Sept. 10, 1963 O. L. LOOKER 3,103,070

BEAM COMPASS

Filed Feb. 13, 1962

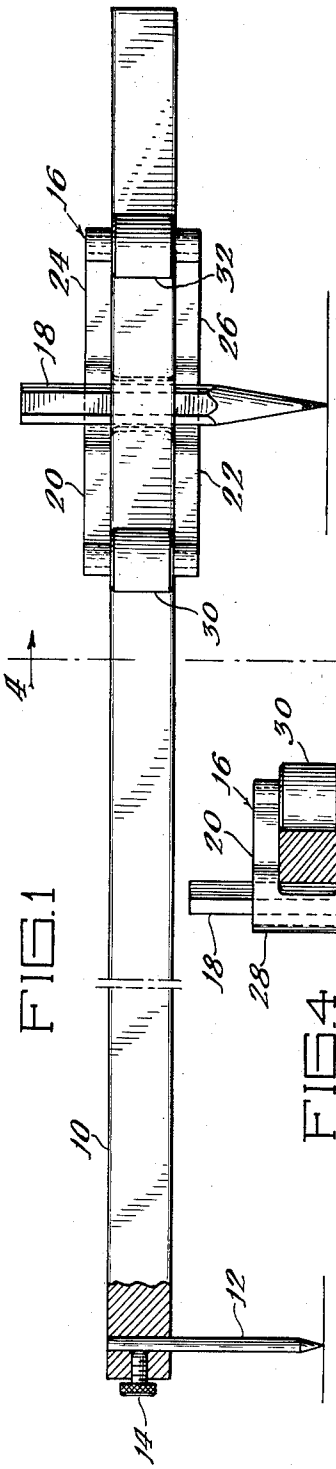


FIG. 1

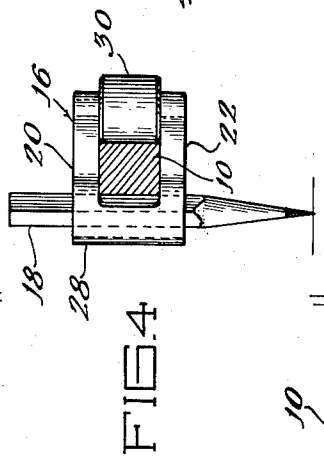


FIG. 4

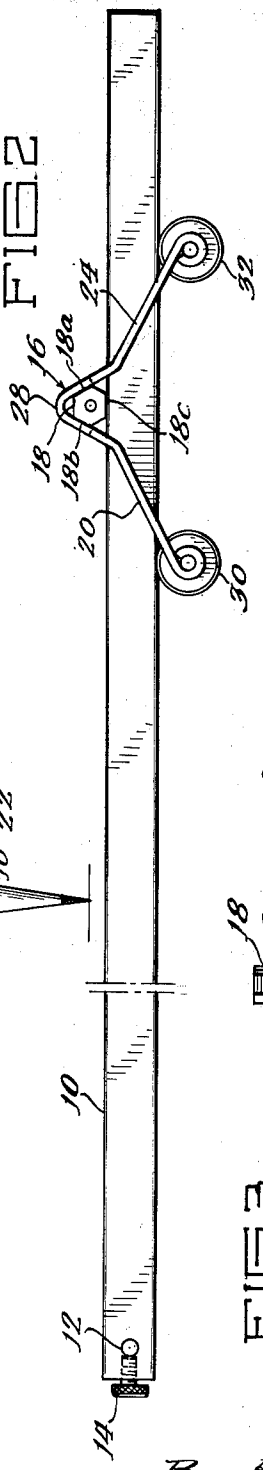


FIG. 2

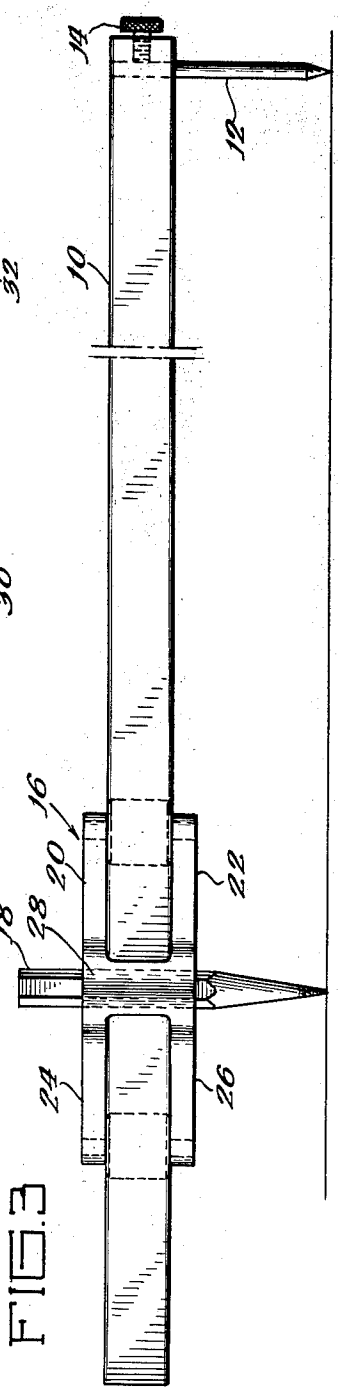


FIG. 3

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BEAM COMPASS

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This invention relates to drafting instruments and more particularly to an instrument for describing arcuate figures, such as a beam compass.

The currently available commercial devices designed for use in describing large arcuate figures require set screw adjustments when it is necessary to change the radius of the arc described. The standard beam compass comprises a fixed pivot point and a movable scribing instrument holder which may be positioned along the longitudinal extent of the beam only after loosening the appropriate set screws, moving the scribing instrument holder to the desired position, and then tightening the set screws. Such a device does not lend itself to rapid and convenient radius adjustments. Furthermore, such adjustments may often prove inaccurate because the scribing instrument holder may be moved from its measured position in the process of tightening the set screws.

It is a primary object of this invention to provide a new and improved beam compass.

It is another object of this invention to provide a new and improved beam compass which may be rapidly and easily adjusted for describing arcs of different radii.

It is yet another object of this invention to provide a new and improved beam compass which may be accurately adjusted in a novel manner to describe an arc of a desired radius.

It is still another object of this invention to provide a new and improved beam compass which does not require the use of set screws to position a scribing instrument holder at any point thereon.

It is a further object of this invention to provide a new and improved beam compass adapted to be used with a common wooden graphite drafting pencil.

It is a still further object of this invention to provide a new and improved beam compass comprising a beam member and a scribing instrument holder movable longitudinally thereof, the scribing instrument holder having means for coarse and fine adjustment of the holder for any point on the beam not requiring the use of locking or unlocking elements to secure the holder at a given point on the beam.

Further features and advantages will be readily apparent from the following specification and from the drawings, in which:

FIGURE 1 is a side elevational view in partial section of an embodiment of this invention;

FIGURE 2 is a top plan view of the device of FIGURE 1;

FIGURE 3 is a side elevational view taken from the opposite side of the view shown in FIGURE 1; and

FIGURE 4 is a section view taken along the line 4—4 of FIGURE 1.

In the illustrated embodiment of my invention the beam compass includes a beam **10** which is a generally rectangular elongate box like member of rigid material such as aluminum or the like. A pivot in the form of a pin **12** is secured at one end of the beam **10** by means of a set screw **14** providing the beam with a pivot point about which an arc may be described. A scribing instrument holder **16** is positioned on the beam for movement along the longitudinal extent thereof. A scribing instrument, such as a pencil, **18** is mounted in the scribing instrument holder for providing the device with means for describing an arc when the device is pivoted about the pivot **12**.

The scribing instrument holder **16** is a one piece spring

member having a V-shaped configuration in plan. It consists of a pair of parallel bifurcated legs with individual leg portions **20**, **22**, **24** and **26** which extend diagonally rearward from a central base **28**. The lower legs **22** and **26** extend across the bottom of the beam **10** and the upper legs **20** and **24** extend across the top of the beam **10**. Each of the pairs of legs supports one of a pair of rollers **30** and **32** in generally parallel relation to the base **28**. The rollers **30** and **32** extend from the top to the bottom of the beam **10** and are in rolling contact with the side of the beam **10** opposite the base **28** of the holder **16**.

The interior sides of the central base **28** describes a 60° angle in plan. The pencil **18** is secured within the holder **16** between the beam **10** and the base of the holder **28**. This provides the interior of the base with surfaces on the inside to be in facial engagement with faces **18***a* and **18***b* of the conventional hexagonal shape drafting pencil and insures that face **18***c* will be in flat facial contact with the side of the beam **10**. The bifurcated legs extend from the common base **28** and flare outwardly at a greater than 60° angle relative to each other. The legs **20**, **22**, **24** and **26** are closely spaced in relation to the top and bottom surfaces of the beam **10** and thus serve to secure the holder against any tilting movement with respect to the longitudinal axis of the beam. Also because the legs flare outwardly from the base at a greater than 60° angle the legs tend to extend in a direction generally lengthwise of the beam **10** and thus restrain the holder from tilting about the beam in a plane generally transverse to the longitudinal axis of the beam. The spring holder **16** tightly embraces the pencil **18** preventing any lateral or vertical movement of the pencil within the holder. Though the illustrated embodiment shows a conventional wooden drafting pencil secured within the holder **16** it is to be understood that mechanical drafting pencils are capable of use with this instrument also.

The rollers **30** and **32** frictionally hold the holder **16** against the beam and provide finger grip means for moving the pencil holder lengthwise of the beam. The rollers are spaced apart a sufficient distance to spring the holder **16** from its normal configuration when the pencil is in place. The movement of the holder **16**, as well as the frictional retention of the holder against the beam **10** is facilitated by the fact that, in the case of a conventional wooden drafting pencil, the pencil is held with a flat face **18***c* against the side of the beam **10** as previously mentioned. The holder **16** may be disengaged from the beam by rolling it off the end opposite the pin **12**. This causes the pencil **18** to drop out and allow the insertion of another pencil of different hardness if desired. To make the unit reversible for left or right hand operation the holder **16** is merely placed back on the beam **10** with the pencil on the appropriate side thereof. To reset the holder on the beam it is positioned at the end of the beam opposite the pivot with one roller against the side of the beam and the other roller on the end. A pencil is then placed between the side of the beam and the interior of the base and the other roller is rolled over the end of the beam and against the same side of the beam as the first mentioned roller.

The rollers **30** and **32** provide a sufficient frictional force to maintain the holder **16** at any preselected point along the length of the beam **10**. Thus no separate locking means such as set screws are necessary to secure the holder **16** at a given point. To move the holder **16** along the beam **10** the rollers **30** and **32** are merely pushed with thumb or finger pressure to the desired position. A feature of this device is that it is capable of coarse and fine adjustment. By applying finger or thumb pressure against the rollers to the exterior of the legs, the

spring action of the holder **16** is opposed, reducing the amount of force with which the holder **16** and pencil **18** are held against the beam **10**. This provides easier movement of the holder **16** along the beam **10**. When finger or thumb pressure is applied on the side of the rollers within the interior of or between the legs, the spring action of the holder **16** is assisted, tending to slightly increase the force with which the holder **16** and the pencil **18** are held against the beam **10**. This increases the force necessary for moving the holder **16** along the beam **10** and aids in making fine adjustments for positioning the holder **16**. For rapidly traversing the holder **16** along the beam **10** the user may grasp the beam in one hand and grasp the pencil with his other hand, and quickly and easily slide the holder to any desired position.

In the illustrated embodiment of this invention the beam **10** is a generally elongate rectangular box shaped member. The beam may be made of any desired length, up to several feet if necessary, depending on the intended usage of the device. The suggested configuration of the beam provides it with two pairs of opposed parallel surfaces. One pair of surfaces provides a base of travel for the rollers and the oppositely positioned pencil. The other pair of surfaces is closely straddled by the bifurcated legs of the holder. This gives the holder stability against tilting relative to the longitudinal axis of the beam as well as in a plane generally transverse to the longitudinal extent of the beam. It is to be understood that relation of the beam surfaces to the holder components could be accomplished by other beam configurations. For example, a H-shaped structure or "I" beam possesses the requisite two pairs of parallel opposed surfaces and could be adapted for use as a beam member for the holder member of this invention.

This invention provides a beam compass which may be rapidly and accurately positioned to any given radius and held in the selected position without the use of any separate locking devices. The pencil holder is easily moved along the length of the beam and has means for coarse and fine adjustment. Furthermore, a conventional wooden graphite drafting pencil may be used for the beam compass. These pencils are easily removed from the compass so that they may be replaced with pencils of different hardness if desired. The compass is also capable of use with a mechanical drafting pencil.

The foregoing detailed description has been given for the clearness of understanding only and no unnecessary limitations should be understood therefrom for some modifications will be obvious to those skilled in the art.

I claim:

1. A draftsman's beam compass, comprising: a rigid beam having upper and lower parallel surfaces and connecting surfaces at right angles thereto; pivot center means secured at one end of said beam for anchoring said beam for swinging about said pivot as a center; and a scribing instrument holder carried by said beam for positioning a scribing instrument a fixed distance from said pivot means, said holder being a unitary spring member, being generally V-shaped in plan and having a base and two bifurcated legs extending diagonally therefrom, each leg closely straddling said beam therebetween, said holder including a pair of rollers journalled in the terminal ends of each leg and being rotatably supported thereby in upright fashion against the side of the beam opposite said base, said rollers being spaced apart, one on each side of the center of said scribing instrument, so that the center of the rollers and the scribing instrument describe a triangle in plan, said base being shaped to conform to selected surfaces on said scribing instruments of different shapes and directly force the scribing instrument against an upright surface on said beam, said spring being sprung from its at rest configuration when so holding a scribing instrument with said rollers engaging the opposite upright surface of said beam whereby said spring holds said scribing instrument in frictional engagement with said beam to lock said instrument against undesired relative movement.

2. The device of claim 1 wherein said base of said holder describes a 60 degree angle in plan and said bifurcated legs flare outwardly therefrom generally lengthwise of said beam for locking said holder on said beam against tilting about the beam as an axis.

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