

No. 685,383.

Patented Oct. 29, 1901.

H. M. LANE.
DRAWING INSTRUMENT.
(Application filed Oct. 16, 1900.)

(No Model.)

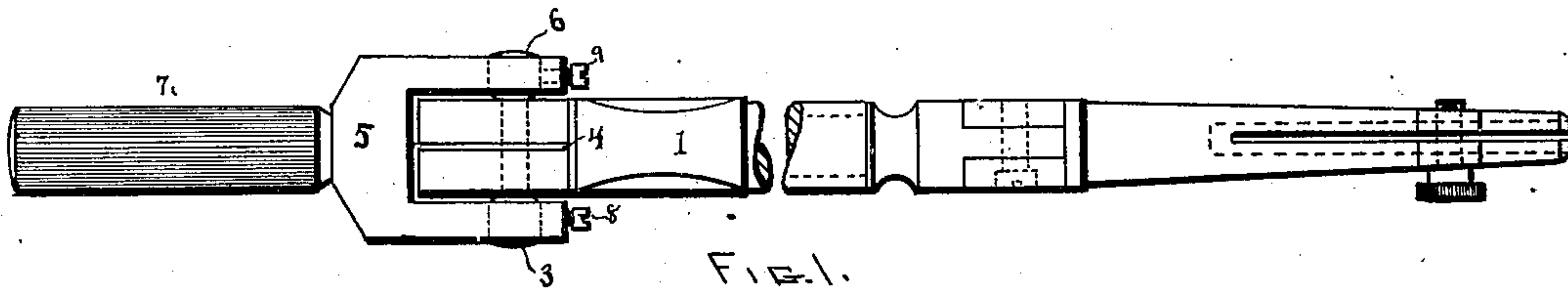


FIG. 1.

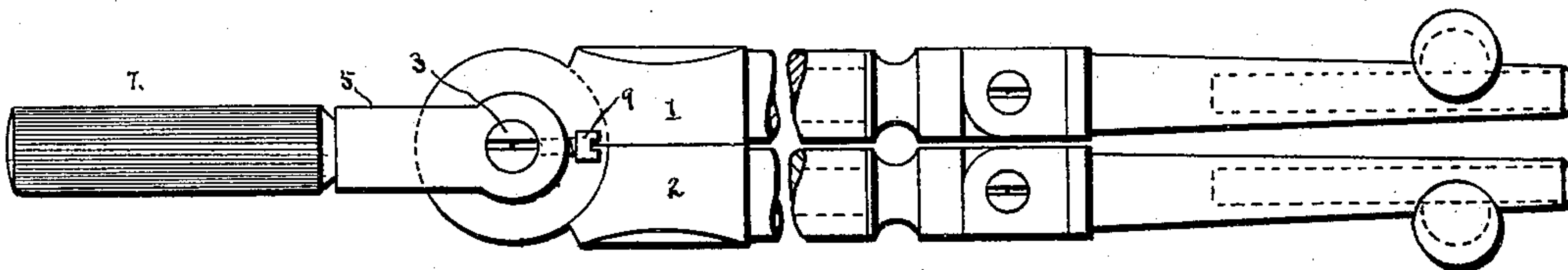


FIG. 2.

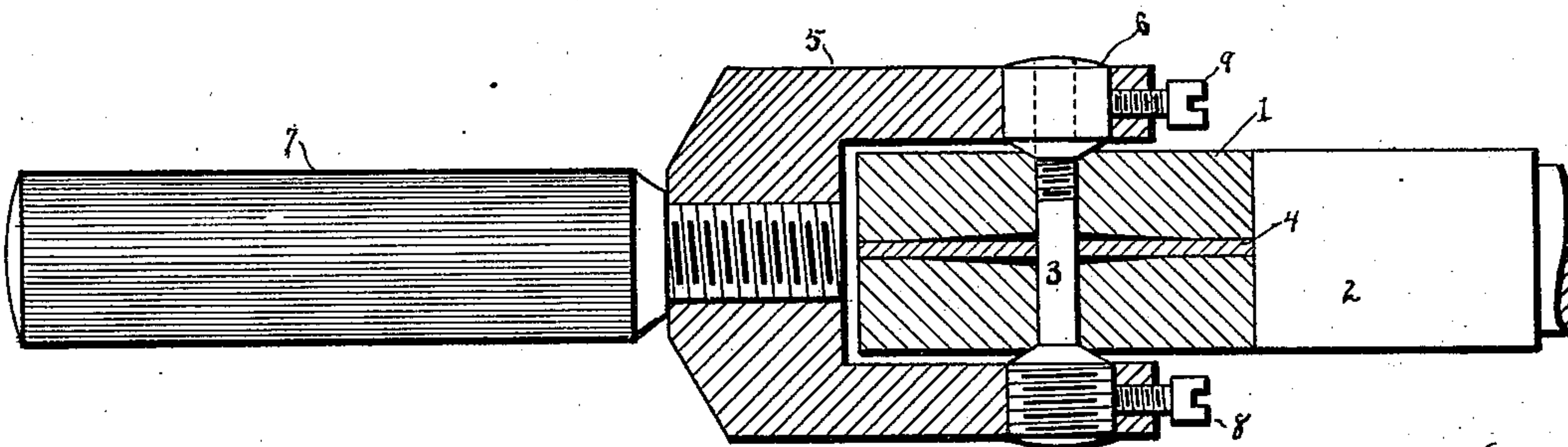


FIG. 3.



FIG. 5.

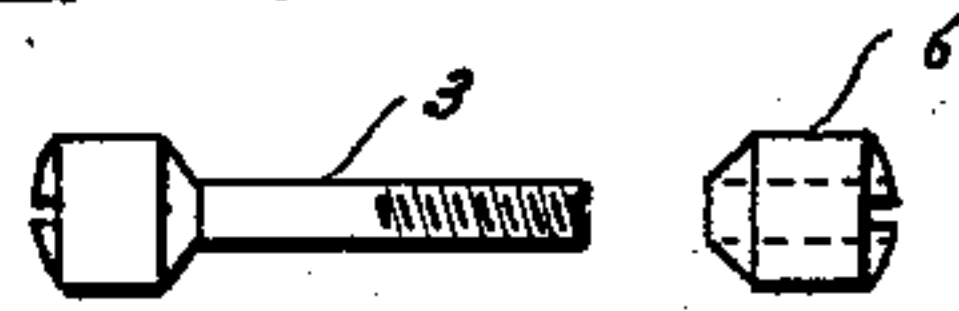


FIG. 6.

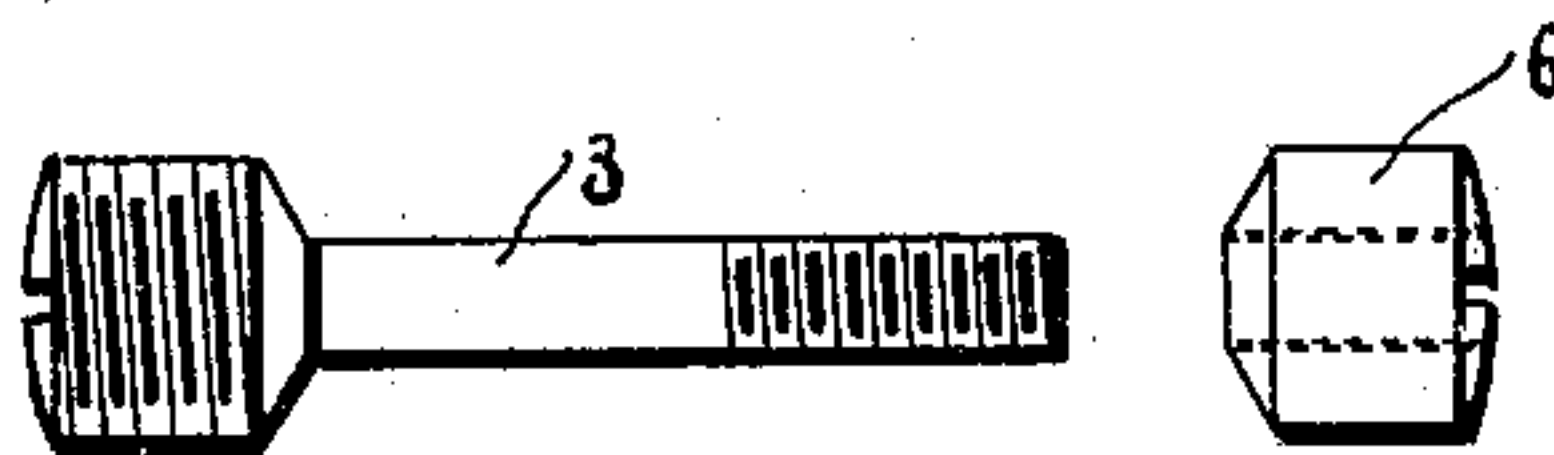


FIG. 4.

WITNESSES,

Victor R. Browning,
Earl H. Browning.

INVENTOR,

Henry M. Lane,
By S. E. Foulis, Atty.

UNITED STATES PATENT OFFICE.

HENRY M. LANE, OF SCRANTON, PENNSYLVANIA.

DRAWING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 685,383, dated October 29, 1901.

Application filed October 16, 1900. Serial No. 33,265. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. LANE, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented a new and useful Improvement in Drawing Instruments, of which the following is a specification.

This invention relates in general to compasses or dividers for draftsmen, and has particular reference to the joint at the head of the instrument.

One object of the invention is to provide a joint which is capable of the most accurate adjustment even after it has been long in use and which will maintain such adjustment perfectly.

A further object is to provide a structure which will relieve the yoke of all undue strain to which it is subjected in instruments heretofore employed.

These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 shows an edge view of a pair of compasses having my improved joint applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged sectional view taken through the center of the instrument. Fig. 4 shows the hinge-bolt and nut upon which are formed the cones, as will be hereinafter described; and Figs. 5 and 6 show modified forms of the bolt and nut.

Similar reference characters designate corresponding parts throughout the several views of the drawings.

One great defect of the instruments of this character which are in general use lies in their lack of perfect adjusting facilities for the head. The cones are formed on the inner ends of adjusting-screws which extend into corresponding cups formed in the outer faces of the hinge-pieces. The cone-screws are threaded on their outsides, and when once adjusted they are held in place by locking set-screws. The threads are so delicate, however, that the set-screws dent or mash into the same. When the instrument is first assembled, it is properly adjusted and the set-screws are tightened, which, as above described, dent or mash the threads on the cone-screws. If now it becomes necessary to tighten the adjustment of the head, a set-

screw is loosened and the corresponding cone-screw is slightly turned. This will have the desired effect; but when the set-screw is tightened its end will sink into the dent or depression previously formed, which will draw the cone-screw back to its former position, and the adjustment is again too loose. In order to tighten the instrument at all, therefore, it is necessary to turn the cone set-screw some distance, which will probably result in making the joint too tight. As will be seen, I have by a very simple device entirely overcome this serious defect.

The construction above described has no means for holding the cones to their places except the arms of the yoke, and these are so long and the strain upon them is necessarily so great that they are oftentimes bent outwardly. As soon as this occurs the yoke is so much weakened that the instrument can never be kept in adjustment, and so becomes almost worthless. My invention overcomes this defect also by relieving the yoke of all undue strain.

Referring now to the drawings, 1 and 2 are the legs of the instrument, which are of well-known construction, except that at their hinge ends they are perforated, the perforations registering, so that the hinge-bolt 3 may pass therethrough. The hinge portions of the legs are separated by the usual washer 4. 5 is the yoke, which embraces the hinge end of the legs and which is perforated to accommodate the hinge-bolt 3, its nut 6, the handle 7, and the set-screws 8 and 9. All of these perforations are threaded except the one for the nut 6, which is left plain for a purpose hereinafter stated. The head of the hinge-bolt is threaded, so that it may be screwed into its perforation in one arm of the yoke, with its stem projecting through the perforations in the hinge ends of the legs and into the unthreaded perforation in the opposite arm of the yoke. The stem is also threaded for a part of its length, and on this portion screws the nut 6. The inner faces of the head of the hinge-bolt and of the nut are cone-shaped to fit correspondingly-shaped cups or depressions in the outer faces of the hinge portions of the legs formed by reaming out the perforations for the hinge-bolt. The outside of the nut 6 is turned smooth and is left

unthreaded and is made to fit loosely in the unthreaded perforation of the yoke. It is evident that with this structure all the delicate adjustments may be made by loosening the set-screw 5 9 and turning the nut 6. This will squeeze the cones more tightly into their cups or loosen the same if the nut is turned in the opposite direction; but the strain is sustained entirely by the hinge-bolt. Furthermore, the nut being 10 unthreaded, the set-screw 9 may be tightened at any position about the same, as there can be no dents or depressions formed in the latter to interfere with the proper action of the screw. This manner of adjusting the tension may be followed exclusively until the 15 bolt-head cone and its cup become so much worn that the legs are badly out of center with the yoke, when the set-screws 8 and 9 may be loosened and the bolt screwed farther into the yoke. In this manner the legs and the yoke may be brought into correct alinement, after which the adjustment may be made from the nut, as before.

From this description it will be seen that 25 I have provided an adjusting means which is simple in its construction and operation, which is capable of locking after the most delicate changes have been made without destroying the adjustment, which is adapted to 30 set the instrument into perfect alinement after it has become excessively worn, and which entirely relieves the yoke from strains due to the adjustment.

It is evident that my broad invention may 35 be embodied in different forms. For example, in Fig. 5 I have shown a hinge-bolt having a plain head, while the nut for the same is threaded. When this form of bolt and nut is employed, that arm of the yoke 5 which 40 receives the nut has a threaded hole, while the hole in the opposite arm is left plain. In Fig. 6 I have illustrated a form in which both the head and the nut are left plain. When these are used, the holes in both of the arms 45 of the yoke are also left unthreaded.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an instrument of the character described, a pair of legs hinged together, the 50 hinged portions of the same having perforations which are provided with cup-shaped countersinks, a yoke embracing the hinged end of the legs and having a threaded and an

unthreaded perforation registering with the 55 perforations in the legs, a bolt passing through said perforations and having a cone-shaped head and nut, one of which is screw-threaded to fit the threaded perforations in the yoke whereby the legs and yoke may be relatively 60 adjusted, and the other unthreaded to fit the unthreaded perforation in the yoke, and a set-screw passing through the yoke and engaging the unthreaded part of the bolt whereby the relative adjustment of the legs may be 65 maintained.

2. In an instrument of the character described, a pair of legs hinged together, a yoke embracing the hinged portion of the legs and 70 having a threaded and an unthreaded perforation, a hinge-bolt having a threaded head which screws into the threaded perforation of the yoke, and a nut fitting loosely in the unthreaded perforation of the yoke and screwing 75 on the stem of the bolt.

3. In an instrument of the character described, a pair of legs hinged together, a yoke embracing the hinged portion of the legs and 80 having a threaded and an unthreaded perforation, a hinge-bolt having a threaded head which screws into the threaded perforation of the yoke, a nut, unthreaded on its outside, fitting loosely within the unthreaded perforation of the yoke and screwing on the stem 85 of the bolt, and set-screws in the yoke for locking the bolt and the nut.

4. In an instrument of the character described, a pair of legs hinged together, the hinged portions of the same having registering perforations which are cup-shaped at their 90 outer parts, a yoke embracing the hinged portion of the legs and having a threaded and an unthreaded perforation, a hinge-bolt having a threaded head which screws into the threaded perforation of the yoke, a nut fitting 95 loosely in the unthreaded perforation of the yoke and screwing on the stem of the bolt, the inner ends of the bolt-head and of the nut being cone-shaped, set-screws in the yoke for locking the bolt and the nut, and a stem 100 screwed into the yoke.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY M. LANE.

Witnesses:

J. E. LOUIS,
W. M. CURRY.