No. 697,854. Patented Apr. 15, 1902.

A. B. LANDIS.

AUTOMATIC WORK REST FOR GRINDING MACHINES.

(Application filed Sept. 11, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

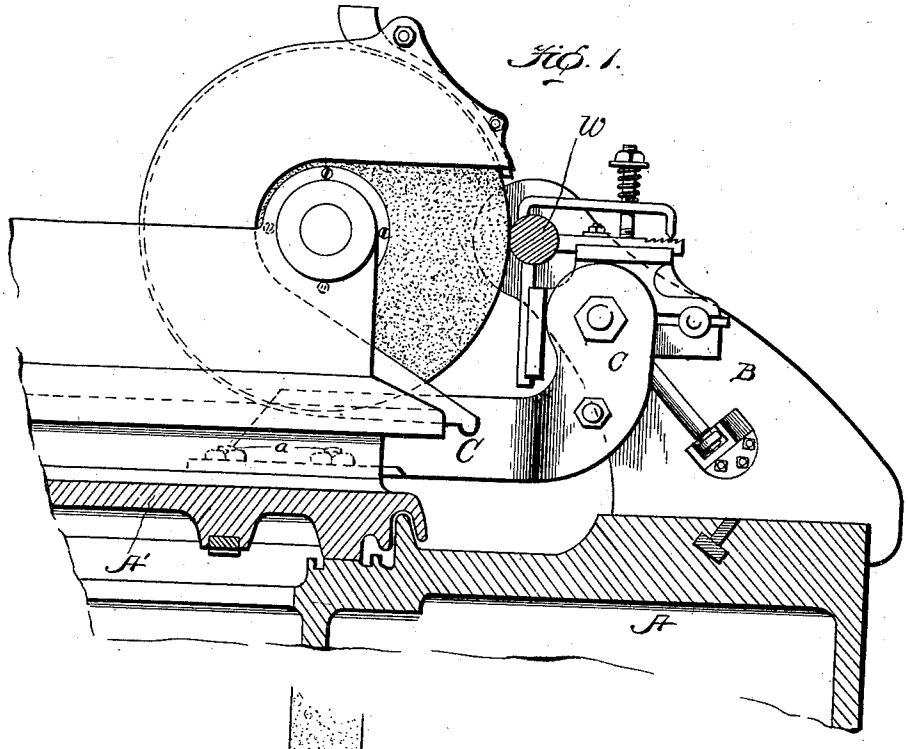
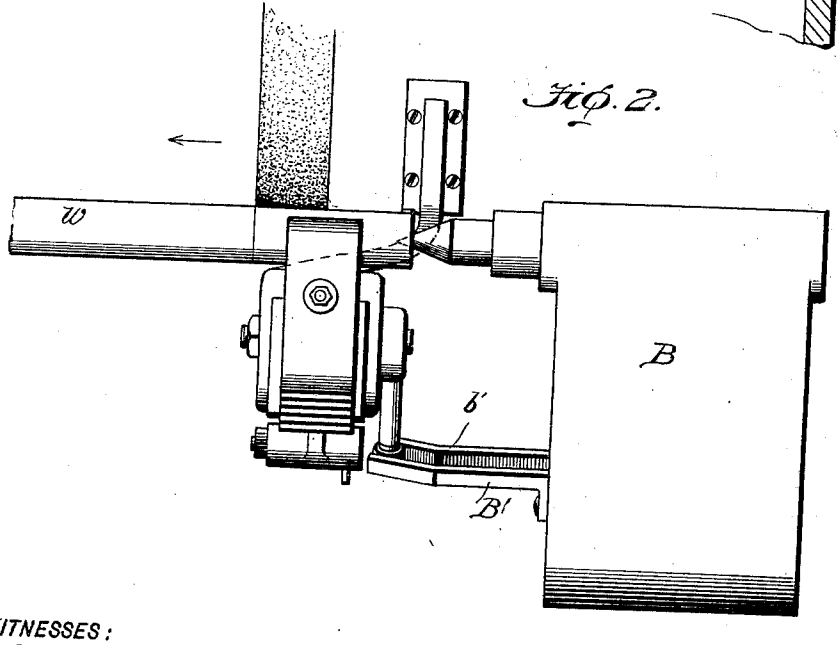


Fig. 2.



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Fig. 4.

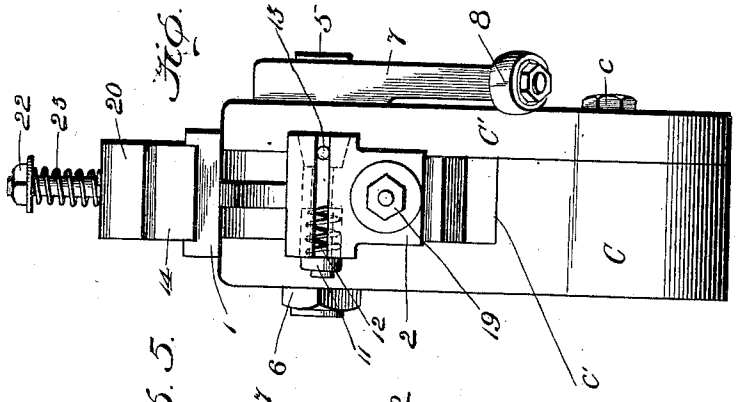


Fig. 5.

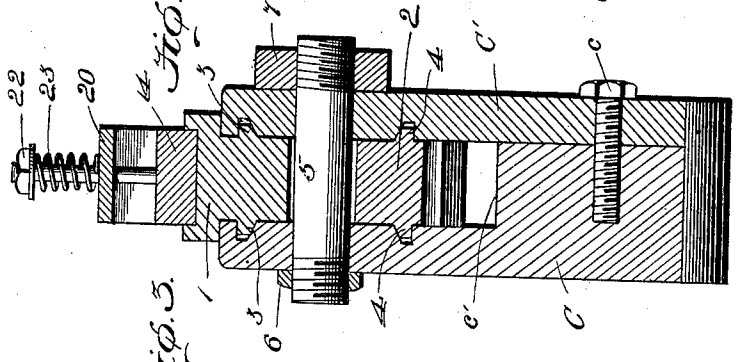


Fig. 3.

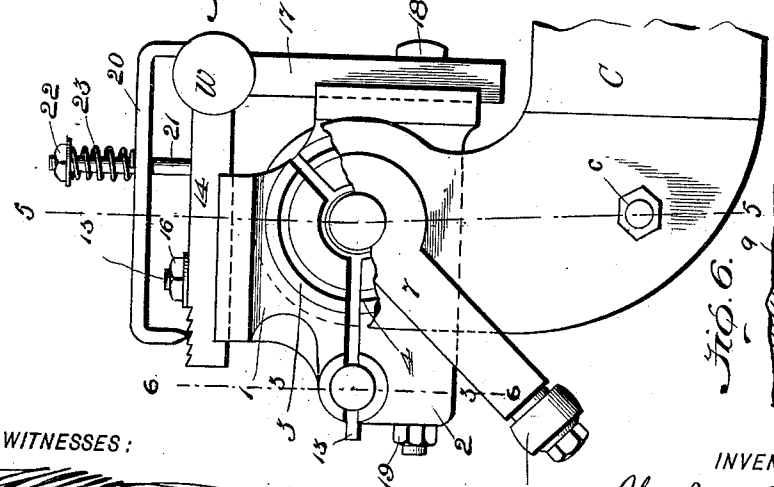
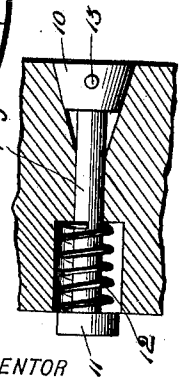


Fig. 6.



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ABRAHAM B. LANDIS, OF WAYNESBORO, PENNSYLVANIA.

AUTOMATIC WORK-REST FOR GRINDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 697,854, dated April 15, 1902.

Application filed September 11, 1901. Serial No. 75,032. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM B. LANDIS, a citizen of the United States, residing at Waynesboro, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Work-Rests for Grinding-Machines, of which the following is a specification.

My said invention consists in an improved construction of work-rests for grinding-machines of that general character shown in various patents heretofore granted to me, whereby the work may be supported against a rigid surface which bears against said work on the surface immediately behind the advancing edge of the grinding-wheel and travels therewith and is simultaneously operated at the end of each traverse of the work to set said rest up to the new surface of the work of the next traverse of the grinding-wheel, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a transverse section through the upper portion of a grinding-machine, showing a work-rest of my improved construction mounted thereon operative in position; Fig. 2, a top plan view of the foot-stock of the machine and the work and work-rest, the arrow indicating the direction of travel. Fig. 3 is a side elevation of the work-rest on an enlarged scale, a portion of the outside plate being broken away to show the interior more clearly; Fig. 4, a rear elevation of the same; Fig. 5, a vertical section on the dotted line 5 5 in Fig. 3, and Fig. 6 a detail section on the dotted line 6 6 in Fig. 3.

In said drawings the portions marked A represent the bed of the machine; A′, the traveling carriage carrying the grinding-wheel; B, the foot-stock, and C the main frame or support of the work-rest.

The parts other than the work-rest are of any appropriate construction — as, for instance, such as shown in my prior patents — and need no special description herein, being shown only for the purpose of better illustrating the arrangement and use of said rest.

The main support or frame C is bolted to the traveling carriage A′ by bolts *a*, extending through flanges formed on its sides at one end, and extends therefrom to a position on the opposite side of the work above bed A and extends up to behind said work in position to support the rest-blocks. It is recessed on one side and has a removable plate C′, secured thereto by a bolt *c*, and at a point above the joint between these two parts is formed a deeper recess or offset *c*′, leaving an open space between them. In each of the adjacent faces of said parts C and C′ is formed a circular groove, with the inner side tapered, and two blocks 1 and 2, formed with corresponding U-shaped segmental flanges 3 and 4 on their opposite faces, are mounted between said parts C and C′, with said flanges fitting in said grooves, said blocks being thus supported to move on the circle of said grooves. A clamping-bolt 5 extends through the parts C and C′ between said blocks 1 and 2 at a point central of said grooves and has a nut 6 upon one end, by which the said parts are drawn together to clamp said blocks rigidly in any desired position. On the opposite end of said bolt is another nut on the end of an arm 7, having an antifriction-roller 8 on its outer end, which is adapted to contact with an operating-cam, as will be presently described. Said blocks 1 and 2 extend rearwardly for a distance behind their connection with the parts C and C′ and are formed with adjacent recesses, which together form an aperture of the form most clearly shown in Fig. 6, being cone-shaped at one end, cylindrical at the other, and the two larger portions joined by a central smaller portion which is circular in cross-section. In this aperture is mounted a rod 9, having a cone-shaped end 10 in the cone-shaped portion of the aperture and a head 11 on the opposite end, between which and the bottom of the cylindrical recess is mounted a spring 12, the force of which is normally directed against the head 11 to draw the cone 10 into the cone-shaped recess and force the adjacent ends of the blocks 1 and 2 apart. A pin 13 is mounted in a perforation to extend transversely from the cone 10 between the parts 1 and 2, by which the rod 9 may be forced in a direction opposite to that of the force of the spring, and by forcing it back until free from the blocks 1 and 2 and turning it until the pin

will rest against the side of one or the other the cone 10 will be withdrawn from between said blocks, permitting them to be brought together at this end and opened at their opposite ends, the movement being in the circular grooves, as will be readily understood. The outer top face of block 1 is formed with a recess in which is mounted a bar 14, the front end of which is formed as the face of the rest which bears against the work. Said bar is secured by a bolt 15, projecting from the block 1 through a slot in said bar and provided with a nut 16 on its outer end, by which the said bar may be clamped, the set permitting the bar to be adjusted for work of different sizes. The block 2 has a similarly-formed vertical face in which is mounted a bar 17, being secured in the way or recess by a bolt 18, which extends through a slot therein and entirely through said block and has a nut 19 on its outer end for securing said bar, said bars 14 and 17 extending substantially at right angles to each other, and the bearing-face of bar 14 rests against the work in a horizontal direction and the vertical bar 17 in a vertical direction from beneath. A finger 20 is mounted to bear on the top of the work, being secured by a bolt 21, extending through a slot therein and set in a perforation in bar 14, a nut 22 and spring 23 being provided for regulating the tension of said finger. The purpose of this rest is to prevent "chattering" or to hold the work away from the drawing force of the grinding-wheel. The top of said bar 14 is formed with serrations with which a point on the rear of said finger 20 engages, which permits adjustments to suit work of different sizes, as will be readily understood.

Extending out from the foot-stock B is a part B′, containing a cam groove or way *b*′, so located that the antifriction-roller 8 of arm 7 will run into it when the carriage nears the end of its travel across said work, which operates to raise said arm, loosening the nut on its end, so that the spring 12 on its end may force the cone 10 farther along the cone-shaped recess in which it is located, and thus force the ends of the blocks 1 and 2 apart and carry the points of rest forward in the lines of a circle to bear against the work, thus "setting up" the said points against the new surface formed.

In operation the parts are adjusted as shown in Fig. 1. The machine is put in operation, and the work is ground from the foot-stock to the head-stock. The grinding-wheel being for a portion of the width of its face in advance of the rest it grinds a true surface on the work before the rest comes against it, and said rest follows across the work on said true surface, but directly opposite the grinding-wheel, to which it supports the work, as in a die, through its entire length to insure the same true surface or same degree of grinding throughout. When the head-stock end is reached, the carriage reverses and travels back, grinding but lightly until the foot-stock is reached, when the cam, coming in contact with the end of arm 7, operates as just described to loosen the nut on its opposite end, which releases the clamping force of bolt 5 on plates C and C′ sufficiently to permit spring 12, operating through the wedge or cone 10, to turn the blocks 1 and 2 on the circular flanges 3 and 4 in the circular grooves in the plates C and C′ and advance the points of rest against the work again. As the carriage starts back the arm is freed from the cam, which operates to set up the nut again and clamp the parts rigidly in position.

This device can be used in connection with an automatic cross-feed of grinding-wheel, which is shown in other patents granted to me, by which the grinding-wheel is automatically set up at the ends of the work, and this rest set up and clamped automatically at the same time makes the machine automatic in its action, using a rest with solid perfect adjustment.

It will be clear that this rest may be used on machines in which the work instead of the grinding-wheel are made to traverse without departing from the invention.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a work-rest, the combination of the points of rest adjustably supported, and means for automatically clamping them in position.

2. In a work-rest for grinding-machines, the combination of the points of rest adjustably supported, means for automatically adjusting them, and means for automatically locking them, substantially as set forth.

3. In a work-rest for grinding-machines, the combination, of the supporting-frame, points of rest carried on parts mounted in said frame to move on circular lines, clamping means, and means for automatically operating said locking means, substantially as set forth.

4. In a work-rest for grinding-machines, the combination, of the supporting parts, blocks mounted on circular connections therein and carrying the points of rest, means for clamping said parts in place, and means for automatically operating said clamping mechanism.

5. In a work-rest for grinding-machines, the combination, of the supporting parts, the blocks carrying the points of rest mounted therein on circular connections, a wedge mounted between adjacent faces of portions of said blocks beyond said circular connections, means for forcing said wedge forward, means for clamping said parts against the operation of said wedge, and means for automatically operating said clamping mechanism, substantially as set forth.

6. In a work-rest for grinding-machines, the combination, of the supporting parts, the blocks carrying the points of rest mounted to

be adjusted toward or away from each other at their ends, means for effecting said adjustment, means for clamping said parts in adjusted position, and means for operating said clamping mechanism automatically, substantially as set forth.

7. In a work-rest for grinding-machines, the combination, of the supporting parts, the blocks carrying the points of rest mounted therein to move on circular connections, means for adjusting said blocks, and means for securing them in adjusted position, substantially as set forth.

8. In a work-rest for grinding-machines, the combination, of the supporting parts, parts carrying the points of rest mounted therein to be adjusted on circular tracks, and means for securing them in the desired position, substantially as set forth.

9. In a work-rest for grinding-machines, the combination, of the supporting parts, the parts carrying the points of rest mounted therein to be moved on circular lines to approach or recede from each other at their ends, substantially as set forth.

10. In a work-rest for grinding-machines, the combination, of the supporting parts, the moving parts carrying the points of rest mounted therein, and a spring-wedge for forcing the said parts to the work, substantially as set forth.

11. In a work-rest for grinding-machines, the combination, of the support C, the plate C′ attached thereto, the blocks 1 and 2 mounted between them by interengaging circular grooves and flanges, the rest-blocks mounted thereon, the clamping-bolt, the spring-wedge, the arm 7 with nut on the clamping-bolt, and the cam on the machine with which said arm engages.

12. In a work-rest, the combination of the supporting parts, the parts carrying the points of rest mounted therein to move on circular connections, and a spring-wedge for operating them provided with a handle by which it may be manipulated against the operation of the spring, substantially as set forth.

In witness whereof I have hereunto set my hand and seal at Waynesboro, Pennsylvania, this 2d day of September, A. D. 1901.

ABRAHAM B. LANDIS. [L. S.]

Witnesses:
J. E. FRANTZ,
ALF. N. RUSSELL.