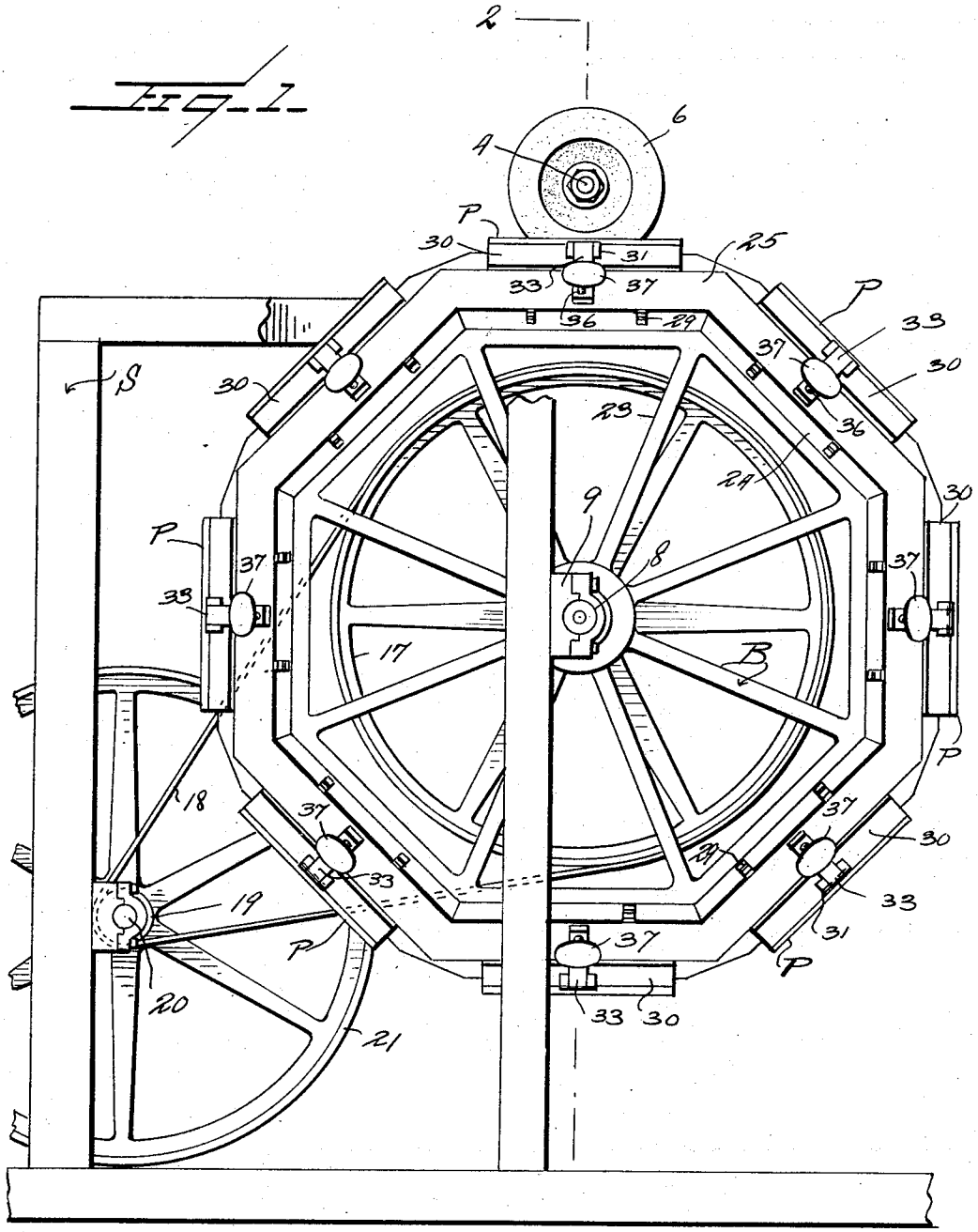
Nov. 18, 1930. W. H. ASHWORTH 1,781,674

AUTOMATIC PLANER KNIFE GRINDER

Filed July 14, 1927 3 Sheets-Sheet 1

Fig. 1.



INVENTOR.

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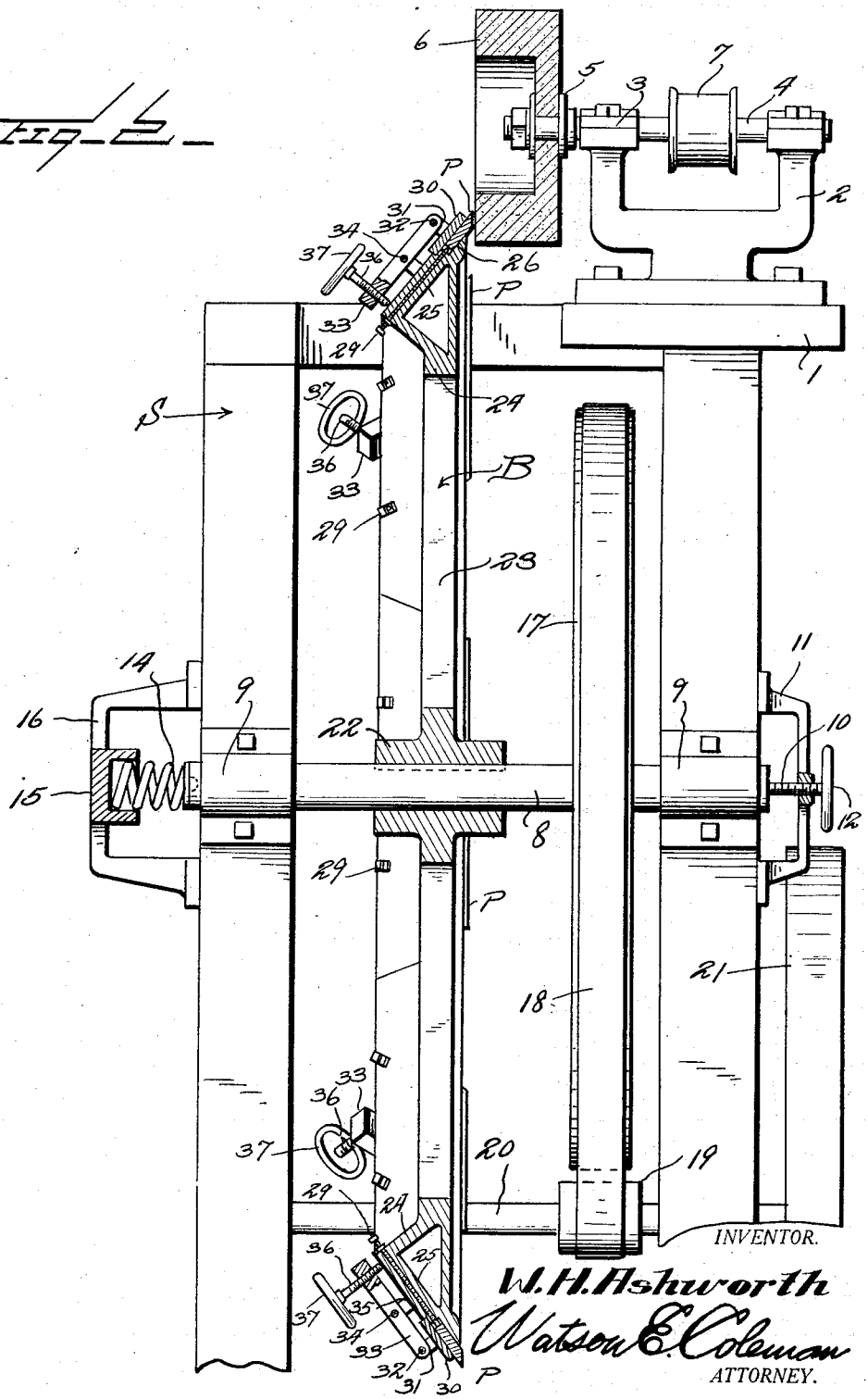
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Fig. 2



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Fig. 3.

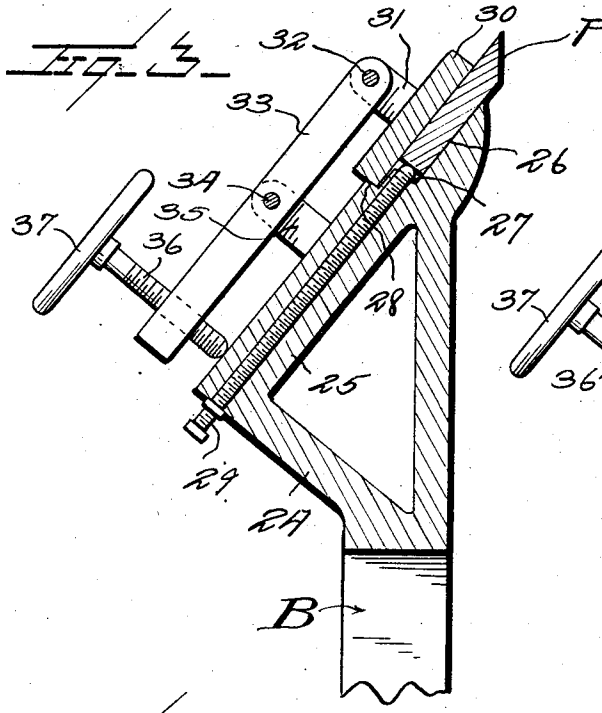


Fig. 4.

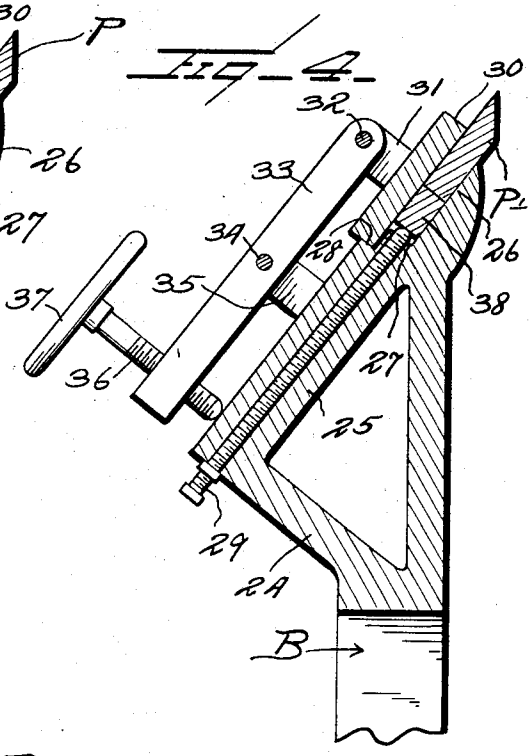
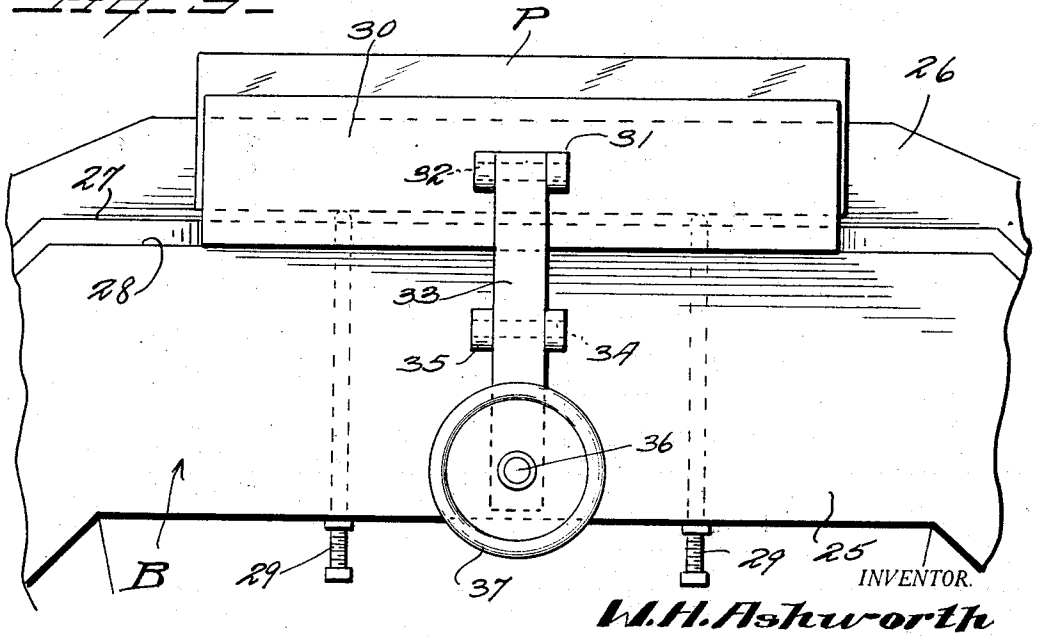


Fig. 5.



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Patented Nov. 18, 1930 1,781,674

UNITED STATES PATENT OFFICE

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AUTOMATIC PLANER-KNIFE GRINDER

Application filed July 14, 1927. Serial No. 205,649.

This invention relates to an automatic planer knife grinder which will grind correctly thin or thick knives to be used on any kind of planer or lumber dresser, and it is an object of the invention to provide a device of this kind including a grinding element and a rotatable blade carrier operating to bring a plurality of blades successively into requisite position with respect to the grinding element, thereby permitting all the blades to be properly ground during a single operation of the machine and in a manner assuring the blades when ground to be of equal weight.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved automatic planer knife grinder whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:—

Figure 1 is a view in side elevation illustrating an automatic planer knife grinder constructed in accordance with an embodiment of my invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1 with certain of the parts in elevation;

Figure 3 is an enlarged sectional view taken radially through the outer or peripheral portion of the rotary blade carrier;

Figure 4 is a view similar to Figure 3 illustrating the use of a filler strip in connection with a blade to be ground;

Figure 5 is a fragmentary view substantially in top plan of the structure illustrated in Figure 3.

As disclosed in the accompanying drawings, S denotes a suitable supporting structure including a table 1 upon which is mounted a bracket 2. This bracket 2 is provided with the spaced bearings 3 providing a mounting for a shaft 4, said shaft 4 having suitably affixed to one end portion thereof, as at 5, a grinding wheel 6 of emery or other desired material. The shaft 4 is adapted to be coupled, as by a pulley 7, with any suitable source of power and adapted to be driven at such axial speed to effect between eighteen hundred and twenty-four hundred R. P. M. of the wheel 6.

Rotatably supported by the supporting structure S in desired spaced relation with respect to the table 1 is a shaft 8 to which is fixed for rotation therewith a blade carrier B. The shaft 8 is free to move lengthwise through the bearings 9 therefor, the limit of such movement in one direction being effected by the elongated member 10 threaded through the bracket 11 suitably secured to the supporting structure S, said member 10 being adapted to engage the shaft 8 at substantially its axial center. The outer portion of the member 10 is provided with a hand wheel 12 whereby the member may be rotated in desired direction to regulate or control the extent of movement of the shaft 8 toward the member 10.

The shaft 8 is constantly urged toward the member 10 by an expansible coil spring of desired tension, said spring being interposed between the end of the shaft 8 remote from the member 10 and a cup-like member 15 carried by a bracket 16 suitably affixed to the supporting structure S, said bracket 16 and cup-like member 15 being omitted in Figure 1.

The shaft 8 is adapted to be coupled to a suitable source of power to effect about six R.P.M of the carrier B. As herein disclosed, the shaft 8 has fixed thereto a large pulley 17 around which passes a belt 18 also directed around a smaller pulley 19 fixed to a countershaft 20 rotatably supported by the structure S. This shaft 20 carries a pulley 21 of requisite diameter and which is adapted to be operatively connected with the desired source of power.

The carrier B comprises a hub 22 fixed to the shaft 8 and from which radiate the spokes 23. The outer extremities of the spokes 23 carry the rim 24. The rim 24 has its periphery

formed into a plurality of elongated facets 25 each preferably of the same length and disposed transversely on an incline of approximately forty-five degrees with respect to the shaft 8. Each of the facets 25 has its upper longitudinal marginal portion provided therealong with a rabbet 26, the inner or back wall of which being formed with the step-shoulders 27 and 28.

A planer blade P to be ground or sharpened is placed within the rabbet 26 of a facet 25 in advance of the inner and forward shoulder 27 with the opposite end portions of its rear edge, as illustrated in Figure 3, in contact with the inserted extremities of the threaded members 29 extending through the outer portion of the rim 24. These members 29 are adapted to be adjusted by a skilled mechanic to assure the requisite projection of the blade beyond the high point of the facet 25 to which it is applied so that at the conclusion of a grinding operation it will be assured that all of the blades are of the same weight. In connection with high speed planers it is highly essential that these blades be of equal weight or otherwise the efficiency of the planer is materially reduced.

A blade P is maintained in applied position within a rabbet 26 by a holding plate 30, the rear edge of which abutting the upper rear shoulder 28 and the forward portion of the plate 30 overlies the applied blade P. This plate 30 at its central part is provided with an upstanding post 31 to which is pivotally connected, as at 32, an end portion of a rigid rock lever 33. This lever 33 substantially midway its ends is supported for rocking movement, as at 34, by an outstanding post 35 carried by a facet 25 inwardly of its rabbet 26. The opposite end portion of the lever 33 has threaded therethrough an elongated member 36 the inner end of which contacting with the facet 25 while the outer or opposite end portion is provided with an operating wheel or member 37. Upon proper rotation of the member 36 the plate 30 will be caused to have firm clamping or holding engagement with an applied blade P.

As is illustrated in Figure 2, the shafts 4 and 8 are in parallelism and the endwise movement of the shaft 8 under the influence of the spring 14 is such as to move the carrier B toward the grinder 6, thus assuring requisite contact of the cutting edges of the blades P with the grinder 6 until such edges have been properly ground or sharpened and to the extent determined by contact of the shaft 8 with the member 10.

When the blades to be ground are unduly worn the proper projection of a blade P′ beyond its associated facet may be advanced by interposing between the rear edge of the blade P′, as illustrated in Figure 4, and the inserted ends of the members 29 a filler strip 38. The width of this strip 38 is to be varied as the occasions of practice may necessitate. It is to be understood that the transverse angle of each of the facets 25, or more particularly the rabbet 26 thereof, will be in accordance with the angle of the bevel to be ground along the cutting edge of the blade P or P′ and it is also to be understood that the outer or working face of the grinder 6 is at right angles to the shafts 4 and 8.

From the foregoing description it is thought to be obvious that a grinding apparatus constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. A planer knife grinding machine comprising, in combination, a supporting structure, a rotating grinder carried thereby and including a rim, a shaft disposed in a direction parallel to the axis of the grinder, means for supporting the shaft both for rotation and endwise movement, means for rotating the shaft, a blade carried by the shaft for rotation therewith, the rim of the carrier having a series of circumferentially spaced facets, each of said facets being disposed transversely of an incline with the high point of the facet at the side of the carrier adjacent to the grinder, the high marginal portion of each of the facets being provided therealong with a rabbet to receive the inner marginal portion of a blade to be ground with the opposite marginal portion of the blade extending beyond the high point of the facet, means carried by the facet and coacting with an applied blade and the portion of the facet rearwardly of the blade to hold the blade in applied position, and an expansible spring contacting with an end of the shaft for urging the carrier in a direction toward the grinder.

2. A planer knife grinding machine comprising, in combination, a supporting structure, a rotating grinder carried thereby and including a rim, a shaft disposed in a direction parallel to the axis of the grinder, means for supporting the shaft both for rotation and endwise movement, means for rotating the shaft, a blade carried by the shaft for rotation therewith, the rim of the carrier having a series of circumferentially spaced facets, each of said facets being disposed transversely on an incline with the high point of the facet at the side of the carrier adjacent to the grinder, the high marginal portion of each of the facets being provided therealong

with a rabbet to receive the inner marginal portion of a blade to be ground with the opposite marginal portion of the blade extending beyond the high point of the facet, means carried by the facet and coacting with an applied blade and the portion of the facet rearwardly of the blade to hold the blade in applied position, members threaded through the peripheral portion of the carrier below each facet for extension through the inner end of the rabbet to provide stops with which the applied blade is adapted to contact, and an expansible spring contacting with an end of the shaft for urging the carrier in a direction toward the grinder.

3. A planer knife grinding machine comprising, in combination, a supporting structure, a rotating grinder carrier thereby, means for rotating the grinder, a rotatable carrier supported by the stucture to one side of the grinder and including a rim closely adjacent the grinder, the rim of the carrier having a series of circumferentially spaced facets, each of said facets being disposed transversely on an incline with the high point of the facet at the side of the carrier adjacent to the grinder, the high marginal portion of each of the facets being provided therealong with a rabbet to receive the inner marginal portion of a blade to be ground with the opposite marginal portion of the blade extending beyond the high point of the facet, an arm pivotally supported by the facet intermediate its ends, a plate operatively engaged with one end portion of the arm for contact with the applied blade and an adjacent portion of the facet to hold the blade in applied position, and means carried by the opposite end portion of the arm and coacting with the facet to force the plate into desired working position with respect to an applied blade.

In testimony whereof I hereunto affix my signature.

WILLIAM HALE ASHWORTH.