C. F. URBAN.

TRUING TOOL FOR LATHE WORK.

APPLICATION FILED MAR. 20, 1914.

1,171,565.

Patented Feb. 15, 1916.

2 SHEETS—SHEET 1.

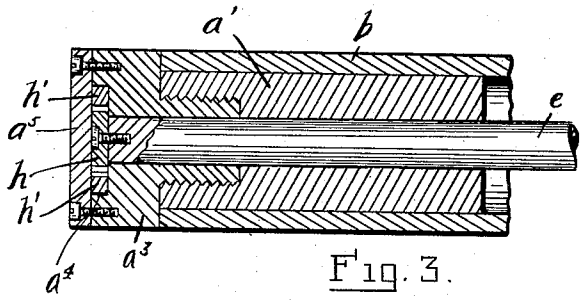



Fig. 3.

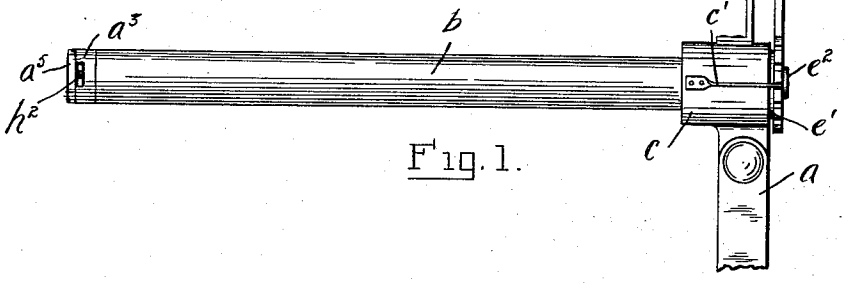



Fig. 1.

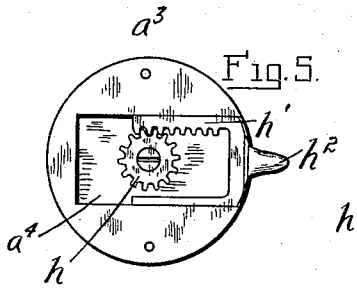



Fig. 5.

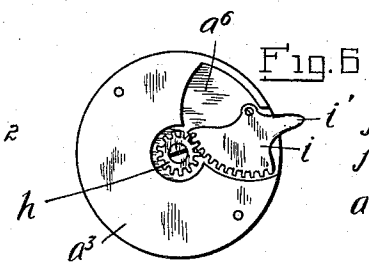



Fig. 6.

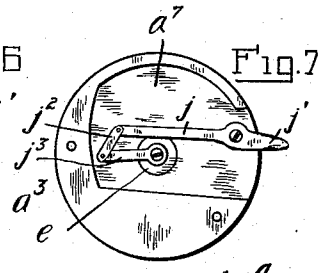



Fig. 7.

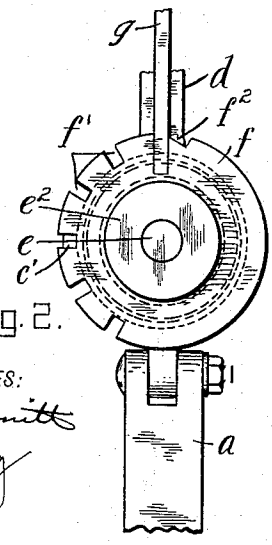



Fig. 2.

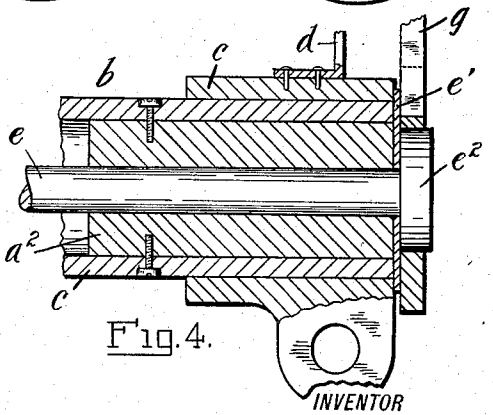



Fig. 4.

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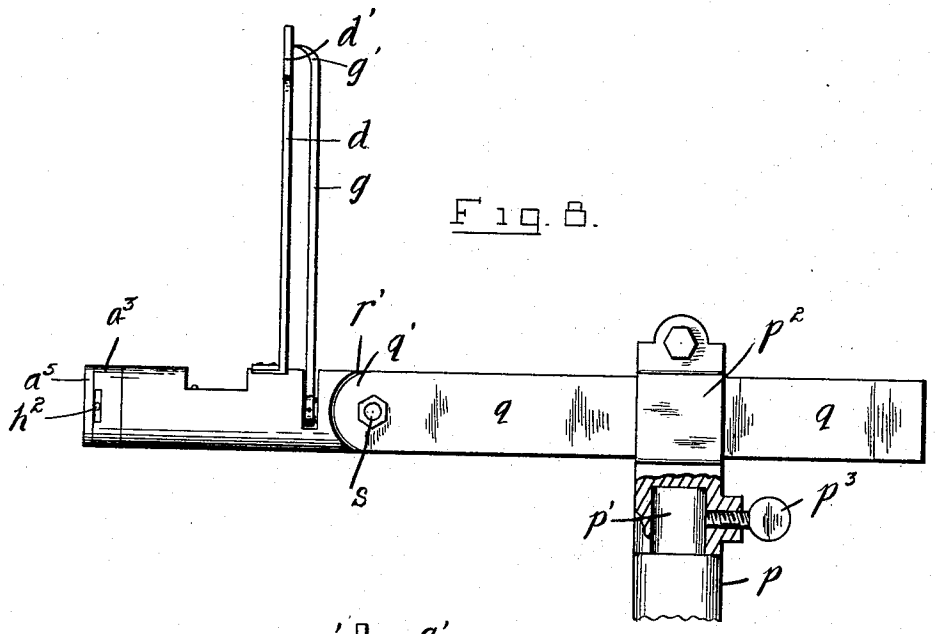



Fig. 8.

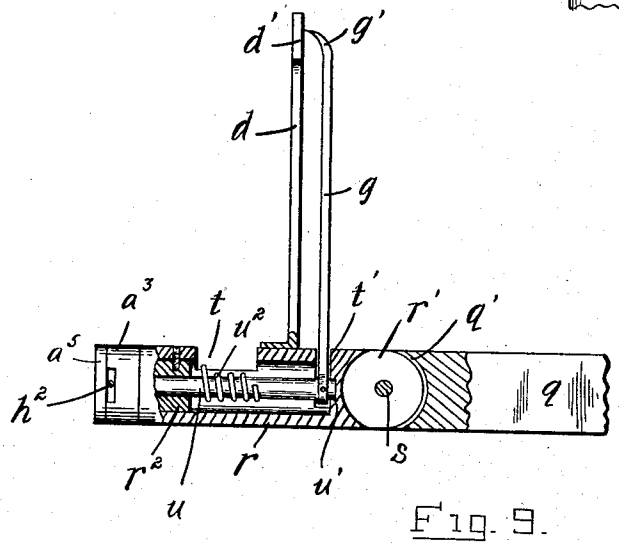



Fig. 9.

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# UNITED STATES PATENT OFFICE.

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## TRUING-TOOL FOR LATHE WORK.

1,171,565. Specification of Letters Patent. Patented Feb. 15, 1916.

Application filed March 20, 1914. Serial No. 826,123.

*To all whom it may concern:*

Be it known that I, CHARLES F. URBAN, a citizen of the United States, and a resident of Milwaukee, Wisconsin, have invented a new and useful Improvement in Truing-Tools for Lathe Work, of which the following is a specification.

My invention relates to improvements in truing tools for lathe work.

One of the main objects of my invention is to provide a truing tool which will have a universal use, that is, one which may be used for truing up work of any character.

A further object is to provide indicating devices whereby any minute irregularity in the work being trued will be multiplied and enlarged so as to render the irregularity more readily discernible.

To attain my purpose my invention embodies two main features: first, it is so adjustable that it may be conveniently brought into working relation with the piece to be trued; second, my device embodies means whereby the minor irregularities are multiplied and enlarged on the indicating scale, thereby greatly increasing the sensitiveness of my device and bring out those irregularities which, otherwise, might escape attention. A device embodying these features is adapted for use in truing up the many different types of lathe work.

Other special features of my invention are fully described in the body of this specification.

In the accompanying drawings I have illustrated different types of the same tool, by the use of which any of the different classes of work may be successfully trued up.

Figure 1 is a side elevation of my improved truing tool constructed to be used for long bores, either horizontal or inclined; Fig. 2 is a right-end elevation of this tool, drawn to a larger scale; Fig. 3 is a longitudinal, vertical section of the left-end of the same tool; Fig. 4 is a longitudinal, vertical section of the right-end of the tool; Fig. 5 is a left-end elevation of the tool with the cap removed so as to show the multiplying devices by which the irregularities of the work will be multiplied; Figs. 6 and 7 are views similar to Fig. 5, but showing different types of multiplying devices which may be used instead of the one shown in Fig. 5; Fig. 8 is a side elevation of a tool adapted to be used for short bores, back surface work and inclined surface work; and Fig. 9 is a sectional detail of the left-end of the same.

$a$ represents a tool holder clamped on the machine. A tube, $b$, fits snugly in the sleeve, $c$, the latter being pivotally mounted on the tool holder, $a$, so as to be adjustable in a vertical plane. Fixed on the sleeve, $c$, is a dial arm $d$, bearing a dial plate $d'$. Bushings $a'$, $a^2$ are inserted in the front and rear ends of the tube $b$ (see Figs. 3 and 4) and form bearings for a rotatable rod $e$. A washer $e'$ is slipped over the rear end of the rod $e$, and a hub $e^2$, shrunk on the end of the rod, bears against said washer. A disk $f$, bearing peripheral notches $f'$, is fixed on said hub $e^2$, see Fig. 2. The indicator arm $g$ is also fixed to the disk $f$ by the screw $f^2$ and projects radially therefrom. The indicator finger $g'$ is adapted to register with graduations on the fixed dial plate $d'$. A flat spring $c'$ is fixed on the sleeve $c$ and its free end engages one of the notches $f'$. In this way, tube $b$ and sleeve $c$ will be spring-restrained against relative rotary movement with respect to each other.

The front end of the bushing $a'$ is counter-tapped and another bushing, $a^3$, screwed therein. The latter is made with a recessed face as at $a^4$ in Fig. 5, so as to provide a seat for the multiplying device which comprises the following parts: A pinion $h$ is fixed on the forward end of the rod $e$, and a rack bar $h'$ provided with a projecting contact nose $h^2$, engages with said pinion. See Fig. 5. The contact nose $h^2$ is adapted to bear on the work to be trued, and any irregularities in the latter will cause said nose to be forced inward, thereby causing the rod, $e$, and consequently the affixed indicator arm $g$, to rotate. The spring $c'$ tends to hold the parts in their normal position. A cap $a^5$, screwed on the face of the bushing $a^4$, protects the multiplying device from dust, exposure, etc.

In Fig. 6 the bushing $a^3$ is made with a slightly different shaped recess $a^6$, and a sector, $i$, made with a nose $i'$ engages with the pinion $h$.

In Fig. 7 the recess $a^7$ is again varied in shape, and the lever $j$ made with a nose $j'$ connects with the link $j^2$, the latter connecting also with a lever $j^3$, which is fixed on the end of the rod $e$. In this way a pressure on the nose $j'$ will rock the lever $j$ and cause a rotary motion to be transmitted to the rod $e$.

In Fig. 8 the tool holder $p$ is made with a journal end $p'$. A clamp bearing $p^2$ is set-screwed on said journal end by the screw $p^3$, but may be adjusted rotatably in a horizontal plane. Clamped in the bearing $p^2$ is a bar $q$, said bar being adapted for longitudinal adjustment in its bearing. The forward end of said bar is made with ears $q'$ and a member $r$ made with one ear $r'$ is adapted to be pivoted to the bar $q$ by a thumb screw $s$, inserted through all three ears $r'$, $q'$. The member $r$ is made with a longitudinal bore, in the front end of which is pinned a bushing $r^2$. A rotatable member, $u$, is journaled in the bushing $r^2$ and the bearing hole $u'$. A bushing $a^3$, cap $a^5$ and multiplying devices similar to those shown in connection with Fig. 1 may be incorporated in the tool shown in Figs. 8 and 9. A coil-spring, $u^2$, tends to hold the movable parts in their initial position. The member $r$ is made with a cut-away portion, $t$, which makes the insertion of the spring $u^2$ more convenient. The member $r$ is further made with a transverse slot $t'$ and the indicator arm $g$ is set-screwed on the rotatable member $u$. This slot allows a partial rotation of the indicator arm in a circular arc, and the degree of rotation of this arm will be registered on the dial $d'$, the arm $d$ of which is fixed on the member $r$. The construction of this tool enables it to be universely adjusted.

I claim:

A truing tool comprising an adjustable tool holder, a truing tool adjustably mounted in the holder, said tool consisting of a fixed sleeve, an indicator dial mounted on said sleeve, a rod rotatable within said sleeve, and provided at one end with means for registering the degree of rotation on the indicator dial, yielding means for holding said registering means in zero position, a movable contact member carried by the dial and adapted to bear on the work to be trued, said contact member being made with a gear rack, a pinion on the end of the rotatable rod, said pinion in mesh with said rack, so that a movement of the contact member will transmit said movement, in multiplied form, to the rotatable rod.

CHARLES FREDOLIN URBAN.

Witnesses:
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**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**