piece B are clamped firmly together in that position. To reverse the blade A, the set-screw *h* is placed against the washer *m*, and the thumb-nut *f* is loosened, allowing the blade to turn about the screw *g* as a center until one end of the piece C bears against the shifting piece B, the washer *m* being kept against the set-screw *h*, when an angle will be formed equal to and the reverse of the first, as shown by the dotted lines. By loosening the thumb-nut *f* a light pressure returns the blade to its square position, as shown in Fig. 1. The washer *m* is made long enough to prevent the thumb-nuts *f* and *k* from coming so close together that they could not be operated. In the shifting-head squares as commonly made the shifting-piece is attached on top of the blade, so that a portion of the head is above the surface of the drawing-board. This is a great inconvenience to the user, and in addition to this the blade has to be turned over in order to make oblique lines, while with my improved T-square no part of the head is above the surface of the drawing-board, so that there is no interference caused by the head in the use of triangles and scales and the like, and it is not necessary to turn the blade to make oblique lines; and, further, with my T-square it is only necessary to keep one edge of the blade in good order, as only one edge need be used, while with ordinary shifting-head squares both edges of the blade must be kept in order, as the turning of the square when oblique lines are to be made brings the opposite edge of the blade into use. By graduating one or both edges of the slot in the plate E the shifting piece B may be set to form any angle with the blade A by placing one end of the washer *m* opposite the number representing the degree of the angle desired. If the blade A is of metal, the plate E is left off and the slot D made wider at bot-

tom than at the top to prevent the head of the screw from passing through it. In order that the head C and shifting bar B may be adjusted with relation to each other, so that the bar B may always be at a true right angle with the blade when in contact with the head, I provide adjustment-screws *p p* in the bar B, which come in contact with the screws *o o* in the head C, or instead of screws *o o* a metallic plate *r* may be used, as shown in Fig. 5, or any other hard material, to prevent wear of the adjusting-screws against the head C. Any wear between the head C and bar B is taken up by adjusting the screws *p p*, so that the bar B shall be at exact right angles with the blade. The same method is used in the adjustment of the bar B when this adjustment is limited to keeping the head, which is composed of two parts, as shown in Fig. 6, at right angles to the blade. In this form of head, as shown in Fig. 6, the bar B is swiveled by the screw *t* and washer *s* to the blade A, and the wear on bar B is taken up by the adjustment of screws *o o* on the plate *r* or screw *p*.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a T-square, the combination, with a blade having a longitudinal slot at or near one end, of a head composed of two parts, one of which is fixed to the slotted end of said blade, the other bearing against said fixed part and adjustably attached to said blade in such a manner that it may be shifted to form any desired angle therewith, substantially as shown and described.

2. In a T-square, the combination, with a blade, of a head composed of two parts, one of which is fixed and the other swiveled, and adjusting-screws in one of the parts bearing against the other, so that the swiveled part may be kept at exact right angles with the blade, substantially as shown and described.

3. In a T-square, the combination, with a blade and longitudinal slot therein, of a head composed of two parts, one of which is fixed to the end of the blade and the other movable, thumb-nut and washer riding in said slot, by which the movable part is adjusted, and additional thumb-nut and washer movable in said slot to fix the angle at which said movable part may be adjusted, substantially as shown and described.

THOMAS J. WEAVER.

Witnesses:
ALFRED M. ALLEN,
GEORGE HEIDMAN.