

(No Model.)

3 Sheets—Sheet 1.

G. W. HARRIS.

## WATCHMAKER'S DEPTHING AND ADJUSTING TOOL.

No. 483,960.

Patented Oct. 4, 1892.

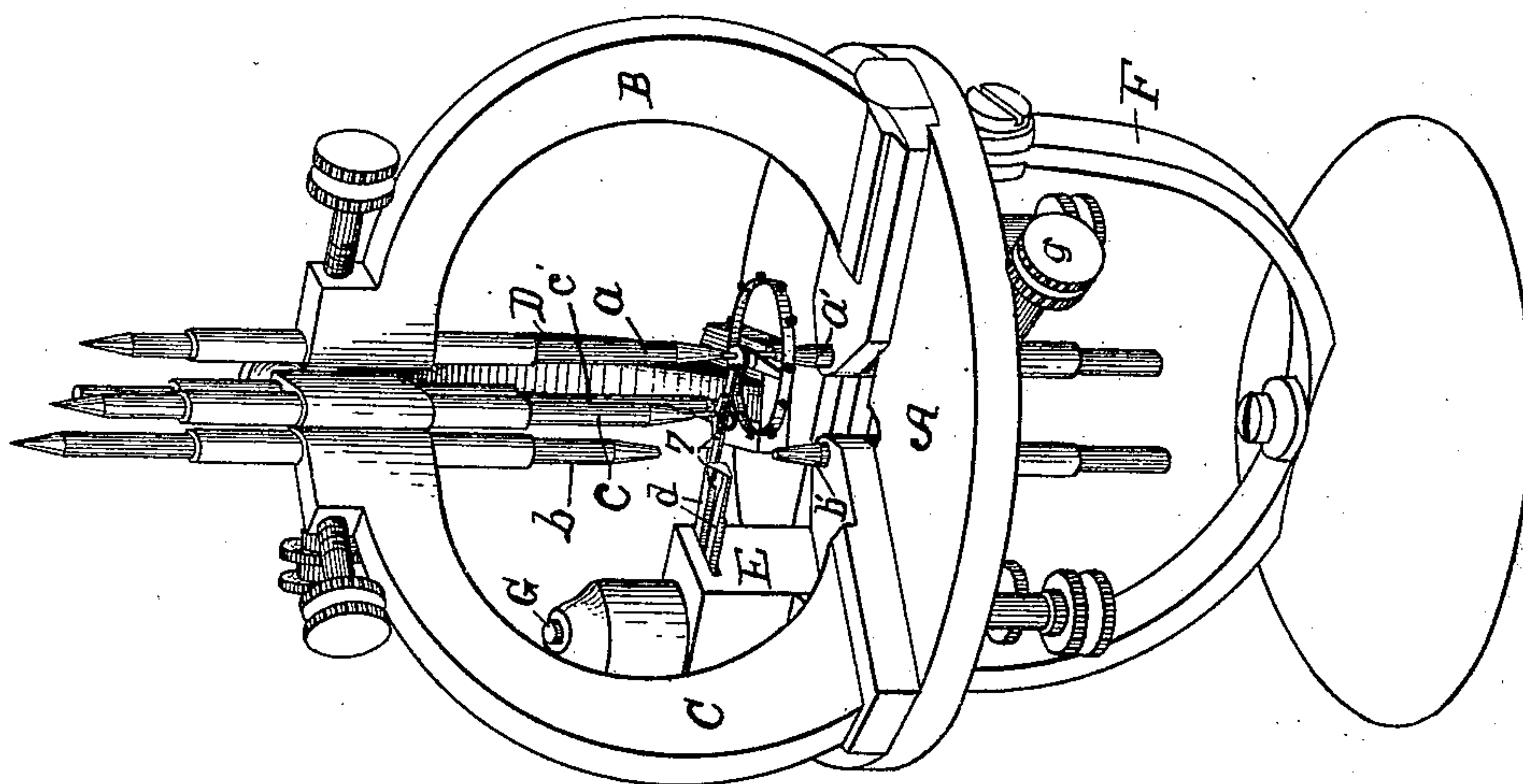
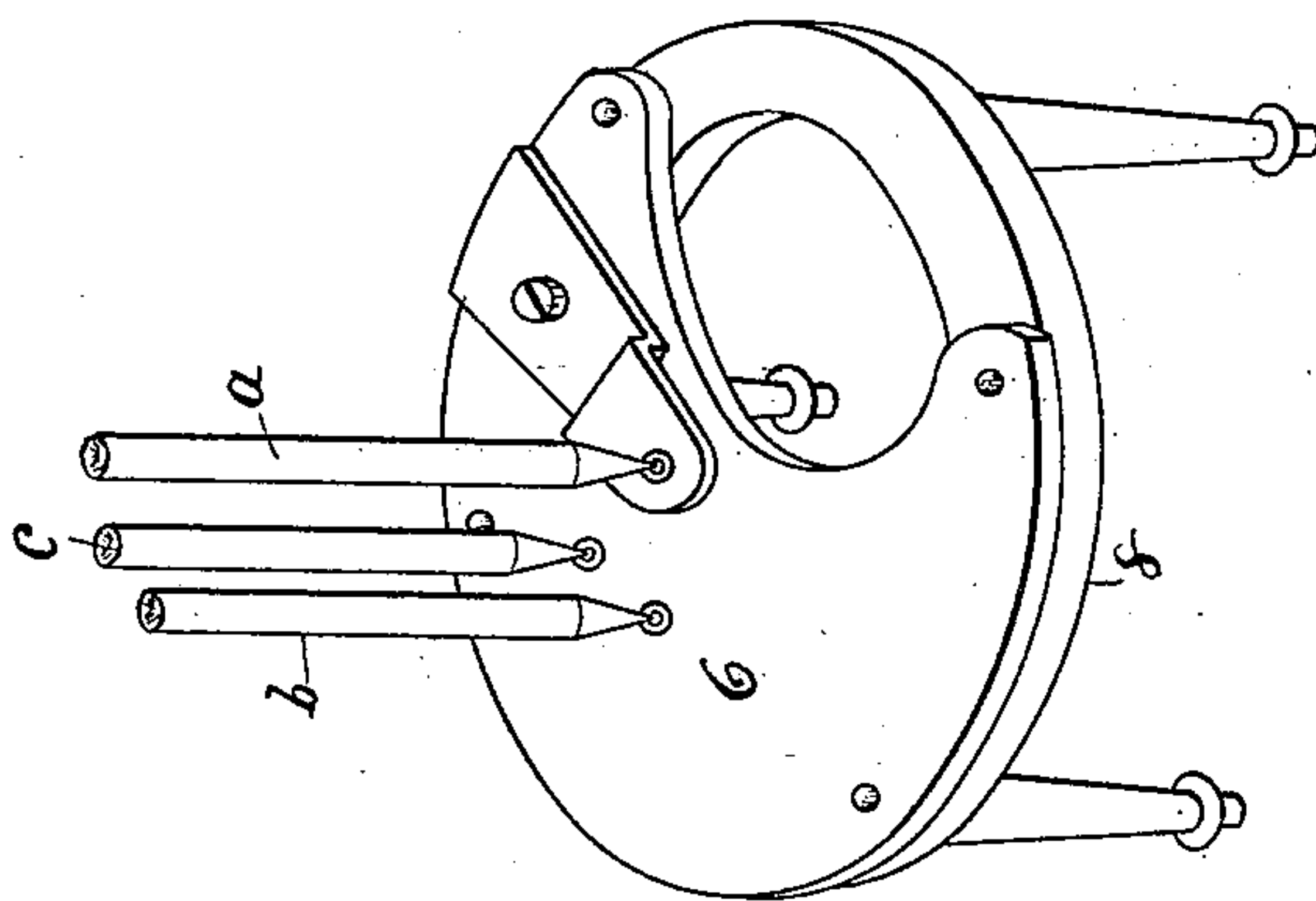


Fig. 1



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Att'y.

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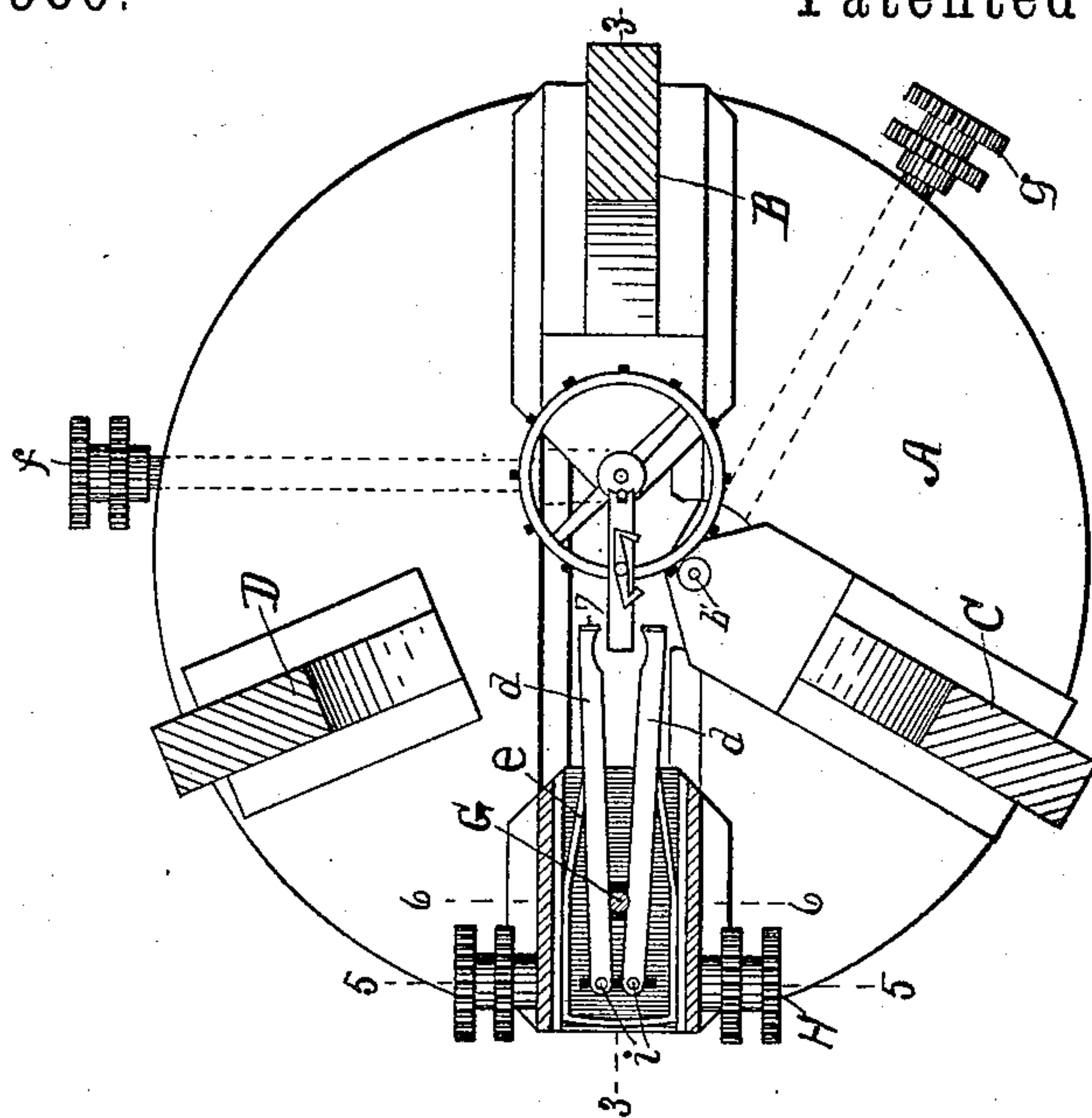


Fig. 4

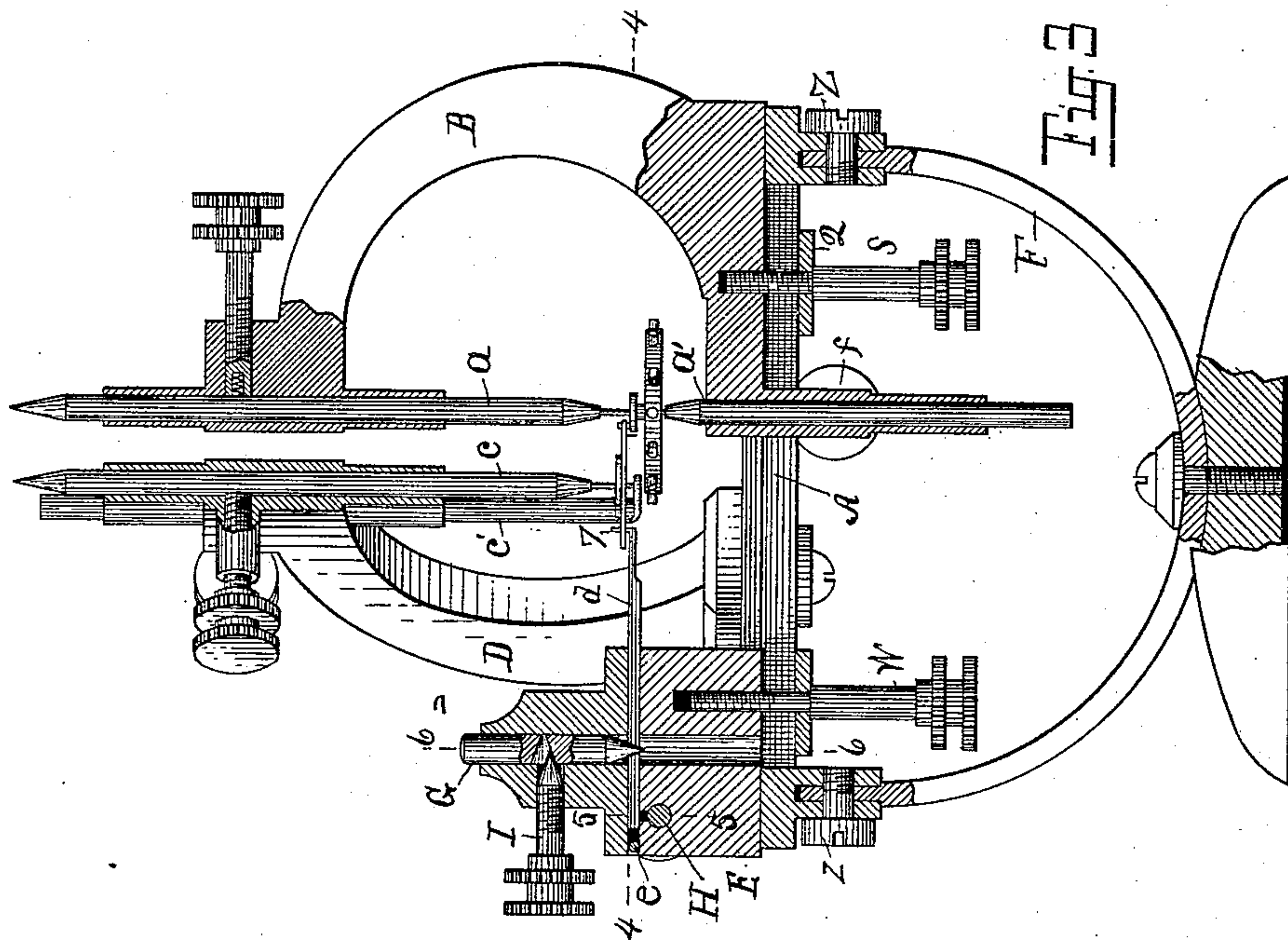


Fig. 5

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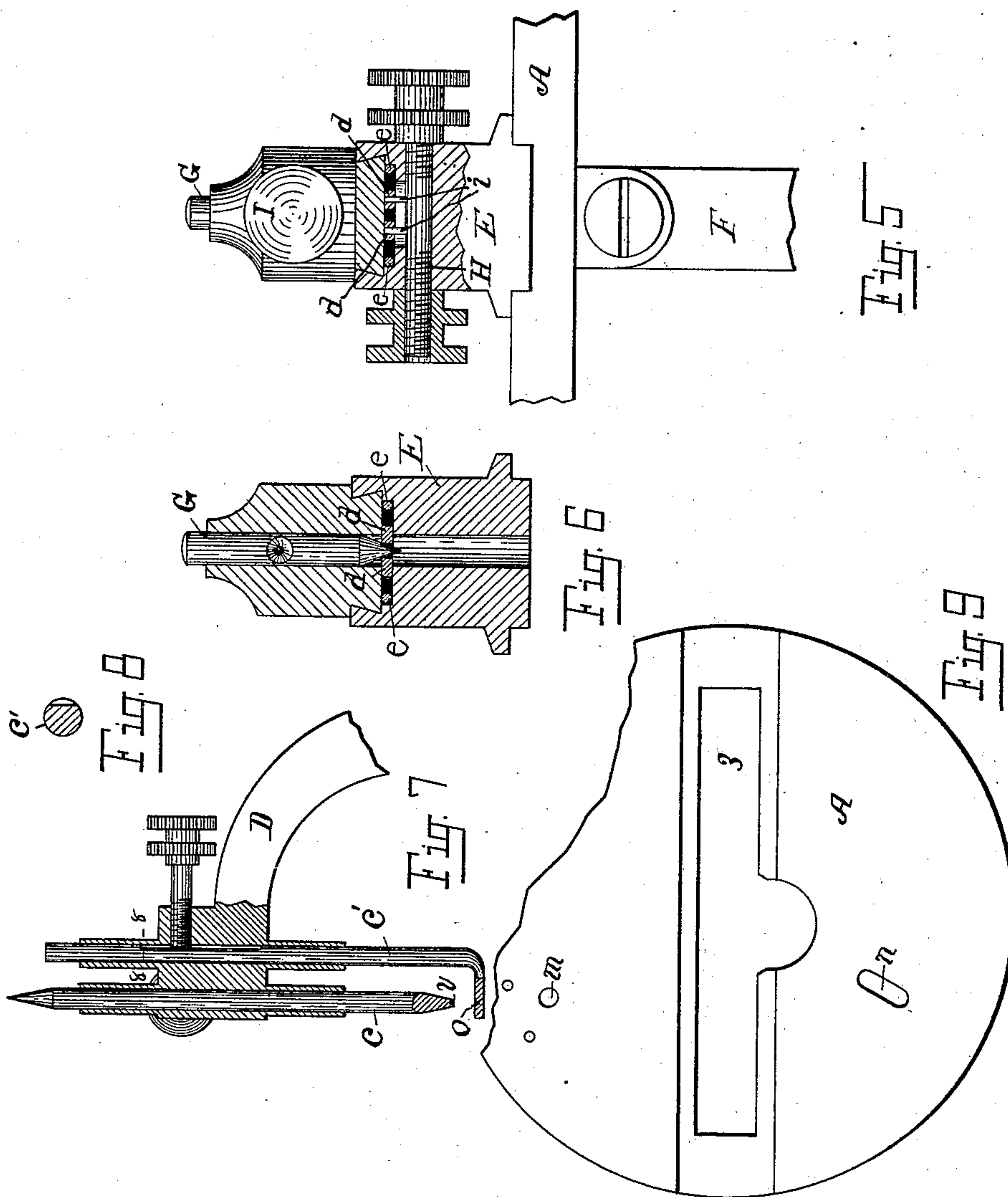
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Marion Longyear.

Inventor.

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# UNITED STATES PATENT OFFICE.

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## WATCHMAKER'S DEPTHING AND ADJUSTING TOOL.

SPECIFICATION forming part of Letters Patent No. 483,960, dated October 4, 1892.

Application filed January 12, 1892. Serial No. 417,826. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. HARRIS, a citizen of the United States, residing at Sturgis, county of St. Joseph, State of Michigan, have invented a new and useful Watchmaker's Depthing-Tool, of which the following is a specification.

This invention relates to that class of tools employed by watchmakers which are employed to test the depthing of wheels—such as, for instance, balance-wheel, escape-wheel, &c.—in order to establish in the tool the points indicating the relative relation of said wheels with other parts and the position they occupy in the watch in order to test the escape-wheel, pallet-jewel, and other parts, and to true the balance-wheel.

The main object of this invention is to construct a tool adapted for depthing the wheels and to ascertain their relative relation with each other and their parts, said tool having a clamp for ascertaining the particular position of the lever with relation to the banking-pins so that other parts may be adjusted to occupy their proper position in relation to said lever.

Other parts will appear in the description and the claims.

Figure 1 is a perspective view; Fig. 2, a perspective of certain details hereinafter described; Fig. 3, an elevation, parts being in section on line 3 3 in Fig. 4; Fig. 4, a sectional plan on line 4 4 in Fig. 3; Fig. 5, an enlarged section on line 5 5 in Figs. 3 and 4, looking from a point at the left; Fig. 6, an enlarged section on line 6 6 in Figs. 3 and 4, looking from a point at the left; Fig. 7, an enlarged elevation of lettered details from Figs. 1 and 3, parts being broken away; Fig. 8, a sectional plan on line 8 8 in Fig. 7; Fig. 9, a plan view of a lettered detail in Figs. 1, 3, and 4.

Referring to the lettered and figured parts of the drawings, A is a plate supported by a frame F, which frame is pivotally connected with said plate at *z z*, Figs. 1 and 3, so that said plate may be tilted from a horizontal to an oblique angle, for the purpose of a better examination of the parts of the watch being tested by the tool. Mounted upon this plate A are three arms B, C, and D, which

arms extend upward and over toward each other at the top, said arms being placed radially with the center of the plate A. Two of these arms B and C are adjustable, so that they may be moved toward the center of the plate or outward, the same being held by set-screws—such as, for instance, S in Fig. 3—said set-screws being passed up through slots 3 and *n* in the plate A, Fig. 9, and provided with washers 2, through which they pass, said washers fitting against the plate A on the under side over the slots 3 and *n*. The arm D is attached rigidly at *m* to the plate A. Vertically adjustable and detachable in the upper ends of these arms are pins *a*, *b*, and *c*, one in each arm, said pins being pointed at one end and provided with a slight concavity in the other end, as at *v*, Fig. 7. The base of these arms B and C is provided with vertically-adjustable pins *a'* and *b'* directly beneath the pins *a* and *c*, and are concave in their upper ends, said pins being held by set-screws *f* and *g*, Fig. 4. The arm D has a vertically-adjustable step *c'* like the pin *c*, except that the lower end is turned at right angles beneath the lower end of the pin *c*. This construction is made in lieu of providing the base of the arm D with a pin like *a' b'* in the base of the arms B C for the reason that the rim of the balance-wheel would be in the way of a pin in the base of the arm D, as will be more clearly described in the operation. The step *c'* has a concavity *o* directly beneath the end of the pin *c* and is flattened on the side which the set-screw engages, as illustrated in Figs. 7 and 8, so that when said screw is set the step will occupy its true position with the concavity *o* directly beneath the pin *c*.

In Fig. 2 is shown a stand 8, which is placed upon the plate A, with the plate 6 of a watch upon said stand, so that the watch-jewel of the lever in the watch will come in a position to center the pointed end of the pin *c* in said jewel, as in Fig. 2. The arms B C are then adjusted so as to bring the pins *b a* in a position that their pointed end may be centered into the balance-wheel jewel and escape-wheel jewel, thus registering the position of these parts in the tool which they would occupy in the watch. The pins *a*, *b*, and *c* are then raised, the watch-plate 6 and stand 8 taken



out of the tool, and the pins *a*, *b*, and *c* reversed, so that their concave end will point downward. By this means the depthing of the wheels is accomplished by placing them  
 5 between the ends of the upper and lower pins—as, for instance, the balance-wheel between the pins *a* and *a'*, the lever between the step *c'* and pin *c*, and the escape-wheel between the pins *b* and *b'*—with the ends of the axes  
 10 of these pins in the concave ends of the pins, the idea being illustrated in Figs. 1 and 3, the parts thus occupying the same position in the tool in relation to each other as they should in the watch. No escape-wheel is here shown,  
 15 but the position it would occupy has been stated and will be readily understood since the idea of depthing the wheels is well known.

Mounted upon the plate A over the slot 3, opposite to the arm B, is a clamp device used  
 20 for testing the position of the lever in its relation to the banking-pins of a watch.

At E is a block adapted to slide so as to be adjusted toward the center of the tool or outward, and is held by a set-screw *w* in a similar manner that the arms B C are held. In  
 25 the recess in this block are two clamp-arms *d*, extending inward toward the center of the tool and provided at their free end with upward projections 7, Figs. 1, 3, and 4.

30 At H is a shaft passed transversely through the block E, Figs. 3 and 4, said shaft having upward projections *z*, to which projections the rear end of the clamp-arms *d* are pivoted, Fig. 4, said projections passing up through a  
 35 transverse slot in the block, so that they may be moved laterally by loosening the nuts on the shaft H at one end and tightening the nuts on said shaft at the other end, in order to adjust the clamp-arms so that they will be  
 40 true with each other and with the block. These clamp-arms are pressed toward each other by springs *e*, which springs press against each arm, as shown in Fig. 4. The clamp-arms are forced apart by a pointed pin G, the  
 45 point of which comes between the clamp-arms when it is pressed downward in the vertical hole, which it loosely occupies in the upper portion of the block E. In the rear side of this pin G is a funnel-shaped hole, into which  
 50 is inserted the point of a set-screw I, which set-screw is inserted into the block from the side, so as to enter said funnel-shaped hole. The beveled point of the set-screw I comes in contact with the beveled side of the hole in  
 55 the pin G, and forces said pin down to open the clamp-arms, as stated, and holds it down until it is desired to raise the pin G, the latter of which is accomplished by releasing the set-screw, at which time the pressure of the  
 60 springs *e* in their action of approaching each other will force the pin up. The upward projections 7 of the clamp-arms *d* bear the same relation to the lever of the watch that the banking-pins in the watch do. Hence by re-  
 65 moving the balance-wheel from the tool and lowering the pin *a*, bringing its point in the crotch of the lever, the clamp-arms are then

adjusted, so as to bring the banking-pins or lever-projections 7 equidistant each side of the lever, as in Fig. 4. This adjustment is  
 70 accomplished by the use of the pin G, set-screw *z*, and shaft H, as stated in the prior description.

Should the lever-staff be one side of the center, the space between the projections 7  
 75 of the clamp-arm *d* would not be equal on each side of the lever; but, as stated, they would be equalized by adjustment by the operator, and when thus equalized the lever bears the same relation to the projections 7  
 80 that it does to the banking-pins in the watch, and can only be oscillated a like distance in the tool when testing the parts. Hence by replacing the balance-wheel and rotating the same the action of the roller-jewel can be  
 85 tested in the crotch of the lever, also the edge of the roller-table and the guard-pin to ascertain if any one of these parts are not as they should be.

By operating the lever the escape-wheel  
 90 and pallet-jewels may be tested to see if they work in proper order, all of which will be understood by watch-repairers without every minutia of the operation being herein illustrated.  
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The clamp-arms provided with the end banking-pin projections 7 may be adjusted by any suitable means aside from those herein shown, and so far as depthing the wheels is concerned the adjustable arms and plate, with  
 100 their depthing-pins, may be employed independently of the clamp-arms.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—  
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1. A watch-tool for the purpose described, comprising a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible  
 110 depthing-pins, one of the pins in the upper end of one of the arms being angled at the lower end, forming a step with a concavity in the upper surface of said step directly beneath the point of the other depthing-pin in said arm, for the purpose stated, substantially as set forth.  
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2. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically adjustable and reversing depthing-pins, and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever and also adjustable endwise, substantially as set forth.  
 120  
 125

3. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable  
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and reversible depthing-pins, and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever, and also adjustable endwise, a radially-adjustable block in which the rear end of the clamping-arms are pivoted, a shaft transversely through said block and endwise adjustable therein, said block having a transverse slot above said shaft, said shaft being provided with upright projections passing up through said slot and forming pivots to the clamping-arms, a spring in said block pressing against the outside of each clamping-arm, a vertically-adjustable pin in said block provided with a point at the lower end, adapted to be inserted between the clamping-arms for opening them and withdrawn to allow them to close, substantially as set forth.

4. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing pins and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever, and also adjustable endwise, a radially-adjustable block in which the rear ends of the clamping-arms are pivoted, a shaft transversely through said block and endwise adjustable therein, said block having a transverse slot above said shaft, said shaft being provided with upright projections passing up through said slot and forming pivots to the clamping-arms, a spring in said block pressing against the outside of each clamping-arm, a vertically-adjustable pin in said block provided with a point at the lower end, adapted to be inserted between the clamping-arms for opening them, said pin being provided at the

rear side with a funnel-hole and an adjusting set-screw inserted into the block and provided with a pointed end adapted to enter the funnel-hole to lower said pin to permit the clamp-arms to approach each other, substantially as set forth.

5. A watch-tool for the purpose described, comprising a suitable support, said support being adapted to be tilted from a horizontal to different oblique angles, and vice versa, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, substantially as set forth.

6. The combination of a frame-support, a plate pivotally attached to said frame-support in a manner to be tilted from a horizontal to different oblique angles, and vice versa, upright arms on said plate, a suitable number of which arms are radially adjustable inward and outward, and a series of depthing-pins vertically adjustable and reversible in said arms, substantially as set forth.

7. A watch-tool for the purpose described, comprising a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, in combination with a stand for temporarily placing in the tool to support the watch-plate beneath the upper depthing-pins, substantially as set forth.

In testimony to the foregoing I have hereunto subscribed my name in the presence of two witnesses.

GEORGE W. HARRIS.

Witnesses:

ASHER M. MILLER,  
JUSTIN J. WAIT.