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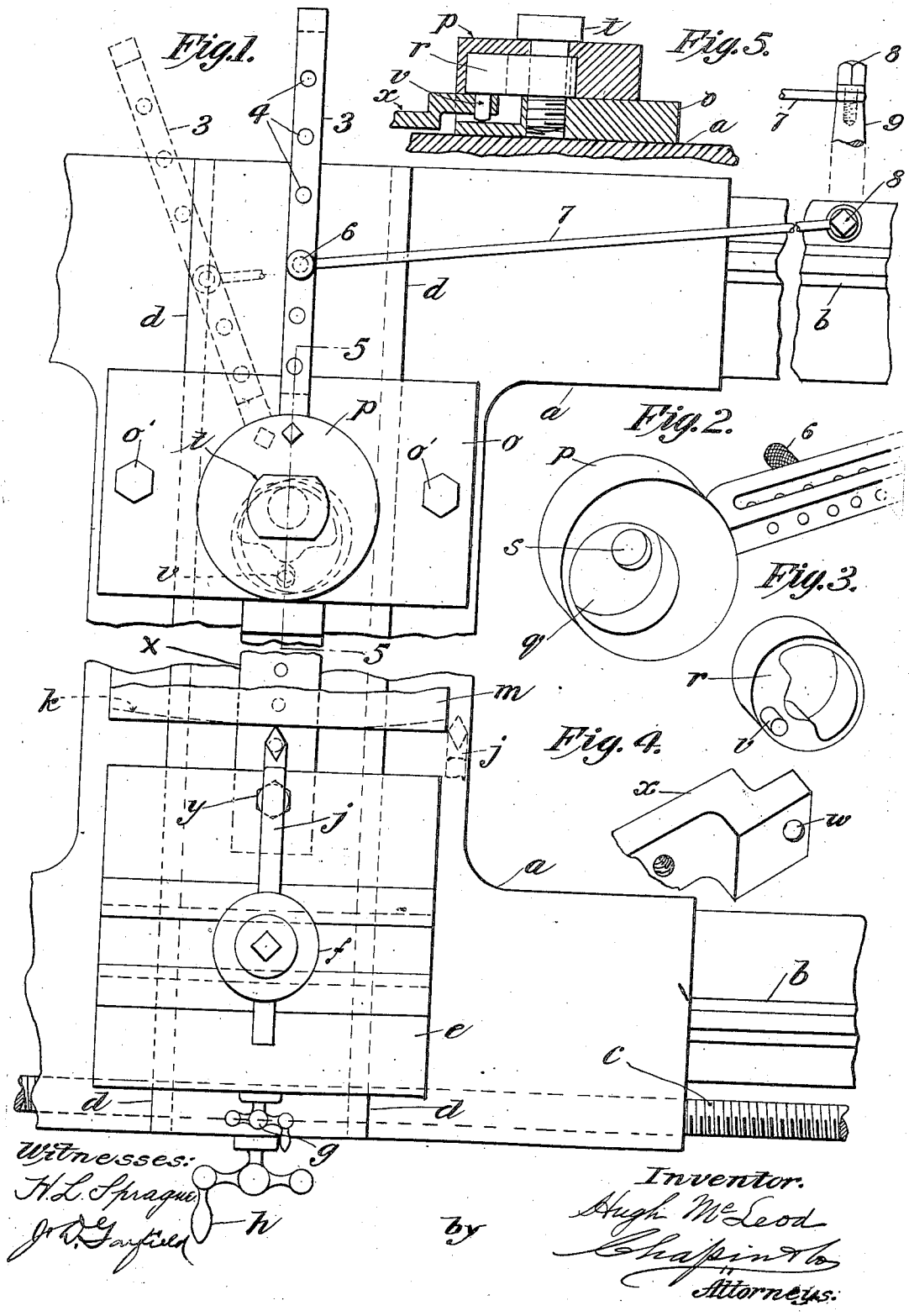
H. McLEOD.

PULLEY CROWNING ATTACHMENT FOR LATHES.

APPLICATION FILED SEPT. 3, 1904.



UNITED STATES PATENT OFFICE.

HUGH McLEOD, OF HATFIELD, MASSACHUSETTS.

PULLEY-CROWNING ATTACHMENT FOR LATHES.

No. 822,754. Specification of Letters Patent. Patented June 5, 1906.

Application filed September 3, 1904. Serial No. 223,211.

To all whom it may concern:

Be it known that I, HUGH McLEOD, a citizen of the United States of America, residing at Hatfield, in the county of Hampshire and State of Massachusetts, have invented new and useful Improvements in Pulley-Crowning Attachments for Lathes, of which the following is a specification.

This invention relates to lathes, and has for its object to provide an attachment for the above-named tool to form the crown on the face of a pulley much more perfectly and cheaply than can be done with the devices now in use within my knowledge, a further object being to provide a construction for the above-described use capable of being adjusted to crown the face of pulleys whose diameters are different and whose faces are of different widths.

Having these ends in view, the invention consists in the construction set forth in the following specification and clearly summarized in the claims appended thereto.

In the drawings forming part of this application, Figure 1 is a plan view of a tool-carriage of a lathe having the invention applied thereto. Fig. 2 is a perspective view of a portion of an oscillating arm mounted on the tool-carriage. Fig. 3 is a perspective view of an eccentrically-located ring loosely mounted in a socket in said oscillating arm. Fig. 4 is a perspective view of one end of an arm connected with said ring and with the cross-slide on the tool-carriage. Fig. 5 is a partly-sectional view of the principal operative parts of the device on line 5 5, Fig. 1.

Referring to the drawings, *a* indicates the tool-carriage of a lathe, and *b* the ways on the lathe-bed on which the carriage slides, the latter being moved in the usual manner by a suitable feed-screw, as *c*. Mounted on this tool-carriage and transversely slidable thereon in the ways *d* is the usual cross-slide *e*, carrying the tool-post *f*, the cross-slide being operable by hand by means of a crank-wheel, as *g*, and the tool-carriage operable in the usual manner longitudinally of the bed by means of the hand-wheel *h*, all as usual in lathes. Means are provided also common in lathe constructions whereby the cross-slide may be disengaged from the feed-screw operated by the hand-wheel *g*, (which means are not shown herein;) but by means of such disengagement, as is well-known, the cross-slide may be moved back and forth on the ways *d* independently of its feed-screw.

In carrying out this invention means are provided whereby the tool-carriage and the cross-slide may be manipulated by their feed-screws in the usual manner to adjust the tool *j* properly relative to the face of the pulley, a portion of which is indicated by *m*, and the device forming the subject-matter of this application, connected with the cross-slide, is actuated by the feed movement of the tool-carriage *a* to automatically move the cross-slide in one direction during the traverse movement of the tool *f* from one side of the pulley to the center thereof and in the opposite direction during the traverse movement of the tool from the center to the other side. This movement of the slide being continuous, or practically so, the path described by the point of the tool will be that of a curve such as is shown by the dotted line *k*, Fig. 1. The device whereby this movement is imparted to the cross-slide *e* consists of a block *o* transversely slidable on the ways *d* of the tool-carriage, the same as the cross-slide, except that it has no feed-screw. This block has mounted on the upper side thereof the disk *p*, in the under side of which a socket *q* is turned to receive a rotatable member *r*, which is located eccentric to the axis of the disk *p*. This axis is indicated by the hole *s*, through which a screw *t* passes and is screwed into the block *o*. In the rotatable member *r* a pin *v* is fixed, which engages with a hole *w* in the end of a bar *x*, which extends between the disk *p* and the cross-slide *e*, said bar being attached to the cross-slide pivotally by a nut, as *y*, the end of the bar under the disk being let into a recess in the edge of the block *o*, as shown in Fig. 5.

Extending rearwardly from the back side of the disk *p* is an arm 3, provided with a number of holes 4 therein, whereby by means of a pin 6 a connecting-rod 7 may be secured pivotally to the arm 3, the opposite end of the brace-rod being pivotally secured, as at 8, to the bed of the machine, the point of attachment of said bar 7 being preferably in the form of a post 9, as shown, projected up from the plan view, Fig. 1.

When the parts are put together, the block *o* is moved on the ways *d* to permit the attachment of the bar *x* to the cross-slide *e*, the arm 3 being in the position shown in Fig. 1, and the pin *v* will then lie in a line extending centrally through the disk *p*, lengthwise through the arm 3, and through the tool *j*, and the block is then secured to the carriage

by bolts o'. By means of the hand-wheels g and h the tool may now be moved to a position indicated by dotted lines in Fig. 1 at the right-hand end of the work, the cross-slide released from its feed-screw, and the automatic feed set to operate the tool-carriage lengthwise of the bed. As the tool moves to the right the brace-rod 7 will prevent the arm 3 from moving with it, and hence when the tool arrives at the position shown at the right-hand side of the work the arm 3 will occupy the position shown in dotted lines in Fig. 1, and in moving to this position the disk p will have been rotated and the pin v on the rotatable member r, acting as a crank-pin, will have drawn the cross-slide toward it by means of the bar x, extending between said pin v and the cross-slide. Of course during the movement of the tool-carriage toward the right, as described, the tool must be backed off away from work, then advanced to the proper position, and then released from its feed-screw. When the tool-carriage now moves to the left, it is obvious that the tool will be backed off from the work gradually by the rotation of the disk p until the arm 3 reaches the position shown in full lines in Fig. 1, the continued movement of the tool-carriage effecting the continued rotation of the disk p, whereby after passing the center the tool will again be drawn in toward the work, thereby giving to the face of the pulley the desired crown.

The bar x may be provided with a number of holes for the reception of the bolt y, thereby adapting the device to be used on pulleys of varying diameters, and by changing the point of connection between the brace-bar 7 and the arm 3 more or less crown may be formed on the face of the pulley, or the device may be adapted to pulleys having the same diameter and different width of face. It is thus seen that by means of these adjustments the device is applicable to a great variety of work, whereas when the crowns are turned on the pulleys as at present by means of a pilot-slot it requires a separate block having one of these pilot-slots therein for each pulley to be turned in, which the crown varies.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with the tool-carriage, of a cross-slide carrying a tool-holder, a block slidable on the tool-carriage, and means comprising an eccentric device attached to the said block by means of which the tool-holder may be moved in an arc when the tool-carriage is operated, said eccentric device comprising a rotatable disk having an eccentric socket therein, a rotatable member located in the socket, a pin eccentrically located on the rotatable member, an adjustable connecting-bar connected to the pin at one end and pivotally to the cross-slide at the other end, as described.

2. The combination with the tool-carriage of a lathe, of a cross-slide thereon, a disk rotatably mounted on the carriage, a rotatable member located in a socket in said disk eccentrically thereto, a pin located in said rotatable member eccentrically of the latter, a connection extending from said pin to the cross-slide and pivotally connected with the latter, an arm rigidly connected to the disk, and a brace-rod adjustably secured to said arm by one end, its opposite end being fixed.

HUGH McLEOD.

Witnesses:
A. E. Addis,
Archie C. Vining.