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Ulmer

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[54] **ROTARY TOOL GUARD**

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[52] **U.S. Cl.** ..... **144/251 A;** 83/544; 90/11 R

[51] **Int. Cl.** **B27g 19/00**

[58] **Field of Search** ..... 90/11 R, 12 R; 144/134 R, 144/134 A, 251 R, 251 A, 251 B, 252 R, 252 A, 253 R; 83/544, 545, 546, 397.1, 478

[56] **References Cited**

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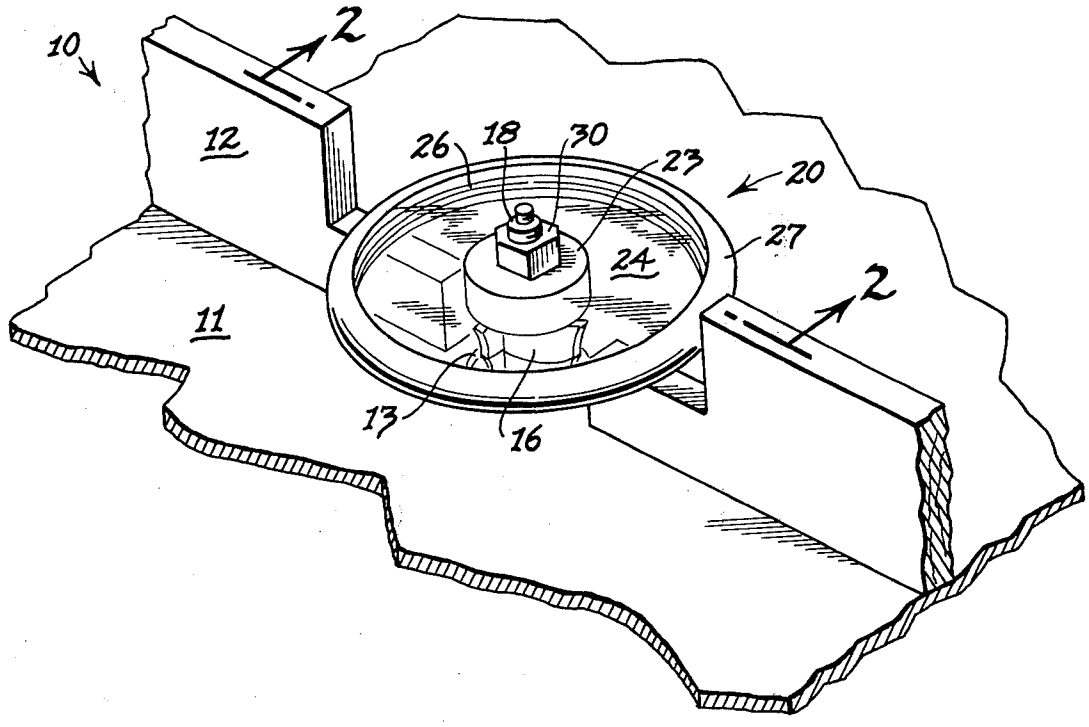
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Attorney, Agent, or Firm—Harrington A. Lackey

[57] **ABSTRACT**

A rotary tool guard, and more particularly a shaper guard, including a disc-shaped transparent guard member fixed to the vertical spindle above the rotary tool, for rotary movement with the tool.

4 Claims, 2 Drawing Figures



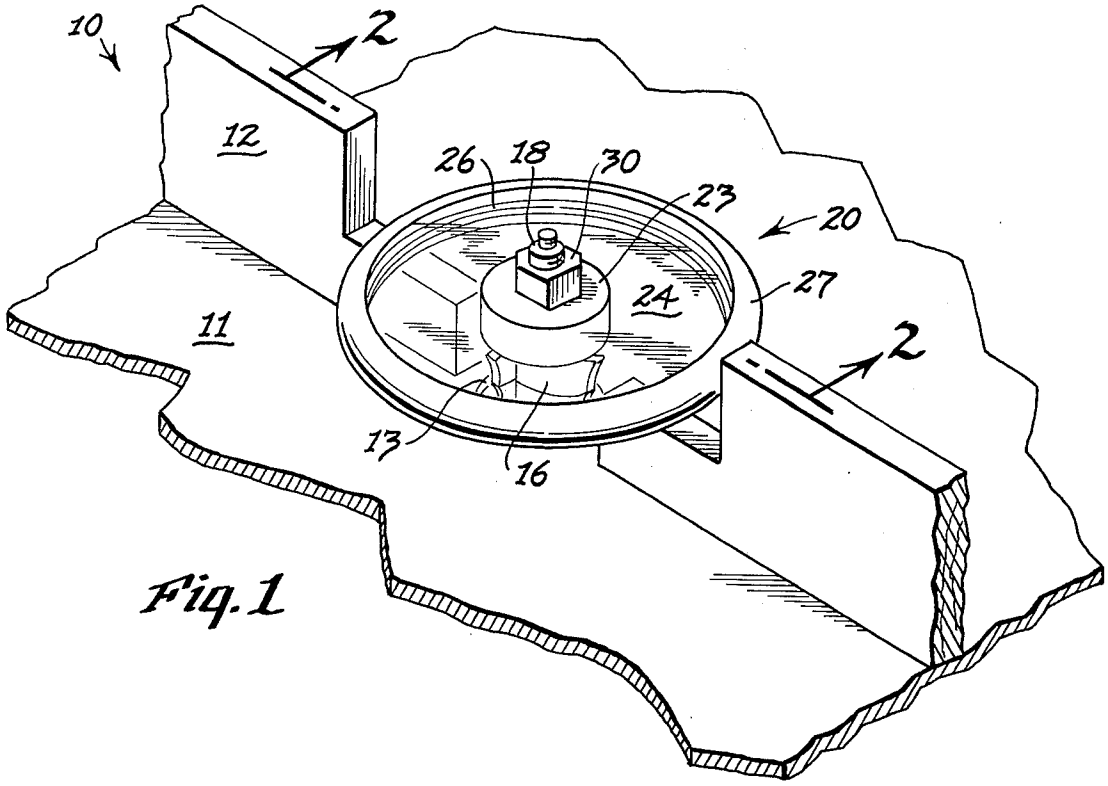

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Fig. 1

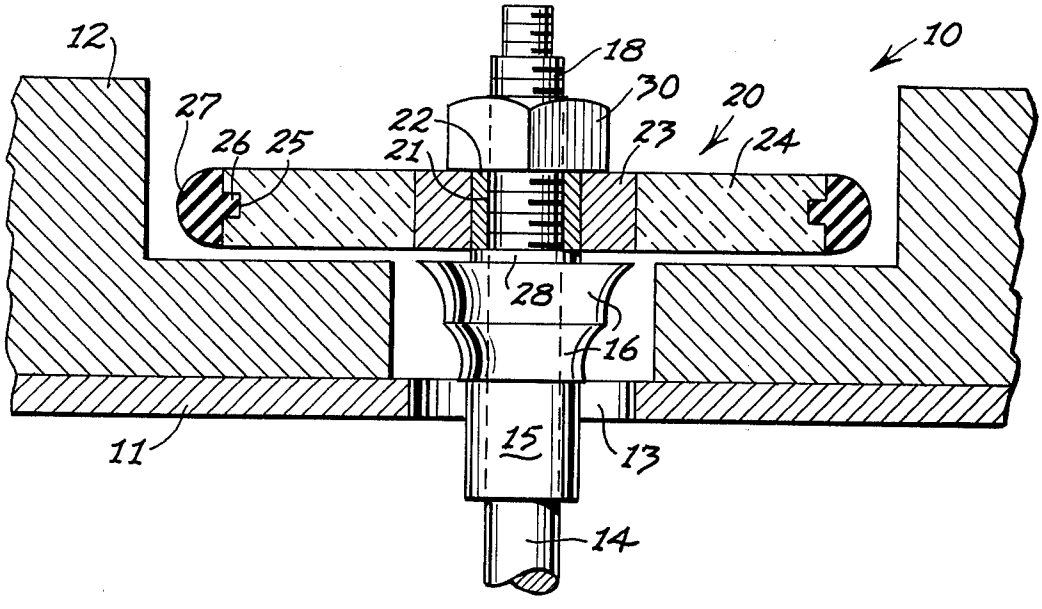

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Fig. 2

ROTARY TOOL GUARD

BACKGROUND OF THE INVENTION

This invention relates to a rotary tool guard, and more particularly to a shaper guard.

Heretofore, shaper guards have been of various designs, primarily ring-shaped, and mounted above the rotary shaper tool by a standard or bracket fixed to the shaper table at a laterally remote position from the shaper tool spindle.

The prior art shaper guards, because of their stationary position and stationary mounting are oftentimes removed by the operator because the shaper guard, or its mounting bracket, gets in the operator's way, or obscures the operator's vision of his work. The removal of the shaper guard and its mounting bracket, of course, maximizes the danger of injury to the operator.

Such prior art shaper guards are clearly shown in U.S. Pat. No. 1,706,156 issued to Hall on Mar. 19, 1929, and U.S. Pat. No. 2,642,104 issued to Brown on June 16, 1953.

The broad idea of the transparency of a shaper guard, as an optional feature, is disclosed in U.S. Pat. No. 2,895,518 of Rhett, issued July 21, 1959, in column 4, lines 44–50. However, the Rhett shaper guard is also supported in a fixed position relative to the spindle by a support spaced laterally of the spindle.

SUMMARY OF INVENTION

It is therefore an object of this invention to provide a rotary tool guard, and more particularly a shaper guard, which has an annular transparent body, and which is adapted to be fixed to the spindle of a rotary tool. The transparent body permits continuous and clear visibility of the work beneath the guard, regardless of the position of the guard; while fixing the guard to the spindle discourages removal of the guard from the spindle, particularly while the spindle and guard are both rotating.

Another object of this invention is to provide a shaper guard which has no mounting portions or brackets projecting laterally beyond the periphery of the guard itself.

The rotary tool guard made in accordance with this invention includes a unitary disc-shaped guard member having a hole in the center thereof adapted to be fitted over the vertical spindle, and means holding the guard rigidly upon the spindle above the rotary tool for rotation with the tool. The guard member also includes a major annular body portion of transparent material, such as transparent acrylic plastic, and preferably surrounded by an annular peripheral rim of soft, resilient material, such as rubber or polyurethane.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top perspective view of the guard made in accordance with this invention mounted upon the spindle of a shaper tool, with portions of the shaper table and fence shown fragmentarily;

FIG. 2 is an enlarged fragmentary section taken along the line 2—2 of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIEMENT

Referring now to the drawings in more detail, the table **11** and fence **12** of a conventional spindle shaper machine **10** are disclosed fragmentarily.

Projecting upward through an opening **13** in the table **11** is a vertical spindle **14** which is rotatably driven about its vertical axis by a motor and transmission, not shown, within the machine **10** and below the table **11.** Fixed upon the spindle **14** is the shaper tool **15** having blades **16** of the desired configuration for forming or shaping a wooden piece or work fed over the top of the table for cutting engagement with the shaper blades **16.** The fence **12,** of course, is employed to guide the work as it is shaped.

The shaper blades **16** are fixed upon the lower portion of the upper section **18** of the spindle **14,** the upper section **18** being that part of the spindle **14** which projects above the hole **13** in the table **11.** The upper spindle section **18** is adapted to project above the shaper blades **16,** and is also preferably threaded, as shown.

The rotary tool guard or shaper guard **20** is disc-shaped and provided with a hole **21** in the center thereof to fit snugly over the upper spindle section **18.** The hole **21** may be defined by an annular bearing sleeve or liner **22** forming the inner periphery of a bearing hub **23.**

Surrounding the hub **23** and forming the major portion of the guard member **20** is an annular body portion **24** preferably of solid, transparent material, such as a transparent acrylic resin, for example "Plexiglas."

A groove **25** is formed circumferentially around the periphery of the annular body portion **24** to receive the annular rib **26** of the annular rim **27** of the guard member **20.** The annular rim **27** is made of a soft resilient material, such as rubber or polyurethane for protection of the operator against accidental contact with the periphery of the guard member while rapidly rotating with the spindle **14.**

The bottom surface of the guard member **20** may be separated from the shaper tool **15** by a washer or spacer **28** around the spindle section **18.** The spacer **28** also provides a surface against which the guard member **20** is forced and held in clamped position by the nut member **30.** The nut member **30** threadedly engages the upper spindle section **18** and is tightened down upon the guard member **20** which is forced against the spacer **28.** In this manner, the guard member **20** is held in fixed position relative to the spindle **14** and the shaper tool **15,** so that the guard member **20,** as well as the shaper tool **15,** rotates as a unit with the spindle **14.**

By fixing the shaper guard **20** to the spindle **14,** the rapid rotation of the shaper guard **20** with the blades **16** discourages the operator from attempting to remove the guard member **20** from the spindle **14.**

Since the guard member **20** rotates rapidly with the spindle **14,** maximum visibility by the operator through the guard member **20** into the work engaging the shaper blades **16,** is obtained by the incorporation of the large annular transparent body portion **24.** Since the transparent body portion **24** is completely annular and of uniform radial dimensions, visibility through the guard member **20** is uniform and continuous regardless of the rotational position or rotational speed of the guard member **20.**

Although a bearing hub **23** and sleeve **22** are disclosed, it is of course within the scope of this invention to provide a guard member **20** which is of uniformly solid, transparent material having a hole **21** therethrough for fitting over the spindle section **18.** The absence or presence of the bearing elements **22** and **23**

depends upon the structural nature of the transparent material **24** or the structural requirements of the member **20**, vis-a-vis the degree of transparency desired. The annular rim **27** also may be an optional feature, but is preferred because of its additional safety characteristics in minimizing injury to the operator of the shaper apparatus **10**.

Furthermore, since the sole mounting means for the guard member **20** is the hole **21** fitted about the upper spindle section **18** and the nut **30** and spacer **28**, there are no laterally projecting mounting means or brackets which will be in the way of the operation of the rotary tool **15** upon the work. Also, because of the maximum vision provided by the transparent annular body portion **24**, there is less likelihood of the tool operator being sufficiently annoyed or discommoded even to desire to remove the guard member **20** from the spindle member **14**.

What is claimed is:

1. A guard for a rotary tool apparatus having a platform, a vertical spindle projecting above said platform and rotatably driven about its vertical axis, and a rotary tool fixed to the portion of the spindle adjacent and above said platform for operating upon work upon said platform in engagement with said tool, comprising:

a. a disc-shaped guard member having a diameter greater than the maximum diameter of the swath of said rotary tool,

b. means supporting said guard member coaxially upon said spindle above said rotary tool, and

c. said guard member comprising an annular body portion of solid, circumferentially uninterrupted, transparent material, to permit continuous vision through said annular body portion, even while said guard member is rotating, said guard member further being provided with a rim of soft resilient material fixed to and surrounding the periphery of said transparent annular body portion.

2. The invention according to claim **1** in which the transparent material of said annular body portion is rigid.

3. The invention according to claim **2** in which said means supporting said guard member comprises bearing means in the center of and fixed to said annular body portion for supporting said guard member coaxially upon said spindle.

4. The invention according to claim **3** in which said transparent annular body portion constitutes the major portion of said guard member and lies substantially in a horizontal plane with said bearing means and said annular rim, said rigid transparent material being structurally self-supporting and integrally connecting said bearing means and said annular rim.

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