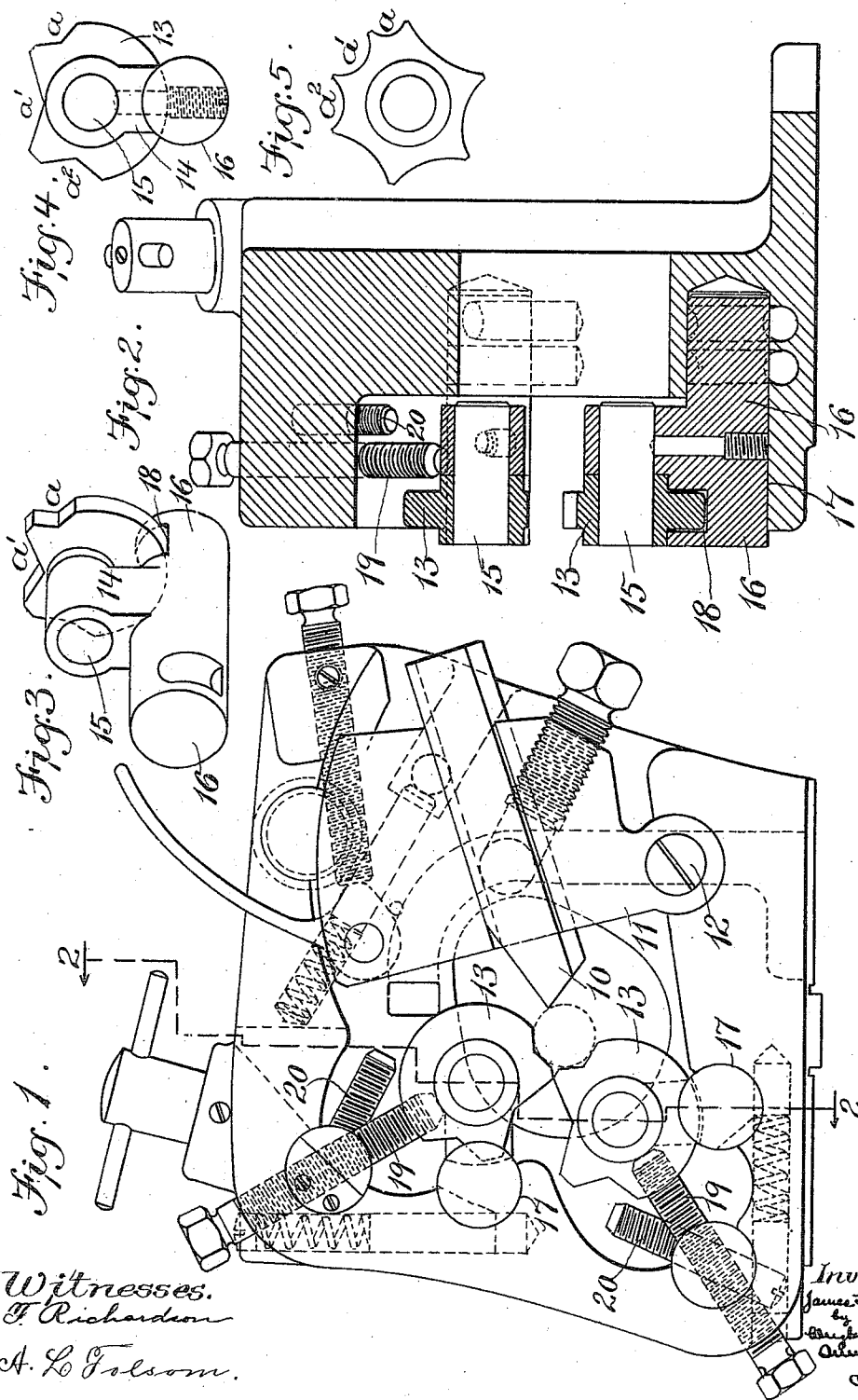


J. HARTNESS.
 WORK SUPPORTING REST FOR TURNING TOOLS.
 APPLICATION FILED OCT. 17, 1906.

985,411.

Patented Feb. 28, 1911.



Witnesses.
T. Richardson
A. L. Folsom.

Inventor
James Hartness
by
Charles Brown
Attorney

UNITED STATES PATENT OFFICE.

JAMES HARTNESS, OF SPRINGFIELD, VERMONT.

WORK-SUPPORTING REST FOR TURNING-TOOLS.

985,411.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Original application filed November 24, 1905, Serial No. 288,970. Divided and this application filed October 17, 1906. Serial No. 339,349.

To all whom it may concern:

Be it known that I, JAMES HARTNESS, of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Work-Supporting Rests for Turning-Tools, of which the following is a specification.

This invention has relation generally to turning tools for lathes and more particularly to devices for supporting the work in the operation of turning to prevent the work from springing under the thrust of the cutter.

It has been proposed heretofore to employ rolls as back and top rests, and except for certain disadvantages they are highly satisfactory inasmuch as they reduce the friction which operates to limit the speed of the work being turned. Nevertheless, in the employment of such rolls, there is always a tendency for the work to carry chips and grit between it and the rolls so as to spring the work toward the cutter with the result that the work is not perfectly and evenly turned. Again the rolls are apt to become uneven, eccentric or imperfect in shape so that the work itself will be effected by such variation. Thus on account of the uncertain operation of the roller back and top rests, it has been necessary to use the ordinary flat rests to obtain accurate results. The objection to the use of a single contact flat rest however is that it is soon destroyed by the friction of the work running at the high speed that obtains in modern machine shop practice. This makes it necessary to either reduce the size of the chip or the speed of the work, or in some way relieve the pressure at the point of contact.

The object of the present invention is to provide work rests having none of the disadvantages of the single contact rests or the roller rests so that the work may be driven at high speed without causing the destruction of the work-engaging surfaces of the rests.

The present invention, therefore, contemplates the employment of double contact surfaces for both the top and the back rests; that is to say, I preferably employ a top rest and a back rest, each of which is notched to provide adjacent surfaces with which the work may make contact. In order to insure an equal contact of the work with both of the surfaces on each rest, the rest itself is

mounted pivotally. Thus each rest is capable of rotation about its pivot and yet is in sliding contact with the work. This makes it possible to rotate the work to a speed as high as the present steels will stand without resorting to rotating roller rests.

Referring to the accompanying drawings, which illustrate one embodiment of the invention,—Figure 1 represents a turning tool, the main features of which are illustrated, described and claimed in Letters Patent No. 860,802, granted July 23, 1907, from which this application was divided. Fig. 2 represents a section on the line 2—2 of Fig. 1. Fig. 3 represents in perspective view one of the rest carriers with a swiveled rest embodying the invention supported thereby. Fig. 4 represents an end view of the same. Fig. 5 represents a convenient form of the rest.

As set forth in said Letters Patent, hereinbefore referred to, the tool is provided with a cutter 10, adjustably supported on a cutter carrier 11, pivoted or fulcrumed at 12. The work rests are indicated at 13 13. Each may be mounted upon a carrier consisting of a relatively short arm 14 having a transverse cylindrical aperture, the walls of which are hardened to receive a hardened cylindrical crank pin 15. The arm at its other end is provided with oppositely projecting trunnions 16 16, which constitute a rock or crank shaft and which are fitted in an open socket or bearing 17. One of the trunnions extends out as far as the end of the hardened crank pin 15 and is formed with the groove 18 to receive the work rest as illustrated in Fig. 3. As described in said Letters Patent, a plurality of abutments are provided for each work rest so that they may be maintained in any desired position according to the diameter of the work. These abutments are indicated at 19 20. Each work rest consists of a disk or plate which is centrally apertured to receive one of the pins 15 and it is held against movement in the direction of its axis by the walls of the groove 18 in one of the trunnions 16. The disk is provided with one or more transverse peripheral notches as at a a' a'' (see Fig. 4). These notches will preferably be V-shaped or in the form of reëntrant angles, to provide surfaces to be engaged by the work, though I should not regard it as a departure from the invention if the notches were rounded

or in the form of arcs of circles of different diameters, as illustrated in Fig. 5.

By the employment of swivels as back rests, it will be observed that each back rest will automatically accommodate itself to the work, and that it may be partially rotated so as to bring a different notch into operative position with relation to the work. Assuming, for example, that the thrust against each of the rests 13 in Fig. 1 is approximately 1,000 pounds, it will be understood that it is divided between two contact points, thus making the running contact with each surface of the rest only 500 pounds. Each rest equalizes its contact with the work automatically, and, as previously stated, permits the work to be run to a maximum speed. The rest, which is directly opposite the cutter, is generally termed the "back rest" and the rest which is located in position to resist the lateral thrust of the work may be termed the "top rest".

I desire to have it understood that the phraseology which I have employed is for the purpose of description and not of limitation, and that the invention may be embodied in other forms which may readily suggest themselves to those skilled in the art to which this invention relates.

While I preferably form both of the rests, which may be termed "notches" or "forked" rests, with pivot apertures, around which they may move to accommodate themselves to the work, nevertheless should occasion arise, I might replace either of them with a roller rest substantially as described in my said Letters Patent No. 860,802.

Having thus explained the nature of my invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the modes of its use, I declare that what I claim is:—

1. A turning tool comprising a cutter, a

back rest opposite the cutter, and a top rest located between the cutter and the back rest, each of said rests being peripherally notched longitudinally of its axis to provide a double bearing surface on the work, and pivots on which said rests are freely rotatable when operatively engaged with the work, whereby said rests may yield about their pivots to equalize the pressure of said bearing surfaces on the work.

2. A turning tool comprising a cutter, and a work rest comprising a pivot and a rest loosely movable about the axis of the pivot and having a transverse peripheral notch, said rest and pivot being arranged with relation to the cutter, and the rest being freely movable about said pivot, so that the walls of the notch accommodate themselves to the work and resist the lateral thrust thereof due to the action of the cutter on the work.

3. A turning tool comprising a cutter, a top rest, and a back rest, one of said rests being notched to provide a double bearing surface on the work and a pivot on which said last-mentioned rest is loosely pivoted and about which it is free to move, whereby it may yield about its pivot to equalize the pressure on each wall of the notch and hold the work against the thrust of the cutter thereon.

4. In combination with the support therefor, of a pivot projecting from said support, and a work rest free to rotate about said pivot when in operative relation to the work, and having a peripheral notch extending longitudinally of said pivot to receive said work, substantially as set forth.

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

JAMES HARTNESS.

Witnesses:

A. N. HOWE,
A. S. MUNRO.