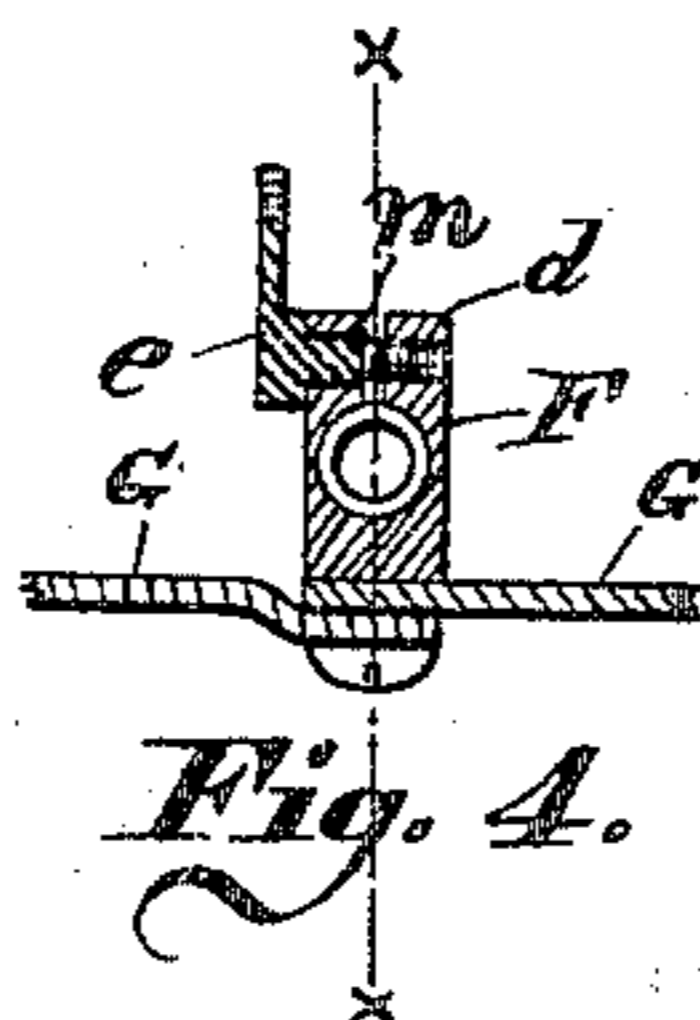
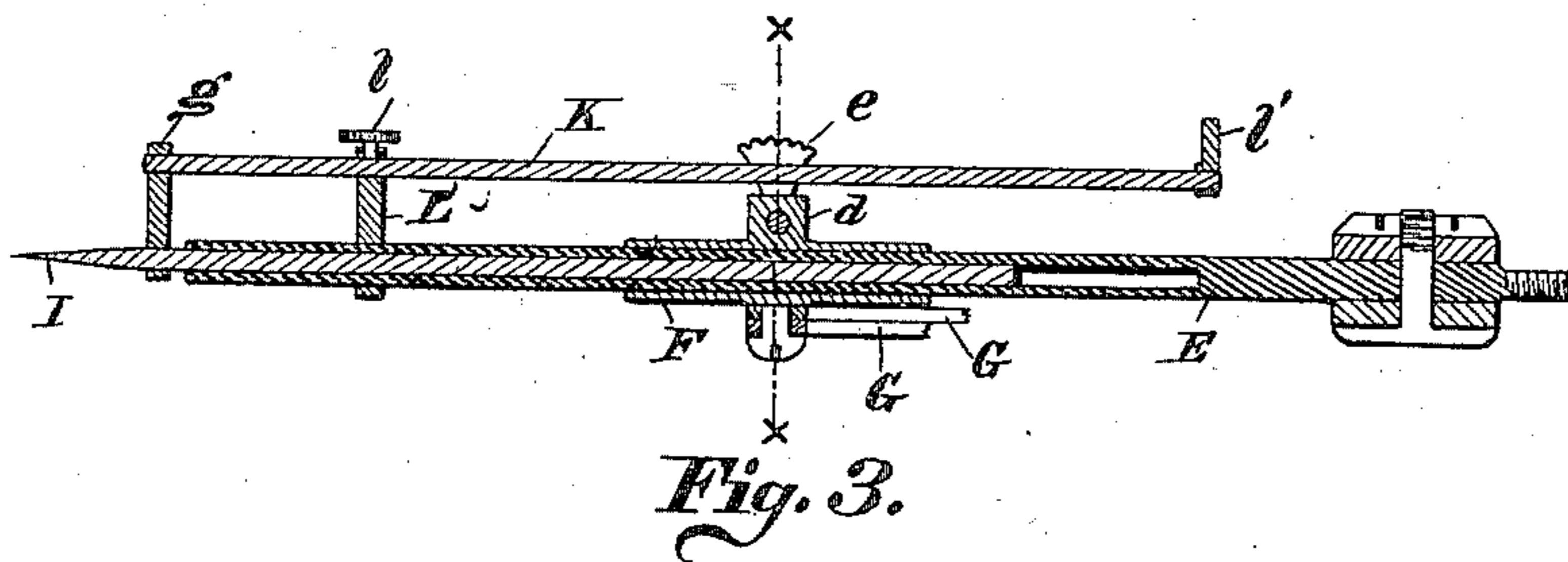
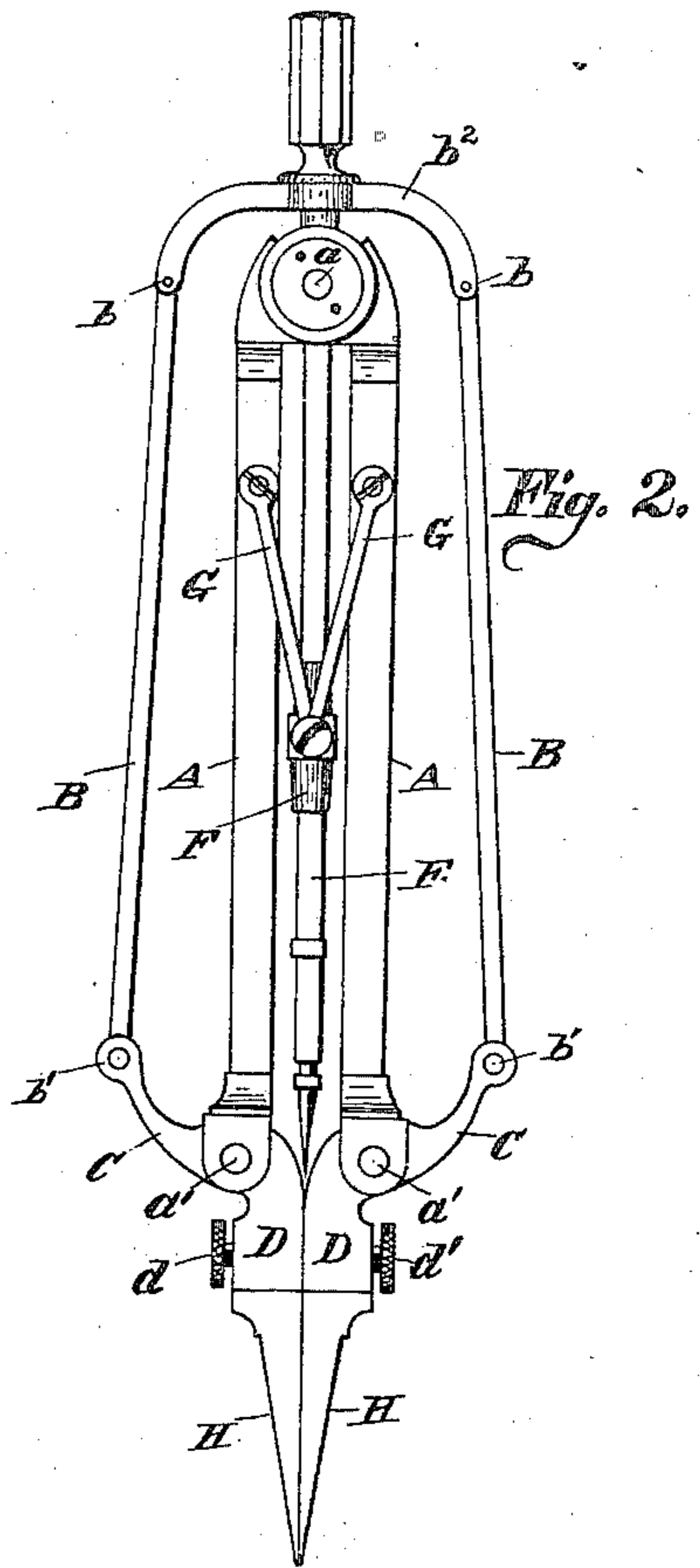
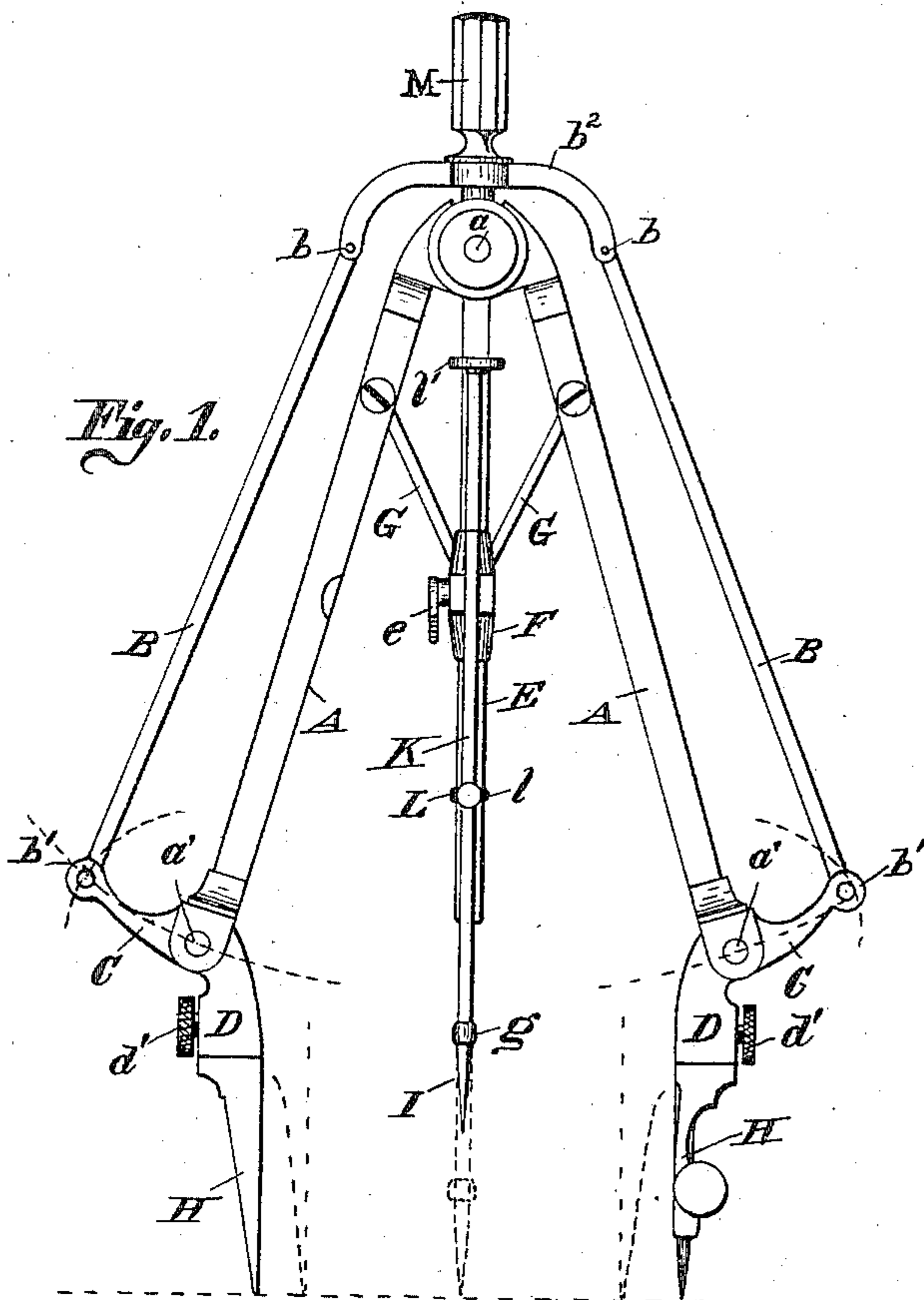


(No Model.)

C. ALBERT.
PARALLEL DIVIDERS.

No. 341,714.

Patented May 11, 1886.



WITNESSES:

Jno. M. Strehli.
O. M. Hill

INVENTOR

Charles Albert.

UNITED STATES PATENT OFFICE.

CHARLES ALBERT, OF CINCINNATI, OHIO.

PARALLEL DIVIDERS.

SPECIFICATION forming part of Letters Patent No. 341,714, dated May 11, 1886.

Application filed May 18, 1885. Serial No. 165,854. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ALBERT, a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain
5 new and useful Improvements in Parallel Dividers, of which the following is a specification.

The various features of my invention and the advantages arising from their use conjointly or otherwise will be apparent from the
10 following specification and claims.

In the accompanying sheet of drawings, forming part of this specification, Figure 1 is a view in elevation of what may be termed the
15 "back" of a pair of dividers embodying my invention, the dividers being shown open, the dotted lines indicating the circle described by the arms in the operation of opening and closing. Fig. 2 is a view in elevation of the
20 front of a pair of dividers embodying my invention, the dividers being closed. Fig. 3 is a section taken through the center of the guiding-bar and the center pointer, showing the manner of connection of said center pointer
25 with said guiding-bar, and also clamping mechanism for retaining the pointer-arms at any desired points. Fig. 4 is a section through the center of the clamping-sleeve, taken at the
30 lines *x x* of Fig. 3.

My invention consists of the main arms A A, pivoted at fixed center *a*, and the outer arms, B B, pivoted at the fixed points *b b* to curved beam *b'*, and to the arms C of the pointer-shanks D at the points *b' b'*. These arms
35 C and shanks D are preferably made in one piece and pivoted, as shown, in or to the main arms A A at the points *a' a'*. The points or centers *a* and *b b* are fixed in relation to each other, and rigid arms or connections will extend
40 between center *a* and said centers or points *b b*.

Rigidly fixed at the center *a* is the guiding-bar E, which latter is at right angles to the axis of the pivot-connection *a*, and on this
45 guiding-bar E slides the clamp-sleeve F. To this clamp-sleeve F are pivotally attached the graduating-arms G, preferably by means of a screw, as shown. These arms G are pivotally connected to the arms A A, preferably by

screws, and serve the purpose of keeping the
50 arms A A at all times equidistant from the center bar, E, and prevent any oscillatory movements of said arms A A. This clamp-sleeve F is so constructed and connected to the guiding-bar E that the movement imparted to it (said sleeve) by the opening and closing of the arms A A forces said sleeve up and down on the guiding-bar E. This sleeve F is preferably slit on one side its entire length, as shown at *m*, Fig. 4, and has passing
60 through the lug *d* of said sleeve a locking-screw, *e*. The purpose of this slit is to allow the sleeve F to be more readily contracted onto and pinch the guiding-bar E by means of said locking-screw *e*. This locking-screw *e*
65 serves an important function, in that by means of said locking-screw the arms A A, and consequently the pointers H, can be retained at any desired points and locked there by simply turning the locking screw *e*, which clamps the
70 two parts of lug *d* and rigidly holds the sleeve F to the guiding-bar E until released by turning the locking-screw in the opposite direction.

The construction and operation of the center
75 pointer, I, is substantially as follows: The center pointer, I, is adjustable on or in relation to the guiding-bar E, and the preferred mode of carrying such adjustability into effect is as follows: The guiding-bar E is hollow,
80 preferably its entire length or the greater part thereof, and in this hollow bar the center pointer, I, is operated up and down. To this center pointer, I, preferably near its point, is rigidly connected the guiding-rod K by
85 means of the stay-connection *g*, which connection is preferably of the same configuration and height as the guiding-sleeve L. This guiding-sleeve L is rigidly attached to the guiding-bar E, and has in its end portion an
90 opening to allow the guiding-rod K to pass through it, thus serving to steady the guiding-rod and the center pointer. In the top of sleeve L is placed a thumb-screw, *l*, which serves to retain the center pointer at any
95 desired height. The operation of this center pointer is very simple, and is as follows: When desired to raise or lower the center pointer,

the operator loosens the thumb-screw *l* and takes hold of the lug *l'* of the guiding-rod *K*, and this rod being rigidly connected to pointer *I* by means of stay *g*, the said pointer is readily set at any desired point. The said pointer can then be set at said desired point by means of the thumb-screw *l*.

For the purpose of convenience and utility I provide a handle, *M*, which is rigidly attached preferably in the top of the curved beam *b*² by a screw-connection.

The principle upon which my invention is constructed, and the construction by means of which it is operated, is as follows: I provide three fixed pivotal centers, substantially as shown at *a b b*, which pivotal points are on an exact line, and the points *b b* are equidistant from the center pivotal point, *a*. I also provide four additional pivotal points of connections—viz., *a' a' b' b'*—which points are changeable. The distance from pivotal point *a'* to pivotal point *b'* must correspond to the distance from fixed pivotal point *a* to fixed pivotal point *b*. The relative proportions of the arms *A A B B* and shanks *D* and shank-arms *C* are such that when connected together at said pivotal points of connection and closed, as shown in Fig. 2, the pointers *H*, placed in shank *D*, will be parallel, and when the arms are so constructed and pivoted, and the pivotal points *a'* and *b'* are the same distance apart as the fixed centers *a* and *b*, the result will be to always retain the pointers *H* in a parallel line at whatever point placed.

The preferable construction of the arms *A A B B* in regard to length and the preferable angle or inclination of the arm *C* of shank *D* are such that when the dividers are opened to one-half their width the points *a'* and *b'* will be on a line at right angles to the arm *A*. The shank *D* is preferably so constructed as to receive and hold in position any of the ordinary points, pens, or needle-points, and these may be held in position, as in the ordinary dividers, by means of a thumb screw, *d'*.

The dividers may be made of any suitable material, as steel, brass, German silver, &c., but is preferably made of brass, excepting the arms *B B* and pointers *H H*, which are preferably made of steel.

In operation this divider is very simple and accurate, being operated, as the ordinary divider, by simply opening and closing the arms. When any two given points are taken, if desired to retain the distance of those points, the arms are held in said position by clamping the clamp-sleeve *F* on guiding-bar *E* by means of locking-screw *e*, and when desired to ascertain the center between any two points thus taken the center pointer is operated as heretofore described. If desired, the center pointer, *I*, may be dispensed with, retaining the guiding-bar *E*.

The advantages of a pair of dividers, constructed as hereinbefore described, will be

apparent to those in need of a pair of dividers combining accuracy and durability. As constructed, the dividers are neat and present a pleasing appearance. To architects and mechanical draftsmen this divider is especially valuable. In the ordinary divider, when it is desired to draw a circular line with a bow-pen, the inclination is such as to leave a ragged and irregular line, whereas in my divider, the points being at all times parallel, the pen will leave a clean regular line.

While the various features of my invention are preferably employed together, one or more of said features may be used without the remainder, and in so far as applicable, one or more of said features may be used in connection with dividers of descriptions other than those herein specifically set forth.

What I claim as new and useful, and desire to secure by Letters Patent, is—

1. Parallel dividers consisting of the curved beam *b*², arms *A A*, pivoted at fixed center *a*, and arms *B B*, connected at fixed pivotal connections *b b*, outside of the arms *A A*, the arms *B B* being also connected to arms *C* of shank *D*, at pivotal connections *b' b'*, said shanks *D* and arms *C* being pivotally connected to the ends of arms *A A*, substantially as and for the purposes specified.

2. Parallel dividers, constructed substantially as described, the arms of which are connected at fixed pivotal points *a b b*, the points *b b* being equidistant from the center pivotal point, *a*, and on a line therewith, substantially as and for the purposes specified.

3. In a pair of parallel dividers, the combination, substantially as described, of arms *A A*, arms *B B*, curved beam *b*², the upper extremity of arms *B B* being connected to curved beam *b*² by means of fixed pivotal connections *b b*, shanks *D*, and arms *C*, substantially as and for the purposes specified.

4. In a pair of parallel dividers, the combination of arms *A A B B*, curved beam *b*², shanks *D*, and arms *C*, guiding-bar *E*, clamp-sleeve *F*, and graduating-arms *G*, substantially as and for the purposes specified.

5. In a parallel divider, the center or bisecting divider, *I*, guiding-bar *E*, guiding-rod *K*, sleeve *F*, guiding-sleeve *L*, stay *g*, lug *d*, and lock-screw *e*, substantially as and for the purposes specified.

6. In a pair of dividers, the combination of the arms *A A*, pivoted to center *a*, arms *B B*, pivoted to points *b*, arms *C*, each of the latter being pivoted to its arm *B* and its arm *A*, shanks *D*, and arms *G G*, pivoted to said arms *A A* and the center pointer, *I*, substantially as and for the purposes specified.

7. In a pair of dividers, the combination of the arms *A A*, pivoted to center *a*, arms *B B*, pivoted to points *b*, arms *C*, each of said arms being pivoted to its arm *B* and its arm *A*, shanks *D*, and arms *G G*, pivoted to said arms *A A*, and sleeve *F*, to which said arms *G G*

are also pivoted, set-screw *e*, and center pointer, *I*, substantially as and for the purposes specified.

5 8. In a parallel divider, the combination of handle *M*, curved beam *b*², arms *A A*, pivoted at fixed center *a*, and arms *B B*, connected at fixed pivotal connections *b b*, the arms *B B* being also connected to arms *C* of shanks *D*

at pivotal connections *b' b'*, said shanks *D* and arms *C* being pivotally connected to the ends 10 of arms *A A*, substantially as and for the purposes specified.

CHARLES ALBERT.

Attest:

JNO. W. STREHLI,
O. M. HILL.