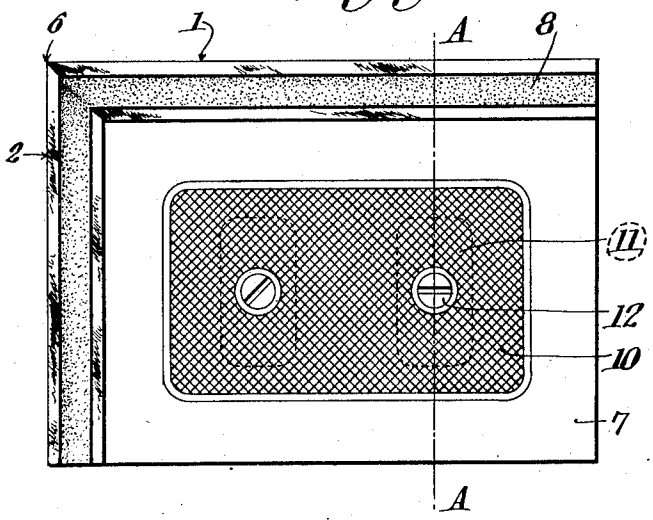
E. J. BRYANT.

PRECISION SQUARE.

APPLICATION FILED JULY 7, 1917.

1,355,808. Patented Oct. 19, 1920.

Fig. 1.



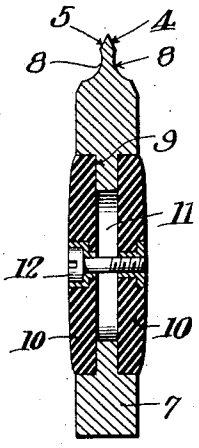


Fig. 2.

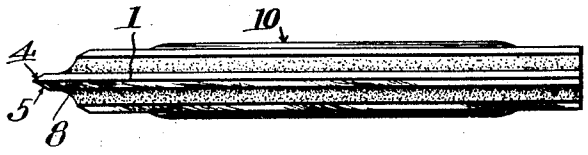


Fig. 3.

Inventor:
Elmer J. Bryant
by Ramsey & Parmelee
Attys.

UNITED STATES PATENT OFFICE.

ELMER J. BRYANT, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO THE TAFT-PEIRCE MANUFACTURING COMPANY, OF WOONSOCKET, RHODE ISLAND, A CORPORATION OF RHODE ISLAND.

PRECISION-SQUARE.

1,355,808. Specification of Letters Patent. Patented Oct. 19, 1920.

Application filed July 7, 1917. Serial No. 179,266.

To all whom it may concern:

Be it known that I, ELMER J. BRYANT, a citizen of the United States, and a resident of the city of Woonsocket, in the county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Precision-Squares, of which the following is a specification.

This invention relates broadly to precision tools and more particularly to a precision square.

The principal object of the present invention is to provide a precision square wherein the construction of the square includes handles, or grips, of heat insulating material to prevent the heat from the hand of the user from affecting the accuracy of the instrument.

A further object of the present invention is to provide a precision square wherein the precision edges of the square are substantially knife edges extending outwardly from and supported by a substantially uniform body portion of relatively thick heavy metal.

A still further object of the present invention is a precision square constructed with a relatively heavy substantially rectangular body portion of uniform dimensions relative to the center line thereof and being provided on two adjacent edges with extending portions terminating in knife edges accurately formed to straight line edges meeting at a ninety degree angle.

A still further and important object of the present invention comprises the provision of a precise square of a substantially uniform body portion adapted to support work edges formed at the apex of a V-shaped section of material and provided with concave channels comprising grooves in the portion joining the V-shaped part with the body of the square.

A still further and equally important object of the present invention is a precision square wherein the precision edge is substantially a knife edge with a polished surface extending a slight distance therefrom and a dull surface adjacent the polished surface whereby contrast in light effect is produced which enables the operator to use the instrument with great precision.

Other and further objects of the present invention will in part be obvious and will in part be pointed out hereinafter in the specification following by reference to the accompanying drawings wherein like characters are used to represent like parts throughout the several views of the drawings.

Figure 1 is a side view of a device constructed in accordance with the present invention.

Fig. 2 is a detail view taken on line A—A of Fig. 1.

Fig. 3 is a plan view of the device shown in Fig. 1.

Metal squares are usually made with a relatively heavy base and a relatively light arm extending from this base with the work faces on the base and arm at right angles to the flat sides of these members. In the use of such tools it is ordinary and customary for the workman to turn the tool relative to the face of the work and observe how the edge of the arm contacts with the work under inspection. For very precise work many elements of error may enter into inspection of work under these conditions. First, the turning of the square at an angle to the work face shortens the base at right angles to the work under inspection and any slight particle under an edge of the base arm throws out the operative edge from the perpendicular surface on which the base arm is usually placed. Secondly, heat from the operator's hand on the upper edge of the base arm tends to expand this arm sufficiently to introduce a perceptible error at the end of the leaf arm. Thirdly, the flat work surface of the leaf arm is a precision surface whereas the side of the leaf arm is not a precision surface and where the operator uses the edge of his square errors which may be in the flat surface become effective errors, since the operator is using a line which is determined by one precision surface and one surface which is not a precision surface.

To obviate the above known difficulties in the art and to provide a precise tool in the nature of a precision square, this invention contemplates that the precision work face shall comprise an edge formed by the meeting of two precision surfaces that are relatively inclined at an acute angle and the supporting of these surfaces by a substantially uniform relatively heavy body of metal which is provided with hand grips of heat insulating material so that in use the

heat from the operator's hand is not communicated direct to any part of the square which is liable to expand and affect the accuracy of the work face. It is usual to use precise squares in connection with surface plates and inspect the work by looking toward the light and observing how the precision edge meets the surface under inspection. To facilitate this operation the precision surfaces which meet to form the precision edge are preferably highly polished for a short distance from the edge and a dull, preferably black, band is provided adjacent the polished edge. This relation of polished and unpolished parts provides a condition which enables the operator to more easily observe and test the surface under inspection.

Referring now more particularly to the drawings the precision edges 1 and 2 are formed by the meeting of precision surfaces 4 and 5 that are angularly disposed in such manner that a cross-section of the metal between these surfaces is substantially V-shaped. While the angle 6 between the precision edges 1 and 2 may include any desired number of degrees it is preferable that this angle shall be an exact right angle of ninety degrees. In order to provide a rigid support for the precision edges a substantially rectangular body portion 7 is provided and the precision edges are supported upon the body portion by a relatively thin rigid mass of metal that extends outwardly from the body portion and is concaved on each side, as at 8, to constitute grooves. The central part of the body portion is recessed, as at 9, to provide for hand grips 10 which are formed of heat insulating material, such as wood or vulcanite and similar materials. The body portion 7 is provided with openings 11 within the recessed part 9 in order to permit the connecting screws 12 to pass through the body portion and connect the hand grips without contact of the screws with the body portion. The precision surfaces 4 and 5 preferably are polished to comprise reflecting surfaces and the grooves 8 preferably are dead finished to contrast with the reflecting surfaces whereby a band or zone of light may be reflected against the surface being inspected and adjacent the precision edge being used. These reflecting surfaces are angularly disposed so that when the edge of the square is placed against a surface to be tested the light striking the reflecting surface is reflected against the work face or surface which is being tested. This results in providing illumination which comes at substantially right angles to the work surface being tested. When such surface is viewed at a small angle relative to the surface so that the angle of vision is nearly parallel to the work surface it will be noted that any irregularity in the surface immediately becomes visualized so that the polished surface provides an illumination that very greatly facilitates observation during the use of the scale.

From the foregoing it will be noted that this instrument comprises precision edges supported by a relatively heavy body portion of substantially uniform mass and which is provided with heat insulating hand grips which prevent distortion of the instrument while in use by heat absorbed from the hand of the user.

Realizing that my invention may be embodied in structures other than the specific construction disclosed herewith I desire that it be understood that the specific disclosure herewith is illustrative and not to be taken in a limiting sense.

Having thus described my invention what I claim is:—

1. As an article of manufacture, a precision square comprising an oblong rectangular body portion of relatively heavy thickness and having the metal thereof distributed substantially uniformly relative to the center line of said body portion, a heat insulating handle carried by said body portion, outwardly extending members also carried by said body portion, the sides of said outwardly extending members comprising substantially plane surfaces angularly disposed with reference to each other and oppositely disposed grooves, said plane surfaces meeting to form a precision edge, the plane surfaces adjacent said precision edge being preferably polished to comprise reflecting surfaces, and said grooves being constituted to comprise non-reflecting surfaces, substantially as described.

2. As an article of manufacture, a precision square comprising a substantially rectangular rigid body portion, said body portion being provided on each side thereof with depressions, handles of heat insulation material adapted to be secured within said depressions and comprise the grips for handling said square to insulate the heat of the operator's hand from said square and fastening means for said handles, said fastening means being out of contact with said body portion, said body portion having precision edges integral therewith and extending outwardly therefrom.

3. As an article of manufacture, a precision square comprising a rigid body portion substantially rectangular in form, the sides of said body portion being provided with depressions and openings through said body portion thereby providing passageways connecting said depressions, heat insulating hand grips within said depressions, and securing means carried by said hand grips and passing through said passageways and out of contact with the body portion, said body portion having precision

edges integral therewith and extending outwardly therefrom.

4. As an article of manufacture, a precision square comprising a rigid body portion having substantially flat sides and being provided with precision edges formed on said body portion by angularly disposed surfaces which intersect in substantially the median plane extending between and parallel to the flat sides of the said body portion.

5. As an article of manufacture, a precision square comprising a rigid body portion having substantially flat sides and angularly disposed precision surfaces extending outwardly from said flat sides, said body portion being provided with precision edges formed adjacent the apex of the angle of intersection of the said precision surfaces which intersect at substantially the median plane extending parallel to the flat sides of the said body portion.

6. As an article of manufacture, a precision square comprising a rigid body portion having angularly disposed precision surfaces formed thereon, the intersection of said surfaces forming precision edges with the surfaces adjacent said precision edges being polished to form reflecting surfaces, and a non-reflecting area substantially parallel with said precision edges and adjacent said reflecting surfaces.

7. An article of manufacture comprising a precision square and having a substantially rectangular body portion of relatively thick metal, beveled portions extending from two sides of said body portion, said beveled portions being provided with grooves substantially parallel to the sides of the body portion, said beveled portions meeting to form substantially knife like precision edges, the plane surfaces of said beveled portions being polished to comprise reflecting surfaces and said grooves being formed to constitute non-reflecting surfaces, the remaining edges of said body portion being substantially plane surfaces extending the full width of said body portion to comprise bases upon which said square may be set to adjust a precision edge against a suitable work surface.

8. As an article of manufacture, a precision square comprising a rigid substantially rectangular body portion having substantially centrally located depressions on opposite sides thereof connected by passageways extending entirely through the body portion, insulating grips in said depressions, and beveled portions formed on a plurality of sides of said body portion, said beveled portions intersecting on substantially the median plane of the body to form knife like precision edges.

9. As an article of manufacture, a precision square comprising a rigid substantially rectangular body portion having substantially centrally located depressions on opposite sides thereof connected by passageways extending entirely through the body portion, opposed insulating grips in said depressions, securing means passing through said passageways for connecting said grips, and beveled portions formed on the body portion, said beveled portions intersecting in substantially the median plane of the body to form knife like precision edges.

10. An article of manufacture comprising a precision square having a substantially rectangular body portion, extensions on two adjacent sides of said body, said extensions comprising plane surfaces meeting to form knife edges, and with the intersection of said surfaces being substantially the mid plane of said body portion which is parallel to the flat sides thereof.

11. An article of manufacture comprising a precision square having a substantially rectangular body portion, extensions from two adjacent sides of said body portion with said extensions comprising parts having inclined sides to form knife edges, the remaining sides of said body portion being substantially flat edges meeting at a right angle.

12. As an article of manufacture a precision square having a body portion substantially symmetric relative to all of its axes, knife-edged portions extending from said body portions on two adjacent sides and the remaining two sides of said body portion comprising flat edges, and heat-insulating handle grips mounted over the central portion of said body portion.

13. As an article of manufacture, a precision square having beveled knife edges comprising intersecting reflecting surfaces, said square being provided with non-reflecting grooves adjacent said reflecting edges.

14. An article of manufacture comprising a precision square comprising angularly disposed portions provided with knife-edged measuring parts, said knife-edged parts being formed by intersecting polished surfaces, the part of said square adjacent said edges comprising non-reflecting grooved portions, and said square being provided with flat supporting surfaces opposite to the said measuring parts.

15. As an article of manufacture a precision square comprising a body portion having substantially parallel sides, precision knife edges formed on two adjacent sides and flat supporting surfaces opposite the precision edges, heat insulating grips embedded in the sides of said square, and securing means for said grips extending through said square and out of contact therewith.

ELMER J. BRYANT.