

(No Model.)

W. A. JAMES.

DIVIDERS.

No. 465,111.

Patented Dec. 15, 1891.

Fig. 1.

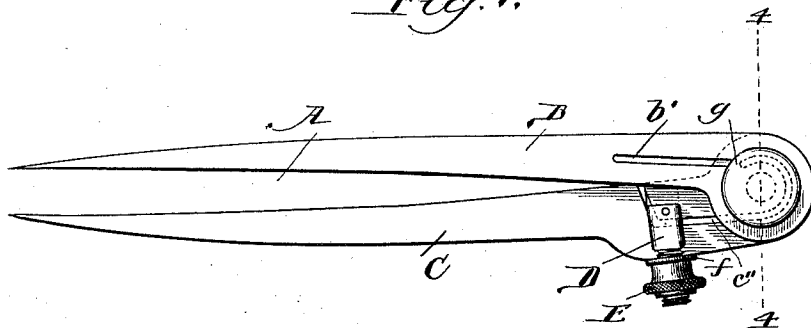


Fig. 2.

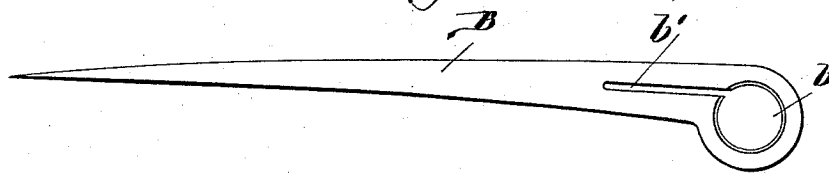


Fig. 4.

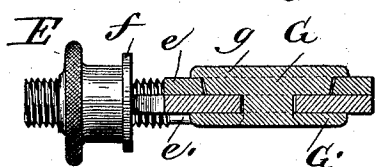
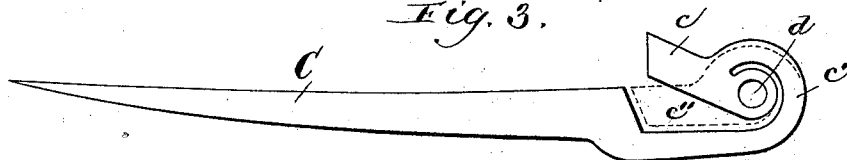


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM A. JAMES, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND
WILLIAM H. O'BRIEN, OF SAME PLACE.

DIVIDERS.

SPECIFICATION forming part of Letters Patent No. 465,111, dated December 15, 1891.

Application filed May 1, 1891. Serial No. 391,279. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. JAMES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dividers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a pair of my improved dividers. Fig. 2 is a top view of one of the arms. Fig. 3 is a top view of the other arm, the adjusting devices being removed; and Fig. 4 is a sectional view on line 4 4 of Fig. 1.

My invention relates to instruments which are commonly known as "dividers" or "compasses." My improvements may, however, be also applied to calipers and other instruments of similar character.

The principal object of my invention is to provide a device for adjusting the two arms of the dividers in making fine measurements.

Another object of my invention is to so pivot the two arms that they will not work loose upon the pivot.

I accomplish these objects as hereinafter specified, and as illustrated in the drawings.

That which I regard as new will be pointed out in the claims.

In the drawings, A indicates a pair of dividers having arms B C. The arm B is provided at its pivotal end with an opening *b*, which forms a bearing, by means of which it is adapted to be pivoted to the other arm of the dividers. The bearing *b* is preferably made quite large, and is provided with an inclined interior surface, which inclines outward toward the top or upper surface of the arm for a purpose which will be hereinafter explained.

b' indicates a slot, which is cut in the arm B and extends from the opening *b* a short distance along the arm B toward the point of the arm, and is preferably on the central line of the arm. When the arm C is separate from the other arm of the dividers and the adjusting device is removed, it will assume the shape shown in Fig. 3. It consists, as shown, of an arm C corresponding to the arm

B, which arm C is cut away at its rear or pivotal end, and is provided with a short spring-arm *c*, which, when not under restraint, maintains about the position shown in Fig. 3. The spring section or arm *c* is formed integral with the main portion of the arm C, being connected thereto by a narrow strip of metal *c'*, which is curved, as shown. A slot *c''* is thus formed between the greater part of the spring-section *c* and the strip *c'*, which slot is wider at its outer end and becomes gradually narrower toward its inner end when the section *c* is not under restraint, as shown in Fig. 3. The strip *c'* is tempered in order to give it the requisite elasticity.

In the manufacture of the arm C it is preferably cut out of a blank sheet of suitable metal with a die shaped similar to the outline of Fig. 3. A hole is then bored through the spring-arm *c* at about the point indicated by *d* in Fig. 3 for the passage of a pivot.

D indicates a pin, which is provided at one end with screw-threads and at the other is divided longitudinally to form two arms *ee'*. The slot between the two arms *ee'* is of sufficient width to permit of the insertion of the arm C between the two arms *ee'*, as best shown in Fig. 4. The spring-section *c* is riveted or otherwise securely fastened between the arms *ee'* of the pin D, the strip *c'* of the arm C being first inserted in the slot between the arms *ee'*, in which slot it is free to move. The arms *ee'* are made of such length that when the pin D is placed in position on the arm D the slot *c''* will be of about a uniform width. By securing the pin D in position by means of two arms, as shown, the different parts of the adjusting devices are much strengthened.

E represents a thumb-screw, which is adapted to be screwed upon the screw-threads at the outer end of the pin D, as best shown in Figs. 1 and 4. The slot between the two arms of the pin D extends almost to the outer end of the pin, so that when the thumb-screw E is screwed upon the pin it will move over the said slot. It is evident that when the pin D is in position, by screwing on the thumb-screw E, it will cause the arm C, through the strip

c' , to approach the spring-section c , and thereby narrow the slot c'' . If desired, a washer f may be provided to prevent the wearing away of the bearing-surfaces of the thumb-screw and arm C.

The arms B C are pivotally mounted upon each other, and are firmly secured together by means of a pivot G, which is adapted to fit into the opening b in the arm B, and to pass through the opening d in the arm C, and to be riveted or otherwise firmly secured at the other side of the arm C to firmly unite the two arms of the dividers. The portion of the pivot G which fits into the opening b in the arm B is inclined to fit the inclined inner surface of such opening. It is also made of such size that it fits tightly into the opening b , so that when the pivot is firmly driven into its position it will slightly spring the opening b outward, and thereby form a tight spring-joint, the slot b' permitting of this action. The pivot G is preferably so constructed as to form a cap g at the side of the dividers at which it is inserted, and, if desired, a similar cap g' may be placed upon the opposite side of the dividers and be secured in place in any suitable manner.

When it is desired to use my improved dividers for making fine measurements, the arms B C are first adjusted roughly to about the position desired, and then by rotating the thumb-screw either forward or backward the space between the points of the arms may be diminished or increased by diminishing or increasing the width of the slot c'' , the tension of the strip c' acting to separate the section c and the main portion of the arm C, and thus separating the points of the dividers.

By varying the length of the pin D and the tension of the section c the adjustability of the dividers may be made greater or less, as desired.

By this construction a pair of dividers is secured which is very simple in construction and very efficient.

If desired, in the manufacture of the dividers the arm C, with the spring-section c , may be cut out of a narrow strip of metal, the section c then being in the same straight line with the rest of the arm C and forming a continuation of it. The section c may then be bent into position and the connecting-strip c' properly tempered.

That which I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with two arms adapted to be pivoted together to form a pair of dividers, one of said divider-arms being provided with a longitudinal slot closed at one end and opening at the other end into a pivotal bearing for the purpose of expanding the latter by the insertion of a pivot, of a pivot passing through the pivotal bearing to unite the arms and serving to expand said bearing and thereby produce a joint which will not work loose, substantially as described.

2. The combination, with two arms adapted to be pivoted together to form a pair of dividers, one of said divider-arms being provided with a tapering pivot-bearing and a longitudinal slot closed at one end and opening at the other end into the tapering pivot-bearing, of a tapering pivot passing through the said pivotal bearing and serving to expand the latter to produce a joint which will not work loose, substantially as described.

3. The combination, with a pair of dividers consisting of two arms pivotally secured together, one of said arms having a spring-section at one end adapted to be drawn toward the main portion of said arm, and the pivotal point of said arm being in said spring-section, of devices for drawing said spring-section toward the main portion of said arm, substantially as and for the purpose specified.

4. The combination of a pair of dividers consisting of two arms pivotally secured together, one of said arms having a spring-arm c , provided with a pivot-bearing d for the pivot of the arms, and a screw-pin D and nut E for drawing the spring-arm c toward the arm C, substantially as and for the purpose specified.

5. In a pair of dividers composed of two arms pivotally secured together, one of said arms having spring-arm c , the combination of a pin D, adapted to embrace the arm C and to be secured to the spring-arm c at both sides, the outer end of said pin D being screw-threaded, with a thumb-screw E, adapted to be screwed upon said pin D, substantially as and for the purpose specified.

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Witnesses:

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