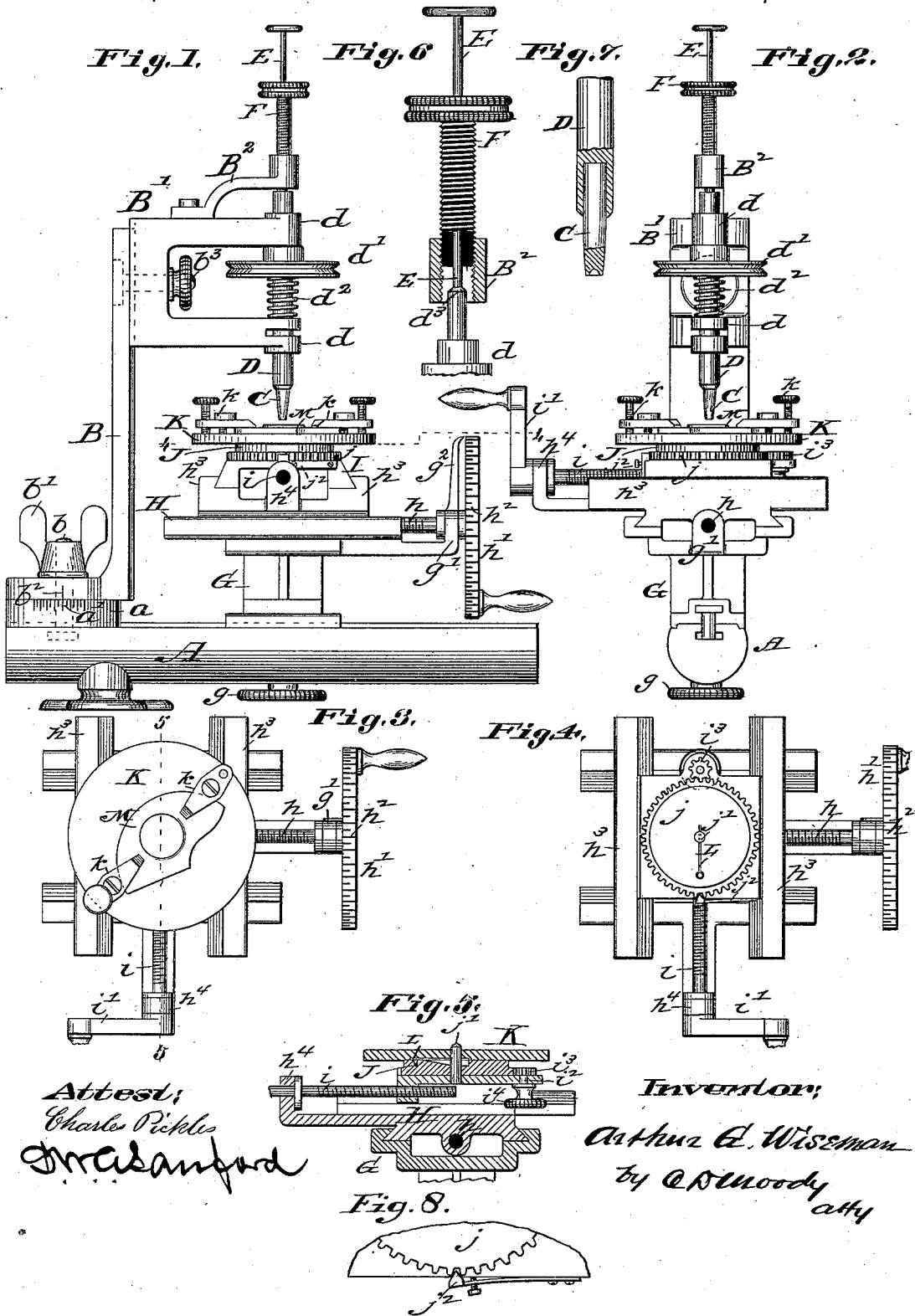


(No Model.)

A. G. WISEMAN.
LATHE ATTACHMENT.

No. 308,724.

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UNITED STATES PATENT OFFICE.

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LATHE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 308,724, dated December 2, 1884.

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To all whom it may concern:

Be it known that I, ARTHUR G. WISEMAN, of Webster Groves, St. Louis county, Missouri, have made a new and useful Improvement in Attachments for Lathes, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation of the attachment; Fig. 2, an end elevation of the attachment; Fig. 3, a plan of that portion of the attachment upon which the work is held; Fig. 4, a horizontal section on the line 4 4 of Fig. 1; Fig. 5, a vertical section on the line 5 5 of Fig. 3; Fig. 6, an elevation, partly in section, of the mechanism used to operate the spindle; Fig. 7, a sectional elevation showing the lower end of the spindle, having a raying-tool inserted; and Fig. 8, a detail.

The same letters of reference denote the same parts.

The present machine can be used in various kinds of work. It is especially adapted for what watch-makers term "raying," or the ornamental finish which is given to watch-plates. The machine can be used also in ornamenting other work. It consists, partly, in the means employed for holding and operating the spindle that carries the raying or other tool, partly in the means for holding and adjusting the plate or article being ornamented or operated upon, and partly in the combination of the means for operating the spindle, with the means for holding and adjusting the work being operated upon, all substantially as hereinafter specified, and designated in the claims.

The improvement can be attached to lathes of various descriptions. It is illustrated in connection with a lathe such as is used by watch-makers, and the spindle of the attachment carries a raying-tool.

A, Figs. 1, 2, represents a bed-plate such as used in connection with lathes.

B represents a standard pivoted at *b* to the bed-plate. The standard can be turned horizontally on its pivot, and when adjusted can, by means of the clamp *b'*, be fastened. To enable the standard to be adjusted accurately, the part *a*, upon which the standard turns, is provided with a graduation, *a'*, and the stand-

ard is provided with a pointer, *b*². The standard is provided with an arm, *B'*, which is vertically adjustable upon the standard, and capable of being secured at any desired elevation by means of the screw *b*³. The arm is designed for holding the raying-tool C, Figs. 1, 2. The raying-tool is attached to or held in a spindle, D, which in turn is adapted to be rotated in the bearings *d d* in the arm *B'*. The spindle is also vertically adjustable in the bearings *d d*, partly for the purpose of enabling the raying-tool to be set to work lower down or higher up, as desired, but more especially for applying the raying-tool to the plates being operated upon. To this end the spindle is provided with a shoulder, which is, as a matter of convenience, made also to serve as a pulley, by means of which the rotary motion is applied to the spindle. A spring, *d*², bearing downward upon the bearing *d* and upward against the pulley *d'*, serves to uphold the spindle, but in such manner as to enable it to be depressed when desired.

E represents a stem, which passes downward loosely through a screw, F, Figs. 1, 2, 6, and bears upon the upper end, *d*³, of the spindle D. By depressing the stem E the spindle D is forced downward. This stem E is depressed by the fingers with a quick movement. The screw F is adapted to work upward and downward in a bearing, *B*², which is attached to the arm *B'*. By moving the screw F up or down through its bearing it is caused to bear upon the upper end of the spindle D, which in consequence is moved up or down in the bearings *d d*, so as to operate at a higher or lower level. Whenever the screw F is raised the spring acts to lift the spindle. The spring also lifts the spindle D whenever the pressure of the fingers or screw F upon the stem E is removed. The raying-tool C is preferably inserted in a socket in the spindle, substantially as shown in Fig. 7. The raying-tool is preferably a piece of wood. In this manner the raying-tool can be swung around to the desired quarter, adjusted vertically, and depressed to act upon the work being ornamented or operated upon.

The device for holding and adjusting the work will now be described.

G represents a rest adapted to be attached

to and to be adjustable longitudinally upon the bed-plate A, and capable, by means of the screw g , of being clamped at the desired point upon the bed-plate. A slide, H, Figs. 1, 2, 5, is held in or upon the rest G, and is adjustable thereon in the direction of the longitudinal axis of the bed-plate A, and to this end a screw, h , working through a bearing, g' , upon the rest G, is made to engage with the slide. The screw is provided with a suitable head, h' , or otherwise constructed to enable the screw to be rotated, and the slide thereby moved forward and backward upon the rest. The head h' has a graduation, h^2 , which is used in connection with a pointer, g^2 , which is conveniently supported upon the bearing g' . The threads or pitch of the screw h and the graduation h^2 are correlated, enabling the operator to adjust the position of the slide upon the rest by means of the graduation and pointer.

I represents an upper slide resting upon the slide H, and adjustable transversely thereupon, for which purpose the slide H is furnished with the ways h^3 h^3 , upon which the slide I can be moved forward and backward.

The means for operating the slide I are analogous to what is used in moving the slide H, a screw, i , working through a bearing, h^4 , upon the slide H, and engaging in the slide I. The screw i , for turning it, may have a crank, i' , simply, or it may have in addition thereto a graduated head operating in connection with a pointer, the pitch of the screw and graduation being correlated similarly to that used in adjusting the slide H. A plate, J, is centered upon the slide I, and adapted to be rotated horizontally thereupon. To this end the plate J is supplied with a gear, j , Figs. 1, 2, 4, 5, 8, and the slide I has journaled in it a shaft, i^2 , carrying a pinion, i^3 , which engages with the gear j . By turning the pinion i^3 (by means of the head i^4) the plate J can be turned around upon the center j' , as desired. A spring-click, j^2 , Figs. 1, 4,

8, regulates the rotation of the plate J. A top plate, K, is attached to and rotates with the plate J. This top plate is virtually an extension of the plate J; but in practice it is made separately and then fastened thereto. Between the two plates, and operating in a suitable recess in one or both of the plates, is a spring-arm, L, for upholding the center j , the last-named part being preferably a vertically-yielding one. The plate K supports the piece M, Figs. 1, 2, 3, or other work being operated upon, and for holding the work in place the plate K is provided with suitable clamps, k k . These clamps may be of any desirable form, or any equivalent device may be employed for securing the work upon the plate K.

The work being attached to the plate K, the procedure is as follows: If it is desired to operate from the center of the work M, the standard B is adjusted to bring the tool C directly over the center of the rest G, and the work-

holding device is, by means of the adjusting-screws h i , adjusted to bring the center of the work beneath the tool C. The spindle D is supposed to be rotated by a belt passing from the driving-shaft (not shown) around the pulley d' . By depressing the stem E the tool C is pressed downward upon the work M. If raying is to be done, emery is applied to the tool. The rotation of the tool C in contact with the work M then produces the desired ornamentation. Then by working the screw h suitably the slide H, with the superstructure thereon, is moved to bring another portion of the work beneath the tool C, whereupon the stem E is depressed and a second figure produced upon the work, as before, and so on, proceeding in a radial direction, until the work is sufficiently ornamented in the direction of its periphery. The plate J, by means of the pinion i , is then rotated according to the distance it is desired to space the rays apart upon the work; that is, suppose the gear j to have ninety-six teeth, if it is desired to have thirty-two rays, the gear j is turned threeteeth, whereupon the stem E is depressed and the tool C is operated as before. A series of figures are then produced upon another radial line upon the work, and so on, as desired. Should it be desired to work from a point outside of the center of the work, the standard B is, by means of the graduation a' and the pointer b^2 , adjusted accordingly, whereupon the work is moved forward and backward beneath the tool C by means of the screw h , as before.

Should it be desired to produce figures extended in the form of a square, for instance, the screw i and slide I may, in addition to the other parts, be brought into operation and as follows: Beginning at any desired corner of the work, the initial figure is produced by depressing the stem E. The work is then by means of one of the screws and slides—say the screw h and slide H—moved so as to enable a series of figures to be produced in a straight line across the work until another corner of the square is reached. Then by means of the other screw, i , and slide I the work is drawn in a direction at right angles to that in which it was last moved, during which the stem E and tool C are operated as before. This causes another side of the square to be produced upon the work. The first-named screw and slide are then brought again into requisition, and another side of the square is produced, and so on. The ornamentation can be still further varied by bringing into requisition the adjustable feature of the standard B in combination with the adjustable features of the slides H I.

For raying, the tool C should be made of wood and be adapted to be pressed endwise against the work, for I have ascertained that this material is especially adapted to such work, and by means of a tool thus constructed I can produce readily far better results than

by means of a raying-tool made of any other material.

As above stated, the means here shown, saving the construction of the tool C, may be employed for other purposes than raying. For instance, in place of a raying-tool, a milling-tool can be attached to the spindle D, and in place of raying work may be milled; and in place of a milling-tool a wood-working tool may be attached to the spindle D, and wood thereby be carved in any ornamental design.

I claim—

1. In combination with the adjustable plate K, the bed-plate A, supported as described, the horizontally-adjustable standard B, carrying the arm B', and spindle D, provided with pulley d' , spring d^2 , screw F, and stem E, as described.

2. The combination of the bed-plate A, the adjustable plate K, supported and operated as described, and the adjustable standard B, the part a on which it turns having the graduation a' , the pointer b^2 , and clamp b' , substantially as and for the purposes set forth.

3. The combination of the standard B, the arm B', the spindle D, provided with the pulley d' , the spring d^2 , the stem E, and the screw F, as and for the purposes described.

4. The combination of the bed-plate, the

adjustable rest G, the adjustable slides H I, the screw F, the stem E, the spindle D, and the intermediate mechanism, substantially as described.

5. The combination of the slides H I and ways h^3 , the rest G, the plate J, adapted to be rotated upon the slide I, means for rotating said plate, the screw F, the spindle D and stem E, and intermediate mechanism, substantially as described.

6. The combination of the plate J, the gear j , the pinion i^3 , and the rest G, slides H I, and the ways h^3 , as and for the purposes described.

7. The combination of the plate K, adapted to be moved in the direction of the longitudinal axis of the bed-plate A, and also cross-wise thereto, and intermediate mechanism, with the rotating spindle D and tool C, the screw F, and stem E, as described.

8. The combination of the rotatable plate K, the gear j , the slide I, the click j^2 , the screw F, stem E, and the supporting and intermediate mechanism, substantially as and for the purposes described.

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Witnesses:

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C. E. HUNT.