

H. JUBINVILLE.  
 CENTER AND AXIS INDICATOR.  
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1,141,396.

Patented June 1, 1915.

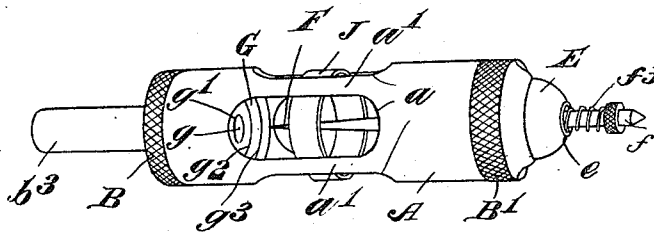


Fig. 1.

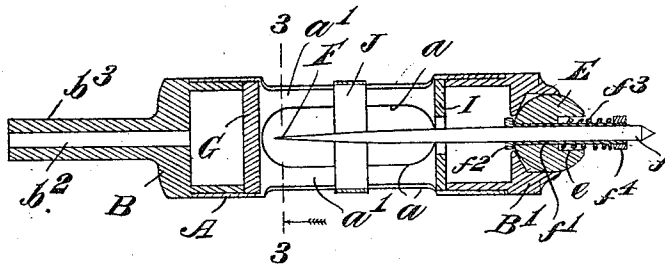


Fig. 2.

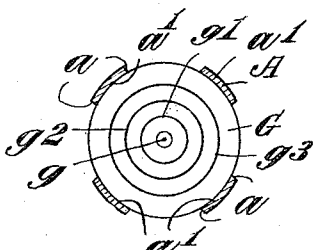


Fig. 3.

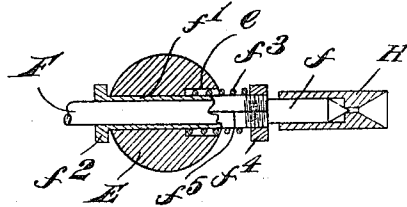


Fig. 4.

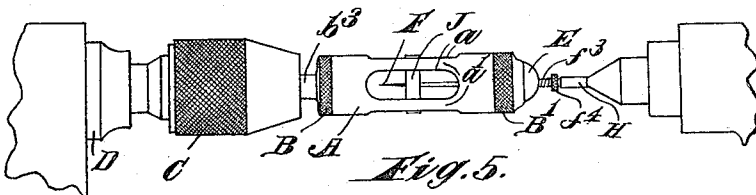


Fig. 5.

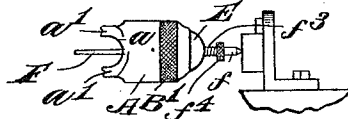


Fig. 6.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

HILDAIGE JUBINVILLE, OF DRACUT, MASSACHUSETTS.

CENTER AND AXIS INDICATOR.

1,141,396.

Specification of Letters Patent.

Patented June 1, 1915.

Application filed December 16, 1912. Serial No. 736,951.

*To all whom it may concern:*

Be it known that I, HILDAIGE JUBINVILLE, a citizen of the United States, residing at Dracut, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Center and Axis Indicators, of which the following is a specification.

This invention relates to center and axis indicators and may be used in connection with lathes, horizontal and upright drilling, and boring machines, and with any machine or tool in which it is desired to determine the alinement of a revolving center with a stationary center or with a point in stationary or "dead" work, as in the former case to determine the "truth" or exact alinement with each other of the centers of a lathe or similar machine-tool, and in the latter to fix the proper position of the work to be operated upon.

The objects of this invention are to provide a light, portable device, with few parts and joints, of great accuracy, and of wide application.

The only essential movable parts in this device are the indicator needle and its holding ball, the movable reinforcing ring being used to secure lightness and strength, and not being indispensable as its use may be avoided by increasing the stiffness of the shell or body.

Figure 1 is an isometric perspective view of my improved center and axis indicator; Fig. 2, a central longitudinal section of the same; Fig. 3, a vertical transverse section on the line 3 3 in Fig. 2 showing the disk; Fig. 4, a central longitudinal section of the ball, its securing sleeve and nut, and the sleeve with double female center showing a part of the needle; Fig. 5 a side elevation of the device held in a revolving chuck and indicating the alinement of the centers; Fig. 6, a side elevation of the head of the device applied to "dead" or non-revolving work.

A is a tubular shell or case provided with lateral sight openings *a* and may be a hard brass tube in which the sight-openings are punched. The ends of the case A are closed by plugs B B<sup>1</sup> one B of which is provided with a shank *b*<sup>3</sup> adapted to be held in a chuck C of a lathe or other machine-tool having a revolving spindle D to carry said chuck. This shank may be hollowed as shown at *b*<sup>2</sup> for lightness. The other plug B<sup>1</sup> is provided with a central socket to

receive a ball E and allow the latter to turn freely in any direction.

The ball E carries an indicating needle or pointer F which passes through a central opening *e* in said ball, and extends nearly into contact with an indicator disk G marked as shown in Fig. 3 with a central spot *g* and circles *g*<sup>1</sup> *g*<sup>2</sup> *g*<sup>3</sup> concentric with said spot *g*. The disk G is crowded into place by the plug and may be held in place by friction.

The outer, larger end *f* of the needle F projects from the ball and is shaped to enter and fit closely a female center H of sixty degrees, the center proper of which is adapted to receive the dead center of a lathe or other machine-tool, as shown in Fig. 5. It is obvious that when the shank *b*<sup>3</sup> is thus held in a revolving chuck C carried by the live spindle and the socket engages the dead spindle, as above described the inner end or point of the needle F will be in alinement with the central spot *g* of the disk G, if the axis of the two centers of the lathe are in alinement with each other, but that if the centers are out of alinement, the point of the needle will describe a circle and that by adjusting one of these centers, if possible, until the needle points directly to the spot *g*, the centers will be brought into alinement. Usually, such adjustment is impossible. If the point of the needle points steadily in the same direction but not to the spot *g*, it indicates that the dead center is out of alinement with the head-stock on the diametrically opposite side of the spot *g* from that indicated by the needle. If the live spindle describes a circle, the point of the needle will also describe a circle, the radius of which will be proportionate to the distance the live center is out of true. It is also apparent that if a piece of work be placed in the lathe or similar machine-tool and the female center H be removed and the outer end of the needle (which is a center of sixty degrees) be placed in a prick punch hole in the work and the live spindle be revolved, the needle will show by pointing to the spot *g* that the work is properly centered, or otherwise will show by describing a circle about said spot that the head stock is out of true, but, if the circle described is eccentric to said spot the work must be moved to secure the proper alinement of the chuck and prick punch hole.

To facilitate watching the point of the

needle, as when the needle is used point up, an annular mirror I is arranged at right angles to the axis of the tubular body A, in which mirror the movement of the needle point relatively to the disk G, is clearly reflected.

The needle is preferably free to slide longitudinally in the ball E and instead of being fast therein, is held in a cylindrical sleeve  $f^1$ , the inner end of which has an external annular flange  $f^2$  which is forced outward against said ball by a spiral spring  $f^3$  compressed between said ball and a nut  $f^4$ , said spring being preferably guided by a depression  $e$  in said ball. The outer end of the sleeve  $f^1$  is slightly tapered and is provided with a longitudinal slit  $f^5$ , so that turning said nut onto said sleeve binds said sleeve and needle together and normally holds the flange  $f^2$  against said ball but allows the needle to be crowded nearly into contact with the disk G when in use, to facilitate observation of the concentricity or eccentricity of the needle point with said disk.

To strengthen and stiffen the narrow, longitudinal parts  $a^1$  of the shell or case A between the sight openings  $a$ , an annular reinforce or ring J is retained by friction between these parts at right angles to the axis of said case but may be moved toward either end of said case to facilitate observation of the disk G or mirror I.

I claim as my invention:

1. The combination in a center and axis indicator, of means adapted to be grasped by and turned with a revolving holder, a pointer carried by said means and free to turn in all directions about a fixed center, and a disk carried by said means and having concentric circles and a central spot marked thereon, said spot being in alinement with said center of said pointer and with the center of rotation of said holder.

2. The combination in a center and axis indicator of a case provided with sight-openings and with a closed end, having a socket, a ball free to turn in all directions in said socket, a pointer passing through said ball and closed end and a disk located in said case and having concentric circles and a central spot marked thereon, said spot being in alinement with the axis of rotation of said case and with the center of said ball.

3. The combination in a center and axis indicator of a case provided with sight-openings and with a closed end, having a socket, a ball free to turn in all directions in said socket, a pointer passing through the center of said ball and being free to move longitudinally in said ball, a disk arranged in said case and having concentric circles and a central spot marked thereon, said spot being in alinement with said center of said pointer and with the center of said ball, and elastic means for pressing said needle away from said disk.

4. The combination in a center and axis indicator, of a case provided with sight-openings and with a closed end and having a socket, a ball free to turn in all directions in said socket, a pointer passing through said ball and closed end, a disk located in said case and having concentric circles and a central spot marked thereon, said spot being in alinement with the center of said pointer and with the center of rotation of said case, and an annular mirror arranged within said case around said pointer and opposite said disk.

5. The combination in a center and axis indicator, of a case provided with sight-openings and having a socket, a ball free to turn in all directions in said socket, a pointer passing through said ball and projecting from said ball and socket, a disk located in said case and having concentric circles and a central spot marked thereon, said spot being in alinement with the center of said pointer, and a female center adapted to be secured on said projecting end of said pointer.

6. The combination in a center and axis indicator, of a case provided with longitudinal sight-openings and with a closed end and having a socket, a ball free to turn in all directions in said socket, a pointer passing through said ball, a disk located in said case and having concentric circles and a central spot marked thereon, and an annular reinforce retained by friction on said case and movable toward either end of said case.

In witness whereof, I have affixed my signature in presence of two witnesses.

HILDAIGE JUBINVILLE.

Witnesses:

ALBERT M. MOORE,  
GEORGE WOLFGANG.