(No Model.)

D. S. WILLIAMS.

DRAFTSMAN'S COMPASSES.

No. 437,411. Patented Sept. 30, 1890.

FIG. 1.

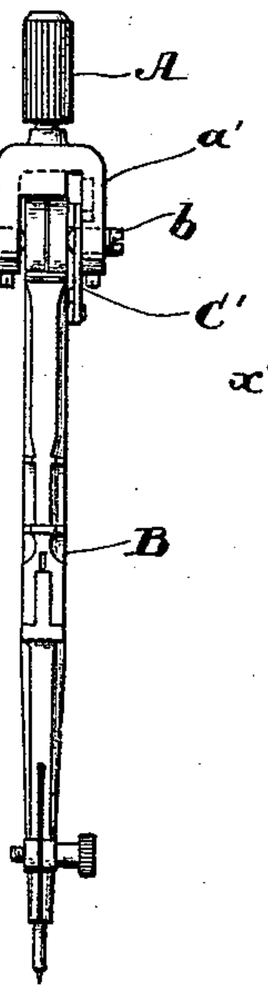


FIG. 2.

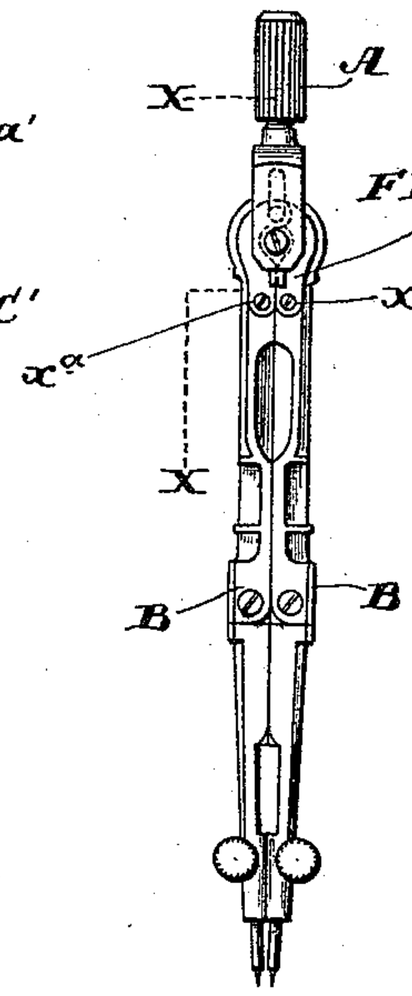


FIG. 6.

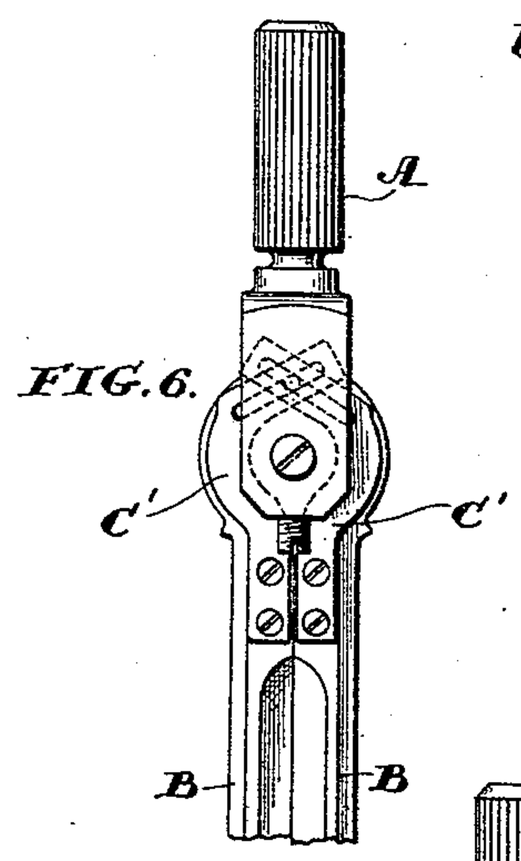


FIG. 7.

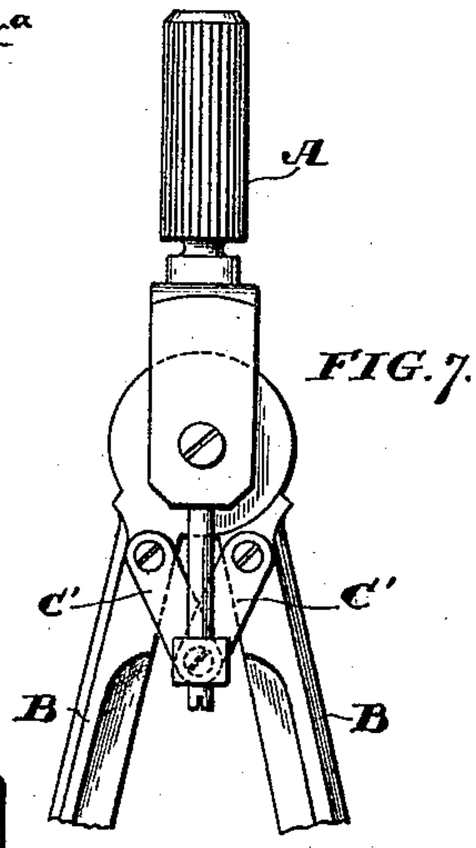


FIG. 3.

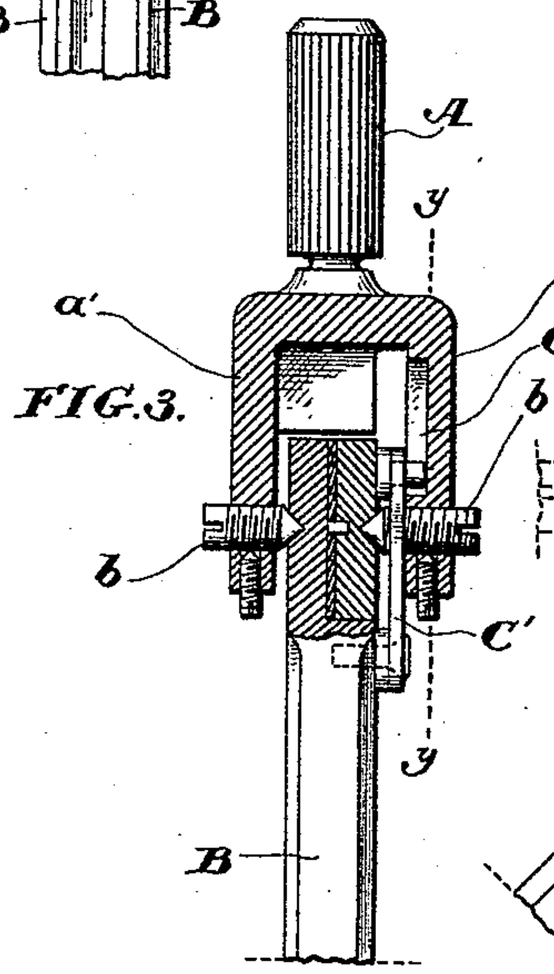


FIG. 4.

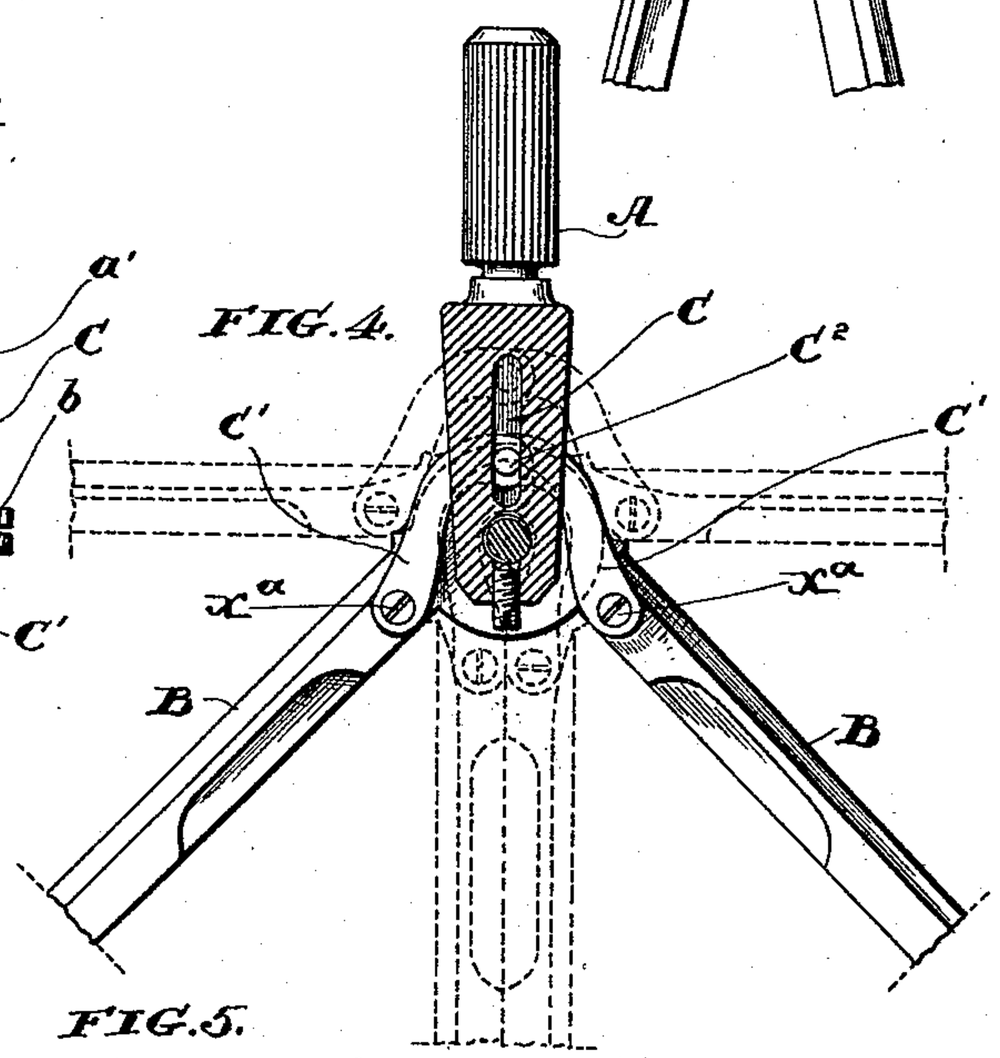
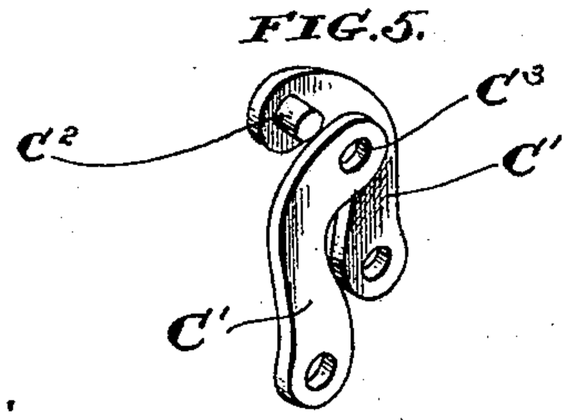


FIG. 5.



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DRAFTSMAN'S COMPASSES.

SPECIFICATION forming part of Letters Patent No. 437,411, dated September 30, 1890.

Application filed February 12, 1890. Serial No. 340,135. (No model.)

To all whom it may concern:

Be it known that I, DAVID S. WILLIAMS, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Compasses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is an edge view of a pair of compasses embodying my invention. Fig. 2 is a side view thereof. Fig. 3 is an enlarged sectional elevation, as on the line $x\,x$, Fig. 2. Fig. 4 is a full vertical section, as on the line $y\,y$, Fig. 3, the parts being shown in several positions which they may be caused to assume. Fig. 5 is a perspective view of the guide-arms detached. Figs. 6 and 7 are views of modifications, which will be hereinafter referred to.

This invention relates to an improvement in that class of drafting-compasses wherein the legs or members are pivotally connected with a suitable handle, which is designed more particularly to facilitate the use of the instrument.

The purpose of the improvement is to obviate a defect which has been found to exist in actual practice in such compasses—to wit., the lateral tipping of the handle by the pivoted legs each time they are set or adjusted. When thus tipped, it is necessary, at the expense of time, to return the handle to its first or central position with respect to the legs—an action which is apt to misadjust the instrument.

The improvement consists in novel provisions by which the handle of the compasses shall be maintained positively in a fixed or central condition with respect to the legs, regardless of the position of adjustment of the latter, which provisions shall be automatic in their action, and shall not interfere with the free swing or movement of said legs, as will be duly explained.

The invention consists, also, in details of construction, which will hereinafter appear.

Referring to the annexed drawings, A represents the handle proper, and B the legs, of a pair of compasses. The heads of these legs are jointed in the usual manner, and, by means of pointed screws b, they are concentrically pivoted in and between yoke-lugs a', depending from said handle. The general construction and arrangement of these parts are well known, and they therefore require no special description.

In the inner side of one of the lugs a', just above the adjacent screw b, I cut a longitudinal recess or guideway c, and on the legs of the compasses at suitable points, as x^a, I pivot the lower ends of arms or fingers c', whose upper ends are curved inwardly and are pivotally connected by means of a pin or stud c^2, which extends into and fits neatly within the recess or guideway c. This pin or stud is preferably fixed to the head of the inner arm, so as to project through a hole c^3 pierced in the head of the other or outer arm. (See Figs. 1 to 5, both inclusive.) By this construction it will be evident that when the legs are opened or closed in the usual manner a corresponding movement will be imparted thereby to the pivoted arms c'—that is to say, they will turn in opposite directions on their common pivot c^2, which, working freely in the guideway c^3, will maintain the handle in a vertical or central position with respect to the legs. The guide device, thus being automatic in its action, will not interfere with the easy swing or movement of the legs during the adjusting of the latter, nor incidentally will it limit the usual range of adjustment of the same. (See Fig. 4.)

I mean in this connection by the term "automatic" that the guide device is self-acting, so to say, upon the handle when the legs of the instrument are being opened or closed in the customary way—that is, by a person grasping and properly moving the respective legs. By interposing this guide device between the legs and one of the depending yoke-lugs, as shown and described, said device is supported laterally by the adjacent yoke-lug, and is thereby protected from accidental displacement or breakage. I remark that if the guide device were located between the jointed heads of the compass-legs said device in its action would interfere with the free and delicate adjustment of the instrument.

Although I believe the arrangement above described to be the best and simplest form of my improvement, yet I do not rigidly confine myself thereto, as it is obvious that the invention may be variously modified by a skill-

ful person without departing from its essential principle. Thus, for example, as pictured in Fig. 6, the arms *c'* may be firmly secured to the compass-legs, and the free ends of said arms may cross each other and be provided with guide-slots, through which projects from the adjacent lug a fixed pin or stud. In such case the action of the arms upon the handle will be practically the same as in the former arrangement. Again, as shown in Fig. 7, the upper ends of the arms may be fulcrumed upon the legs, and their other or lower ends be pivotally connected with a collar or head which is guided in its vertical movement by means of a pin projecting downwardly from the adjacent handle-lug. In this instance the general action upon the handle during the setting of the legs will be the same as in the other described constructions.

Other modifications of my improvement will readily suggest themselves to the artisan.

I claim—

1. In compasses, the combination, with the handle provided with the depending yoke-lugs and the legs concentrically pivoted in and between said lugs, of a guide device constructed to form a free sliding connection between said legs and handle, whereby when the legs are opened or closed in the usual manner said guide device will be moved by the legs to act upon the handle to prevent the tipping of the latter, substantially as described.

2. In compasses, the combination, with the handle provided with the depending yoke-lugs and the legs concentrically pivoted in and between said lugs, of an automatic guide device operatively connected with said legs and handle, said device located between one of the yoke-lugs and the pivoted portions of the legs and adapted always to maintain the handle in a fixed or central position with respect to said legs without practically affecting their free pivotal swing or movement, substantially as described.

3. In compasses, the combination, with the handle provided with the depending yoke-lugs and the legs concentrically pivoted in and between said lugs, of longitudinal arms or fingers having their extremities operatively connected with the said legs and with one of said yoke-lugs, whereby the arms or fingers will be swung in opposite directions when the legs are being opened or closed and will act always to maintain the handle in a fixed or central position with respect to the legs, substantially as described.

4. In compasses, the combination, with the handle provided with the depending yoke-lugs and the legs concentrically pivoted in and between said lugs, of longitudinal arms or fingers having their lower ends connected to the said legs and their upper ends pivotally united and freely guided on the inner side of one of said lugs, whereby said arms or fingers will be swung in opposite directions when the legs are being opened or closed and will act to maintain the handle always in a fixed or central position with respect to the legs, substantially as described.

5. In compasses, the combination, with the handle provided with the depending yoke-lugs and the legs concentrically pivoted in and between said lugs, of longitudinal arms or fingers having their lower ends pivoted to the legs and their upper ends pivotally united and freely guided on the side of one of said yoke-lugs, whereby said arms will be swung in opposite directions when the legs are being opened or closed and will act to maintain the handle in a fixed or central position with respect to the said legs, substantially as described.

6. In compasses, the combination, with the handle provided with the depending yoke-lugs, in and between which the legs are concentrically pivoted, of the arms having their lower ends pivoted to the legs and their upper ends pivotally united and freely guided within a vertical recess or guideway in the inner side of one of said yoke-lugs at a point above the pivotal connection of the legs, whereby said arms will be swung in opposite directions when the legs are being opened or closed and will act to maintain the handle in a fixed or central position with respect to the said legs, substantially as described.

7. In compasses, the combination, with the handle provided with the yoke-lugs and the legs concentrically pivoted in and between said lugs, of longitudinal arms or fingers having their lower ends pivotally connected with the legs and their upper ends united by means of a common pivot-pin which projects into a vertical recess or guidway in the inner side of one of said yoke-lugs at a point above the pivotal connection of the legs, whereby the said arms or fingers will swing freely in opposite directions when the legs are being opened or closed and will act to maintain the handle always in a fixed or central position with respect to the said legs, substantially as described.

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Witnesses:
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LISLE STOKES.