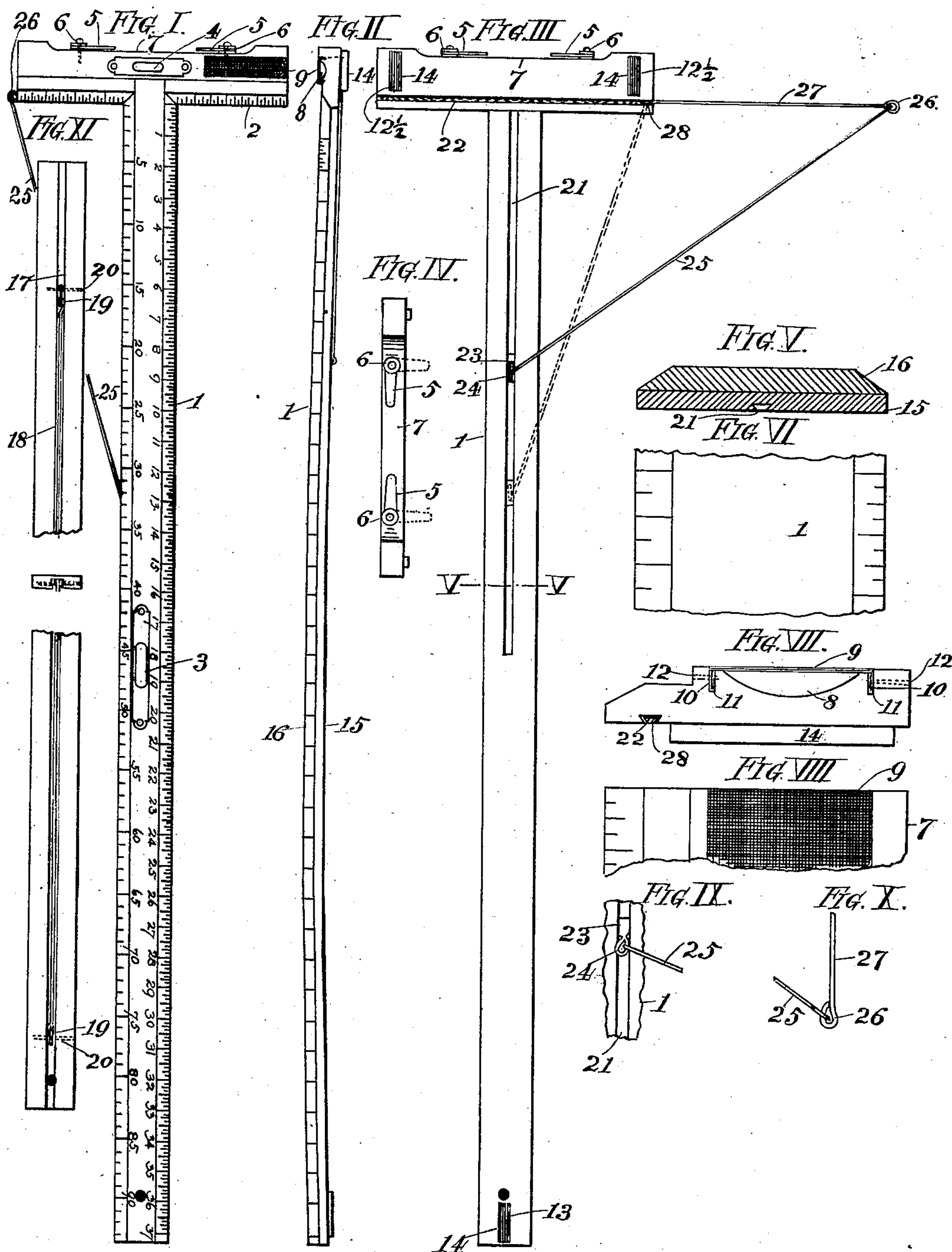


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(No Model.)



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UNITED STATES PATENT OFFICE.

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T-SQUARE.

SPECIFICATION forming part of Letters Patent No. 685,369, dated October 29, 1901.

Application filed March 23, 1897. Serial No. 628,835. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. BARRIE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, 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, which form a part of this specification.

My invention relates to certain new and useful improvements in T-squares and attachments in connection therewith intended more especially for blackboard-work in schools, &c., and which is also applicable to various other uses; and it consists in certain novelties hereinafter described and claimed.

Figure I is a plan view of my improved T-square. Fig. II is an edge view showing the permanently-set curved construction of the body of the T-square. Fig. III is a back view of the T-square. Fig. IV is an end view of the head of the T-square. Fig. V is a transverse section of the body of the T-square, taken on line V V, Fig. III. Fig. VI is an enlarged detail view of the face of the T-square. Fig. VII is an end view of the head of the T-square. Fig. VIII is an enlarged detail view of the side of the head of the T-square, showing chalk-sharpening device. Fig. IX is a detail view showing manner of operating the inner end of the attachment for drawing angles. Fig. X is a detail view showing connection between the rods for finding the angles. Fig. XI is a modification showing wire for holding the body of the T-square in a curved condition.

Referring to the drawings, 1 represents the body of the T-square, having a suitable scale thereon, such as an inch-scale and a metric scale, as shown in Fig I.

2 represents the head of the T-square, which may also have one of its faces divided up and forming a scale.

3 represents a spirit-level running lengthwise of the body 1 and preferably placed near its center.

4 represents a spirit-level extending lengthwise of the head, thus forming a level extending at right angles with the level 3 in the body of the T-square, the level 3 showing

when the body of the square is on a horizontal line, and the level 4 in the head showing when the latter is on a horizontal line and indicating when the body of the T-square is vertical, thus providing a means by which an exact horizontal line and exact perpendicular line may be obtained by the user, according to the position of the T-square. Frequently the base-board of the blackboards being out of horizontal or entirely absent, at which time a person using the ordinary T-square and resting the head upon the base-board could not obtain an exact vertical line. To the outer edge of the head are secured arms or stops 5, pivoted at 6, so that they may be turned at right angles with the head, as shown in dotted lines in Fig. IV, the purpose of said stops being to limit the endwise movement of the T-square when said stops come in contact with a straight edge, such as the edge of a drawing-board. By glancing at the spirit-level 3 it may be ascertained whether the body of the T-square extends on an exact horizontal line. The stops 5 being pivoted can be folded back, extending on a line with the head when not in use, the outer edge of the head being recessed, as shown at 7, for the reception of said stops. A portion of one side of the head is provided with a recess 8, over which is secured a chalk-sharpening medium 9, said medium being preferably formed of wire-gauze, with its edges inserted in grooves 11 in the head and held therein by pins or nails 12 or their equivalent. As the chalk or crayon is sharpened the powdered chalk drops into the recess 8, from which it may be shaken out through the open end of the recess at the extremity of the head and deposited into the chalk-receptacle at the foot of the blackboard or other convenient receptacle.

12½ represents projections or bearings running transversely of the head on one side near its outer ends, and 13 a projection running lengthwise of the body of the T-square and located near its outer end, said projections being made, preferably, of rubber and corrugated, as shown at 14, in order to give a greater frictional contact between the projections and the blackboard or other surface on which they are placed. The projections de-

scribed form a soft yielding frictional bearing between the T-square and the blackboard or other surface, the same being essential in doing exact work in order to hold the T-square in the proper position after the same has been obtained through observation of the level, otherwise a very slight pressure by the crayon or chalk upon the T-square will force it out of the proper line. In order to facilitate the holding of the T-square firmly against a vertical surface, I have formed the body of the T-square in a permanently-set curved contour, as shown in Fig. II, the result being that when the center of the body of the T-square is pressed firmly against a vertical surface the straightening of the T-square causes the bearings on the ends to firmly grasp the surface on which they are placed and prevents slipping and the consequent drawing of an irregular line by the user. The curve in the T-square may be obtained in different ways. My preferred form consists of making the body of the T-square in two parts, as shown at 15 16, Fig. II, and gluing them together in a matrix while in their curved condition, allowing them to dry while curved, by which means the T-square will maintain its curved condition when pressure is not placed upon the same and which will return to its curved condition when pressure has been released from the same. In Fig. XI, I have shown a modification in which I form a longitudinal groove 17, in which I place a wire 18, having loops 19 on its ends. The body of the T-square is then bent into a curved form, at which time pins or nails 20 are passed through the T-square and the loops in the end of the wire, the wire thus forming a truss-rod, which maintains the T-square in a normally-curved condition.

I will now describe my device for obtaining any angle desired in connection with the T-square.

21 represents a groove, preferably dovetail in shape in cross-section, located on the under side and running lengthwise of the body of the T-square.

22 represents a similar groove, located on the under side and running lengthwise of the head.

23 represents a slide in the groove 21, having a loop 24 thereon.

25 represents a rod having its inner end secured to the loop 24 and its outer end secured to a loop 26 on a rod 27.

28 represents a slide in the groove 22 in the head, to which the inner end of the rod 27 is connected, the slides in the grooves 21 22 being adapted to reciprocate according to the angles it is desired to obtain by projecting the rods 25 27, when said angles have been obtained said rods each serving as a straight-edge or ruler along which chalk-lines may be drawn.

I claim as my invention—

1. As a new article of manufacture a T-square having two pivoted arms forming stops secured to the outer edge of the head and located beyond the outer line of the long arm of the T-square, substantially as set forth.

2. As a new article of manufacture a T-square having a recess cut in the outer edge of the head and pivoted stops secured to the head in said recess and located beyond the outer line of the long arm of the T-square, substantially as set forth.

3. As a new and improved article of manufacture, a T-square consisting of a straight inelastic head and an elastic body straight or flat in cross-section and formed of resilient wooden strips, said body having a permanent longitudinal curve and adapted to be straightened out to a flat condition and to resume its curved form by its own resiliency, substantially as set forth.

4. As a new article of manufacture, a T-square having its head straight and its body formed flat in cross-section and with a permanent longitudinal curve, spirit-levels arranged lengthwise of said body and head for securing accurate horizontal and perpendicular lines, and frictional bearing projections upon the head and outer end of the body of the T-square, substantially as set forth.

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