

PATENT



SPECIFICATION

Application Date, May 13, 1919. No. 11,985/19.

Complete Left, Nov. 12, 1919.

Complete Accepted, Apr. 1, 1920.

PROVISIONAL SPECIFICATION.

An Improved Set-square and Protractor.

I, WILLIAM BRITAIN, of Wildwood, Rowantree Road, Enfield, in the County of Middlesex, Manufacturer, do hereby declare the nature of this invention to be as follows:—

The invention relates to that kind of set-square and protractor having three arms hinged together and means for adjusting them with relation to each other.

The object of the present invention is to provide an improved instrument which is simple in construction and is readily and accurately adjusted to form various shapes of set-squares. As the angles of some of the set-squares will differ but slightly from the angles of other set-squares made by the instrument, it may be used as a protractor for a large number of angles by adding or subtracting various angles formed by it.

According to the present invention the central arm is pivoted at its ends to the other two arms which latter will be called the outer or end arms. In set-squares formed by this instrument the central arm forms the hypotenuse and the end arms subtend the right angle.

One of the end arms has a number of studs or projections and the other end arm has a number of recesses or apertures to fit the studs or projections. Each stud or projection is marked with two angles and each recess or aperture is correspondingly marked with two angles. The positions of the studs or projections and the recesses or apertures are arranged so that when a stud and an aperture correspondingly marked are caused to engage the end arms will subtend a right angle and the hypotenuse will form angles corresponding to the two markings of the engaging parts.

When the three arms which are approximately equal in length, are folded so that they coincide with each other, the adjacent faces are in close contact and the studs project from the outer face of one of the end arms. In order to cause the recesses or apertures to engage with the studs it is necessary to slightly twist the instrument so that the arm having the recesses or apertures moves over the faces of the studs.

The two outer arms having been correctly adjusted to produce the desired angles it is only necessary to press the recess or aperture onto the studs and the three arms are locked in the desired positions.

The studs and apertures may conveniently be arranged to produce the following angles:—

80°—10°, 70°—20°, 60°—30°, 50°—40°, 45°—45°, 36°—54°, 27°—63°, 18°—72°, 9°—81°, and when so arranged by adding or subtracting, it is possible to obtain an angle of any degree.

[Price 1/-]

An extra recess or aperture may be formed beyond the 9° — 81° recess or aperture to engage with the 9° — 81° stud in which position the central arm will be held at a right angle to the arm carrying the projections or studs.

It will be understood that the instrument is adapted to form other angles than those given above as examples, by fixing the studs and forming the apertures in other positions. 5

Dated this 13th day of May, 1919.

HARRIS & MILLS,
Chartered Patent Agents,
34/35, High Holborn, W.C. 1. 10

COMPLETE SPECIFICATION.

An Improved Set-square and Protractor.

I, WILLIAM BRITAIN, of Wildwood, Rowantree Road, Enfield, in the County of Middlesex, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:— 15

The invention relates to that kind of instrument having three arms pivoted together like a rule and which may be used as a rule, the end arms being adapted to be fixed with relation to each other to form a right angle. It has been proposed to provide means for fixing the end arms in different positions to form different right angled triangles. In one form of such instrument it was proposed to employ studs projecting from the inside faces of the end arms and to provide sockets on the inside faces of the opposite arms to receive such projecting studs. Such a construction necessitated the provision of sockets in the central arm to receive the studs on the outer arms to enable the three arms to be folded together in close contact like an ordinary rule. 20 25

According to the present invention I cause the studs to project from the outer face of one of the end arms and I form suitable apertures or recesses open on the outer face of the other end arm.

In order to cause the recesses or apertures to engage with the studs it is necessary to slightly twist the instrument so that the arm having the recesses or apertures moves over the faces of the studs. 30

The two outer arms having been correctly adjusted to produce the desired angles it is only necessary to press the recess or aperture onto the studs and the three arms are locked in the desired positions. 35

The studs and apertures may conveniently be arranged to produce the following angles:—

80° — 10° , 70° — 20° , 60° — 30° , 50° — 40° , 45° — 45° , 36° — 54° , 27° — 63° , 18° — 72° , 9° — 81° , and when so arranged by adding or subtracting, it is possible to obtain an angle of any degree. 40

An extra recess or aperture may be formed beyond the 9° — 81° recess or aperture to engage with the 9° — 81° stud in which position the central arm will be held at a right angle to the arm carrying the projections or studs. 45

It will be understood that the instrument is adapted to form other angles than those given above as examples, by fixing the studs and forming the apertures in other positions. 50

The invention is illustrated in the accompanying drawings in which Fig. 1 is a view of one side of the instrument arranged in a straight line, Fig. 2 is a view of the other side thereof and Fig. 3 is an edge view of the same. Figs. 4, 5, 6 and 7 show the instrument arranged as different right angled set squares in which the outer or end arms contain the right angle. 50

Fig. 8 shows how the instrument may be arranged so that the central arm

and one outer or end arm contain the right angle. All the figures except Fig. 4 are partly broken away.

The instrument has three arms, *a* being the central arm and *b* and *c* being the outer or end arms. The central arm *a* is hinged to the two arms *b* and *c* like an ordinary rule and one side of the instrument may be engraved or otherwise marked as shown in Fig. 1 to enable the instrument to be used as a rule.

One arm *c* has a number of studs or projections c^1 on its outer face and the other arm *b* has a number of recesses or apertures b^1 on its outer face. It will be seen that each stud or projection is marked with two angles and each recess or aperture is correspondingly marked with two angles.

In order to form a set square the arms *b* and *c* are turned down on their pivots *d d* and the instrument is slightly twisted so that the arm *b* having the recesses or apertures b^1 moves over the faces of the studs c^1 . When a recess or aperture b^1 coincides with a correspondingly marked stud the arm *b* is at a right angle to the arm *c*. The arms *b* and *c* are then pressed together to cause the stud c^1 to enter the recess or aperture b^1 and thus lock the three arms with relation to each other.

Fig. 4 shows a set square having other angles of 80° and 10° .

Fig. 5 shows a set square having other angles of 70° and 20° .

Fig. 6 shows a set square having other angles of 72° and 18° .

Fig. 7 shows a set square having other angles of 81° and 9° .

It will be noticed in the example shown that the apertures and studs at the one end of the arms *b* and *c* give differences of 10° in the angles produced and that the apertures and studs at the other ends of the arms *b* and *c* give differences of 9° in the angles produced. This is a very convenient disposition of the parts as by adding or subtracting angles produced by the instrument it is possible to draw any angle in degrees up to 90° .

An extra hole b^2 is formed at the end of the arm *b* which may be placed over the stud marked 9—81. This throws the central arm *a* at a right angle to the outer arm *c* and thus produces an exterior right angle without any projecting end or ends as in the other arrangements of the instrument.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

35 An improved set square or protractor having three arms the central arm being hinged at each extremity to an end arm, one end arm having recesses or apertures open on its outer face and the other end arm having projections or studs on its outer face the said recesses or apertures and the said projections or studs being so disposed that when the instrument is slightly twisted and a recess or aperture
40 is passed over a corresponding stud the two end arms contain a right angle substantially as shown and described.

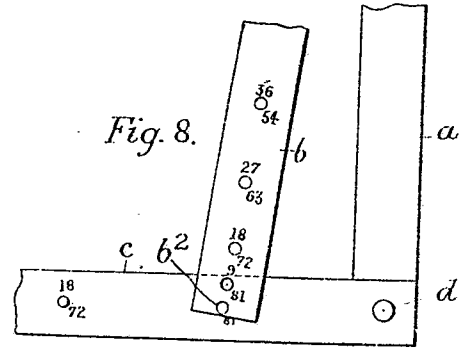
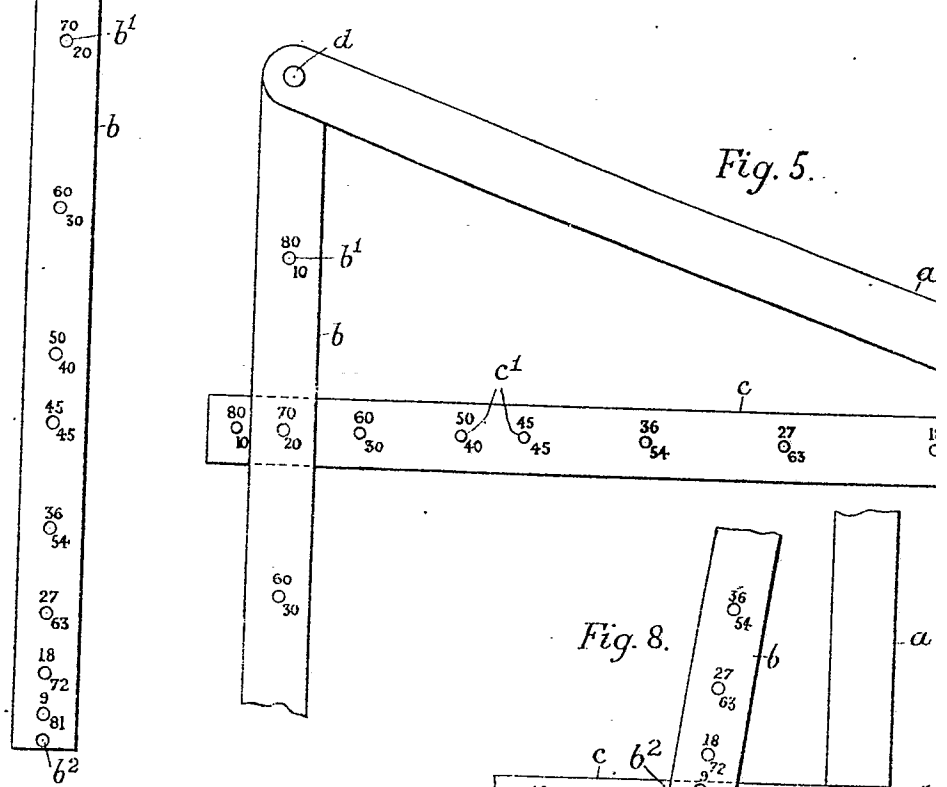
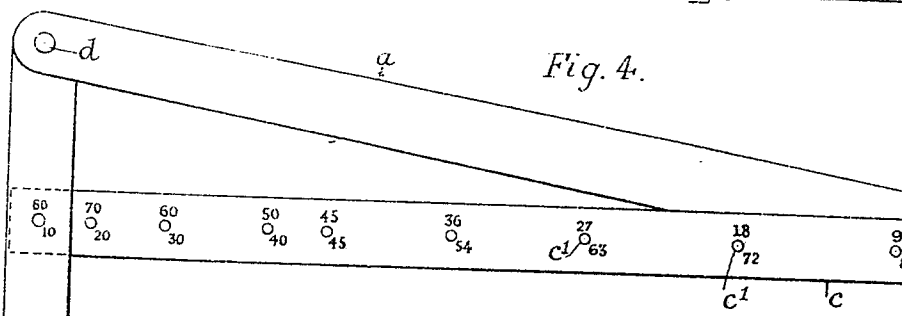
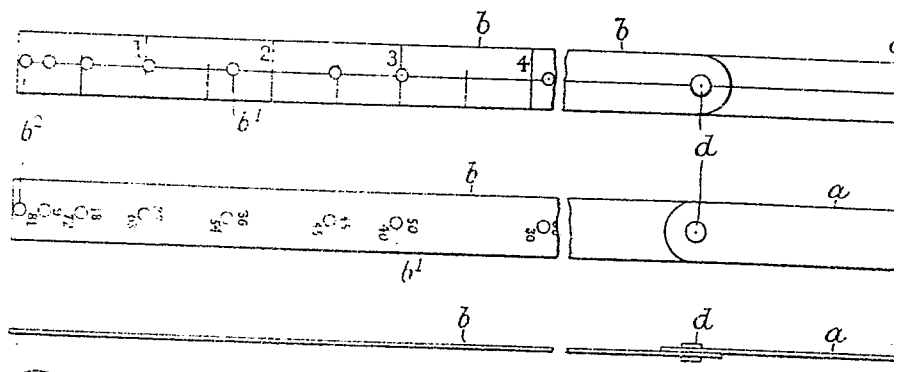
2. An improved set square or protractor as claimed in Claim 1 having an extra recess or aperture which when placed over the last end projection or stud will cause the central arm to form an exterior right angle with one of the outer arms
45 substantially as shown and described.

3. The improved set square or protractor herein described and shown in the accompanying drawings.

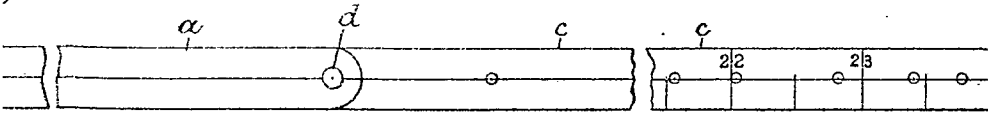
Dated this 12th day of November, 1919.

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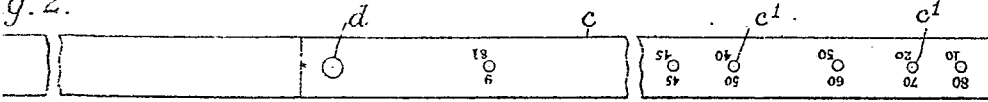
From the drawings it will be seen that the invention is not limited to the particular form shown in the drawings.



g.1.



g.2.



g.3.

