No. 856,726. PATENTED JUNE 11, 1907.

H. B. ROSS.

CUTTER HEAD KNIFE SHARPENER.

APPLICATION FILED JAN. 17, 1906.

3 SHEETS—SHEET 1.

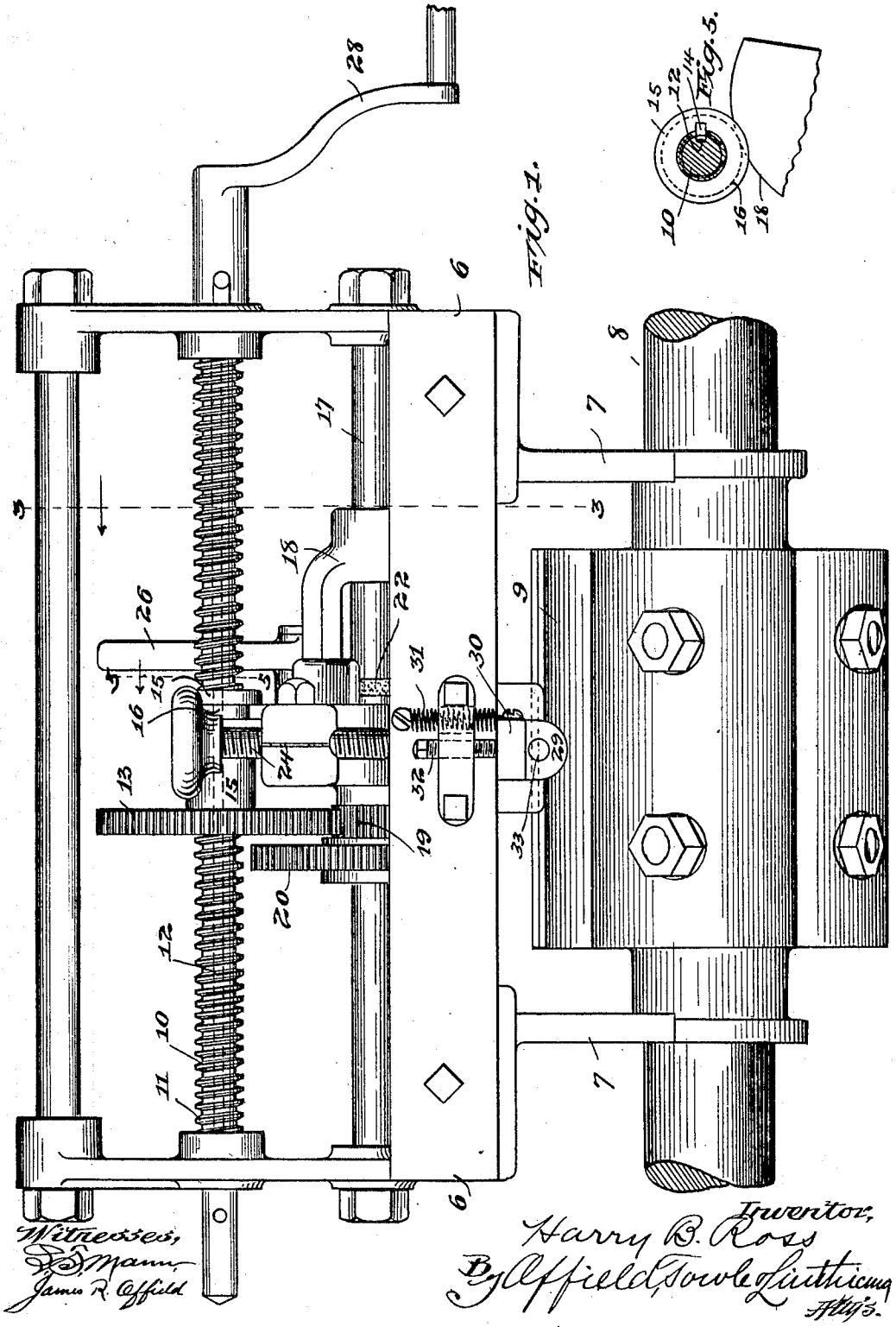


Fig. 1.

Fig. 5.

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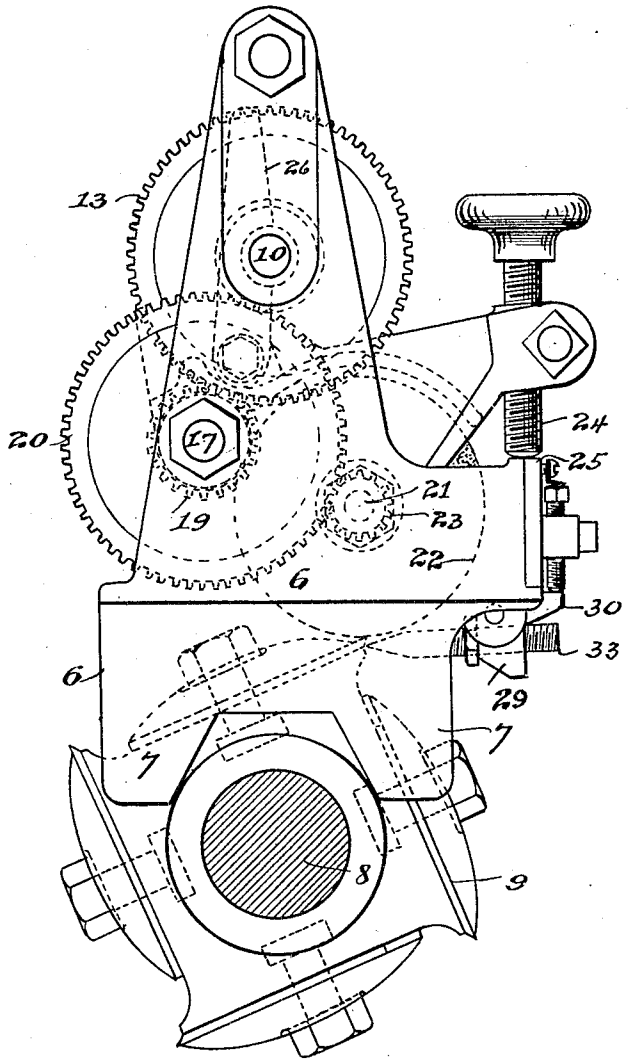
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

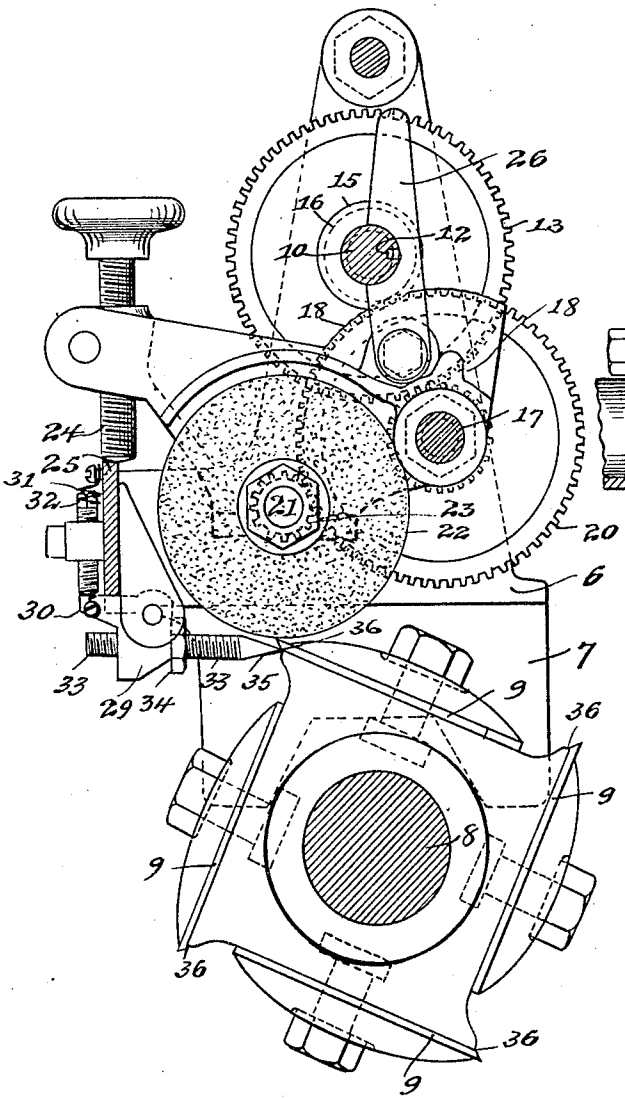
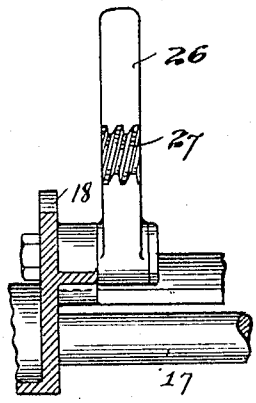


Fig. 4.



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UNITED STATES PATENT OFFICE.

HARRY B. ROSS, OF BELOIT, WISCONSIN, ASSIGNOR TO THE BERLIN MACHINE WORKS, OF BELOIT, WISCONSIN, A CORPORATION OF WISCONSIN.

CUTTER-HEAD-KNIFE SHARPENER.

No. 856,726. Specification of Letters Patent. Patented June 11, 1907.

Application filed January 17, 1906. Serial No. 296,505.

To all whom it may concern:

Be it known that I, HARRY B. ROSS, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Cutter-Head-Knife Sharpeners, of which the following is a specification.

My invention relates to that class of knife sharpeners which are used for sharpening the knives of the cutter-heads of planing machines, and in which the knife may be sharpened without removing it from the head or the latter from its position in the machine.

It is the object of my invention to provide a simple grinding device which can be readily attached to and detached from the machine, and which is entirely self-contained, requiring no means of attachment to the planer and which carries all of the necessary devices for properly positioning the grinding wheel with reference to the knife and maintains the cutter-head in proper position while the grinding is being performed. In my device the gaging is done from the knife itself instead of from some fixed part of the machine, such, for example, as the chip-breaker or other part of the frame.

In the accompanying drawings Figure 1 is a front elevation of the grinding attachment shown in proper relation to the cutter-head, the shaft of the latter being also shown broken away; Fig. 2 is an end elevation of the parts shown in Fig. 1; Fig. 5 is a reduced detail on line 5, 5, Fig. 1. Fig. 3 is a sectional elevation on the line, 3, 3, of Fig. 1 looking in the direction of the arrow; and Fig. 4 is a detail view of a threaded arm cooperating with a worm shaft for effecting the traverse of the emery wheel over the knife.

The grinding mechanism is mounted in a frame, 6, provided with notched legs, 7, which straddle the cutter-head shaft, 8, which carries the cutter-head 9.

10 is the power shaft of the machine which is provided with a worm thread, 11, and a continuous key-seat or slot, 12; a driving gear, 13, is mounted on the worm shaft and rotatably connected thereto by means of a feather, 14, carried in a sleeve-hub, 15, rigid with the gear-wheel and provided with a groove, 16.

17 is a smooth rod carried in the frame works parallel to the power shaft, and on said rod is slidingly and pivotally mounted a frame, 18, carrying a pinion, 19, and a gear, 20, and on a pin or stud, 21, the emery wheel, 22, a pinion, 23, on the end of the stud intermeshing with the gear 20. The frame, 18, is provided with an adjusting screw, 24, which contacts with the crossbar, 25, of the frame and limits the downward, swinging movement of the frame, 18, and consequently the downward movement of the emery wheel. On the frame, 18, is mounted a threaded arm, 26, having threads, 27, to engage the worm shaft, 10, which latter is shown as provided with a crank-handle, 28, and such crank may be applied to either end of the shaft or may be substituted by a pulley when it is desired to drive it by power. On the crossbar, 25, is mounted an adjustable pivoted stop the pivoted end of which is marked 29, and which carries a heel-piece, 30, to which the spring, 31, is connected and the swing of which is controlled by means of the set-screw 32; the spring and set-screw determine the normal position of this stop frame and the stop itself is in the form of a threaded bolt, 33, having a jam nut, 34, and its outer end flat-pointed or chisel-shaped, as shown at 35.

In operation the grinding attachment is set upon the shaft, the notched legs straddling the shaft and embracing the cutter-head, as shown in Fig. 1. In this position the stop, 33, will be brought to bear against the under beveled side of the knife, 36, which will effectually prevent the rotation of the knife; the stop is adjusted to the proper position to engage the knife by means of the adjusting screw, 32, and the adjustment of the stop, 33, will effect the angle and the amount of clearance back of the cutting edge on the knife. The position of the grinding wheel relative to the knife will be determined by the adjusting screw, 24, and since the alinement is made with reference to the knife itself it is obvious that any inequalities of grinding, such as might be present if the wheel were gaged with reference to the machine frame, will be avoided. The rotation of the worm shaft will effect the rotation of the emery wheel and also the traverse of the frame, 18, which is provided with a rib, 18^a, engaging the groove, 16, on the hub of the main driving gear.

It will be seen that this grinding attachment can be very readily applied and re-

moved; that it is self-contained and requires no extraneous fastening-means to secure it in position; that it carries all of the necessary adjusting provisions whereby to secure accuracy in the sharpening of the knife and to provide for such variation in the sharpening as to secure the desired amount of clearance.

I claim:

1. A cutter-head knife sharpener having a frame adapted for support upon the cutter-head shaft, a grinding wheel and means for causing the rotation and automatic traverse of the grinding wheel in contact with the knife, an adjustable stop for positioning and holding the cutter-head, and adjusting means for positioning the grinding wheel with reference to the knife, substantially as described.

2. In a cutter-head knife sharpener a supporting frame adapted for support upon the cutter-head shaft, a driving-shaft mounted in said frame, a pivoted frame having a grinding wheel rotatably mounted therein, gearing between the power shaft and grinding wheel for imparting rotative movement thereto, worm gearing connecting the power shaft and the pivoted frame for imparting a traversing movement to the latter, an adjustable stop on the pivoted frame for positioning the grinding wheel relative to the knife, an adjustable stop in the main frame for positioning and holding the knife, substantially as described.

3. In a cutter-head knife sharpener the combination with a rotating and traversing grinding wheel and means for positioning said wheel relative to the knife, of means for positioning and holding the knife, comprising a pivoted spring-actuated member, an adjusting screw therefor and an adjustable stop-device mounted therein, substantially as described.

4. In a cutter-head knife sharpener the combination with a supporting frame having a worm shaft thereon, a driving gear having a sliding engagement with said worm shaft, and a grinding wheel carrying-frame pivoted upon the supporting frame, and having gear members thereon concentric to its axis, and a threaded arm carried by the pivoted frame and engaging the worm shaft, substantially as described.

HARRY B. ROSS.

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