

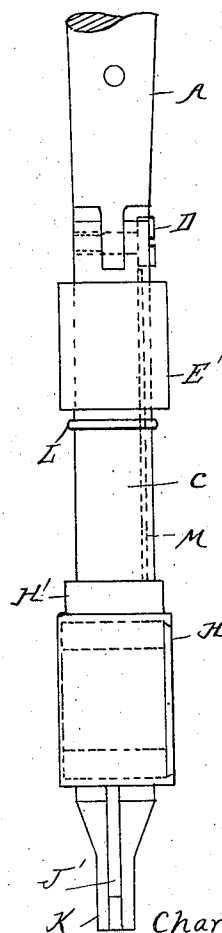
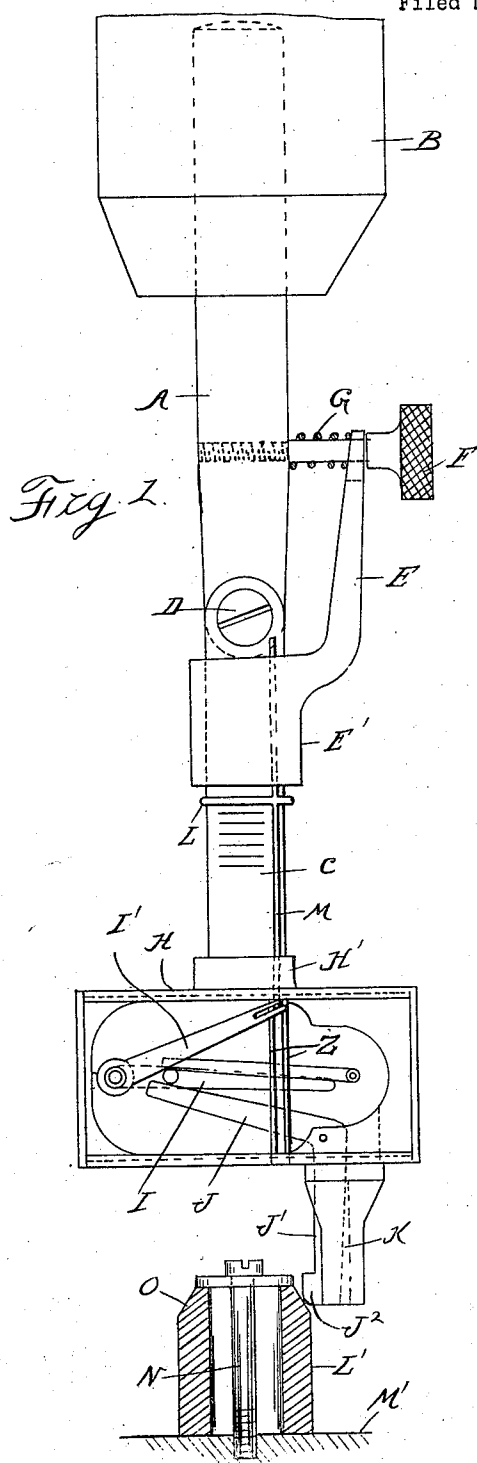
March 18, 1924.

1,487,119

C. A. NEWITT

INDICATOR

Filed Dec. 20, 1920



Inventor
Charles A. Newitt

By Whittemore Hulbert & Whittemore

Attorneys

UNITED STATES PATENT OFFICE.

CHARLES A. NEWITT, OF DETROIT, MICHIGAN.

INDICATOR.

Application filed December 20, 1920. Serial No. 432,025.

To all whom it may concern:

Be it known that I, CHARLES A. NEWITT, a subject of the King of Great Britain and Ireland, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Indicators, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to indicators adapted for application to revoluble spindles and for the purpose of accurately aligning the work to be operated upon with said spindle. The invention consists in the novel construction as hereinafter set forth.

In the drawings:

Figure 1 is an elevation of the indicator as applied to a spindle and showing the relation of the same to the work to be trued;

Figure 2 is an elevation viewed at right angles to Figure 1.

A is a shank adapted for engagement with a revoluble spindle, such, for instance, as the spindle of a chuck B upon a drill press. C is an extension of the shank A hinged thereto to form a knuckle joint by the pivot D and provided with adjustment means such as the arm E extending in rear of the pivot and engaging an annular shoulder E' of an adjusting screw F and spring G for varying its distance from the shank A. H is a housing at the outer end of the extension C, in which are arranged multiplying levers I including a bell crank lever J, which is fulcrumed eccentric to the axis of the shank and has an arm J' extending substantially parallel to said axis and outward from said housing. This arm J' is guided in a slotted member K which is mounted upon the housing H and at the outer end of the arm J' is a rounded knob or contact member J².

Sleeved upon the extension C is a ring L which is fixedly attached to a longitudinally slidable member M guided in slots in the hub E' of the arm E and the hub H' of the housing H. The end of the member M, which projects into the housing which is bent to form a right angled projection which is connected to a slotted rock arm I' forming one of the multiplying levers I and the arrangement of said levers is such that the movement of the contact J² is largely multiplied and is communicated to the member M. A pair of vertical parallelly spaced members Z are secured in the housing H and form a guide for the right angled projection

of the member M to prevent the same from swinging out of engagement with the slotted end of the lever I'. This member in turn will adjust the ring L longitudinally of the member C.

It is the usual practice in the drilling of work with a series of holes which are accurately spaced in relation to each other to first position a series of buttons upon the work, and then to successively set the work with a button in exact alignment with the drill spindle. When thus positioned, the button may be removed and the work drilled with the assurance that the bore will be correctly positioned. My indicator is adapted for such use and as shown, L' is a button clamped to the work M' by means of a clamping screw N. The button is preferably formed with a chamfered or tapered portion O, over which the contact J² may pass into engagement with the cylindrical portion of the button. Thus to test whether the spindle is properly aligned with the button, it is fed downward, causing the contact J² to ride up the incline O and onto the cylindrical portion of the button and as the spindle is simultaneously revolved, it is obvious that any eccentricity with respect to the axis of the button will cause a movement of the multiplying levers I. This movement will be communicated to the member M and ring L, shifting the latter longitudinally of the member C. The member C may be properly calibrated and the amount of deflection of the ring L thereon is thus accurately indicated. The work is then adjusted in position until the ring L remains stationary, which is an indication of the axis that the button is accurately aligned with the axis of the spindle.

One advantage of the construction is that it is substantially symmetrical; the housing H extending equally upon opposite sides of the axis and the multiplying levers within the housing being similarly arranged. This counteracts centrifugal action and also by condensing the structure avoids interference with the work. Adjustment of the contact J² towards or from the axis of the spindle is effected by the screw F, which by moving the arm E will rock the extension C on the hinge D, thereby carrying said point either towards or from the axis.

What I claim as my invention is:

1. An indicator tool comprising a shank for engagement with a revoluble spindle in

axial alignment therewith, an indicator ring surrounding and movable longitudinally of said shank, a housing mounted on said shank and extending transversely thereof in symmetrical relation thereto, a guide projecting from said housing and offset from the axis of the spindle, a multiplying lever system within said housing, a movable contact member engaging said offset guide and having an actuating connection to said multiplying levers, and a member extending longitudinally of said spindle and connecting said indicator ring with said multiplying levers.

2. An indicator tool comprising a shank for engagement with a revoluble spindle in axial alignment therewith, an indicator ring surrounding and movable longitudinally of said shank, a member connected to said ring and extending longitudinally of the shank, a second member apertured to receive and form a guide for said first mentioned member, a housing mounted on said shank and extending transversely thereof in symmetrical relation thereto, multiplying levers within said housing, one of said levers connected with said longitudinally movable member, a guide projecting from the end of said housing in offset relation to the axis of the spindle, and an actuating member for said multiplying levers engaging said guide and having a contact portion for engagement with the work.

3. An indicator tool comprising a shank for engagement with a revoluble spindle in axial alignment therewith, an extension attached to said shank and angularly movable in relation thereto, an indicator ring surrounding and adjustable longitudinally of said extension, a housing mounted on said extension and extending transversely thereof in symmetrical relation thereto, multiplying levers within said housing, one of said levers connected with said ring, a work contacting member for actuating said levers arranged eccentric to the axis of the spindle, and means for adjusting said extension angularly relatively to said shank to move said contact towards or from the axis of the spindle.

4. An indicator tool comprising a shank for engagement with a revoluble spindle in axial alignment therewith, an extension pivoted to said shank and angularly adjust-

able thereto, multiplying levers secured to said extension and extending transversely thereof, a movable contact for actuating said multiplying levers pivoted to said extension and having its pivot offset from the axis of the spindle, an indicator ring surrounding the extension and connected to said multiplying levers to be actuated thereby, an arm secured to said extension and a screw forming an adjustable engagement between said arm and shank by which said extension is angularly adjusted relative to said shank to move said contact member towards or from the axis of the spindle.

5. An indicating tool comprising a shank for engagement with a revoluble spindle in axial alignment therewith, an extension for said shank, a knuckle joint between said shank and extension permitting relative angular adjustment of the axes thereof, a member having a slotted hub engaging said extension and an arm extending beyond said knuckle joint, a screw extending transversely of said shank and having a threaded engagement therewith, and a swivelled engagement with said arm, a shoulder on said screw, a spring sleeved upon said screw and yieldably pressing said arm in contact with said shoulder, a housing having a slotted hub portion engageable with said extension, an indicator ring, sleeved upon the extension intermediate the hubs of said arm and housing, a member connected to said ring and slidably engaging the slots in said hubs, multiplying levers including a bell-crank lever, a connection between one of said levers and the last-mentioned member, said bell-crank lever having one arm thereof offset from the axis of the spindle, and a guide for said bell crank arm mounted on said housing and extending outward therefrom.

6. An indicator tool comprising a shank for engagement with the shank of a revoluble spindle, the shank of said tool having an extension, an indicator ring adjustable longitudinally of said extension, multiplying levers connected to said ring and extending transversely of said extension, and a movable actuating member for said levers offset from the axis of the spindle and having a contact portion for engagement with the work.

In testimony whereof I affix my signature.
CHARLES A. NEWITT.